STATE OF ILLINOIS

HAZARD MITIGATION PLAN

2023 Illinois Natural Hazard Mitigation Plan

J. B. Pritzker
GOVERNOR

October 2023

Primary Contributors

University of Illinois Extension	Carrie McKillip	University of Illinois Extension
	Russell Medley	University of Illinois Extension
	Anne Silvis	University of Illinois Extension
	Zachary Kennedy	University of Illinois Extension
	Mia Leigh Renna	Department Civil and Environmental Engineering, University of Illinois, Urbana-Champaign
	Anagha Devanarayanan	Department of Urban and Regional Planning, University of Illinois, Urbana-Champaign
	Sameeksha Samir	Department NuclearPlasma & Radiological Engineering, University of Illinois, Urbana-Champaign
	Jared Motley	Department Civil and Environmental Engineering, University of Illinois, Urbana-Champaign
Illinois State Water Survey	Camden Arnold	Senior Scientific Specialist, Hazard Mitigation Planning
	Lisa Graff – CFM	Mitigation & Planning Manager
	Brad McVay – GISP, CFM	GIS Specialist
	Meirah Williamson	Scientific Specialist, GIS Analyst
	Zoe Zaloudek – GISP, CFM	Assistant Research Scientist, Geospatial Science
	Trenton Ford	Illinois State Climatologist
Illinois State Geological Survey	Richard Berg	Director

Special Thanks

Illinois State Water Survey	Diana Davisson – EIT, CFM	Mapping Program Engineer
	Glenn Heistand – PE, CFM	Section Head, Coordinated Hazard Assessment and Mapping Program (CHAMP)
	Mary Richardson – CFM	Engineering Assistant

IEMA-OHS

ILLINOIS EMERGENCY MANAGEMENT AGENCY
AND OFFICE OF HOMELAND SECURITY

JB Pritzker
Governor

OFFICE OF THE DIRECTOR

Alicia Tate-Nadeau
Director

MEMORANDUM

TO: Deputy Director Office of Emergency Management, Clayton Kuetemeyer

FROM: Director Alicia Tate-Nadeau

DATE: September 29, 2023

SUBJECT: 2023 Illinois Natural Hazard Mitigation Plan Implementation

As Governor's Authorized Representative (GAR) under the Code of Federal Regulations for purposes of implementing Federal Emergency Management Agency (FEMA) protocols, I hereby approve and adopt on behalf of the State of Illinois the 2023 Illinois Natural Hazard Mitigation Plan (INHMP). The development and maintenance of the INHMP is a cooperative effort of state agencies, coordinated by the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) to establish a process for identifying and mitigating the effects of natural hazards in the State of Illinois as required under the Disaster Mitigation Act of 2000. The Office of Emergency Management within IEMA-OHS is hereby directed to take all necessary steps under the Illinois Emergency Management Act, 20 ILCS 3305/1 *et seq.*, to implement the attached INHMP.

The INHMP addresses the relative risk and actions that can be taken to mitigate the natural hazards demonstrated to affect Illinois, including severe storms, tornadoes, floods, severe winter storms, drought, extreme heat, and earthquakes. Hazard mitigation is an important component of emergency management and serves to reduce or eliminate loss of human life and property.

As required by the Illinois Emergency Management Act, 20 ILCS 3305/6(c)(2), IEMA-OHS will coordinate the periodic update and revision of the INHMP to reflect the changes in federal and state statutes and mitigation opportunities within the State of Illinois. All grant funding that is provided pursuant to this plan will be administered in accordance with the applicable provisions contained in 2 C.F.R. Part 200.

Sincerely,

DocuSigned by:
Alicia Tate-Nadeau
5B1D0CF78EC24C3

Alicia Tate-Nadeau,
Director

CC: Thomas Sivak, Regional Administrator
Federal Emergency Management Agency, Region V

TABLE OF CONTENTS

ACRONYMS

APA	Approval Pending Adoption
AIA	American Institute of Architects
ARC	American Red Cross
ARCGC	American Red Cross of Greater Chicago
ATC	Applied Technology Council
B/C	Benefit Cost
BOCA	Building Officials Code Association
BOMA	Building Owners and Managers Association
BRIC	Building Resilient Infrastructure and Communities
CAP	Community Assistance Program
CAP-SSSE	Community Assistance Program-State Support Services Element
CDAP	Community Development Assistance Program
CDB/DBCR	Capital Development Board/Division of Building Codes and Regulations
CDBG	Community Development Block Grant
CERL	Construction Engineering Research Laboratory (part of USACE)
CFM	Certified Floodplain Manager
CFR	Code of Federal Regulation
CHIP	Capability/Hazard Identification Plan
CMS	Central Management Services
CTP	Cooperating Technical Partners
CUSEC	Central United States Earthquake Consortium
DA&P	Disaster Assistance & Preparedness
DCEO	Department of Commerce and Economic Opportunity (Illinois)
DC&W	Direction, Control and Warning
DHS	Department of Homeland Security (federal)
DMA2k	Disaster Mitigation Act of 2000
DOI	Division of Insurance
DRC	Disaster Resistant Community
EOP	Emergency Operations Plan

ESDA	Emergency Services and Disaster Agency (local)
FBFW	Flood Boundary Floodway
FCO	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
FHMO	Federal Hazard Mitigation Officer
FIRM	Flood Insurance Rate Map
FLASH	Federal Alliance for Safe Housing
FMA	Flood Mitigation Assistance
FRM	Flood Risk Management
FY	Fiscal Year
GAR	Governor's Authorized Representative
GRF	General Revenue Fund
HM	Hazard Mitigation
HMGP	Hazard Mitigation Grant Program
HMST	Hazard Mitigation Survey Team (for non-flood disasters)
HRCQ	Highway Route Controlled Qualities
HUD	U.S. Department of Housing and Urban Development
IA	Individual Assistance
IAFSM	Illinois Association of Floodplain and Stormwater Managers
IBA	Illinois Broadcasters Association
IBHS	Insurance Institute for Business and Home Safety
ICDB	Illinois Capital Development Board
IDFPR/DOI	Illinois Department of Financial and Professional Regulation/Division of Insurance
IDNDR	International Decade for Natural Disaster Reduction
IDNR	Illinois Department of Natural Resources
IDNR-OWR	Illinois Department of Natural Resources - Office of Water Resources
IDOA	Illinois Department of Agriculture
IDOT	Illinois Department of Transportation
IDPH	Illinois Department of Public Health
IEA	Illinois Education Association
IEMA-OHS	Illinois Emergency Management Agency and Office of Homeland Security
IEMMAS	Illinois Emergency Management Mutual Aid System

IEPA	Illinois Environmental Protection Agency
IHMT	Interagency Hazard Mitigation Team
IHPA	Illinois Historic Preservation Agency
ILARC	Illinois Association of Regional Councils
ILEAS	Illinois Law Enforcement Alarm System
IMAG	Interagency Mitigation Advisory Group
IMSIF	Illinois Mine Subsidence Insurance Fund
INA	Illinois Nurserymen's Association
INHMP	Illinois Natural Hazard Mitigation Plan
INHMPC	Illinois Natural Hazard Mitigation Planning Committee
IPAM	Illinois Property Asset Management
IRCC	Illinois River Coordinating Council
ISBE	Illinois State Board of Education
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey (part of IDNR)
IWIC	Integrated Water Information Center
JFO	Joint Field Office
LCSMC	Lake County Stormwater Management Commission
LDD	Levee and Drainage District
LIHEAP	Low Income Home Energy Assistance Program
LSAC	Levee Safety Action Classification
MABAS	Mutual Aid Box Alarm System
MCSC	Mitigation Coordination and Strategy Committee
MERSWPC	Metro-East Regional Storm Water Planning Committee
MESD	Metro-East Sanitary District
MICA	Mobile Information Collection Application
MMIS	Modified Mercalli Intensity Scale (I thru XII)
MMMS	Map Modernization Management Support
MSD	Metropolitan Sanitary District - Chicago
MSDGC	Metropolitan Sanitary District of Greater Chicago (Now MWRD)
MWRD	Metropolitan Water Reclamation District - Chicago
NCEI	National Centers for Environmental Information (former NCDC)

NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NFIRA	National Flood Insurance Reform Act
NIBS	National Institute of Building Scientists
NIPC	Northeastern Illinois Planning Commission
NLD	National Levee Database
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NSF	National Science Foundation
NTH	Natural and Technological Hazards (part of FEMA)
NWS	National Weather Service
OMB	Office of Management and Budget
OWR	Office of Water Resources (IDNR)
OSLAD	Open Space Acquisition and Development
PA	Public Assistance
PCWD	Prairie Central Watershed District
PDM	Pre Disaster Mitigation
PDSI	Palmer Drought Severity Index
PI	Project Impact
PIO	Public Information Officer
PL	Public Law
POC	Point of Contact
PSA	Public Service Announcement
PVC	Polyvinyl Chloride
RACES	Radio Amateur Civil Emergency Service
RECD	Rural Economic and Community Development (formerly FmHA)
RFC	Repetitive Flood Claims
RR	Railroad
RWIS	Roadway Weather Information System
SBA	Small Business Administration, U.S. Department of Commerce
SBE	State Board of Education
SCO	State Coordinating Officer

SCS	Soil Conservation Service (now NRCS)
SHMO	State Hazard Mitigation Officer
SIMAPC	Southwestern Illinois Metropolitan and Regional Planning Commission
SIU	Southern Illinois University
SOP	Standard Operating Procedures
SRL	Severe Repetitive Loss
TARP	Tunnel and Reservoir Project (aka deep tunnel)
TBD	To Be Determined
TWP	Township
UBC	Uniform Building Codes
UIUC	University of Illinois, Urbana-Champaign
USACE	U.S. Army Corps of Engineers
USEPA	U. S. Environmental Protection Agency
USGS	U. S. Geological Survey, U.S. Department of the Interior

EXECUTIVE SUMMARY

The 2023 Illinois State Natural Hazard Mitigation Plan represents an entire restructuring of the plan format, with the intent to make the plan as user friendly and straightforward as possible. Many of the changes are designed to enable local jurisdictions, organizations, and regions to pull out specific pieces for use in their own planning, grant development and mitigation efforts. Additional elements were added to the planning process, mitigation objectives, and state profile to directly respond to new plan guidance from the Federal Emergency Management Agency.

The 2023 Plan also outlines changes made to the structure of the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) to address new and emerging changes in the climate, frequency of disasters, and movement toward building disaster resilient communities. This change is reflected in new action items and funding opportunities included in the plan.

Planning took place from June 2022 through June 2023, and incorporated four full planning meetings, five targeted focus groups, numerous meetings with former state mitigation advisory committee members, IMAG, Illinois Emergency Management Agency and Office of Homeland Security staff.

The plan was developed by University of Illinois Extension and Prairie Research Institute, Illinois State Water Survey, through funding from the Illinois Emergency Management Agency and Office of Homeland Security.

0.1 GOALS AND OBJECTIVES

The goals and objectives of the 2023 Illinois Natural Hazard Mitigation Plan were reworked to reflect the changes inherent in the expanding focus on building community resilience to disaster to address climate change, vulnerable populations, and nature-based mitigation solutions. While the lives and livelihoods of Illinois residents remain the top priority, the goals and objectives fostered the development of action items that can be implemented through state and local actions in specific, measurable projects and programs. The goals and objectives are as follows:

State Mitigation Goals and Objectives 2023

1. **Protect Illinois residents from natural hazards.**

Objective 1: Expand and disseminate disaster preparedness education and procedures to Illinois residents, with a focus on vulnerable populations.

Objective 2: Help educate the public on the benefits of hazard-resistant construction and site planning.

Objective 3: Publicize and encourage the use of early warning systems.

Objective 4: Encourage the use of personal protective actions to prevent loss of life and injuries during disasters.

2. **Create, support, and expand systemic efforts to lessen the vulnerability of the State to natural hazards and risks associated with them.**

Objective 1: Expand mitigation opportunities and institutionalize hazard mitigation practices across the State.

Objective 2: Assist jurisdictions in developing mitigation projects and identifying funding for cost-beneficial mitigation efforts.

Objective 3: Improve compliance with State floodplain regulations and management.

Objective 4: Encourage participation the National Flood Insurance Program (NFIP)

Objective 5: Focus mitigation efforts on Repetitive and Severe Repetitive loss properties, as well as Substantially Damaged properties.

Objective 6: Encourage the use of natural infrastructure and nature-based solutions in mitigating natural hazards.

Objective 7: Encourage mitigation projects that look at projected climate change and adaptations.

Objective 8: Promote wildfire prevention programming and develop policies/strategies to mitigate the impacts of wildfire on residents and communities.

Objective 9: Expand earthquake awareness programming and develop policies/strategies to mitigate earthquake impacts on residents and communities.

Objective 10: Continuously demonstrate and capitalize upon the connection between natural hazard mitigation and sustainable development.

Objective 11: Improve the disaster resistance of buildings, structures, and infrastructure whether it be new construction, expansion, or renovation.

3. **Improve coordination, capacity, communications, and partnerships among jurisdictions and agencies to support mitigation efforts.**

Objective 1: Provide leadership and planning/technical assistance for natural hazard mitigation planning and projects at all jurisdiction levels.

Objective 2: Maximize the use of best technology for decision making.

Objective 3: Increase awareness and knowledge of hazard mitigation principles and practices among local public officials and community leaders.

Objective 4: Encourage communities to develop, adopt, and implement local hazard mitigation plans.

Objective 5: Encourage other organizations, public and private, to incorporate natural hazard mitigation best practices into their operations.

Objective 6: Provide local and state officials with information related to state floodplain regulations and the benefit of participation in the NFIP.

4. **Increase public understanding, support, and education for hazard mitigation planning and projects.**

Objective 1: Heighten public awareness of natural hazards.

Objective 2: Inform the public about the benefits of mitigation measures.

Objective 3: Help create a workforce trained in hazard resistant construction techniques.

Objective 4: Maximize post-disaster "windows of opportunity" to implement major mitigation outreach initiatives.

Implementation details for these goals and objectives are in section three of this plan.

0.2 RISK ASSESSMENT

Section 2 presents the methodology used to perform the risk analysis for each hazard. Risk analysis is a process by which the State determines which hazards are of concern and addresses the potential impacts of those hazards statewide. Hazards included in the risk analysis include:

- Drought
- Earthquake
- Extreme Temperatures: Cold Wave
- Extreme Temperatures: Heat Wave
- Flooding: Coastal
- Flooding: Dam/Levee Failure
- Flooding: Flash
- Flooding: Riverine
- Landslide
- Mine Subsidence
- Pandemic
- Severe Storms: Hail
- Severe Storms: Lightning
- Severe Storms: Wind
- Tornado
- Wildfire
- Winter Weather: Ice Storms
- Winter Weather: Winter Storms

These hazards are listed in alphabetical order, and not in order of risk or vulnerability. The following variables were used to determine the risk ranking:

- Population
- Population Growth
- Historic Hazard Occurrence
- Population Exposure
- Severity of Impact
- Social Vulnerability

Historical events, future land development changes and an assessment of the impact of hazards on state owned facilities and essential facilities are addressed. The profile for each hazard includes a description, historical events, impacts, social vulnerability, climate change, risk analysis, and loss estimates.

0.3 MITIGATION CAPABILITIES

The State of Illinois, through its agencies, organizations, and jurisdictions, has a long history of successful mitigation efforts, as outlined in Section 3 of the plan. These successes were accomplished through careful and systematic collaborations that have been developed and sustained throughout the years. The plan contains, in detail, the many agencies and organizations with the capabilities to implement the mitigation actions set forth in the plan, as well as programs, policies, legislation, and funding related to accomplishing the goals of the plan.

The plan reflects the accomplishments (Appendices 3.4 and 3.5) as well as agencies, partners, and internal changes to IEMA-OHS that will enhance the ability of Illinois to become a more disaster-resilient State. The plan notes the diversity of capabilities of local jurisdictions to implement mitigation activities, as well as trainings and technical assistance that will be provided by IEMA-OHS staff to build those capabilities.

The organizational restructuring of the IEMA-OHS Recovery Division is highlighted, as these changes will allow for greater interaction among the recovery and mitigation specialists and increase the ability to "build back better" in the aftermath of a disaster. By partnering potential public assistance dollars with applicable mitigation funding streams, IEMA-OHS staff will be able to work with impacted communities to not only rebuild, but also build resiliency by ensuring the recovery efforts build in resiliency rather than only replacement.

0.4 SUMMARY OF CHANGES

The Illinois 2023 Natural Hazard Mitigation Plan was developed under the new guidance released by FEMA on April 19, 2022, as FP 302-094-2 State Mitigation Planning and Policy Guide, OMB Collection #1660-0062. With new guidance regarding climate change, nature-based solutions, and vulnerable populations, multiple changes were needed. These required changes provided an opportunity to reorganize the plan to become a more usable, reader-friendly document. To this end, the plan was reorganized, with discussions replacing lengthy sections that were moved to the Appendix. These appendices are referenced in the text. The goal is to make the document more concise and user friendly.

Perhaps the most significant changes in the plan are in the mitigation strategy section, with goals, objectives, and action items revamped to remove administrative items, reword/rework goals, and create broader objectives within each goal area. The resulting action items are broader and provided context for projects to be developed to mitigate natural hazards in Illinois. These action items were labeled to note the type of mitigation project they would generate. A list of the removed action items is included in the appendix.

A new method for setting priorities was developed to assist with selection of projects for various funding streams. This methodology can be applied across funding streams and types of projects. In addition to the narrative description of the process, a tool was developed for use by IEMA-OHS staff and the IMAG to optimize the available funding based upon the prioritization criteria. A copy of the tool, along with the methodology, is included in the Appendix. Action items are labeled long term if they are ongoing or continuous, while specific actionable items that could be completed within the planning horizon of this plan (five years) are labeled short term.

The hazards identified in the risk analysis were updated from the 2018 plan. All hazards were assessed equally, which is a deviation from the 2018 plan in which the primary hazards being reviewed were severe storms and tornadoes, floods, severe winter storms, drought, extreme heat, and earthquakes. Hazards less likely to impact Illinois were listed under Other Natural Hazards. Wildfire and Cold Wave were added to the list of hazards.

The data and methodology were updated from the 2018 plan. Data from NCEI Storm Events Database and SHELDUS, spanning 26 years (1996-2021), was used to calculate severity of impact and historical frequency. Social vulnerability was added to the risk ranking formula to better assess natural hazard risk among communities that are marginalized.

Finally, the Program Coordination section was enhanced with specific listings of the types and scopes of technical assistance provided to local jurisdictions, with a checklist of technical assistance from IEMA-OHS included as Appendix 4.1. This change will provide an easy reference for plan users, as well as Mitigation Staff, in tracking assistance provided. The change in organizational structure, described in the Chapter 3 Section on Capability Assessment, was referenced in this section on how technical assistance delivery and tracking will be enhanced.

0.5 PLAN IMPLEMENTATION

The implementation of the 2023 Illinois Natural Hazard Mitigation Plan, once adopted, will be the joint responsibility of IEMA-OHS, the Illinois Mitigation Advisory Group (IMAG), local jurisdictions, and agencies. Through the regular meetings of IMAG, IEMA-OHS will provide status reports of mitigation activities, and recommendations for funding when available.

One of the key components of implementing the plan will be the adherence to the processes outlined throughout the plan, including, but not limited to, plan monitoring, technical assistance, and project prioritization procedures. Plan maintenance is prescribed in Section 1.4.

Following the maintenance processes, Section 1.4 of the plan specifies the responsibility of the State Hazard Mitigation Officer (SHMO) in detail, as well as reporting procedures to IMAG annually. Updates to the plan must be presented to the IMAG for review.




SECTION 1

INTRODUCTION

SECTION 1 FIGURES

1.1 STATE PROFILE

Illinois and the Four Planning Regions

Illinois includes 57,918 square miles, making it the 25th largest of the 50 states in total area. Illinois extends from 36.9540° to 42.4951° North Latitude and from 87.3840° to 91.4244° West Longitude. The State is approximately 385 miles long and 218 miles wide, with its geographic center in the town of Chestnut. Carlyle Lake (24,580 acres) and Rend Lake (18,900 acres), two of largest lakes in Illinois, make up a substantial amount of the inland water area. However, Illinois' largest lake is Lake Michigan. The State lies on its southwestern shore. Its coastline is 63 miles long, extending from Wisconsin to Indiana. Elevations in the State range from the lowest level at the Mississippi River at Cairo in Alexander County (279 feet above mean sea level) to the highest point of Charles Mound in Jo Daviess County (1235 feet above mean sea level). The largest cities in Illinois are Chicago, Aurora, Rockford, Joliet, Naperville, Springfield, and Peoria. The State of Illinois is bordered by the states of Indiana, Iowa, Kentucky, Missouri, Wisconsin, and Michigan (in Lake Michigan).

The landscape of Illinois owes much of its diversity from repeated glaciations over its geologic past, leaving a legacy of morainal hills and lake plains over about 90% of the State. A relatively flat lake plain dominates Chicago and eastern Cook County. Another major plain is the Green River Lowland centering on Whiteside, Henry, and Bureau Counties. Distinct glacial moraines (with elevations of 30-50 feet) and thick deposits (>100 feet) of glacial sediment dominate much of the northeastern corner of Illinois, while thinner deposits and more subtle moraines reside in north-central, western, and much of southern Illinois. Only the northwestern corner of Illinois, centering on Jo Daviess County and northwestern Carroll County, west-central Illinois covering Calhoun and portions of Pike and Adams Counties, and the southern tip of Illinois (Union, Johnson, Pope, Hardin, Alexander, Pulaski, and Massac Counties, as well as small portions of the southern parts of Jackson, Williamson, Saline, and Gallatin Counties) were not glaciated, and bedrock is commonly exposed.

Illinois' rivers are other prominent geographic features. There are 926 miles of rivers that serve as Illinois' western (Mississippi River – 593 miles), southern (Ohio River – 133 miles), and southeastern (Wabash River--200 miles) borders. The Illinois River dominates waterways within the State. It flows east to west through northern Illinois and then heads south at Hennepin for a total distance of 273 miles to join the Mississippi River. Its major tributary, the Kankakee River, flows westward from Indiana, and traverses 133 miles through northeastern Illinois. Other major Mississippi River tributaries are the Rock River that flows southward from Wisconsin and then westward through 155 miles of Illinois, and the Kaskaskia River that travels 325 miles from central through southwestern Illinois. The Embarrass River travels 195 miles from central Illinois to southeastern Illinois, where it is tributary to the Wabash River.

1.1.1 Regions

The Illinois State Hazard Mitigation Plan organizes the state into four regions with similar demographics, land uses, and risk profiles. The administrative boundaries of the Illinois Emergency Management Agency and Office of Homeland Security regional offices were considered when creating the four regions. While these regions share similarities, there are differences among their constituent counties and communities. Analyzing the four regions of the state is foundational to the risk and vulnerability assessments, as well as the identification and implementation of hazard mitigation strategies. The four regions are made up of 12 counties in northeastern Illinois, 17 counties in northwestern Illinois, 34 counties in central Illinois, and 39 counties in southern Illinois.

Figure 1.1: Illinois Hazard Mitigation Plan Regions

1.1.2 Regional Characteristics

The following section provides a general discussion of geological hazards in the four regions, and demographic, economic and climate characteristics of each of the four Illinois Hazard Mitigation Plan regions.

Demographic Characteristics

Each of the four planning regions in Illinois have distinct demographic characteristics. Information on race and ethnicity, household income, poverty prevalence, educational attainment, English proficiency, and housing characteristics are included in the following sections to better understand the people living in each region.

Economic Characteristics

Similar to the demographic nuances that vary by planning region, each region has slightly different economic characteristics. The impacts of a natural disaster can have disparate effects on different industries. Understanding the economic make-up of the regions including employment and commutation patterns can increase the efficacy of hazard mitigation planning efforts. It is also important to recognize and acknowledge that each region has variation in the economic makeup of the communities and counties within them. The following section presents general economic information at the regional level including employment by North American industrial Classification System (NAICS) 2-digit sectors, occupational employment, commuting data, and number of business establishments by industry.

Climate Characteristics

Summary

Illinois lies midway between the Continental Divide and the Atlantic Ocean. The state's southern tip is 500 miles north of the Gulf of Mexico, and nearly 400 miles south of the most northern tip of the state. Illinois spans both continental and subtropical climates, both with warm, humid summers and frequent short fluctuations in temperature, precipitation, humidity, cloudiness, and winds. The southern third of the state is best characterized as a humid subtropical climate, humid with a hot summer, cool winter, and no defined dry season. The northern two-thirds of the state is best characterized as a humid continental climate, humid with a hot summer, cold winter, and no defined dry season.

The overall climate of Illinois has five unique features:

1. Four distinct seasons, each with different conditions;
2. Major north-south temperature and precipitation differences;
3. An extremely wide variety of amounts and forms of precipitation with moderate variations between monthly and seasonal average values, but with no defined dry season;
4. Extreme variability of weather conditions across the state and between years; and
5. Many storms in all seasons.

Climate Records

Illinois' position roughly halfway between the tropic of cancer and the Arctic circle means the state experiences widely varying temperature extremes. The highest temperature ever reported in Illinois was 117°F in East St. Louis on July 14, 1954. The lowest temperature ever reported in Illinois was -38° in Mt. Carroll on January 31, 2019. Likewise, Illinois' continentality and relative proximity to the Gulf of Mexico means the state experiences widely varying precipitation. The highest 24-hour precipitation total on record in Illinois is 16.91 inches in Aurora on July 18, 1996. The highest one-year precipitation total was 74.58 inches at New Burnside in 1950. Among the lowest one-year precipitation totals was 15.67 inches at Wheeling in 2005. Illinois also experiences severe weather, including hail. The largest diameter hailstone reported in Illinois is 4.75 inches in Minooka on June 10, 2015. Cold and snowy winters, especially in northern Illinois, make for extreme winter weather. The highest 24-hour snowfall in Illinois is 36 inches in Astoria on February 28, 1900. The highest single day snow depth measurement in Illinois was 41 inches in Gebhard Woods State Park on January 31, 1979.

Northwest Region

Northwest Region Geological Hazards

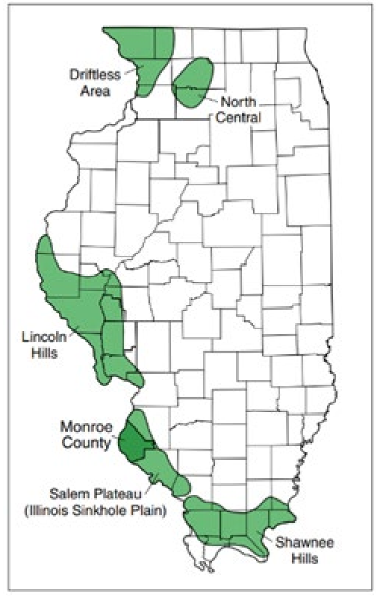


Figure 1.2 – Karst Regions of Illinois (Weibel and Panno 1997).

- **Groundwater susceptibility** - Groundwater from sandstone and limestone/dolomite bedrock are significant drinking water sources. Glacial deposits are less than 100 feet thick (and usually <25 feet thick) throughout most of the region. Therefore, shallow sand and gravel aquifers are not major suppliers of drinking water. The exceptions are southern and southeastern Lee County and most of Bureau County, as well as the Green River Lowland in southern Whiteside, northeastern Henry, and northwestern Bureau Counties. For the latter, surface sand and gravel and sand dunes are dominant. Where aquifers are close to or at land surface, there is high potential for groundwater contamination from surface spills, surface application of fertilizers and pesticides, industrial activity, and other potentially adverse land-use practices.
- **Karst and sinkholes** - Groundwater susceptibility to potential contamination is particularly high in Jo Daviess, western Stevenson, most of Carroll, and northwestern Whiteside Counties, where glacial deposits are absent or very thin and widespread karst, sinkholes, and fissures in the bedrock can readily transmit pollutants. A secondary region of karst occurs in central Ogle and northwestern Lee Counties.
- **Flooding** – Flooding can be an issue along the Mississippi, Rock, and middle Illinois Rivers and their tributaries. On the outside of meander bends, undercutting of sloped areas can create instability and slope failure or landsliding.
- **Mined-out land** – Areas with underground mine workings from coal and other mining are susceptible to collapse and can result in damage to buildings and roads. In this northwestern region, that includes the old lead and zinc mining in Jo Daviess and Carroll Counties and primarily coal mining activity in Rock Island, Henry, Bureau, Mercer, Henderson, Warren, Knox, Stark, Marshall, and Putnam Counties.

Northwest Region Demographic Characteristics

Demographic highlights for the northwest region:

- The region is the second most racially diverse region of the state, behind the northeast region.
- The region has the second largest Hispanic or Latino population, both in terms of total number and proportion of the population.
- Among the four regions, the northwest has the second lowest proportion of households earning less than $10,000 annually, while also having the lowest proportion of households earning $200,000 or more annually.
- The poverty rate in the region is the second highest among the regions, while the proportion of families in poverty in the region is the highest for all regions.
- The region ranks second highest for the proportion of adults without a high school diploma; and the lowest proportion of adults holding a Bachelor’s degree or higher.

- The northwest region has the second highest proportion of individuals with limited English proficiency (LEP) among the four regions, but the second lowest in terms of total number of LEP residents, due to the region having the smallest total population.
- The housing structures in the northwest region are the oldest among the four regions. The region has the highest proportion of housing structures built between 1940 and 1969 and the lowest proportion of housing built 2010 or later compared to the state's other regions.

Figure 1.3: Northwest Region Population by Race, 2021

Total Population, 2021	849,604	*Pct*
White alone	703,204	82.8%
Black or African American alone	68,266	8.0%
American Indian alone	1,917	0.2%
Asian alone	14,682	1.7%
Native Hawaii & Other Pacific Is. alone	481	0.1%
Some other race alone	20,317	2.4%
Two or more races	40,737	4.8%

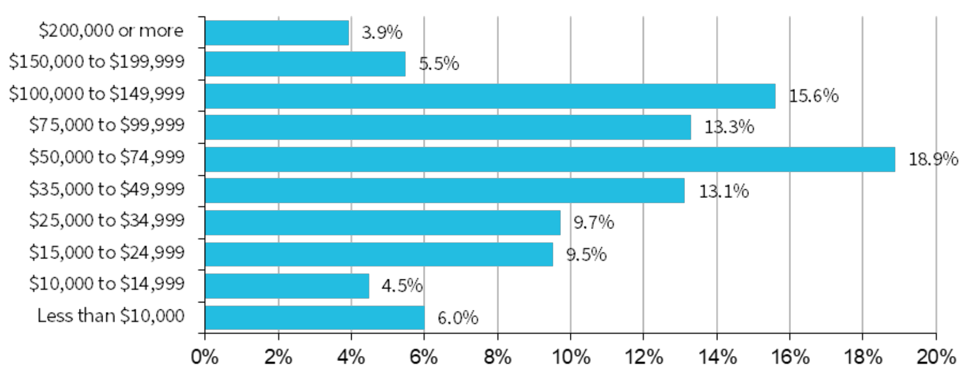
Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.4: Northwest Region Hispanic or Latino Population, 2021

Total Population, 2021	849,604	*Pct*
Hispanic or Latino (of any race)	88,167	10.4%
Not Hispanic or Latino	761,437	89.6%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.5: Northwest Region Household Income Distribution, 2021



Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.6: Northwest Region Poverty Prevalence, 2021

People Below Poverty	112,700	13.7%
Families below poverty	21,559	9.8%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.7: Northwest Region Educational Attainment for Population 25 Years and Older, 2021

Total Population 25 yrs or older	591,242	*Pct*
No high school degree	61,059	10.3%
High school graduate	530,183	89.7%
Associates degree	61,392	10.4%
Bachelor's degree or higher	130,372	22.1%
Graduate or professional	45,743	7.7%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.8: Northwest Region English Proficiency, 2021

Population 5 yrs or older, 2021	800,764	*Pct*
Speak only English	720,986	90.0%
Speak a language other than English	79,778	10.0%
Spanish or Spanish Creole	50,683	6.3%
Other Indo-European languages	12,948	1.6%
Asian and Pacific Island languages	8,811	1.1%
Other languages	7,090	0.9%
Speak English less than "very well"	26,737	3.3%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.9: Northwest Region Housing Characteristics, 2021

Total Housing Units, 2021	389,840	*Pct*
Occupied	348,742	89.5%
Vacant	41,098	10.5%
For rent	6,644	1.7%
Rented, not occupied	930	0.2%
For sale only	4,131	1.1%
Sold, not occupied	1,101	0.3%

Seasonal, recreational, occasional	7,608	2.0%
For migrant workers	69	0.0%
Other vacant	20,615	5.3%
Year Built		
Built 2010 or later	8,615	2.2%
Built 2000 to 2009	31,134	8.0%
Built 1990 to 1999	38,333	9.8%
Built 1980 to 1989	30,756	7.9%
Built 1970 to 1979	60,176	15.4%
Built 1940 to 1969	124,525	31.9%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Northwest Region Economic Characteristics

Economic highlights for the northwest region:

- The top three sectors in the northwest region are Education, healthcare & social assistance; Manufacturing; and Retail trade. These three sectors are also the top sectors in two of the other three regions. In the northwest, these sectors account for 52.9 percent of total employment. The northwest region's economy has the highest proportion of manufacturing jobs compared to total jobs among the four regions.
- In the northwest region, the top three occupation groups in terms of total employment are Management, Professional & related; Production & transportation; and Sales and office occupations. The region has the highest proportion of workers employed in production and transportation occupations, which aligns with the region's higher proportion of employees in the manufacturing sector.
- 31.2 percent of the region's residents commute outside of the county in which they live when they travel to work. The northwest region is the second highest in terms of the proportion of regional residents who out-commute. The mean travel time to work for northwest region workers is 21.3 minutes, the second shortest average commute time among the four regions. [1]

Figure 1.10: Northwest Region Employment by Sector, 2021

Civilian employees > 16 years, 2021	390,596	*Pct*
Ag, forestry, fishing & hunting, mining	8,689	2.2%
Construction	24,683	6.3%
Manufacturing	72,878	18.7%
Wholesale trade	10,833	2.8%
Retail trade	44,935	11.5%

Transport, warehousing, and utilities	25,959	6.6%
Information	4,472	1.1%
Finance and ins, and real estate	18,130	4.6%
Prof, mgmt, admin, & waste mgmt	27,884	7.1%
Edu, health care, & social assistance	88,598	22.7%
Arts, entertain, rec, accommod, & food	30,864	7.9%
Other services, except public admin	18,463	4.7%
Public administration	14,208	3.6%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.11: Northwest Region Employment by Occupation

Civilian employees > 16 years, 2021	390,596	*Pct*
Management, professional, & related	124,323	31.8%
Service	67,921	17.4%
Sales and office	79,460	20.3%
Farming, fishing, and forestry	2,749	0.7%
Construction, extract, maint, & repair	19,495	5.0%
Production, transportation	83,308	21.3%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.12: Northwest Region Commuting Time, 2021

Workers 16 years and over, 2021	383,683	*Pct*
PLACE OF WORK:		
Worked in county of residence	263,990	68.8%
Worked outside county of residence	119,693	31.2%
TRAVEL TIME TO WORK:		
Less than 10 minutes	71,792	18.7%
10 to 14 minutes	58,329	15.2%
15 to 19 minutes	60,592	15.8%
20 to 24 minutes	52,566	13.7%
25 to 29 minutes	25,727	6.7%
30 to 34 minutes	36,566	9.5%
35 to 39 minutes	8,800	2.3%

40 to 44 minutes	9,014	2.3%
45 to 59 minutes	17,741	4.6%
60 or more minutes	22,235	5.8%
Mean travel time to work (minutes)	21.3	

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Northwest Region Climate Characteristics

The northwest region of Illinois is the climatologically coldest and driest region, and experiences a humid continental climate. Average annual temperature in the northwest region is 49°F, and ranges from 48°F in Jo Daviess County to 51°F in Henderson County. The average seasonal temperature ranges from 72°F in climatological summer (June – August) to 25°F in climatological winter (December – February). The average temperature in the climatologically warmest month of July is 73 degrees, and the average temperature in the climatologically coldest month of January is 22 degrees. Average daily high temperatures in the region range from 30°F in January to 84°F in July. Average daily low temperatures in the region range from 14°F in January to 63°F in July.

The northwest region experiences an average of fewer than five days per year with a high temperature at or above 95°F, and the region experiences an average of 19 nights per year with a low temperature at or below 0°F. A heat index value at or above 105°F is often used as a threshold for National Weather Service extreme heat warnings. The Northwest region experiences an average of two days a year with at least one hour with a heat index at or above 105°F. The region experiences 8 to 18 hours per year with a heat index at or above 105°F. Similarly, a wind chill value at or below -15°F is often used as a threshold for National Weather Service extreme cold warnings. The Northwest region experiences an average of 14 days a year with a wind chill at or below -15°F, and on average experiences 40 to 80 hours with a wind chill at or below -15°F.

Total annual precipitation in the northwest region is 38.2 inches, and total seasonal precipitation ranges from 13.1 inches in climatological summer to 5.3 inches in climatological winter. Average monthly total precipitation ranges from 5.1 inches in July to 1.6 inches in January. The northwest region on average experiences two or more inches of precipitation in a single day once every one to two years. Average total annual snowfall in the northwest region is 35 inches, and ranges from nearly 40 inches in Jo Daviess County to 22 inches in Henderson County.

Northeast Region

Northeast Region Geological Hazards

- **Lake Michigan shoreline** – This includes bluff erosion hazards from south of Waukegan and into northern Cook County due to wave-storm undercutting of slopes, slope failure, and landslides. The situation is worse when lake levels are high. Groundwater seeping from sand layers within the bluffs exacerbates the erosion. Beach sand is a natural protector of both bluffs and beaches along the shoreline. The paucity of sand contributes to erosion issues at all of Illinois' Lake Michigan beaches. It's particularly an issue between the Wisconsin state line to Waukegan, where starvation of sand and resultant erosion has caused considerable shoreline retreat. The armored shoreline along Chicago is particularly susceptible to damage during severe wave storm activity.
- **Groundwater susceptibility** - Of these 12 counties, five use Lake Michigan as a drinking water

source (Cook and DuPage primarily, about one half of Lake, and very small portions of Will and Kendall). Groundwater from shallow sand and gravel and from sandstone and limestone/dolomite bedrock are significant drinking water sources. Where aquifers are close to or at land surface, such as in McHenry, Kane, Will, Kankakee, and western Lake Counties, there is high potential for groundwater contamination from surface spills, surface application of fertilizers and pesticides, industrial activity, and other potentially adverse land-use practices.

- **Karst and sinkholes** – Although not widespread throughout northeastern Illinois, sinkholes have been known to develop in the shallow bedrock beneath Chicago.
- **Flooding** – Flooding can be an issue along the Fox, Des Plaines, Kankakee, and upper Illinois Rivers and their tributaries. On the outside of meander bends, undercutting of sloped areas can create instability and slope failure or landsliding.
- **Mined-out land** – Areas with underground mine workings from coal and other mining are susceptible to collapse and can result in damage to buildings and roads. In this region, that includes coal mining activity in western Kankakee, southwestern Will, and southern Grundy and Livingston Counties.

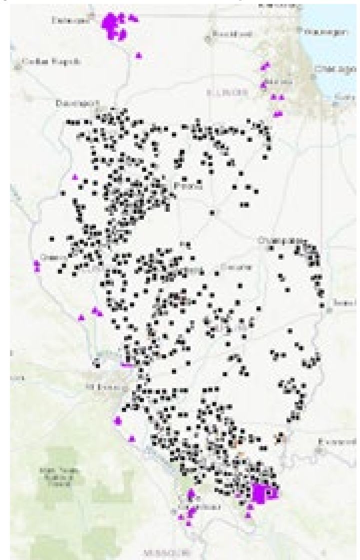


Figure 1.13 Mine Locations

Northeast Region Demographic Characteristics

Demographic highlights for the northeast region:

- The northeast region is the both the most populous and most racially diverse region of the state.
- The region has the largest Hispanic or Latino population, both in terms of total number and proportion of the population. Individuals identifying as Hispanic or Latino comprise nearly one of every four of the region's residents.
- Among the four regions, the northeast has the lowest proportion of households earning less than $10,000; however, the region has the highest total number of low-income households due to the northeast region's larger population in comparison to the other regions. The region has the highest proportion and total number of households earning $200,000 or more in annual household income.
- The poverty rate for people and families in the northeast region is the lowest among all regions. However, the overall number of people living in poverty in the region is much higher than the other regions due to the region's large population base. Over 950,000 individuals are living in poverty in the northeast region.
- Educational attainment in the northeast region is a complex picture. The region ranks highest for the proportion of adults without a high school diploma, while also having the highest proportion of adults holding a Bachelor's degree or higher.
- The northeast region has both the highest proportion of individuals with limited English proficiency (LEP) among the four regions, both in terms of proportion and overall number. There are nearly one million LEP individuals living in the region.

- The housing structures in the northeast region are the newest among the four regions. The region has the lowest proportion of housing structures built between 1940 and 1969, and the highest proportion of housing built 2010 or later, compared to the state's other regions.

Figure 1.14: Northeast Region Population by Race, 2021

Total Population, 2021	8,885,515	*Pct*
White alone	5,395,161	60.7%
Black or African American alone	1,453,923	16.4%
American Indian alone	36,638	0.4%
Asian alone	646,988	7.3%
Native Hawaii & Other Pacific Is. alone	3,447	0.0%
Some other race alone	746,618	8.4%
Two or more races	602,740	6.8%

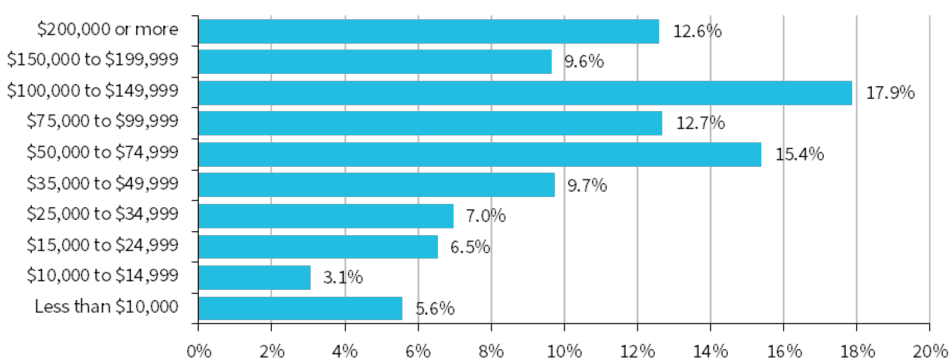
Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.15: Northeast Region Hispanic or Latino Population, 2021

Total Population, 2021	8,885,515	
Hispanic or Latino (of any race)	2,046,720	23.0%
Not Hispanic or Latino	6,838,795	77.0%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.16: Northeast Region Household Income Distribution, 2021



Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.17: Northeast Region Poverty Prevalence, 2021

People Below Poverty	959,048	11.0%

Families below poverty	167,409	7.8%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.18: Northeast Region Educational Attainment for Population 25 Years and Older, 2021

Total Population 25 yrs or older	6,066,555	*Pct*
No high school degree	649,287	10.7%
High school graduate	5,417,268	89.3%
Associates degree	438,267	7.2%
Bachelor's degree or higher	2,475,014	40.8%
Graduate or professional	998,414	16.5%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.19: Northeast Region English Proficiency, 2021

Population 5 yrs or older, 2021	8,364,478	*Pct*
Speak only English	5,795,550	78.3%
Speak a language other than English	2,568,928	21.7%
Spanish or Spanish Creole	1,505,979	13.3%
Other Indo-European languages	622,403	3.7%
Asian and Pacific Island languages	317,919	3.5%
Other languages	117,611	1.1%
Speak English less than "very well"	951,196	8.2%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure1.20: Northeast Region Housing Characteristics, 2021

Total Housing Units, 2021	3,615,523	*Pct*
Occupied	3,339,084	88.8%
Vacant	276,439	11.2%
For rent	68,086	1.9%
Rented, not occupied	9,007	0.4%
For sale only	29,732	0.7%
Sold, not occupied	13,176	0.1%
Seasonal, recreational, occasional	22,022	3.6%
For migrant workers	143	0.0%

Other vacant	134,273	4.0%
Year Built		
Built 2010 or later	126,410	7.5%
Built 2000 to 2009	410,903	13.6%
Built 1990 to 1999	400,980	13.6%
Built 1980 to 1989	331,908	13.2%
Built 1970 to 1979	506,741	14.8%
Built 1940 to 1969	1,077,413	25.1%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Northeast Region Economic Characteristics

Economic highlights for the northeast region:

- The top three sectors in the northeast region are Education, healthcare & social assistance; Professional, Scientific & management, Administrative & waste management services; and Manufacturing. The northeast is the only region in which the Professional, scientific & management, administrative & waste management services sector is a top-three employer. This can be attributed to the unique structure and activity associated with the large Chicago metro area economy.
- In the northeast region, the top three occupation groups in terms of total employment are Management, professional & related; Sales and office; and Service occupations. The region has the highest proportion of workers employed in Management, professional & related occupations when compared both across regions and to the other occupations within the region. This aligns with the region's higher proportion of employees in the Professional, scientific & management, administrative & waste management services sector.
- 23.9 percent of the region's residents commute outside of the county in which they live when they travel to work. This ranks the northeast region as the second lowest in terms of the proportion of regional residents who out-commute. However, the mean travel time to work for northeast region workers is 28 minutes, the longest among all regions, and likely explained by more congested traffic patterns in the northeast region when compared to the rest of the state.

Figure 1.21: Northeast Region Employment by Sector, 2021

Civilian employees > 16 years, 2021	4,460,705	*Pct*
Ag, forestry, fishing & hunting, mining	14,670	0.3%
Construction	236,096	5.3%
Manufacturing	496,497	11.1%
Wholesale trade	134,461	3.0%
Retail trade	446,436	10.0%
Transport, warehousing, and utilities	312,562	7.0%

Information	85,025	1.9%
Finance and ins, and real estate	354,647	8.0%
Prof, mgmt, admin, & waste mgmt	634,052	14.2%
Edu, health care, & social assistance	1,001,738	22.5%
Arts, entertain, rec, accommod, & food	391,283	8.8%
Other services, except public admin	203,927	4.6%
Public administration	149,311	3.3%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.22: Northeast Region Employment by Occupation

Civilian employees > 16 years, 2021	4,460,705	*Pct*
Management, professional, & related	1,911,032	42.8%
Service	712,202	16.0%
Sales and office	941,367	21.1%
Farming, fishing, and forestry	5,729	0.1%
Construction, extract, maint, & repair	171,434	3.8%
Production, transportation	610,170	13.7%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.23: Northeast Region Commuting Time, 2021

Workers 16 years and over, 2021	4,380,726	*Pct*
PLACE OF WORK:		
Worked in county of residence	3,333,724	76.1%
Worked outside county of residence	1,047,002	23.9%
TRAVEL TIME TO WORK:		
Less than 10 minutes	323,072	7.4%
10 to 14 minutes	384,256	8.8%
15 to 19 minutes	454,022	10.4%
20 to 24 minutes	479,562	10.9%
25 to 29 minutes	253,394	5.8%
30 to 34 minutes	611,590	14.0%
35 to 39 minutes	157,205	3.6%
40 to 44 minutes	220,460	5.0%
45 to 59 minutes	481,712	11.0%

60 or more minutes	520,423	11.9%
Mean travel time to work (minutes)	28.0	

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Northeast Region Climate Characteristics

The northeast region of Illinois is the most populous and experiences a humid continental climate. Average annual temperature in the northeast region is 50°F, and ranges from 48°F in Boone County to 51°F in Kankakee County. The average seasonal temperature ranges from 72°F in climatological summer (June – August) to 26°F in climatological winter (December – February). The average temperature in the climatologically warmest month of July is 74°F, and the average temperature in the climatologically coldest month of January is 23°F. Average daily high temperatures in the region range from 31°F in January to 84°F in July. Average daily low temperatures in the region range from 15°F in January to 63°F in July.

The northeast region experiences an average of five days per year with a high temperature at or above 90°F, and the region experiences an average of 17 nights per year with a low temperature at or below 0°F. The northeast region experiences an average of two days a year with at least one hour with a heat index at or above 105°F. The region experiences between 6 and 12 hours per year with a heat index at or above 105°F. The northeast region experiences an average of 10 days a year with a wind chill at or below -15°F, and on average experiences 40 to 70 hours with a wind chill at or below -15°F.

Total annual precipitation in the northeast region is 37.8 inches, and total seasonal precipitation ranges from 12.4 inches in climatological summer to 5.7 inches in climatological winter. Average monthly total precipitation ranges from 4.6 inches in July to 1.8 inches in February. The northeast region on average experiences a day with two or more inches of precipitation day once every one to two years. Average total annual snowfall in the northeast region is 38 inches, and ranges from over 40 inches in Lake County to 25 inches in Grundy County.

The highly developed urban and suburban Chicagoland region and Lake Michigan are unique features to northeast Illinois' climate. One of the most noticeable effects of development in Chicagoland is the urban heat island, which causes Chicago to be two to three degrees F warmer than surrounding suburban and rural areas. In addition, differences in development, land use, and greenspace can affect the intensity of the urban heat island effect, causing some neighborhoods to be 5 to 10°F warmer than other nearby neighborhoods. The large thermal mass of Lake Michigan tends to moderate temperatures, with cooler summers and warmer winters along the lake shore relative to inland. Furthermore, winter precipitation can be enhanced by lake-effect snow that occurs when winds blow from the north or northeast. However, because the predominant wind in the winter blows out of the west or northwest, Chicago does not experience as much lake-effect snow as areas on the downwind lake coast, such as western Michigan.

Central Region

Central Region Geological Hazards

- **Groundwater susceptibility** - Groundwater from sand and gravel (east of the Illinois River and to a lesser extent west of the river), as well as groundwater from sandstone and limestone/dolomite bedrock are significant drinking water sources. The Mahomet aquifer (a USEPA designated sole source aquifer) dominates the region between the Illinois River and the Indiana state line, where it is buried at depths of 200-300 feet. The potential to contaminate this more deeply buried aquifer is low. However, siting of hazardous or radioactive waste sources above the aquifer and its tributaries should be avoided. There are also numerous shallower sand and gravel aquifers above the Mahomet and throughout the region. Particularly susceptible are the sand and gravel and sand dunes at land surface in Mason County. West of the Illinois River, glacial deposits are thin (generally <50 feet thick) and bedrock aquifers are close to land surface. Where aquifers are at or close to land surface, there is high potential for groundwater contamination from surface spills, surface application of fertilizers and pesticides, industrial activity, and other potentially adverse land-use practices.
- **Flooding** – Flooding can be an issue along the Mississippi, lower Illinois, and upper Embarrass and Kaskaskia Rivers and their tributaries. Prolonged periods of precipitation can result in serious groundwater flooding (from elevated water tables) in the sand dune region of Mason County, as well as behind levees along the Mississippi River. On the outside of meander bends, undercutting of sloped areas can create instability and slope failure or landsliding.
- **Karst and sinkholes** – The northern portion of the Lincoln Hills karst region covers southwestern Hancock, northwestern to southeastern Adams, Pike, southern half of Brown, western Cass and Morgan, and Scott Counties. Potential for land collapse and groundwater contamination is high.
- **Mined-out land** – Areas with underground mine workings from coal and other mining are susceptible to collapse and can result in damage to buildings and roads. In central Illinois, the primary areas for coal mining are in the extreme eastern portion of the region in Vermilion and Edgar Counties and west of the Illinois River particularly in Fulton, Schuyler, and Brown Counties.

Central Region Demographic Characteristics

Demographic highlights for the central region:

- The central region is the second most populous and third most racially diverse region of the state.
- The central region has the third largest Hispanic or Latino population, both in terms of total number and proportion of the population. Individuals identifying as Hispanic or Latino make ap around four percent of the population.
- Among the four regions, the central region has the highest proportion of households earning less than $10,000. This may be because the region has the largest proportion of college students, compared to the total population. Students earn limited income and often account for the higher numbers in the low-income brackets. The region also has the second highest proportion of households earning $200,000 or more in annual household income.
- The poverty rate for people in the central region is the highest among all regions. However, the family poverty rate in the central region is the second lowest among the regions. Again, the presence of students who earn limited income, but are included in poverty calculations, contribute to the region's higher proportion of individuals in poverty.

- The central region has the lowest proportion of the adult population without a high school diploma and the second highest proportion of adult residents with a Bachelor's degree or higher.
- The central region has the second lowest proportion of individuals with limited English proficiency (LEP) among the four regions. However, due to the central region's larger population base compared to the northwest and southern regions, the central region has the second largest overall number of LEP individuals among the regions.

The housing structures in the central region are the second oldest among the four regions. The region has the second highest proportion of housing structures built between 1940 and 1969 and the second lowest proportion of housing built 2010 or later, compared to the state's other regions.

Figure 1.24: Central Region Population by Race, 2021

Total Population, 2021	1,675,008	*Pct*
White alone	1,404,052	83.8%
Black or African American alone	144,940	8.7%
American Indian alone	2,244	0.1%
Asian alone	50,167	3.0%
Native Hawaii & Other Pacific Is. alone	666	0.0%
Some other race alone	13,952	0.8%
Two or more races	58,987	3.5%

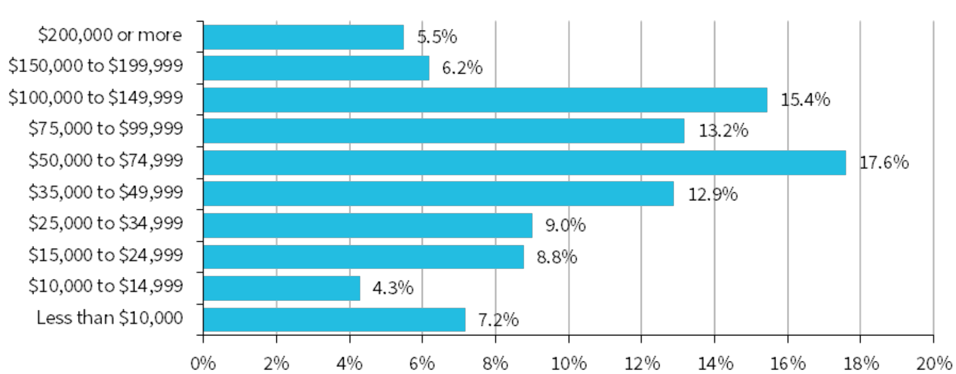
Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.25: Central Region Hispanic or Latino Population, 2021

Total Population, 2021	1,675,008	
Hispanic or Latino (of any race)	64,697	3.9%
Not Hispanic or Latino	1,610,311	96.1%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.26: Central Region Household Income Distribution, 2021



Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.27: Central Region Poverty Prevalence, 2021

People Below Poverty	225,030	14.0%
Families below poverty	35,973	8.8%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.28: Central Region Educational Attainment for Population 25 Years and Older, 2021

Total Population 25 yrs or older	1,120,102	*Pct*
No high school degree	85,043	7.6%
High school graduate	1,035,059	92.4%
Associates degree	107,630	9.6%
Bachelor's degree or higher	333,320	29.8%
Graduate or professional	128,187	11.4%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.29: Central Region English Proficiency, 2021

Population 5 yrs or older, 2021	1,578,867	*Pct*
Speak only English	1,475,366	93.4%
Speak a language other than English	103,501	6.6%
Spanish or Spanish Creole	40,019	2.5%
Other Indo-European languages	29,544	1.9%
Asian and Pacific Island languages	28,376	1.8%
Other languages	5,403	0.3%
Speak English less than "very well"	31,304	2.0%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.30: Central Region Housing Characteristics, 2021

Total Housing Units, 2021	765,798	*Pct*
Occupied	681,974	89.1%
Vacant	83,824	10.9%
For rent	20,689	2.7%
Rented, not occupied	4,868	0.6%

For sale only	8,873	1.2%
Sold, not occupied	7,027	0.9%
Seasonal, recreational, occasional	6,285	0.8%
For migrant workers	37	0.0%
Other vacant	36,045	4.7%
Year Built		
Built 2010 or later	35,411	4.6%
Built 2000 to 2009	74,935	9.8%
Built 1990 to 1999	82,160	10.7%
Built 1980 to 1989	62,622	8.2%
Built 1970 to 1979	123,038	16.1%
Built 1940 to 1969	227,222	29.7%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Central Region Economic Characteristics

Economic highlights for the central region:

- The top three sectors in the central region are Education, healthcare & social assistance; Manufacturing; and Retail trade. These three sectors are also the top sectors in two of the other three regions. In the central region, these sectors account for 50.6 percent of total employment. The central region's economy has the highest proportion of Education, healthcare & social assistance jobs compared to total jobs among the four regions. The high proportion of jobs in this industry is partially explained by the number of state universities and institutions of higher learning in the region.
- In the central region, the top three occupation groups in terms of total employment are Management, professional & related; Sales and office; and Service occupations. The region has the second highest proportion of workers employed in Management, professional & related occupations when compared to the other regions.
- 21.8 percent of the region's residents commute to work outside of the county in which they live. This ranks the central region as the lowest in terms of the proportion of regional residents who out-commute. The mean travel time to work for central region workers is 18.4 minutes, the shortest among all regions, which is unsurprising given the region's lower proportion of out-commuters.

Figure 1.31: Central Region Employment by Sector, 2021

Civilian employees > 16 years, 2021	779,593	*Pct*
Ag, forestry, fishing & hunting, mining	19,946	2.6%
Construction	41,018	5.3%
Manufacturing	89,928	11.5%

Wholesale trade	19,817	2.5%
Retail trade	84,763	10.9%
Transport, warehousing, and utilities	39,391	5.1%
Information	11,281	1.4%
Finance and ins, and real estate	55,719	7.1%
Prof, mgmt, admin, & waste mgmt	58,311	7.5%
Edu, health care, & social assistance	219,418	28.1%
Arts, entertain, rec, accommod, & food	64,616	8.3%
Other services, except public admin	36,724	4.7%
Public administration	38,661	5.0%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.32: Central Region Employment by Occupation

Civilian employees > 16 years, 2021	779,593	*Pct*
Management, professional, & related	301,233	38.6%
Service	138,335	17.7%
Sales and office	159,967	20.5%
Farming, fishing, and forestry	5,820	0.7%
Construction, extract, maint, & repair	32,731	4.2%
Production, transportation	115,252	14.8%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.33: Central Region Commuting Time, 2021

Workers 16 years and over, 2021	767,094	*Pct*
PLACE OF WORK:		
Worked in county of residence	600,226	78.2%
Worked outside county of residence	166,868	21.8%
TRAVEL TIME TO WORK:		
Less than 10 minutes	153,625	20.0%
10 to 14 minutes	136,635	17.8%
15 to 19 minutes	133,582	17.4%
20 to 24 minutes	94,038	12.3%
25 to 29 minutes	41,495	5.4%

30 to 34 minutes	63,191	8.2%
35 to 39 minutes	14,798	1.9%
40 to 44 minutes	15,750	2.1%
45 to 59 minutes	31,768	4.1%
60 or more minutes	27,555	3.6%
Mean travel time to work (minutes)	18.4	

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Central Region Climate Characteristics

The central region of Illinois separates the humid continental climate to the north and the humid subtropical climate to the south. Average annual temperature in the central region is 52°F, and ranges from 51°F in Livingston County to 54°F in Cumberland County. The average seasonal temperature ranges from 73°F in climatological summer (June – August) to 28°F in climatological winter (December – February). The average temperature in the climatologically warmest month of July is 75°F, and the average temperature in the climatologically coldest month of January is 25°F. Average daily high temperatures in the region range from 33°F in January to 85°F in July. Average daily low temperatures in the region range from 17°F in January to 64°F in July.

The central region experiences an average of eight days per year with a high temperature at or above 95°F, and the region experiences an average of 13 nights per year with a low temperature at or below 0°F. The central region experiences an average of seven days a year with at least one hour with a heat index at or above 105°F. The region experiences between 12 and 15 hours per year with a heat index at or above 105°F. The central region experiences an average of seven days a year with a wind chill at or below -15°F, and on average experiences 30 to 60 hours with a wind chill at or below -15°F.

Total annual precipitation in the central region is 38.7 inches, and total seasonal precipitation ranges from 16.5 inches in climatological summer to 2.1 inches in climatological winter. Peak monthly precipitation in the central region occurs in May and June, compared with June and July in the northwest and northeast regions. Average monthly total precipitation ranges from 4.7 inches in June to 1.9 inches in February. The central region, on average, experiences a day with two or more inches of precipitation once a year. Average total annual snowfall in the central region is 22 inches, and ranges from over 25 inches in Livingston County County to 17 inches in Shelby County.

Southern Region

Southern Region Geological Hazards

- **Groundwater susceptibility** -- Except in alluvial valleys along rivers and from bedrock south of the glacial limit (northern Union, southern half of Johnson and Pope, Hardin, and northern Alexander, Pulaski, and Massac Counties), groundwater in this region is not plentiful. However, where aquifers are close to or at land surface, there remains a high potential for groundwater contamination from surface spills, surface application of fertilizers and pesticides, industrial activity, and other potentially adverse land-use practices.
- **Flooding** – Flooding can occur along the Mississippi, Ohio, Wabash, lower Embarrass and lower Kaskaskia Rivers and their tributaries. On the outside of meander bends, undercutting of sloped areas can create instability and slope failure or landsliding.
- **Karst and sinkholes** – Karst is prevalent where glacial deposits are thin, and particularly in the bedrock uplands near the Mississippi River valley. From western St. Clair to northwestern Jackson Counties is the Illinois Sinkhole Plain. Western St. Clair and Monroe Counties are particularly susceptible. Monroe County has over 10,000 identified sinkholes, or about 50 per square mile. The southern portion of the Lincoln Hills karst region covers Calhoun, western Greene, most of Jersey, and northwestern Madison Counties. The Shawnee Hills karst region covers all or parts of 10 southern Illinois counties. Potential for land collapse and groundwater contamination is high in all regions.
- **Seismic risk** – The USGS 2018 National Hazard Map shows that this entire southern Illinois region has at least a moderate risk for severe earthquakes. The highest and very high risk areas of the New Madrid Seismic Zone cover all or parts of 14 of the southernmost counties. Ground shaking, liquefaction, and structural damage to buildings are the primary concerns.
- **Mined-out land** – Areas with underground mine workings from coal or other mining are susceptible to collapse and can result in damage to buildings and roads. This southern Illinois region has the greatest concentration of abandoned mines and mining activity in the State. Fluorspar has been extensively mined in Hardin County. Coal mining has been active in all but 3 of the region's 39 counties.

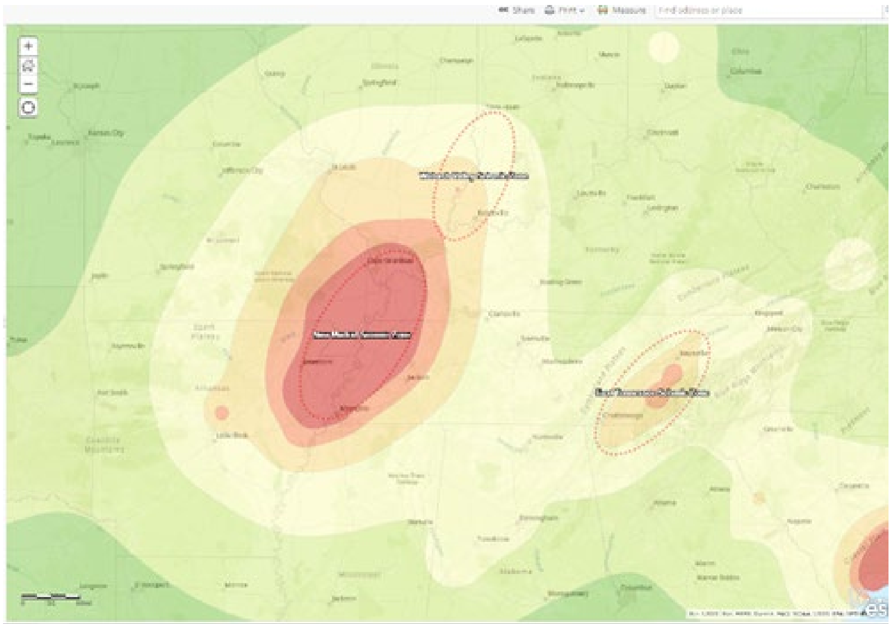


Figure 1.34 – Southern Illinois Seismic Hazard Map

Southern Region Demographic Characteristics

Demographic highlights for the southern region:

- The southern region is the second least populous and least racially diverse region of the state.
- The southern region has the smallest Hispanic or Latino population, both in terms of total number and proportion of the population. Individuals identifying as Hispanic or Latino make up around three percent of the population.
- Among the four regions, the southern region has the second highest proportion of households earning less than $10,000. The region also has the second lowest proportion of households earning $200,000 or more in annual household income, behind the northwest region.
- The poverty rate the southern region is the second highest among all regions. This includes both the individual and family poverty rates. The rates in the southern region are similar to those of the northwest region.
- The southern region ranks in the middle of the regions in educational attainment. The region has the second lowest proportion of individuals without a high school degree, but has the second lowest proportion of adults holding a Bachelor's degree or higher.
- The southern region has the lowest proportion and overall number of individuals with limited English proficiency (LEP) among the four regions.
- Housing structures in the southern region rank in the middle among regions in terms of age. The region has the second lowest proportion of housing structures built between 1940 and 1969, and the second highest proportion of housing structures built in 2010 or later.

Figure 1.35: Southern Region Population by Race, 2021

Total Population, 2021	1,301,700	
White alone	1,098,603	84.4%

Black or African American alone	133,879	10.3%
American Indian alone	1,880	0.1%
Asian alone	12,605	1.0%
Native Hawaii & Other Pacific Is. alone	496	0.0%
Some other race alone	11,618	0.9%
Two or more races	42,619	3.3%

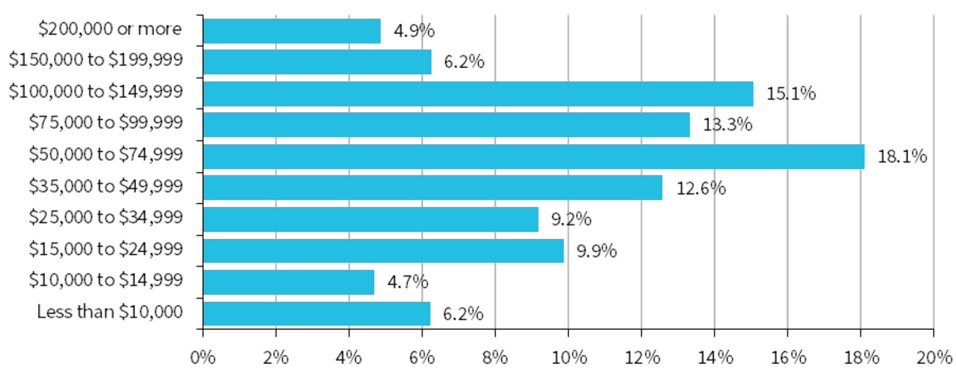
Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.36: Southern Region Hispanic or Latino Population 2021

Total Population, 2021	1,301,700	
Hispanic or Latino (of any race)	39,349	3.0%
Not Hispanic or Latino	1,262,351	97.0%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.37: Southern Region Household Income Distribution, 2021



Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.38: Southern Region Poverty Prevalence, 2021

People Below Poverty	172,039	13.7%
Families below poverty	31,382	9.5%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.39: Southern Region Educational Attainment for Population 25 Years and Older, 2021

Total Population 25 yrs or older	909,331	*Pct*
No high school degree	82,598	9.1%

High school graduate	826,733	90.9%
Associates degree	106,179	11.7%
Bachelor's degree or higher	216,501	23.8%
Graduate or professional	81,608	9.0%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.40: South Region English Proficiency, 2021

Population 5 yrs or older, 2021	1,228,054	*Pct*
Speak only English	1,181,273	96.2%
Speak a language other than English	46,781	3.8%
Spanish or Spanish Creole	25,190	2.1%
Other Indo-European languages	11,646	0.9%
Asian and Pacific Island languages	7,228	0.6%
Other languages	2,676	0.2%
Speak English less than "very well"	14,520	1.2%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Figure 1.41: Southern Region Housing Characteristics, 2021

Total Housing Units, 2021	592,009	*Pct*
Occupied	515,582	87.1%
Vacant	76,427	12.9%
For rent	9,682	1.6%
Rented, not occupied	2,015	0.3%
For sale only	6,829	1.2%
Sold, not occupied	2,294	0.4%
Seasonal, recreational, occasional	10,138	1.7%
For migrant workers	184	0.0%
Other vacant	45,285	7.6%
Year Built		
Built 2010 or later	31,260	5.3%
Built 2000 to 2009	67,819	11.5%
Built 1990 to 1999	73,703	12.4%
Built 1980 to 1989	63,414	10.7%
Built 1970 to 1979	82,890	14.0%

Built 1940 to 1969	173,880	29.4%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates

Southern Region Economic Characteristics

Economic highlights for the southern region:

- The top three sectors in the southern region are Education, healthcare & social assistance; Manufacturing; and Retail trade. These three sectors are the top sectors in two of the other three regions. In the southern region, these sectors account for 48.1 percent of total employment. The southern region employs the highest proportion of workers in Agriculture, forestry, fishing & hunting; and mining. While this sector is still a relatively small employer, the proportion of workers in this industry is comparatively high in this region, likely due to both mining activity and the presence of the federal lands, including the Shawnee National Forest.

Figure 1.42: Southern Region Employment by Sector, 2021

Civilian employees > 16 years, 2021	589,554	*Pct*
Ag, forestry, fishing & hunting, mining	18,486	3.1%
Construction	36,208	6.1%
Manufacturing	68,374	11.6%
Wholesale trade	13,797	2.3%
Retail trade	67,737	11.5%
Transport, warehousing, and utilities	40,582	6.9%
Information	7,277	1.2%
Finance and ins, and real estate	32,076	5.4%
Prof, mgmt, admin, & waste mgmt	48,258	8.2%
Edu, health care, & social assistance	147,374	25.0%
Arts, entertain, rec, accommod, & food	51,020	8.7%
Other services, except public admin	27,227	4.6%
Public administration	31,138	5.3%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.43: Southern Region Employment by Occupation

Civilian employees > 16 years, 2021	589,554	*Pct*
Management, professional, & related	203,489	34.5%
Service	110,691	18.8%

Sales and office	119,017	20.2%
Farming, fishing, and forestry	4,387	0.7%
Construction, extract, maint, & repair	31,844	5.4%
Production, transportation	98,030	16.6%

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Figure 1.44: Southern Region Commuting Time, 2021

Workers 16 years and over, 2021	581,756	*Pct*
PLACE OF WORK:		
Worked in county of residence	356,393	61.3%
Worked outside county of residence	225,363	38.7%
TRAVEL TIME TO WORK:		
Less than 10 minutes	104,315	17.9%
10 to 14 minutes	75,166	12.9%
15 to 19 minutes	74,023	12.7%
20 to 24 minutes	65,113	11.2%
25 to 29 minutes	34,978	6.0%
30 to 34 minutes	66,520	11.4%
35 to 39 minutes	19,612	3.4%
40 to 44 minutes	22,696	3.9%
45 to 59 minutes	45,080	7.7%
60 or more minutes	35,675	6.1%
Mean travel time to work (minutes)	22.8	

Source: U.S. Census Bureau, 2021 ACS 5-yr Estimates & U.S. Department of Commerce

Southern Region Climate Characteristics

The southern region of Illinois experiences a mix of humid continental and humid subtropical climates, with hot and humid summers and winters which are milder than those in central and northern regions. Average annual temperature in the southern region is 55°F, and ranges from 53°F in Montgomery County to 58°F in Alexander County. The average seasonal temperature ranges from 76°F in climatological summer (June – August) to 34°F in climatological winter (December – February). The average temperature in the climatologically warmest month of July is 77°F, and the average temperature in the climatologically coldest month of January is 31°F. Average daily high temperatures in the region range from 37°F in January to 87°F in July. Average daily low temperatures in the region range from 22°F in January to 66°F in July.

The southern region experiences an average of 12 days per year with a high temperature at or above 95°F, and the region experiences an average of nine nights per year with a low temperature at or below 0°F. The southern region experiences an average of 15 days a year with at least one hour with a heat index at or above 105°F. The region experiences between 24 and 30 hours per year with a heat index at or above 105°F. The southern region experiences an average of two days a year with a wind chill at or below -15°F, and on average experiences 4 to 8 hours with a wind chill at or below -15°F.

Total annual precipitation in the southern region is 44.3 inches, and total seasonal precipitation ranges from 13.3 inches in climatological spring to 2.9 inches in climatological winter. Unlike the northern and central Illinois regions, the southern region experiences a smaller difference between warm and cold season precipitation, and the region's wettest season is climatological spring (March-May) compared to summer in central and northern regions. Average monthly total precipitation ranges from 5.2 inches in May to 2.6 inches in February. The southern region on average experiences one to two per year with two or more inches of precipitation. Average total annual snowfall in the central region is 12 inches, and ranges from over 15 inches in Montgomery County to around seven inches in Alexander County.

---

[1] Jie Zong, Jeanne Batalova Jie Zong and Jeanne Batalova. "The Limited English Proficient Population in the United States in 2013." migrationpolicy.org, June 27, 2022. https://www.migrationpolicy.org/article/limited-english-proficient-population-united-states-2013.

1.2 PLANNING PROCESS

The Illinois Emergency Management Agency (IEMA-OHS) contracted with University of Illinois Extension and the Illinois State Water Survey to update the State of Illinois Natural Hazard Mitigation Plan in accordance with 44 CFR 201.4 Standard State Mitigation Plans. The 2023 plan update represents the fourth version of the Illinois Natural Hazard Mitigation Plan, with previous versions receiving approval from the Federal Emergency Management Agency (FEMA) in 2007, 2013, and 2018. The scope and timeline for the plan update was developed with a team from University of Illinois Extension, Illinois State Water Survey, and the IEMA-OHS Mitigation Team.

Planning Team

The process to update the plan followed accepted best practices in participatory planning [1] by using the Interagency Mitigation Advisory Group (IMAG) to engage in the planning process.[2] The IMAG consists of state agencies and organizations with roles, responsibilities, or resources applicable to mitigating the impact of disasters in Illinois. One of the primary charges of the IMAG is to serve as a steering committee for the five-year mitigation plan update. Committee members, as well as their area of expertise, is included in the table below.

Figure 1.45: 2022-2023 IMAG Committee Members

Agency	Point of Contact	Role in the Planning Process
United States Army Corps of Engineers	Chris Haring	To deliver support that responds to, recovers from, and mitigates disaster impacts to Illinois and the nation.
American Red Cross	Scott Clarke	To provide insight into mitigation activities as they relate to response and recovery.
Illinois Environmental Protection Agency	Tony Falconio	To provide information and data regarding environmental applications with mitigation measures.
Illinois State Historical Preservation	Jon Pressley	To advise on historical properties throughout Illinois.
Illinois Department of Transportation	Gene Felchner	To help communities identify mitigation measures for State roads. To identify state resources and infrastructure vulnerable to hazards.

Illinois Department of Natural Resources	Ron Davis	To study the rivers and waterways of the State and identify solutions, both structural and nonstructural, to mitigate flooding. To ensure compliance with the NFIP regulations.
Illinois Department of Public Health	Jenna Worker	To provide information on preventing and controlling disease and injury which intersects with IEMA-OHS's mission.
Illinois Department of Public Health	Tyler Woodard	
Illinois Department of Public Health- All Hazards Planning Section Chief	Jessica McAnelly	
Illinois Emergency Management Agency	Greg Nimmo	To coordinate mitigation planning and project implementation. To serve as a liaison between FEMA's Federal Insurance and Mitigation Administration and the Illinois Natural Hazard Mitigation Planning Committee. To educate local governments (specifically local planning departments) on new hazard mitigation planning requirements and to aid the incorporation of mitigation concerns into local comprehensive planning efforts.
Illinois Emergency Management Agency	Sam Al-Basha	
Illinois Emergency Management Agency	Zachary Krug	
Illinois Emergency Management Agency	Jeffery Thompson	
Illinois Emergency Management Agency	Steve Baggerly	
Illinois Emergency Management Agency	Sandra Hulbert	
Illinois Emergency Management Agency	Rusty Tanton	
Illinois Emergency Management Agency	Adnan Khayyat	
Illinois Department of Human Services	Amy Dickenson-Ferguson	To provide data on state hospitals and human service facilities and mitigation measures used at these facilities.

Illinois Department of Natural Resources – Office of Water Resources	Bill Milner	To study the rivers and waterways of the State and identify solutions, both structural and nonstructural, to mitigate flooding. To ensure compliance with the NFIP regulations.
Illinois Department of Natural Resources	Ron Davis	
Illinois Environmental Protection Agency	Blaine Kinsley	To provide information and data regarding environmental applications with mitigation measures.
Illinois Environmental Protection Agency	Bobby Elzie	
Illinois State Geological Survey	Bob Bauer	To provide information on the soil and geology of Illinois and its relation to natural hazards.
Independent Insurance Agents of Illinois	Brett Gerger	To provide insight into how reducing damages relates to consumers and the insurance industry.
United States Army Corps of Engineers	Chris Haring	To deliver support that responds to, recovers from, and mitigates disaster impacts to Illinois and the nation.
Illinois Department of Corrections	David White	To identify ways to mitigate hazards that threaten correctional institutions within the State.
Illinois Department of Corrections	Mike Chappell	
Department of Commerce and Economic Opportunity	David Wortman	To identify potential funding and provide matching funds to support mitigation activities.
Illinois Emergency Services Managers Association	Dawn Cook	To be a liaison between the Illinois Natural Hazard Mitigation Planning Committee and local governments about hazard mitigation planning requirements. To educate local officials about the resources available for mitigation planning assistance and training.
United States Geological Survey, Department of the Interior	Gary Johnson	To provide information on the soil and geology of Illinois and its relation to natural hazards.

Illinois Department of Transportation	Gene Felchner	To help communities identify mitigation measures for State roads. To identify state resources and infrastructure vulnerable to hazards.
Capital Development Board	Greg Swanson	To provide feedback on infrastructure projects regarding permitting and regulation compliance.
Southern Illinois University at Carbondale	Harvey Henson	To advise on planning and hazard identification.
National Oceanic and Atmospheric Administration	Heather Stanley	To provide climate change data and expertise.
Illinois State Board of Education	Jeff Aranowski	To provide information on mitigation activities in the State's public schools, including disaster resistant construction and disaster drills.
Illinois State Board of Education	Miguel Calgeron	
Champaign County Emergency Management Agency	John Dwyer	To provide expertise on emergency response and services.
Illinois State Water Survey	Lisa Graff	To provide data on the State's climate as it relates to natural hazards (State Climatologist). Information on FEMA flood hazard mapping and outreach activities (Coordinated Hazard Assessment and Mapping Program).
Illinois State Water Survey	Glenn Heistand	
Metropolitan Water Reclamation District	Michael Cosme	To provide matching funds and partner on storm water related infrastructure projects.
Metropolitan Water Reclamation District	Richard Fisher	
Illinois Department of Insurance	Reid McClintock	To provide insight into how reducing damages relates to consumers and the insurance industry.
Illinois Department of Insurance	Robert Rapp	
Illinois Emergency Services Managers Association	Ron Graziano	To be a liaison between the Illinois Natural Hazard Mitigation Planning Committee and the local governments

Illinois Emergency Services Managers Association	Mick Fleming	about hazard mitigation planning requirements. To educate local officials about the resources available for mitigation planning assistance and training.
Illinois State Climatologist	Trent Ford	To develop the weather-related sections of the plan.
Illinois State Climatologist – Retired	James Randal Angel	
Federal Emergency Management Agency	Steve Greene	To provide guidance on the planning process.
Illinois Department of Agriculture	Sandy Gilmore	To provide expertise on the impacts of disaster to agriculture.
Illinois State Police	Mike Link	To provide expertise on civil disturbances and human caused hazards.
Department of Innovative Technology	Beth Pruitt	To provide expertise on technological hazards.

The IMAG is composed of members from agencies involved in emergency management, natural resources, environmental regulations, historic preservation, planning and zoning, community development, construction regulation, public information and insurance, federal, state, and local levels of government, private non-profit organizations and academic fields who have expertise in mitigation and who can offer technical assistance. This group meets annually and has the following responsibilities:

- Serve in an advisory role, providing expertise and technical assistance, regarding policy creation consistent with the State's mitigation goals.
- Advance a comprehensive strategy for the development, integration, and implementation of the State's mitigation programs.
- Review and provide suggestions regarding priorities for mitigation actions/applications for implementation, including measures to be funded.
- Combine funds from various programs to implement a mitigation project and monitor the funding, using all allocations to the extent possible.
- Oversee implementation of approved projects.
- Review plans and reports to identify opportunities to integrate mitigation actions.
- Provide technical assistance to local jurisdictions.
- Prepare status reports, briefings and/or an annual report for the IEMA-OHS Director, Governor of Illinois, and Illinois General Assembly upon request.

- Monitor and determine, as needed, and no less than annually, if the Illinois Natural Hazard Mitigation Plan needs to be updated, by working with and being a part of the IMAG.

IMAG was instrumental in developing this plan, and continues to function, as needed, and no less than annually, as follows:

- Identify the State's vulnerability to hazards.
- Develop and update the Illinois Natural Hazard Mitigation Plan required under 44 CFR Section 201.

Agencies

The State and Federal Agencies included in the IMAG have expertise in aspects of policy, research, and programming that provide input to the planning and implementation of disaster mitigation goals, objectives, and actions. In addition to IMAG participation, many of the agencies have primary or supporting responsibilities in the mitigation actions included in the plan.

Illinois has a host of internal agencies and non-governmental organizations that provide valuable expertise and support to the mitigation planning and implementation process. Representation from these entities is also a crucial part of IMAG Planning and implementation. From disaster relief organizations, such as the American Red Cross, to the Illinois Higher Education System units such as University of Illinois Prairie Research Institute, these entities provide objective expertise that is crucial in the planning process. The following breakout shows which agencies have direct responsibilities for the crucial sectors impacted by disasters.

Emergency Management

Illinois Emergency Services Managers Association

Illinois State Police

Illinois Emergency Management Agency

Champaign County Emergency Management Agency

Federal Emergency Management Agency

United States Army Corps of Engineers

Illinois Department of Public Health- All Hazards Planning Section Chief

Economic Development

Department of Innovative Technology

Department of Commerce and Economic Opportunity

Capital Development Board

Illinois Department of Agriculture

Land Use and Development, Building Codes

Illinois Environmental Protection Agency

Department of Commerce and Economic Opportunity

Capital Development Board

Illinois Department of Natural Resources

Illinois Department of Transportation

Housing

Independent Insurance Agents of Illinois

Illinois Department of Corrections

Department of Commerce and Economic Opportunity

Illinois Department of Insurance

Health and Social Services

Illinois Department of Public Health

Illinois State Board of Education

American Red Cross

Infrastructure

Illinois Department of Transportation

Capital Development Board

Metropolitan Water Reclamation District

Department of Commerce and Economic Opportunity

Natural and Cultural Resources

Illinois Environmental Protection Agency

Illinois Historic Preservation Office

Illinois Department of Natural Resources

Illinois State Geological Survey

Focus Group Participants. In addition to the agencies that are represented as IMAG members, other entities participated in the focus groups to provide input to their sector. The five areas targeted in the focus groups were Agriculture, Flood Plain Managers, Vulnerable Populations, Emergency Managers, and Natural Resources. Summaries of the focus group discussions are included in appendix 1.2 These summaries were used to extract potential mitigation actions to be included in the plan.

Organizations represented in the focus groups include:

- Illinois Farm Bureau
- Illinois Corn Growers Association
- NAACP
- Quad Cities Community Foundation
- American Rivers
- American Red Cross
- United Churches of the Metro East
- Illinois Extension
- Prairie Rivers Network

- State agencies
- Local Emergency Managers
- Illinois State Water Survey
- American Association for Floodplain and Stormwater Management

The final phase of the mitigation planning process, held before the final steering committee meeting, was to provide agencies with actions proposed for the plan, as well as determine actions from the previous plan to be eliminated. A listing of meetings and summaries is included in **Appendix 1.1 Planning Process.**

Timeline and Meetings

Planning Meetings. The planning process was conducted through a series of virtual meetings, focus groups, and agency meetings. Four formal planning meetings were held during the ten-month planning process. See below for the date and main topic of each meeting:

- **June 23, 2022** – Overview of planning process, roles, and responsibilities
- **August 4, 2022** – Review of goals, suggested new goals and voting; Additional planning components to come
- **September 15, 2023** – Regional profiles, risk assessment, and climate change
- **June 23**, **2023** – Summary of final plan, risk assessment, goals, objectives and action items and prioritization methodology

The meetings were recorded, and the audio was transcribed so the content of the meeting could be reviewed. These meetings formed the core of the discussion of the planning process, but to gather input from practitioners and stakeholders across disciplines, five focus groups were held to explore and document impacts of disasters as well as mitigation project options. These focus groups were held prior to the development of the mitigation objectives and actions, to ensure the input could inform the content of the plan.

Focus Groups. Focus groups were held between November 2022 and February 2023. The five focus group sectors were Agriculture, Flood Plain Managers, Vulnerable Populations, Emergency Managers, and Natural Resources. These small virtual group discussions allowed participants to delve into ideas for mitigation issues, barriers, challenges, and suggestions. The general script for the focus group facilitators and a summary of the discussion for each group is included in **Appendix 1.2**

Agency Action Confirmations. Each agency with major responsibility for specific proposed mitigation actions was contacted to review the actions included in the 2023 plan, as well as the actions that were eliminated from the 2018 plan. Any changes or modifications were completed before the Final Planning Meeting.

---

[1] "Models." Organizing Engagement, December 7, 2019. https://organizingengagement.org/models/.
[2] Lauria, Mickey, and Carissa Slotterback. Learning from arnstein's ladder: From citizen participation to public engagement. New York: Routledge, Taylor & Francis Group, 2021.

1.3 PLAN INTEGRATION

The Illinois Emergency Management Agency and Office of Homeland Security operate under the guidelines of the Illinois Emergency Management Act (20 ILCS 3305/). While this portion of the Illinois Code outlines broad roles and responsibilities for the agency, numerous plans, programs, and agencies are involved to keep Illinois residents and communities safe from hazards that could impact lives, property and economic interests.

The goals, objectives, and actions included in the 2023 Illinois Natural Hazard Mitigation Plan were developed to be specific enough to provide a road map for state agencies, but broad enough to provide an umbrella under which local jurisdictional mitigation plans can integrate. The planning process noted the plans that must be integrated to ensure success of the overall mitigation efforts of the State. Specifically, the process incorporated information from the **2021 Illinois Hazard Identification and Risk Assessment, FEMA Hazard Mitigation Assistance Program, and FEMA Building Resilient Communities (BRIC) Program.** The process included a review of other planning documents and programs that may impact the hazard mitigation planning process at the state level. **Appendix 1.3 Plan Integration** shows a table of relevant plans.

2021 Illinois Hazard Identification and Risk Assessment (HIRA) [1]

As the planning document that serves as the basis for much of the emergency management program throughout Illinois, the HIRA forms the foundation for the detailed natural hazard risk assessment included in this document. One natural hazard that is absent in the HIRA is fire, as Illinois has not had a significant history of wildfire/forest fires. This planning process includes fire as a potential hazard, based upon the recognition that climate change in general, and significant periods of drought specifically, can increase the risk of fire, particularly in the forested regions of the state.

The technological cause, human cause, and other cause hazards will be incorporated into the updates of Technological and Human Cause plans, scheduled for update at the completion of the Natural Hazard Mitigation Plan. These plans will be added as addendums to the Natural Hazard Mitigation plans to make a comprehensive Illinois Mitigation Plan that matches the scope of the HIRA.

Illinois Emergency Operations Plan (IEOP)

The IEOP was developed in cooperation with the Office of the Governor, executive departments and agencies, the Illinois Terrorism Task Force, and the American Red Cross. The IEOP describes the Illinois Disaster Management System (IDMS), which conforms to the national incident Management System (NIMS). The IDMS will be used by all State of Illinois agencies when the IEOP is implemented for response or recovery operation in any part of the state affected by a major emergency or disaster.

FEMA Hazard Mitigation Assistance Programs

As a primary funding source for both state and local mitigation projects, the Natural Hazard Mitigation Plan was developed with FEMA priorities at the forefront. IEMA-OHS works closely with and coordinates the Hazard Mitigation funding available through the HMGP, PDM and BRIC programs. HMGP and PDM funds are used with the primary grant funds to assist with the development and updates of the local mitigation plans.

Local Plans

IEMA-OHS encourages local jurisdictions and planners to review the Illinois Natural Hazard Mitigation Plan as guidance for determining mitigation goals and actions at the local level. The state plan provides an umbrella to guide local mitigation efforts toward the accomplishment of the state mitigation strategy. To that end, the state mitigation planner reviews all local plans to ensure consistency and compliance with state and federal planning requirements. The Mitigation Staff provide technical assistance in all aspects of local mitigation planning.

Illinois Recovery Plan

The Recovery Plan facilitates the delivery of state assistance to support residents and local governments and private industry as they deal with recovery from a major disaster. It is designed to supplement and support local recovery efforts and describes how state agencies coordinate and facilitate the delivery of federal disaster assistance programs. The plan includes annexes such as: Damage Assessment, Supplemental Federal Disaster Assistance, Individual Assistance, Public Assistance, and Mitigation Assistance.

Catastrophic Earthquake Annex

The Earthquake Annex outlines operational command, coordination, communication, and control for counties and responsible agencies/organizations following a catastrophic earthquake. It is used in conjunction with a jurisdiction's Emergency Operations Plan.

Food and Water Distribution Plan

This document provides operational guidance and serves as a concept of operations for jurisdictions if they are distributing food and water to the public following a disaster where public facilities for potable water and/or food preparation and supply are inoperable or incapable of meeting the public's essential needs.

Resource Management Planning

Resource management is the cornerstone of effective response and recovery. A comprehensive resource management system provides jurisdictions with a pre-identified structure for assigning resources and carrying out critical missions that support life safety and life essential services.

Strategic Operation Planning

Strategic Operations of Emergency Management provides executive and senior level local emergency management staff with practices to outline efficiencies and priorities prior to, during, and after disasters. Strategic Operations of Emergency Management explores and expands on interlocking strategies for emergency operations centers and incident command structures; development and implementation of straight-line information pathways; lateral and vertical coupling of critical sectors and emergency response roles; analysis of critical and priority information requirements; determination of centers of gravity for objectives-driven task assignment; execution of strategic priorities against defined resourcing elements; and the incorporation of deliberate decision and/or trigger points for strategic emergency management.

Continuity of Operations Plan (COOP)

COOP ensures continuity of essential department or agency functions/services despite an emergency or disaster. The COOP is implemented when a building or facility is rendered inoperable for a period longer than 30 days, during which time services to public and private stakeholders must be continued.

2022 Illinois State Water Plan

Prepared by the Illinois State Water Plan Task Force, headed by the IDNR, and published in December 2022, the plan seeks to develop an interagency plan that will address the breadth of water issues facing the state of Illinois. The plan goals and recommendations intersect with several of the goals and objectives of the INHMP and will be incorporated as much as possible with the action items of the plan to meet the objectives of the mitigation goals. Several action items in the plan are derived directly from items included in the Illinois State Water Plan.

Illinois Drought Preparedness and Response Plan

The goal of the plan is to assist community and state officials and the public with information and tools that promote better decision-making in water supply planning and reduce drought-related impacts, water completion, and conflict of use. The drought plan provides state agencies, communities, and the public with a resource to stay updated on water supply issues, drought actions, and key considerations communities should make for drought preparedness.

Illinois Flood Map/ Digital Flood Insurance Rate Map (DFIRM)

The Illinois State Water Survey provides the preliminary and pending Flood Insurance Rate maps. FEMA provides the Effective Flood Insurance Rate maps and the DFIRM provides a database of the digital version of FEMA flood insurance rate maps. It includes National Flood Insurance Program (NFIP) community information, map panel information, cross section, hydraulic structure information, and base map information.

Illinois Homeland Security Strategy

As a part of the overall emergency management system, this strategy is a framework to guide and unify security efforts in the State of Illinois for 2021 to 2025. It engaged law enforcement, fire services, public and private health organizations, emergency management, school officials, the private sector, elected officials, non-governmental organizations, and residents. This strategy is designed to address current and emerging threats and risks, resident preparedness, and public safety readiness for natural, technological, and human-caused events.

Dam Safety Program (DSP)

The OWR Division of Water Resource Management (DWRM) issues permits for work in and along the rivers, lakes and streams of the state, including Lake Michigan. The permits address activities in and along the public waters, and for the construction and maintenance of dams. The permits are required for construction, operation, and maintenance of new dams and the modification, operation, and maintenance of existing dams. The DSP coordinates with the National Dam Safety Program (NDSP).

Community Rating System (CRS)

The Illinois EMA Mitigation staff recognize the value of the National Flood Insurance Programs CRS as a mitigation tool to reward communities that take steps to exceed NFIP minimum standards. A community receives a CRS classification for any combination of activities that reduce flood losses through mapping, regulations, public information, flood damage reduction, and/or flood warning and preparedness programs. The Illinois Department of Natural Resources OWR works directly with the 71 Illinois communities that participate in the CRS Program and provides outreach to encourage more participation from eligible communities.

Public Assistance (PA)

This program provides federal disaster assistance to state and local government organizations for debris removal, emergency protective measures, and the permanent restoration of public facilities. It is administered by IEMA-OHS as the recipient for the State of Illinois. The federal disaster assistance supplements existing resources when an event exceeds the capabilities of the state and local governments.

---

[5] Illinois Emergency Management Agency. “State of Illinois Hazard Identification and Risk Assessment - Illinois Emergency Management Agency,”

1.4 PLAN MAINTENANCE AND MITIGATION PROJECT MONITORING

Maintenance and Evaluation

The State recognizes that the Illinois Natural Hazard Mitigation Plan, Technological Mitigation Plan, and Human Cause Mitigation Plan are living documents and require regular maintenance and evaluation. The Interagency Mitigation Advisory Group (IMAG) will meet and be responsible for reviewing and evaluating these plans every five years. These committees have been identified in the planning process section. This combined committee will meet once a year in person or virtually. All members will be asked to analyze the overall success and progress in implementing the Plan. The plan maintenance process will proceed as follows:

- Review the goals and action items to determine their relevance to changing situations in the state, as well as changes in policy, and to ensure they are addressing current and expected conditions.
- Review the Risk Assessment and Capabilities portion, as necessary, to incorporate current information, including updated hazard profiles and any new data on vulnerable state facilities.
- Monitor progress on mitigation actions and projects in the Plan by reviewing quarterly progress reports. The database of all local plans and local action items will be reviewed as part of the process.
- Evaluate mitigation actions and projects in the Plan by reviewing the final quarterly progress report. When possible, the party responsible for implementation will report on the actions, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts were proceeding, and which strategies or processes which need to be revised or strengthened.
- Identify implementation problems (technical, political, legal, and financial) based on quarterly progress reports and input by the public and partners.
- Evaluate the effectiveness of the planning effort.
- Consider recommendations by the IMAG members to increase hazard mitigation involvement by state agencies and local jurisdictions.
- Discuss changes in policies, priorities, programs and funding that alter the Plan's goals and objectives, projects and timelines.

This process will occur as needed, but at least every five years. The Illinois Emergency Management Agency-Office of Homeland Security (IEMA-OHS) will be responsible for making changes to the Natural

Hazard Plan. The State Hazard Mitigation Officer (SHMO) has the authority and responsibility for maintenance of the plan. The revised Plan will be submitted for approval to the INHMPC no later than three months after the conclusion of the committee meeting. FEMA will be notified of any changes to the Plan or will be given a justification of why no changes were deemed necessary. When revised, the Plan will be resubmitted to FEMA for their review as required by the federal Mitigation planning guidelines. Once FEMA has determined the Plan is approved pending adoption, the updated Plan will be submitted for approval by the Governor and the INHMPC no later than three months after the conclusion of the plan update meeting.

If political, social, or hazard events dictate changes outside this five-year schedule, as determined by the State Hazard Mitigation Officer (SHMO), these changes will be completed by the IEMA-OHS Mitigation staff, without the need for committee review or approval from committees or agencies.

The Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) will be responsible for making the necessary changes to the Plan. The State Hazard Mitigation Officer (SHMO) has the authority and responsibility for maintenance of the plan Revised Plans will be submitted for comment to the IMAG. **The plan can be modified at any time, updates outside of the five-year review do not require adoption of the plan.**

Inquiries about the Plans should be directed to:

State Hazard Mitigation Officer
1035 Outer Park Drive
Springfield, IL 62704-4462
Phone: (217) 785-9942
E-mail: sam.m.al-basha@illinois.gov
www.state.il.us/IEMA-OHS/

Monitoring Progress of Mitigation Activities

IEMA-OHS is responsible for the monitoring and tracking of the progress of mitigation actions. The SHMO has been assigned to monitor and track the progress of funded mitigation projects. In addition to the SHMO, the IMAG has been identified in the planning process section as the committee who will monitor the progress of mitigation actions and will meet annually for the review.

To facilitate annual monitoring, the SHMO:

1. Collects quarterly reports on measurable outcomes, which are logged into a database which will be distributed to participating agencies.
2. Reviews these reports to evaluate the measurable outcomes.
3. Facilitates an annual review by the IMAG committee of the overall progress on achieving the Plan's goals.
4. Verifies project closeouts, which is a key to the success in implementing the Plan.
5. With IEMA-OHS mitigation staff, tracks progress through quarterly reports from sub-grantees.
6. Adds approved projects to the IMAG list of projects to be discussed at the monthly meeting. Also, at the end of each quarter, a progress report is submitted to the grantor for each project.

Once a year, the IMAG will meet to report on overall progress on achieving the Plan's goals, review new information, and make recommendations to the SHMO for updating the baseline data used in the risk analysis. The bulleted information below is used to reassess project prioritization, as necessary.

- Project outcomes (successes/difficulties/what could have been done better) using the last Quarterly Report as the final evaluation.
- Relevance of goals to changing situations.
- New information learned from disasters, studies, or reports.
- Changes in State or federal policy.
- Risk assessment updates; and
- Level of coordination among agencies in the State.

Goals, objectives, and projects will be reviewed during the annual plan review process to determine whether they need to be modified. Based on the current conditions, the goals and projects will be reevaluated to determine if there is a need to modify the Plan. If necessary, the SHMO will update the Plan based on the recommendations of the IMAG. Each action will be reviewed by members of the planning committee, and updates such as contacts, prioritization, and fund names will be updated.

Mitigation Opportunities and Repetitive Loss Properties and Identification

IEMA-OHS works directly with IMAG Members and the Illinois Department of Natural Resources (IDNR) to identify and mitigate repetitive loss properties in Illinois. Multiple buyout, elevation and remediation projects have been completed since the inception of the mitigation programs, with great success. (Appendix 3.4 and 3.5 – Illinois Mitigation Success Stories). In recognition of changing floodplains, the identification and mitigation efforts are an ongoing part of regular operations. The following procedure has been adopted to ensure continual focus on eliminating repetitive losses.

1. Notice of Funding is released by IEMA-OHS statewide electronically via websites, emails, and regional offices.
2. Jurisdictions may ask IEMA-OHS for list of repetitive loss properties.
3. Jurisdiction submits Pre-Application to IEMA-OHS through Mitigation website link. IEMA-OHS staff forward Pre-Application with screening form to IMAG to have them complete to determine project eligibility.
4. If the mitigation project is part of jurisdiction's local hazard mitigation plan, they are invited to submit a FMA (Flood Mitigation Assistance) or BRIC (Building Resilient Infrastructure and Communities) grant proposal. If properties are part of NFIP, the application process goes to FMA. If the properties are not part of NFIP, jurisdictions are encouraged to apply for BRIC grant program. (Can submit applications to both programs if subject properties are a mix of NFIP or non-NFIP.)
5. Jurisdiction makes application for FMA grant funding or BRIC.
6. Within the application, jurisdiction identifies if properties to be mitigated are repetitive loss.
7. IEMA-OHS checks status of properties for repetitive loss properties in PIVOT Database (database contains all properties that have been repeatedly flooded – four insurance claims). Within FMA program, properties verified as "repetitive loss" are eligible for larger share of FEMA contributions. (Typical FEMA grant is 75% FEMA and 25% Local. If property is repetitive loss, the FEMA share can go up.)

8. IEMA-OHS continues to provide technical assistance as jurisdictions secure FMA or BRIC funding and begin mitigation work.

1.5 COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS

The Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) operates in compliance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended by (PL) 106-390 (Pre-Disaster Mitigation Program, Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities, and the Flood Mitigation Assistance Program (- 44 CFR Part 78)), addresses state mitigation planning, identifies new local mitigation planning requirements, authorizes Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to states that develop a comprehensive, enhanced mitigation plan.

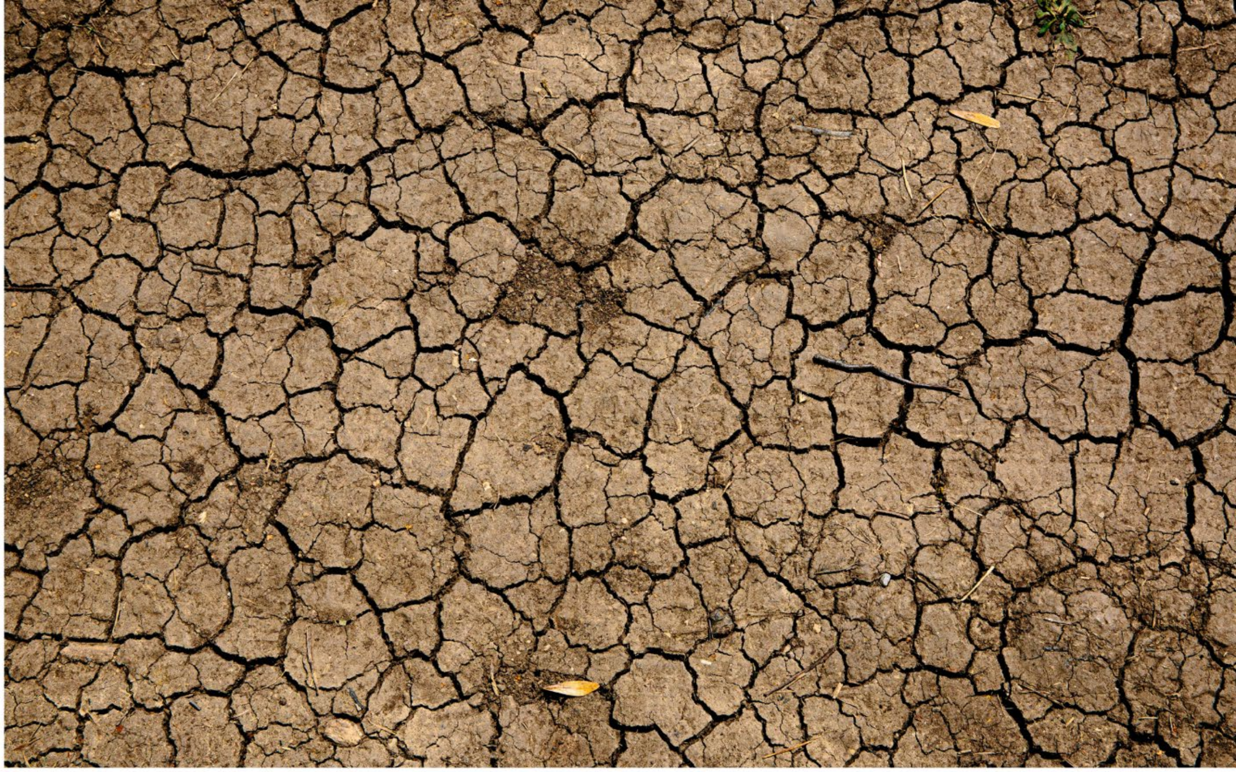
The Disaster Mitigation Act of 2000 (DMA 2K) emphasizes the importance of strong state and local planning processes and comprehensive program management and creates the framework for state, local, tribal, and territorial governments to engage in hazard mitigation planning to receive certain types of non-emergency disaster assistance. The Federal Emergency Management Agency (FEMA) has promulgated rules for implementation in 44 CFR Parts 201 and 206.

The Illinois Emergency Management Agency Act sets forth IEMA-OHS's authority to develop, plan, analyze, conduct, provide, implement, and maintain programs for disaster mitigation, preparedness, response, and recovery (20 ILCS 3305/5). The state will amend the plan whenever necessary to reflect changes in federal statutes and regulations or material changes in state law, organization, policy, or state agency operations.

1.6 ASSURANCES AND PROMULGATION

The State of Illinois will comply with all applicable federal statutes and regulations with respect to the periods in which it receives grant funding, including 44 CFR 201.4(c)(7) and 2 CFR Parts 200 and 3002. The 2023 Illinois Natural Hazard Mitigation Plan will be amended according to the process described in the Plan Maintenance Section whenever necessary to reflect changes in state and federal statutes.





SECTION 2

RISK ANALYSIS

FIGURES

TABLES

2.1 INTRODUCTION

A risk analysis is a process by which the State of Illinois determines which hazards are of concern and addresses the potential impacts of those hazards statewide. The risk analysis helps communicate vulnerabilities for both the hazard mitigation plan and for other emergency management efforts. The risk analysis for the State of Illinois 2023 Hazard Mitigation Plan Update helps connect vulnerability and hazard mitigation actions, providing a data driven basis for developing mitigation strategies for the State.

Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. A list of natural hazards was created through consultation of resources including the 2018 Illinois Natural Hazard Mitigation Plan, FEMA's National Risk Index (NRI), and various hazard mitigation plans for other jurisdictions in Illinois. The following 18 hazards, listed in alphabetical order, are included in this risk analysis:

Hazards Included in Risk Analysis		
Drought	Flooding: Flash	Severe Storms: Lightning
Earthquake	Flooding: Riverine	Severe Storms: Wind
Extreme Temperatures: Cold Wave	Landslide	Tornado
Extreme Temperatures: Heat Wave	Mine Subsidence	Wildfire
Flooding: Coastal	Pandemic	Winter Weather: Ice Storms
Flooding: Dam/Levee Failure	Severe Storms: Hail	Winter Weather: Winter Storms

Each hazard is analyzed at the county level using the following indicators: current population, historic hazard occurrence, population exposure, population growth, severity of impact, and social vulnerability. Historic events include events from 1996-2022. A summary of the historic information for each hazard can be found in Table 2.1.

Table 2.1. Statewide summary of hazards. Source: NCEI, SHELDUS, IMSIF

Hazard	Geographic Extent	Unique Events	Events /Year	Property Damage ($)	Injuries	Fatalities
Drought	Statewide	93	3.4	1,506,115,000[a]	0	0
Earthquake	Limited	1	<1	0	0	0
Extreme Temperatures: Cold Wave	Statewide	186	6.9	8,000	6	202
Extreme Temperatures: Heat Wave	Statewide	241	8.9	775,000	444	420
Flooding: Coastal	Limited	15	<1	25,300,000	0	0
Flooding: Dam/Levee Failure	Statewide	10	<1	2,650,000	0	0
Flooding: Flash	Statewide	1116	41.3	1,383,898,000	13	23
Flooding: Riverine	Statewide	698	25.9	263,103,300	18	26
Landslide	Limited	10	<1	2,115,444	0	0
Mine Subsidence	Limited	1467[b]	66.7	192,938,353[b]	0	0
Pandemic	Statewide	2	<1	n/a	n/a	36,665
Severe Storms: Hail	Statewide	2970	110.0	219,512,600	47	0
Severe Storms: Lightning	Statewide	334	12.4	24,767,000	76	20
Severe Storms: Wind	Statewide	4173	154.6	648,035,400	672	45
Tornado	Statewide	821	30.4	3,050,175,000	4,539	231
Wildfire	Limited	14	<1	4,290,000	0	0
Winter Weather: Ice Storms	Statewide	63	2.3	11,702,000	3	1
Winter Weather: Winter Storms	Statewide	664	24.6	87,985,500	65	20

[a] Crop damage

[b] Insurance claims and payouts

Climate Change

Illinois' climate has changed extensively since the Industrial Revolution and is projected to continue changing through the end of the 21st century and beyond. Most of the change observed in Illinois' climate since the late nineteenth century is directly due to increasing atmospheric greenhouse gas concentrations, particularly CO_2, and projected future climate change is sensitive to changes in atmospheric greenhouse gas concentrations over the next several decades. The findings of the of the 2021 Illinois Climate Assessment[1] were used to summarize past and potential future climate change in Illinois. Climate change expertise was provided by the Illinois State Climatologist.

Historical Temperature & Precipitation Changes

Over the past 120+ years, Illinois has been getting warmer and wetter overall. The average daily temperature in Illinois has increased 1-2°F since 1895, with most of the warming occurring in climatological winter and spring. In fact, the change in average daily temperature in winter is 3 to 5 times the change in average daily temperature in summer and fall; however, all seasons have seen an increase in daily average temperature since 1895. In all seasons, nighttime minimum temperatures have increased at a faster rate than daytime maximum temperatures. Temperature extremes have exhibited mixed trends and changes over the past century. The annual frequency of very hot days, those with a high temperature at or above 95°F, has not increased significantly since the late 1800s. The annual number of very warm nights, those with a nighttime low temperature at or above 70°F, has increased over the past century. In contrast, winter warming has caused a decreasing trend both in the annual number of nights with a minimum temperature below freezing and nights with a minimum temperature below 0°F.

The average annual precipitation in Illinois has increased by 10% to 20% over the past century, meaning most of the state is 3 to 6 inches wetter annually on average than around the turn of the 20th Century. Precipitation changes are more consistent between seasons than temperature changes, although climatological Fall and Summer have gotten wetter at a slightly faster rate than Winter. The increase in total annual and seasonal precipitation has also caused an increase in the frequency of extreme precipitation events. Illinois has experienced a 40% increase in the number of heavy rainfall days, those in which 2 or more inches of precipitation is observed in a single day, over the past century. The increase in annual and seasonal rainfall has seen less frequent than periods of drought over the past several decades.

Based on the historic record of the Palmer Drought Severity Index, droughts with an estimated 10-to-12-year recurrence period on average have occurred only 2 to 3 times in the past 50 years, coinciding with increasingly wet conditions in Illinois. However, warmer conditions have also increased evaporation rates across the state. For example, the average total summer evaporation has increased by 2 to 3 inches since 1980 across Illinois. Increasing evaporation, when combined with relatively short-term dry spells, can cause rapid soil moisture depletion and lead to flash drought, which leads to agriculture and water resource drought impacts more quickly than slower-evolving drought events. The 2012 drought has been identified as a key flash drought event in Illinois because of its unusually rapid intensification and significant impacts.

The statewide average annual snowfall record shows no significant trend since reliable records began in the early 1900s. The large decadal variability in snowfall complicates trend estimation, as the state has had decades with very large snowfall totals (1910s, 1960s, and 1970s), and decades with very small snowfall totals (1920s, 1930s, 1990s).

Projected Temperature & Precipitation Changes

Projections of temperature and precipitation changes across Illinois for mid-century (around 2050) and late-century (around 2080) are assessed from global climate models for the Coupled Model Intercomparison Project Phase 5 (CMIP5). The models are run under two different scenarios or representative concentration pathways (RCPs) representing divergent potential futures of greenhouse gas emissions and societal growth. The scenarios are denoted as “lower” (RCP 4.5) and “higher” (RCP 8.5), referring to relatively lower and higher greenhouse gas concentrations in the simulations. The higher scenario assumes substantially higher greenhouse emissions than the former between now and late-century.

Overall, model projections show a continuation or an acceleration of historical trends in temperature and precipitation across Illinois by the mid- and late- 21st Century. Projections indicate potentially increasing risks of exposure to extreme heat and more intense and variable precipitation across Illinois. However, the projections are sensitive to the scenario with which the models were run. In the following sections, we review projections of temperature and precipitation for each of the four Illinois regions under moderate and high emissions scenarios.

Temperature Projections:

By mid-century, the annual average temperature in all four Illinois regions is projected to increase by 4-5°F in the lower scenario, and 5-7°F in the higher scenario. All four seasons are projected to warm under both scenarios. Winter is projected to continue warming at the fastest rate of all seasons across Illinois, with projected increases of 5-6°F and 7-8°F in the lower and higher scenarios, respectively. The average winter temperature is projected to increase to 30°F, 31°F, 35°F, and 39°F in the northwest, northeast, central, and southern regions, respectively, under the lower scenario, and to 32°F, 32°F, 35°F, and 40°F in the higher scenario. Meanwhile, the average climatological summer temperature is projected to increase to 77°F in both the northwest and northeast regions, 80°F in the central region, and 81°F in the southern region under the lower scenario. The higher scenario projects increases in summer average temperature to 79°F, 79°F, 81°F, and 84°F for the northwest, northeast, central, and southern regions, respectively, by mid-century.

By late-century, the annual average temperature in all four Illinois regions is projected to increase by 5-6°F in the lower scenario and 8-11°F in the higher scenario. Winter warms at a faster rate in late-century projections. The average winter temperature is projected to increase to 31°F, 32°F, 35°F, and 39°F in the northwest, northeast, central, and southern regions, respectively, under the lower scenario, and to 36°F, 37°F, 39°F, and 43°F for the four regions in the higher scenario. The average climatological summer temperature is projected to be 78°F in the northwest and northeast regions, 81°F in the central region, and 82°F in the southern region by late-century in the lower scenario, and to 83°F, 84°F, 86°F, and 87°F in the four regions in the higher scenario.

Projections of Temperature Extremes:

Models project considerable increases in extreme heat frequency and severity across Illinois through the 21st Century. By mid-century, the northwest, northeast, and central regions are projected to experience an additional 5 to 15 very hot days (i.e., heat index at or above 105°F) per year on average in the lower scenario, and an additional 10 to 20 very hot days per year in the higher scenario. Meanwhile, the southern Illinois region is projected to experience an additional 10 to 20 very hot days per year on average in the lower scenario, and an additional 20 to 40 additional very hot days in the higher scenario by mid-century. By late-century, the northwest, northeast, and central regions are projected to experience an additional 10 to 20 very hot days in the lower scenario, and an additional 20 to 60 additional very hot days in the higher scenario. The southern Illinois region is projected to experience an additional 20 to 40 very hot days in the lower scenario and an additional 40 to 80 very hot days in the higher scenario.

Projected increases in extreme heat would likely result in a substantial rise in excess mortality, morbidity, and the economic costs of poor public health outcomes without significant adaptation and mitigation management strategies. High levels of extreme heat vulnerability exist in both urban and rural communities, and differences in vulnerability across socioeconomic lines in Illinois would likely be exacerbated by increases in heat exposure, as is projected in all Illinois regions by mid- and late-century.

The projected increase in extreme heat is contrasted by projected decreases in cold nights, those with a nighttime minimum temperature below 32°F. By mid-century, all regions of Illinois are projected to experience 15 to 40 fewer cold nights in the lower scenario and between 20 and 60 fewer cold nights in the higher scenario. The annual average number of cold nights in the central region, for example, is projected to decline from 115 nights to between 85 and 110 in the lower scenario and 70 to 100 nights in the higher scenario, by mid-century. By late-century, all regions in Illinois are projected to experience 30 to 50 fewer cold nights per year in the lower scenario, and 50 to 80 fewer nights in the higher scenario. The northeast region, for example, is projected to have between 70 and 110 cold nights per year by late-century under the lower scenario, which is approximately the number of cold nights the southern Illinois region currently experiences.

Projected decreases in cold nights would likely decrease excess mortality and morbidity due to extreme cold exposure, to which vulnerability is highest among Illinoisans experiencing housing insecurity. Concurrently, decreased frequency of very cold nighttime temperatures in the winter – a result of significant winter warming rates – would likely produce a more conducive environment for potentially harmful non-native and invasive flora and fauna, such as the Gulf Coast tick. Therefore, winter warming and decreased extreme cold frequency could pose important risks to public health, agriculture, and overall environmental health.

Precipitation Projections:

Models project continued increases in precipitation and precipitation intensity across Illinois through the 21st Century. By mid-century, total annual precipitation is projected to increase by 2 inches in all four Illinois regions in the lower scenario, and by 2-3 inches in all regions in the higher scenario. Winter and spring precipitation are projected to increase to a larger extent than summer and fall precipitation in all four regions in both scenarios. For example, winter precipitation is projected to increase by around 1 inch in the southern region by mid-century under the lower scenario and by 2 to 3 inches under the higher scenario. Meanwhile, summer and fall total precipitation are projected to increase by less than 1 inch in the lower scenario in all regions, and summer precipitation is projected to slightly decrease (by less than 1 inch) in all but the northeast region under the higher scenario. Precipitation projections for late-century in the lower scenario are similar to those for mid-century, with approximately 1 to 2 inch increases in winter and spring precipitation and changes on the order of less than 1 inch in summer and fall. Late-century projections in the higher scenario amplify increasing winter and spring precipitation trends. For example, both winter and spring are projected to become 2 to 3 inches wetter in the northeast region by late-century under the higher scenario, resulting in a 4-5 inch increase in total annual precipitation in this region.

Projections of Precipitation Extremes:

Models project considerable increases in precipitation intensity across Illinois through the 21st Century. By mid-century, projections show a 0 to 60% increase in heavy precipitation days – those in which at least 2 inches of precipitation falls in a single day – under the lower scenario, and a 20 to 60% increase in heavy precipitation days under the higher scenario in all four regions. By late-century, projections show a 20 to 90% increase in heavy precipitation days across Illinois under the lower scenario, with the largest increases in the northeast region. Late-century projections under the higher scenario show a 60 to 150% increase in heavy precipitation days in all four regions.

Irrespective of increasing rainfall across Illinois, more frequency or intense heavy precipitation can increase the risk of pluvial or urban flooding. Projected increases in precipitation intensity in all Illinois regions would likely result in an increase in human- and environmental-health, economic, and infrastructure impacts from increased pluvial flooding. Like the impacts from extreme heat, flood impacts in Illinois fall disproportionately on least affluent communities, and these differences in flood risk across socioeconomic lines would likely be exacerbated by increases in flood exposure, as is projected in all Illinois regions by mid- and late-century.

Social Vulnerability

Social vulnerability is defined as the susceptibility of a community to adverse impacts caused by natural hazards. The Center for Disease Control's (CDC) Social Vulnerability Index (SVI) uses 16 socioeconomic variables grouped under four categories (Figure 2.1) to identify factors that affect a community's ability to prepare for, respond to, and recover from natural hazards.[2] By including social vulnerability in a risk analysis, hazard mitigation projects can be better tailored to the needs of individual communities.

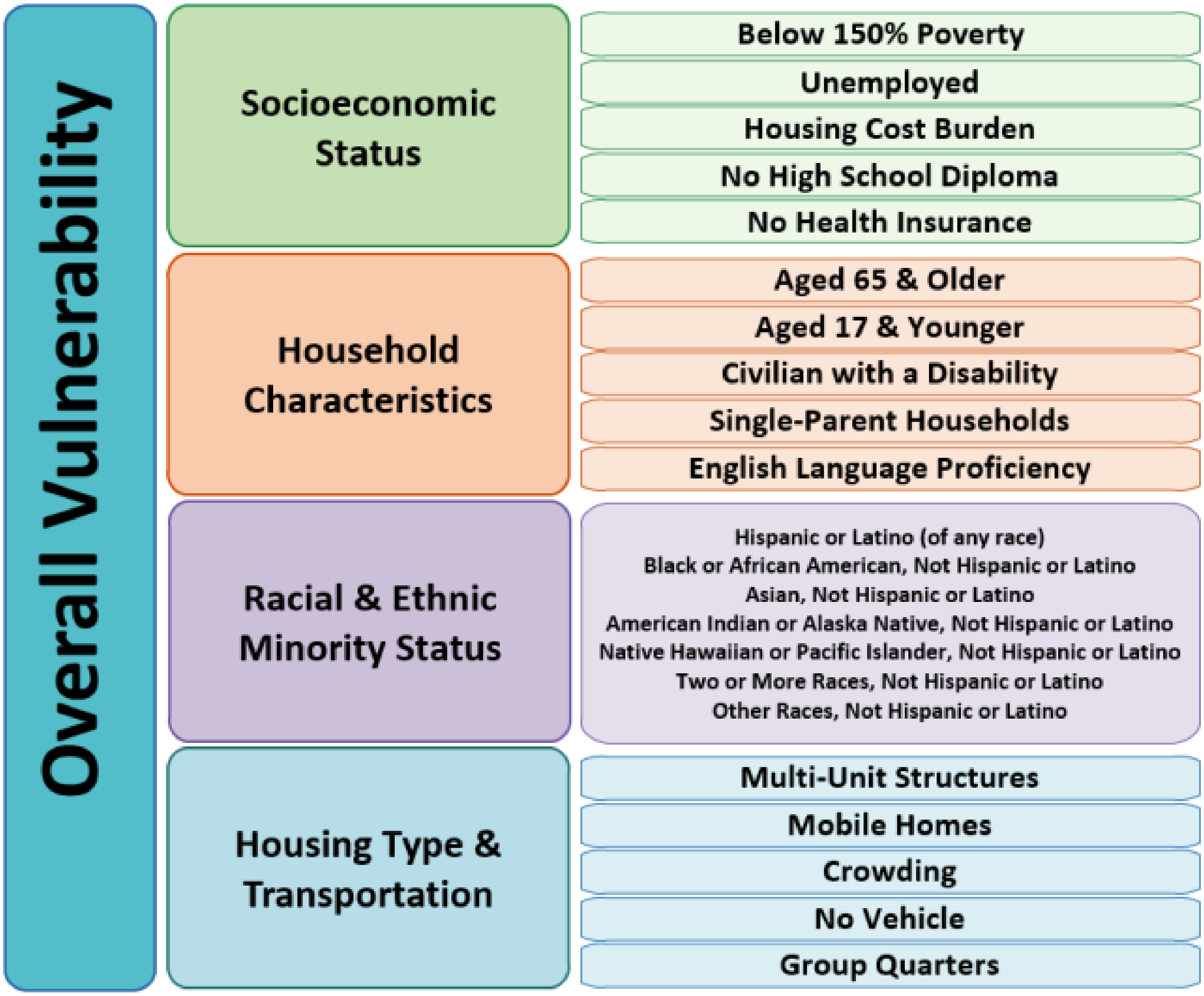


Figure 2.1. CDC/ASTDR SVI factors. Source: CDC

Socioeconomic status can affect natural hazard risk within communities. Individuals and families may not be able to afford hazard insurance (e.g., flood, earthquake), and may not seek medical assistance if injured during a disaster due to a lack of health insurance. Stocking up on provisions before a severe weather event or dipping into savings to replace items lost during hazard event may be out of financial reach for communities with lower socioeconomic status.[3] Infrastructure and facilities in low-income communities are frequently of lower quality, exacerbating the impacts of disasters.

Household characteristics may impact the ability to respond to a hazard. Elderly people, young children, and people with disabilities may need extra assistance when a disaster occurs. Children frequently don’t have the experience or resources necessary to protect themselves from hazards, and elderly people may require extra medical care or other physical assistance during or after a disaster. People with disabilities may need additional resources or assistance post-disaster. People who are not proficient in English may have difficulty understanding hazard alerts or seeking assistance post-disaster.

Racial and ethnic minority status – namely, communities that are non-white, including Hispanic communities – have wide ranging impacts on hazard risk. Social, political, and economic marginalization makes people of color more vulnerable to natural hazards and can prevent people of color from receiving disaster assistance. Historically redlined neighborhoods, where many people of color reside today, are in areas that are more vulnerable to natural hazards, such as floodplains.

Housing type and transportation likewise impact hazard risk. People who live in mobile homes, because mobile homes are not anchored to the ground, are much more susceptible to natural hazards such as tornadoes, severe wind, floods, and earthquakes. People without a vehicle may be unable to evacuate before a disaster occurs, or get supplies needed to prepare for a disaster. People living in group quarters, such as nursing homes or prisons, do not have autonomy to prepare for a disaster, and must rely on facility operators to have a disaster plan in place.

---

[1] Wuebbles, D., Angel, J., Petersen, K., Lemke, A.M. (2021). An Assessment of the Impacts of Climate Change in Illinois. University of Illinois at Urbana-Champaign. https://doi.org/10.13012/B2IDB-1260194_V1

[2] CDC. (2022). "CDC/ATSDR SVI 2020 Documentation". https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation_08.05.22.pdf

[3] Fothergill, A., & Peek, L. A. (2004). Poverty and Disasters in the United States: A Review of Recent Sociological Findings. Natural Hazards, 32(1), 89–110. https://doi.org/10.1023/B:NHAZ.0000026792.76181.d9

2.2 DATA & METHODOLOGY

The list of hazards that affect the State of Illinois was created through consultation of resources including the 2018 Illinois Natural Hazard Mitigation Plan, FEMA's National Risk Index (NRI), and various hazard mitigation plans for other jurisdictions in Illinois. Hazards included in this plan are drought, earthquake, extreme temperatures (cold wave, heat wave), flooding (coastal flooding, dam/levee failure, flash flooding, riverine flooding), landslide, mine subsidence, pandemic, severe storms (hail, lightning, wind), tornado, wildfire, and winter weather (ice storms, winter storms).

Data sources include the First Street Foundation (FSF) flood risk dataset, the Spatial Hazard Events and Losses Database for the United States (SHELDUS), the National Centers for Environmental Information's (NCEI) Storm Events Database, the National Weather Service (NWS), the Center for Disease Control's (CDC) Social Vulnerability Index (SVI), the Association of State Dam Safety Officials (ASDSO)'s Dam Incident Database, the United States Army Corps of Engineers (USACE)'s National Inventory of Dams (NID) and National Levee Database (NLD), the United States Geological Survey's (USGS) Earthquake Catalog, the United States Department of Agriculture's (USDA) Forest Service's Wildfire Occurrence Database, the Illinois Mine Subsidence Insurance Fund (IMSIF), and the Illinois Department of Public Health (IDPH).

Data

First Street Foundation (FSF)

The FSF provides property-level flood risk statistics. The flood factor, a measure of past, current, and future flood risk, is used to assess coastal, flash, and riverine flood risk at the census tract level.

Hazus

Hazus[1] is a geographic information system (GIS)-based natural hazard risk analysis tool developed and freely distributed by FEMA. It is a loss and risk assessment software package built on GIS technology. The information generated can be used for planning emergency response actions and prioritizing mitigation efforts to reduce risk. Hazus output provides a baseline for evaluating success in reducing natural hazard risk exposure when conducting future assessments.

The Hazus assessment is highly data dependent. The accuracy of the analyses depends on several important datasets including essential facilities, building structure information, and general building stock inventories. The earthquake hazard was modeled using Hazus Level 1 methodology which provides initial estimates based on the generalized national databases and best available information.

SHELDUS

SHELDUS is a county-level hazard dataset that provides injury and fatality estimates from natural hazards, as well as crop and property damage estimates. SHELDUS provides inflation adjustments and equally distributes loss information across affected counties to represent loss more accurately. SHELDUS was used to estimate fatalities, injuries, and crop and property damage.

NCEI Storm Events Database

The NCEI Storm Events Database provides descriptions for a wide array of hazard events. The Storm Events Database was used to count the number of hazard events in each county. The database was used to estimate fatalities, injuries, and crop and property damage for hazards that were not available in SHELDUS.

CDC Social Vulnerability Index (SVI)

The CDC SVI assigns a unique social vulnerability to each county based on socioeconomic status, household characteristics, racial and ethnic minority, and housing type and transportation. Counties are then assigned a vulnerability score based on these four factors. The SVI was used to calculate social vulnerability for each county.

Methodology

To compare risk across counties and hazards, a hazard risk ranking methodology was devised. Building on the methodology from the 2018 Illinois Natural Hazard Mitigation Plan, six types of data were gathered at the county level to determine risk: current population, historic hazard occurrence, population exposure, population growth, severity of impact, and social vulnerability. Risk components were given similar weights to the 2018 Illinois Natural Hazard Mitigation Plan, although historic events, severity of impact, and population exposure weights were reduced slightly to incorporate social vulnerability, which was not a risk component in the previous plan. Higher weights were given to variables that are hazard dependent.

Risk Component	Data Source	Weighting
Current Population	US Census Bureau	7.7%
Historic Hazard Occurrence	NCEI Storm Events Database, SHELDUS	23.1%
Population Exposure	Various	23.1%
Population Growth	US Census Bureau, IDPH	7.7%
Severity of Impact	NCEI Storm Events Database, SHELDUS	23.1%
Social Vulnerability	CDC SVI	15.4%

The numeric scores associated with each risk component were summed to determine an overall risk ranking for each hazard at the county level. The following colors were chosen for ranking.

Color	Ranking
	Very Low
	Low
	Medium
	High
	Very High

Current Population

Ranking	Numeric Score	Criteria
Low	1	Fewer than 25,000
Medium	2	Between 25,000 and 250,000
High	3	More than 250,000

Current population data was gathered from the 2021 US Census Bureau population estimates. Counties with smaller populations generally have less overall potential for loss of life or infrastructure, while counties with larger populations have higher potential. Current population constitutes 7.7% of a county's overall risk score.

Historic Hazard Occurrence

Ranking	Numeric Score	Criteria
Low	3	Zero (0) occurrences, 1996-2021
Medium	6	Between 1-20 occurrences, 1996-2021
High	9	More than 20 occurrences, 1996-2021

Historic hazard occurrence data was gathered from the NCEI Storm Events Database. Counties with high numbers of hazard occurrences in the past 26 years may also experience hazards more frequently in the future, contributing to their overall hazard risk ranking. Historic hazard occurrence constitutes 23.1% of a county's overall risk score.

Population Exposure

Ranking	Numeric Score	Criteria
Low	3	Less than 5% of population affected
Medium	6	Between 5% and 15% of population affected
High	9	More than 15% of population affected

Population exposure was determined using quantitative GIS analysis and qualitative information provided by experts at the National Weather Service (NWS). Hazards that affect more people contribute more to a county's overall risk score. Population exposure constitutes 23.1% of a county's overall risk score.

Population Growth

Ranking	Numeric Score	Criteria
Low	1	Population decrease greater than 10% by 2030
Medium	2	Population decrease between 0 and 10% by 2030
High	3	Population increase by 2030

Population growth complements population exposure. As population increases in a county, there are more people to be exposed to a hazard, increasing risk. Population growth constitutes 7.7% of a county's overall risk score.

Severity of Impact

Ranking	Numeric Score	Criteria
Low	3	Fewer than 10 injuries or less than $1,000,000 in infrastructure damage
Medium	6	More than 10 injuries or between $1,000,000 and $10,000,000 in infrastructure damage
High	9	More than 5 fatalities or more than $10,000,000 in infrastructure damage

Severity of impact was determined by examining the worst-case scenario based on past hazards. Using SHELDUS for injury, fatality, and damage estimates, a county was assigned a low, medium, or high ranking with an associated numeric score. For example, if a county had more than 5 fatalities or more than $10,000,000 in reported infrastructure damage caused by a single event, it was given a high severity of impact ranking. Severity of impact constitutes 23.1% of a county's overall risk score.

Social Vulnerability

Ranking	Numeric Score	Criteria
Low	2	First tercile of the SVI (0-0.33)
Medium	4	Second tercile of the SVI (0.33-0.67)
High	6	Third tercile of social vulnerability (0.67-1)

Social vulnerability was determined using the CDC SVI. The SVI uses percentiles ranging from 0 to 1 to rank each county. The first, second, and third terciles are used to categorize low, medium, and high social vulnerability. Social vulnerability constitutes 15.4% of a county's overall risk score.

Loss Estimate Methodology

Annual loss estimates for each county were calculated using property damage from SHELDUS and the NCEI Storm Events Database and building value estimates from Hazus. The following formula was used for each hazard:

For counties that did not have any reported property damage, the following formula was used:

This methodology was not used for the following hazards: drought, earthquake, cold wave, heat wave, mine subsidence, and pandemic. Loss estimate calculations can be found in within each hazard profile (**Section 2.7 Hazard Profiles)**.

[1] FEMA Hazus 5.0 Software. Released May 24, 2021. https://www.fema.gov/flood-maps/products-tools/hazus

2.3 HISTORIC DISASTERS

Historic Disaster Declarations

Disaster declarations in the State of Illinois can be made at the city, county, state, or federal government level. City or county officials may declare a local disaster to activate emergency operation plans within their jurisdiction. If a disaster overwhelms local response capabilities, local officials may request assistance from the Illinois Emergency Management Agency (IEMA). The Governor of Illinois may request a Presidential Disaster Declaration from the federal government if local and state response capabilities are overwhelmed. Disasters can also be declared by the Farm Service Agency (FSA) and the Small Business Administration (SBA).

Presidential Disaster Declarations

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), a governor of an affected state or territory, or a tribal government, can request that the President of the United States make a disaster declaration. There are two types of presidential disaster declarations: major disaster declarations and emergency declarations.

A major disaster declaration covers any natural hazard, including hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought; and any fire, flood, or explosion, regardless of the cause. Federal assistance for recovery and future hazard mitigation can be made available to affected counties. Emergency declarations supplement state, local and Indian tribal government efforts in providing emergency services, such as the protection of lives, property, public health, and safety, or to lessen or avert the threat of a catastrophe. The total amount of assistance provided for in a single emergency may not exceed $5 million. The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed.[1]

Table 2.2. Illinois Federal Disaster and Emergency Declarations 1965-2022. Source: FEMA

Disaster Declaration Number	Date Declared	Event	Counties Affected
DR-194	4/25/1965	Tornado	Adams, Carroll, Henderson, Jo Daviess, Lake, McHenry, Mercer, Pike, Rock Island, Whiteside
DR-227	4/25/1967	Tornado	Boone, Cook, DuPage, Kane, La Salle, Lake, McHenry, Will, Winnebago
DR-242	6/5/1968	Tornado	Champaign, De Witt, Logan, Mason, McLean, Piatt, St. Clair, Vermillion
DR-262	6/6/1969	Flood	Adams, Calhoun, Carroll, Henderson, Jersey, Jo Daviess, Mercer, Pike, Rock Island, Whiteside
DR-276	8/30/1969	Flood	Alexander, Calhoun, Clinton, Henderson, Jackson, Jersey, Jo Daviess, Madison, Monroe, Pike, Pulaski, Randolph, St. Clair, Stephenson, Union
DR-351	9/4/1972	Flood	Cook, DuPage, Grundy

Disaster Declaration Number	Date Declared	Event	Counties Affected
DR-373	4/26/1973	Flood	Adams, Alexander, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Clinton, Cook, DeKalb, Franklin, Fulton, Gallatin, Greene, Hancock, Henderson, Henry, Jackson, Jersey, Jo Daviess, Johnson, Kane, Kankakee, Kendall, La Salle, Lake, Lee, Logan, Madison, Mason, Massac, McHenry, McLean, Menard, Mercer, Monroe, Morgan, Ogle, Peoria, Pike, Pope, Pulaski, Randolph, Rock Island, Schuyler, Scott, St. Clair, Tazewell, Union, Whiteside, Winnebago
DR-427	4/11/1974	Tornado	Champaign, Macon, McLean, Vermilion
DR-438	6/10/1974	Flood	Adams, Alexander, Brown, Bureau, Calhoun, Carroll, Cass, Clark, Coles, Cumberland, DeKalb, DuPage, Edgar, Fulton, Grundy, Hancock, Henderson, Henry, Jersey, Jo Daviess, Kane, Kendall, Knox, La Salle, Lee, Livingston, Logan, Macon, Marshall, Mason, McHenry, Mercer, Monroe, Ogle, Peoria, Pike, Randolph, Rock Island, Sangamon, Schuyler, Stephenson, Tazewell, Whiteside, Will, Winnebago, Woodford
DR-478	7/25/1975	Tornado	Fulton
DR-509	6/18/1976	Severe Storm(s)	Cook, DuPage
DR-583	4/30/1979	Flood	Alexander, Brown, Bureau, Calhoun, Cass, De Witt, Fulton, Greene, Jackson, Jersey, La Salle, Macon, Madison, Marshall, Mason, Monroe, Morgan, Peoria, Pike, Pulaski, Putnam, Randolph, Rock Island, Schuyler, Scott, St. Clair, Tazewell, Union, Woodford
DR-643	6/30/1981	Severe Storm(s)	Carroll, Cook, Schuyler, Will
DR-660	6/5/1982	Tornado	Perry, Williamson
DR-674	12/13/1982	Severe Storm(s)	Brown, Bureau, Calhoun, Cass, Clinton, Fulton, Greene, Jersey, Livingston, Macoupin, Madison, Marshall, Mason, Monroe, Morgan, Peoria, Pike, Putnam, Randolph, Schuyler, Scott, Tazewell, Woodford, Alexander, Calhoun
DR-684	6/6/1983	Severe Storm(s)	Alexander, Calhoun, Cass, Franklin, Greene, Jackson, Jersey, Macoupin, Madison, Monroe, Pulaski, Randolph, St. Clair, White, Adams, Bureau
DR-735	3/29/1985	Flood	Adams, Bureau, Calhoun, Cass, Clark, Crawford, Fulton, Greene, Grundy, Hancock, Jersey, La Salle, Lee, Marshall, Mason, Monroe, Morgan, Peoria, Pike, Rock Island, Tazewell, Will, Woodford
DR-776	10/7/1986	Flood	Adams, Calhoun, Cook, Jersey, Kane, Lake, McHenry, St. Clair
DR-798	8/21/1987	Flood	Cook, DuPage, Hancock
DR-819	1/13/1989	Tornado	Edwards, Hamilton, Wabash, Wayne, White
DR-860	3/6/1990	Severe Ice Storm	Champaign, Douglas, Edgar, Ford, Iroquois, Livingston, McLean, Moultrie, Piatt, Vermilion
DR-871	6/22/1990	Severe Storm(s)	Bureau, Calhoun, Cass, Edwards, Hamilton, Henry, Jasper, Jo Daviess, Marion, Marshall, Richland, Shelby, Tazewell, Wabash, Wayne, White
DR-878	8/29/1990	Tornado	Kane, Kendall, Will
DR-941	4/15/1992	Flood	La Salle
DR-997	7/9/1993	Flood	Adams, Alexander, Boone, Brown, Calhoun, Carroll, Cass, Cook, Fulton, Greene, Hancock, Henderson, Henry, Jackson, Jersey, Jo Daviess, Knox, Lake, Madison, Mason, Massac, McHenry, Mercer, Monroe, Morgan, Ogle, Pike, Pope, Pulaski, Randolph, Rock Island, Schuyler, Scott, St. Clair, Stephenson, Union, Warren, Whiteside, Winnebago

Disaster Declaration Number	Date Declared	Event	Counties Affected
DR-1025	4/26/1994	Severe Storm(s)	Alexander, Calhoun, Cass, Champaign, De Witt, Douglas, Greene, Iroquois, Jersey, Mason, Menard, Monroe, Piatt, Sangamon, St. Clair, Vermilion
DR-1053	5/30/1995	Severe Storm(s)	Alexander, Brown, Calhoun, Cass, Fulton, Greene, Jackson, Jersey, Madison, Mason, Monroe, Morgan, Pike, Pulaski, Randolph, Schuyler, Scott, St. Clair, Union
DR-1110	4/23/1996	Severe Storm(s)	Champaign, Henry, Lake, Macon, Marion
DR-1112	5/6/1996	Severe Storm(s)	Adams, Brown, Cass, Champaign, Crawford, Cumberland, Douglas, Effingham, Franklin, Gallatin, Hamilton, Hancock, Jackson, Jasper, Lawrence, Madison, Menard, Monroe, Perry, Richland, Saline, Sangamon, Schuyler, St. Clair, Vermilion, Wabash, White, Williamson
DR-1129	7/25/1996	Severe Storm(s)	Cook, DeKalb, DuPage, Grundy, Kane, Kendall, La Salle, Ogle, Stephenson, Will, Winnebago
DR-1170	3/21/1997	Severe Storm(s)	Alexander, Gallatin, Hardin, Massac, Pope, Pulaski
DR-1188	9/17/1997	Severe Storm(s)	Cook
DR-1278	5/28/1999	Severe Storm(s)	Jo Daviess
DR-1368	5/9/2001	Flood	Adams, Calhoun, Carroll, Hancock, Henderson, Jo Daviess, Mercer, Pike, Rock Island, Whiteside
DR-1416	5/21/2002	Tornado	Adams, Alexander, Bond, Brown, Calhoun, Cass, Champaign, Christian, Clark, Clay, Clinton, Coles, Crawford, Cumberland, De Witt, Douglas, Edgar, Edwards, Effingham, Fayette, Ford, Franklin, Fulton, Gallatin, Greene, Hamilton, Hancock, Hardin, Iroquois, Jackson, Jasper, Jefferson, Jersey, Johnson, Lawrence, Logan, Macon, Macoupin, Madison, Marion, Mason, Massac, McDonough, Menard, Monroe, Montgomery, Morgan, Moultrie, Perry, Piatt, Pike, Pope, Pulaski, Randolph, Richland, Saline, Sangamon, Schuyler, Scott, Shelby, St. Clair, Union, Vermilion, Wabash, Washington, Wayne, White, Williamson
DR-1469	5/15/2003	Severe Storm(s)	Adams, Alexander, Brown, Fulton, Greene, Hancock, Mason, Massac, McDonough, Pike, Pope, Pulaski, Schuyler, Tazewell, Union, Woodford
DR-1513	4/23/2004	Severe Storm(s)	Kankakee, La Salle, Putnam, Will
DR-1633	3/28/2006	Severe Storm(s)	Greene, Logan, Morgan, Randolph, Sangamon, Scott
DR-1681	2/9/2007	Severe Ice Storm	Bond, Calhoun, Christian, De Witt, Fayette, Jersey, Logan, Macon, Macoupin, Madison, McLean, Monroe, Montgomery, Piatt, Sangamon, Shelby, St. Clair, Woodford
DR-1722	8/30/2007	Severe Storm(s)	Stephenson, Winnebago
DR-1729	9/25/2007	Severe Storm(s)	Cook, DeKalb, Grundy, Kane, Knox, La Salle, Lake, Warren, Will
DR-1747	3/7/2008	Severe Storm(s)	Iroquois, Livingston
DR-1771	6/24/2008	Severe Storm(s)	Adams, Calhoun, Clark, Coles, Crawford, Cumberland, Douglas, Edgar, Greene, Hancock, Henderson, Jasper, Jersey, Lake, Lawrence, Madison, Mercer, Monroe, Pike, Randolph, Rock Island, Scott, St. Clair, Whiteside, Winnebago
DR-1800	10/3/2008	Severe Storm(s)	Bureau, Cass, Cook, DeKalb, DuPage, Greene, Grundy, Kane, Kendall, La Salle, Macoupin, Montgomery, Peoria, Scott, Will, Woodford
DR-1826	3/2/2009	Severe Storm(s)	Alexander, Gallatin, Hardin, Johnson, Massac, Pope, Pulaski, Saline, Union
DR-1850	7/2/2009	Severe Storm(s)	Franklin, Gallatin, Hamilton, Jackson, Randolph, Saline, Union, Williamson

Disaster Declaration Number	Date Declared	Event	Counties Affected
DR-1935	8/19/2010	Severe Storm(s)	Adams, Carroll, Cook, DuPage, Jo Daviess, Moultrie, Ogle, Pike, Schuyler, Stephenson, Winnebago
DR-1960	3/17/2011	Snow	Adams, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Christian, Clark, Clay, Coles, Cook, Crawford, Cumberland, DeKalb, Douglas, DuPage, Edgar, Effingham, Fayette, Ford, Fulton, Grundy, Hancock, Henderson, Henry, Jasper, Jo Daviess, Kane, Knox, La Salle, Lake, Lee, Livingston, Logan, Marion, Marshall, Mason, McDonough, McHenry, McLean, Menard, Mercer, Morgan, Moultrie, Ogle, Peoria, Pike, Putnam, Richland, Rock Island, Sangamon, Schuyler, Scott, Shelby, Stark, Stephenson, Tazewell, Warren, Washington, Whiteside, Will, Winnebago, Woodford
DR-1991	6/7/2011	Severe Storm(s)	Alexander, Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Lawrence, Marion, Massac, Perry, Pope, Pulaski, Randolph, Saline, Union, Wabash, Washington, Wayne, White, Williamson
EM-3068	1/16/1979	Snow	Boone, Bureau, Carroll, Cook, DeKalb, DuPage, Grundy, Henry, Jo Daviess, Kane, Kendall, La Salle, Lake, Lee, Marshall, McHenry, Mercer, Ogle, Peoria, Putnam, Stephenson, Whiteside, Will, Winnebago
EM-3134	1/8/1999	Snow	Adams, Brown, Bureau, Calhoun, Cass, Champaign, Christian, Cook, De Witt, Douglas, DuPage, Ford, Fulton, Greene, Grundy, Hancock, Henderson, Henry, Iroquois, Kane, Kankakee, Kendall, Knox, La Salle, Lake, Livingston, Logan, Macon, Marshall, Mason, McDonough, McHenry, McLean, Menard, Mercer, Morgan, Moultrie, Peoria, Piatt, Pike, Putnam, Sangamon, Schuyler, Scott, Shelby, Stark, Tazewell, Vermilion, Warren, Will, Winnebago, Woodford
EM-3161	1/17/2001	Snow	Boone, Bureau, Cook, De Witt, DuPage, Ford, Fulton, Grundy, Henderson, Henry, Iroquois, Kane, Kankakee, Kendall, La Salle, Lake, Livingston, Marshall, McDonough, McHenry, McLean, Menard, Ogle, Peoria, Stark, Will, Winnebago
EM-3199	2/1/2005	Snow	Edwards, Franklin, Gallatin, Hamilton, Hardin, Jackson, Johnson, Lawrence, Massac, Pope, Richland, Saline, Union, Wabash, White, Williamson
EM-3230	9/7/2005	Hurricane – Katrina Evacuation	Adams, Alexander, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Champaign, Christian, Clark, Clay, Clinton, Coles, Cook, Crawford, Cumberland, De Witt, DeKalb, Douglas, DuPage, Edgar, Edwards, Effingham, Fayette, Ford, Franklin, Fulton, Gallatin, Greene, Grundy, Hamilton, Hancock, Hardin, Henderson, Henry, Iroquois, Jackson, Jasper, Jefferson, Jersey, Jo Daviess, Johnson, Kane, Kankakee, Kendall, Knox, La Salle, Lake, Lawrence, Lee, Livingston, Logan, Macon, Macoupin, Madison, Marion, Marshall, Mason, Massac, McDonough, McHenry, McLean, Menard, Mercer, Monroe, Montgomery, Morgan, Moultrie, Ogle, Peoria, Perry, Piatt, Pike, Pope, Pulaski, Putnam, Randolph, Richland, Rock Island, Saline, Sangamon, Schuyler, Scott, Shelby, St. Clair, Stark, Stephenson, Tazewell, Union, Vermilion, Wabash, Warren, Washington, Wayne, White, Whiteside, Will, Williamson, Winnebago, Woodford
EM-3269	12/29/2006	Snow	Adams, Boone, Brown, Bureau, DeKalb, Fulton, Hancock, Henry, Kendall, Knox, La Salle, Lee, Marshall, Mason, McDonough, McHenry, Menard, Ogle, Peoria, Pike, Putnam, Scott, Stark, Stephenson, Tazewell, Winnebago

Disaster Declaration Number	Date Declared	Event	Counties Affected
EM-3283	3/13/2008	Snow	Boone, Carroll, Jo Daviess, Lake, McHenry, Ogle, Stephenson, Winnebago
EM-3435	3/13/2020	Biological	Adams, Alexander, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Champaign, Christian, Clark, Clay, Clinton, Coles, Cook, Crawford, Cumberland, De Witt, DeKalb, Douglas, DuPage, Edgar, Edwards, Effingham, Fayette, Ford, Franklin, Fulton, Gallatin, Greene, Grundy, Hamilton, Hancock, Hardin, Henderson, Henry, Iroquois, Jackson, Jasper, Jefferson, Jersey, Jo Daviess, Johnson, Kane, Kankakee, Kendall, Knox, La Salle, Lake, Lawrence, Lee, Livingston, Logan, Macon, Macoupin, Madison, Marion, Marshall, Mason, Massac, McDonough, McHenry, McLean, Menard, Mercer, Monroe, Montgomery, Morgan, Moultrie, Ogle, Peoria, Perry, Piatt, Pike, Pope, Pulaski, Putnam, Randolph, Richland, Rock Island, Saline, Sangamon, Schuyler, Scott, Shelby, St. Clair, Stark, Stephenson, Tazewell, Union, Vermilion, Wabash, Warren, Washington, Wayne, White, Whiteside, Will, Williamson, Winnebago, Woodford
EM-3577	12/13/2021	Tornado	Bond, Cass, Coles, Effingham, Fayette, Jersey, Macoupin, Madison, Menard, Montgomery, Morgan, Moultrie, Pike, Shelby
DR-4116	5/10/2013	Flood	Adams, Brown, Bureau, Calhoun, Carroll, Cass, Clark, Cook, Crawford, DeKalb, Douglas, DuPage, Fulton, Greene, Grundy, Hancock, Henderson, Henry, Kane, Kendall, Knox, La Salle, Lake, Lawrence, Livingston, Marshall, Mason, McDonough, McHenry, Mercer, Monroe, Morgan, Ogle, Peoria, Pike, Putnam, Rock Island, Schuyler, Scott, Shelby, Stark, Tazewell, Warren, Whiteside, Will, Winnebago, Woodford
DR-4157	11/26/2013	Tornado	Champaign, Douglas, Fayette, Grundy, Jasper, La Salle, Massac, Pope, Tazewell, Vermilion, Wabash, Washington, Wayne, Will, Woodford
DR-4461	9/19/2019	Flood	Adams, Alexander, Bureau, Calhoun, Carroll, Cass, Fulton, Greene, Hancock, Henderson, Henry, Jackson, Jersey, Knox, Lee, Madison, Mercer, Monroe, Morgan, Pike, Randolph, Rock Island, Schuyler, Scott, St. Clair, Stephenson, Union, Whiteside
DR-4489	3/26/2020	Biological	Adams, Alexander, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Champaign, Christian, Clark, Clay, Clinton, Coles, Cook, Crawford, Cumberland, De Witt, DeKalb, Douglas, DuPage, Edgar, Edwards, Effingham, Fayette, Ford, Franklin, Fulton, Gallatin, Greene, Grundy, Hamilton, Hancock, Hardin, Henderson, Henry, Iroquois, Jackson, Jasper, Jefferson, Jersey, Jo Daviess, Johnson, Kane, Kankakee, Kendall, Knox, La Salle, Lake, Lawrence, Lee, Livingston, Logan, Macon, Macoupin, Madison, Marion, Marshall, Mason, Massac, McDonough, McHenry, McLean, Menard, Mercer, Monroe, Montgomery, Morgan, Moultrie, Ogle, Peoria, Perry, Piatt, Pike, Pope, Pulaski, Putnam, Randolph, Richland, Rock Island, Saline, Sangamon, Schuyler, Scott, Shelby, St. Clair, Stark, Stephenson, Tazewell, Union, Vermilion, Wabash, Warren, Washington, Wayne, White, Whiteside, Will, Williamson, Winnebago, Woodford

State Disaster Declarations

The Governor may proclaim a state disaster, which allows state agency resources to assist local governments. Between 2010 and 2023, there were 32 gubernatorial disaster proclamations across the State of Illinois (Table 2.3).

Table 2.3. Illinois State Disaster Proclamations, 2010-2023. Source: State of Illinois

Date Declared	Event	Counties Affected
6/7/2010	Severe Storms, Tornadoes	LaSalle, Livingston, Peoria, Putnam
6/10/2010	Severe Storms, Tornadoes	Kankakee
7/26/2010	Severe Storms, High Winds, Torrential Rain	Carroll, Cook, DuPage, Henderson, Jo Daviess, Lee, Mercer, Ogle, Rock Island, Stephenson, Whiteside, Winnebago
8/31/2010	Severe Storms, High Winds, Torrential Rain	Adams, Pike, Schuyler
9/16/2010	Severe Storms, High Winds, Torrential Rain	Moultrie
1/31/2011	Winter Weather	All
4/25/2011 5/25/2011	High Wind, Tornadoes, Torrential Rain	All
2/29/2012	Severe Storms, Tornadoes	Saline
4/18/2013 4/20/2013 4/21/2013 4/25/2013 4/30/2013	Severe Storms, Heavy Rainfall, Flooding, Straight-line Winds	Adams, Brown, Bureau, Calhoun, Carroll, Cass, Champaign, Clark, Cook, Crawford, DeKalb, Douglas, DuPage, Fulton, Greene, Grundy, Hancock, Henderson, Henry, Jersey, Jo Daviess, Kane, Kendall, Knox, Lake, LaSalle, Lawrence, Livingston, Marshall, Mason, McDonough, McHenry, Mercer, Monroe, Morgan, Ogle, Peoria, Pike, Putnam, Rock Island, Schuyler, Scott, Stark, Tazewell, Warren, Whiteside, Will, Winnebago, Woodford
11/17/2013 11/19/2013 11/20/2013	Severe Storms, Straight-line Winds, Tornadoes	Champaign, Douglas, Fayette, Grundy, Jasper, LaSalle, Massac, Pope, Tazewell, Vermilion, Washington, Woodford, Wabash, Wayne, Will
1/6/2014	Heavy Snowfall, Frigid Temperatures	All
4/10/2015	Severe Storms, Tornadoes	DeKalb, Ogle
6/23/2015	Severe Storms, Tornadoes, Straight-line Winds and Heavy Rainfall	Grundy, Lee
6/30/2015	Severe Storms, Heavy Rainfall	Calhoun, Cass, Fulton, Greene, Jersey, Mason, Morgan, Pike, Schuyler, Scott, Tazewell
7/31/2015	Severe Storms, Tornadoes, Flooding and Straight-line Winds	Adams, Alexander, Brown, Calhoun, Cass, Coles, Fulton, Greene, Grundy, Iroquois, Jersey, Mason, Monroe, Morgan, Peoria, Pike, Randolph, Richland, Schuyler, Scott, Tazewell, Vermilion, Warren
12/29/2015	Severe Storms, Heavy Rainfall, Flooding	Calhoun, Jackson, Jersey, Madison, Monroe, Randolph, St. Clair
12/30/2015	Severe Storms, Heavy Rainfall, Flooding	Alexander, Christian, Clinton, Douglas, Morgan
1/5/2016 1/28/2016 3/31/2016	Severe Storms, Heavy Rainfall, Flooding	Bureau, Christian, Cass, Clark, Cumberland, Iroquois, Lawrence, Marion, Mason, Menard, Moultrie, Pike, Richland, Sangamon, Vermilion
7/12/2017 7/14/2017	Thunderstorms, Heavy Rainfall, Flooding	Cook, Kane, Lake, McHenry
2/23/2018	Heavy Rainfall, Flooding	Iroquois, Kankakee, Vermilion
12/3/2018	Severe Storms, Tornadoes	Christian
1/29/2019	Winter Storm	All
5/3/2019 5/31/2019 6/20/2019 6/28/2019	Flooding	Adams, Alexander, Brown, Bureau, Calhoun, Carroll, Cass, Fulton, Greene, Grundy, Hancock, Henry, Henderson, Jackson, Jersey, Jo Daviess, Knox, LaSalle, Madison, Marshall, Mason, Mercer, Monroe, Morgan, Peoria, Pike, Putnam, Randolph,

Date Declared	Event	Counties Affected
7/26/2019		Rock Island, Schuyler, Scott, St. Clair, Tazewell, Union, Whiteside, Woodford
2/6/2020	Severe Storms	Cook, Lake
3/12/2020 – present (reissued monthly)	COVID-19	All
6/25/2020	Thunderstorms, Flash Flooding	Bureau
2/16/2021	Winter Storms	All
2/1/2022	Winter Storms	All
7/29/2022	Heavy Rainfall, Flash Flooding	St. Clair, Washington
8/1/2022 (reissued monthly through 10/28/2022)	Monkeypox	All
8/11/2022	Fire	St. Clair, Madison
4/1/2023	Severe Weather, Tornadoes	Boone, Crawford, DuPage, Marion, Sangamon

[1] *How a Disaster Gets Declared | FEMA.gov*. Retrieved March 10, 2023, from https://www.fema.gov/disaster/how-declared

2.4 NATIONAL FLOOD INSURANCE PROGRAM

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a federal program that enables property owners in participating communities to purchase insurance as a protection against flood losses. Eligibility is premised on the adoption and enforcement of state and community floodplain management regulations intended to prevent unsafe development in the floodplain, reducing future flood damages.[1] If a community adopts and enforces a floodplain management ordinance, the federal government will make flood insurance available within the community as a financial protection against flood losses. Communities must continue to enforce their local floodplain management ordinances to remain compliant. In Illinois, most communities have adopted the State of Illinois Model Ordinance that goes above and beyond NFIP minimum standards.

Flood maps generated by FEMA to support the NFIP are the primary source of information on the location of special flood hazard areas (SFHA). Flood Insurance Rate Maps (FIRM) identify SFHAs (1%-annual-chance floodplains) for streams in the community and delineate when the federal mandatory purchase of flood insurance requirement may be applicable.

After flooding events, local officials are responsible for inspecting flood damaged structures in the SFHA to determine if they are substantially damaged (50% or more). If so, the property owner is required to bring the structure into compliance with the local floodplain ordinance if repairs are made to the structure. The Illinois Department of Natural Resources (IDNR) created a tool for communities to use, with steps to take following a flood.[2] Communities can also contact Illinois Association for Floodplain and Stormwater Management (IAFSM) for additional support following a flood.

Repetitive Loss

Repetitive loss properties are defined as any insurable building for which the NFIP paid two or more claims of at least $1,000 over a ten-year period. Frequent losses due to flooding can have a devastating and disruptive impact on individuals, families, and businesses. Depending on the situation, appropriate mitigation measures include elevating buildings above the base flood elevation (BFE), relocating buildings, or demolition of the structure. FEMA's Flood Mitigation Assistance (FMA) program specifically provides funding to mitigate flood damage to structures insured by the NFIP.

As of April 2023, Illinois has 4,173 repetitive loss properties that have not been mitigated.

Table 2.4 shows the communities with the highest number of unmitigated repetitive loss properties. The Village of Bellwood in Cook County has the highest number of repetitive loss properties and total losses, while the City of Des Plaines in Cook County has the highest total insurance claims paid. The Village of Hinsdale, which is located in Cook and DuPage counties, has 10 repetitive loss properties, 20 total losses, and the highest average insurance claim paid ($269,990.18).

Table 2.4. Communities with the highest number of repetitive loss properties. Source: FEMA, IEMA

Community Name	Number of Repetitive Loss Properties	Total Losses	Total Insurance Claims Paid ($)	Average Insurance Claim Paid ($)
Bellwood, Village of	253	597	5,934,891.64	9,941.19
Des Plaines, City of	227	558	18,038,237.75	32,326.59
Peoria County*	141	593	7,764,518.80	13,093.62
Will County *	131	408	6,868,988.00	16,835.75
Rock Island County*	122	474	5,472,143.86	11,544.61
Cook County *	117	335	6,012,943.00	17,949.08
Stone Park, Village of	98	315	5,844,499.24	18,553.97
Rockford, City of	96	209	5,004,491.34	23,944.93
Westchester, Village of	90	214	2,038,897.34	9,527.56
Watseka, City of	82	228	3,839,645.84	16,840.55
Lake County *	80	214	3,786,996.22	17,696.24
Machesney Park, Village of	74	188	5,022,042.26	26,712.99
Melrose Park, Village of	70	179	3,375,678.19	18,858.54
Chicago, City of	69	152	1,789,275.93	11,771.55
Kankakee County *	67	223	4,896,689.94	21,958.25
McHenry County*	61	182	2,258,954.61	12,411.84
Calhoun County*	56	232	2,871,567.90	12,377.45
Joliet, City of	47	110	838,565.33	7,623.32
Grafton, City of	46	210	5,156,737.29	24,555.89
Addison, Village of	44	128	2,653,554.65	20,730.90

* unincorporated

Table 2.5 shows unmitigated repetitive loss properties and insurance claims paid by county. There are 11 counties with no repetitive loss properties in Illinois: Bond, Clay, Cumberland, Edgar, Edwards, Fayette, Johnson, Marion, Pope, Richland, and Stark. It should be noted that only communities participating in the NFIP have recorded repetitive loss properties. Communities not participating in the NFIP may have repetitive flood damage that is not recorded.

Table 2.5. Counties with repetitive loss properties. Source: FEMA, IEMA

County Name	Number of Repetitive Loss Properties	Total Losses	Total Insurance Claims Paid ($)	Average Insurance Claim Paid ($)
Adams County	30	92	5,735,211.63	62,339.26
Alexander County	23	59	662,086.11	11,221.80
Boone County	3	9	133,509.30	14,834.37
Brown County	6	21	238,377.22	11,351.30
Bureau County	4	15	98,214.83	6,547.66
Calhoun County	92	379	5,743,404.53	15,154.10

County Name	Number of Repetitive Loss Properties	Total Losses	Total Insurance Claims Paid ($)	Average Insurance Claim Paid ($)
Carroll County	7	18	276,923.14	15,384.62
Cass County	7	21	293,488.33	13,975.63
Champaign County	18	45	676,083.94	15,024.09
Christian County	1	2	4,893.32	2,446.66
Clark County	3	11	177,116.25	16,101.48
Clinton County	3	6	183,940.85	30,656.81
Coles County	3	6	119,311.88	19,885.31
Cook County	1713	4359	77,312,391.43	17,736.27
Crawford County	6	14	326,833.47	23,345.25
De Witt County	3	6	64,964.71	10,827.45
DeKalb County	45	118	2,037,851.64	17,269.93
Douglas County	21	74	785,708.11	10,617.68
DuPage County	309	833	25,580,251.90	30,708.59
Effingham County	1	2	121,694.36	60,847.18
Ford County	1	2	3,538.54	1,769.27
Franklin County	6	12	224,225.28	18,685.44
Fulton County	16	59	939,449.03	15,922.86
Gallatin County	3	7	233,550.53	33,364.36
Greene County	2	4	513,077.90	128,269.48
Grundy County	52	145	3,568,897.29	24,613.08
Hamilton County	1	2	31,422.00	15,711.00
Hancock County	21	53	910,755.20	17,184.06
Hardin County	2	9	96,175.91	10,686.21
Henderson County	38	119	2,747,747.86	23,090.32
Henry County	14	47	457,623.65	9,736.67
Iroquois County	103	278	5,397,272.59	19,414.65
Jackson County	7	18	940,253.40	52,236.30
Jasper County	2	4	110,273.55	27,568.39
Jefferson County	1	2	67,925.65	33,962.83
Jersey County	74	312	7,293,253.20	23,375.81
Jo Daviess County	25	86	1,444,711.80	16,798.97
Kane County	101	267	5,134,342.47	19,229.75
Kankakee County	92	291	6,257,632.95	21,503.89
Kendall County	19	49	779,927.20	15,916.88
Knox County	2	4	78,932.32	19,733.08
La Salle County	66	190	5,569,753.38	29,314.49
Lake County	209	552	11,500,590.33	20,834.40
Lawrence County	1	4	58,544.87	14,636.22
Lee County	15	37	389,655.94	10,531.24

County Name	Number of Repetitive Loss Properties	Total Losses	Total Insurance Claims Paid ($)	Average Insurance Claim Paid ($)
Livingston County	20	45	412,034.77	9,156.33
Logan County	3	6	20,331.74	3,388.62
Macon County	16	37	540,917.36	14,619.39
Macoupin County	1	3	13,320.55	4,440.18
Madison County	42	128	2,336,306.65	18,252.40
Marshall County	16	43	472,591.61	10,990.50
Mason County	25	87	1,399,562.74	16,086.93
Massac County	2	4	498,677.01	124,669.25
McDonough County	2	5	74,394.77	14,878.95
McHenry County	113	322	4,011,248.72	12,457.29
McLean County	18	45	1,410,344.04	31,340.98
Menard County	3	6	49,592.88	8,265.48
Mercer County	5	12	399,943.46	33,328.62
Monroe County	16	29	1,060,200.87	36,558.65
Montgomery County	2	5	109,325.75	21,865.15
Morgan County	10	22	146,075.09	6,639.78
Moultrie County	1	4	31,337.97	7,834.49
Ogle County	23	62	952,270.63	15,359.20
Peoria County	215	947	12,459,260.54	13,156.56
Perry County	2	5	30,410.29	6,082.06
Piatt County	1	2	121,665.39	60,832.70
Pike County	25	76	1,781,916.19	23,446.27
Pulaski County	2	4	29,907.43	7,476.86
Putnam County	9	30	343,974.84	11,465.83
Randolph County	14	36	644,536.10	17,903.78
Rock Island County	192	678	8,852,482.58	13,056.76
Saline County	1	3	9,914.79	3,304.93
Sangamon County	21	53	1,227,315.81	23,156.90
Schuyler County	7	16	100,636.63	6,289.79
Scott County	2	4	58,658.71	14,664.68
Shelby County	1	3	64,185.26	21,395.09
St. Clair County	70	182	2,269,364.65	12,469.04
Stephenson County	30	74	1,662,414.24	22,465.06
Tazewell County	32	100	1,104,632.54	11,046.33
Union County	5	10	52,009.72	5,200.97
Vermilion County	16	38	1,296,109.74	34,108.15
Wabash County	1	3	5,291.85	1,763.95
Warren County	2	4	49,818.77	12,454.69
Washington County	1	3	89,525.90	29,841.97

County Name	Number of Repetitive Loss Properties	Total Losses	Total Insurance Claims Paid ($)	Average Insurance Claim Paid ($)
Wayne County	2	4	51,117.90	12,779.47
White County	4	8	119,626.41	14,953.30
Whiteside County	22	63	737,052.15	11,699.24
Will County	243	708	11,339,629.84	16,016.43
Williamson County	16	55	716,443.38	13,026.24
Winnebago County	222	564	13,493,398.22	23,924.46
Woodford County	66	238	3,381,893.88	14,209.64

Community Rating System

The Community Rating System (CRS) was implemented in 1990 as a voluntary program for recognizing and encouraging community floodplain management activities that exceed minimum NFIP standards in areas of local mitigation, floodplain management, and outreach activities. Under the CRS, flood insurance premium rates are discounted to reward community actions that meet the three goals of the CRS; reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. Lower-cost flood insurance rates are one of the rewards of participating in the CRS.

The CRS uses a Class rating system that is similar to fire insurance rating to determine flood insurance premium reductions for residents. CRS Classes are rated from 1 to 10, with 1 being the best score a community can receive. Today, most communities enter the program at a CRS Class 9 or Class 8 rating, which entitles residents in SFHAs to a 5% discount on their flood insurance premiums for a Class 9 or a 10% discount for Class 8. As a community engages in additional mitigation activities, its residents become eligible for increased NFIP policy premium discounts. Each CRS Class improvement produces a 5% greater discount on flood insurance premiums for properties in the SFHA.[3]

Table 2.6 shows communities participating in the CRS. The City of Ottawa, located along the Illinois River, has a Class 2 rating, one of the lowest in the nation.

Table 2.6. CRS communities in Illinois. Source: FEMA

Community Name	County	Rating
Adams County*	Adams County	8
Champaign, City of	Champaign County	5
Calumet City, City of	Cook County	5
Country Club Hills, City of	Cook County	7
Des Plaines, City of	Cook County	6
Flossmoor, Village of	Cook County	7
Glenview, Village of	Cook County	6
Lansing, Village of	Cook County	5
Melrose Park, Village of	Cook County	7
Midlothian, Village of	Cook County	7
Mount Prospect, Village of	Cook County	6
Niles, Village of	Cook County	5
Northfield, Village of	Cook County	7

Community Name	County	Rating
River Forest, Village of	Cook County	7
South Holland, Village of	Cook County	5
Westchester, Village of	Cook County	7
Orland Hills, Village of	Cook County	5
Winnetka, Village of	Cook County	6
Prospect Heights, City of	Cook County	6
Palatine, Village of	Cook County	7
Oak Brook, Village of	Cook County, DuPage County	7
Deerfield, Village of	Cook County, Lake County	6
De Kalb, City of	DeKalb County	7
Sycamore, City of	DeKalb County	7
Du Page County*	DuPage County	6
Addison, Village of	DuPage County	6
Downers Grove, Village of	DuPage County	6
Glendale Heights, Village of	DuPage County	7
Glen Ellyn, Village of	DuPage County	7
Lisle, Village of	DuPage County	5
Wheaton, City of	DuPage County	6
Willowbrook, Village of	DuPage County	6
Wood Dale, City of	DuPage County	5
St. Charles, City of	DuPage County, Kane County	5
Watseka, City of	Iroquois County	8
Carbondale, City of	Jackson County	10
Jersey County *	Jersey County	5
Carpentersville, Village of	Kane County	6
Hampshire, Village of	Kane County	10
South Elgin, Village of	Kane County	5
Sugar Grove, Village of	Kane County	6
Hoffmann Estates, Village of	Kane County, Cook County	7
Bartlett, Village of	Kane County, DuPage County, Cook	6
Huntley, Village of	Kane County, McHenry County	7
Montgomery, Village of	Kendall County, Kane County	5
La Salle County *	La Salle County	8
Ottawa, City of	La Salle County	2
North Utica, Village of	La Salle County	10
Lake County *	Lake County	6
Gurnee, Village of	Lake County	5
Highland Park, City of	Lake County	8
Lake Forest, City of	Lake County	7
Libertyville, Village of	Lake County	6
Lincolnshire, Village of	Lake County	5
Riverwoods, Village of	Lake County	6
Buffalo Grove, Village of	Lake County, Cook County	7

Community Name	County	Rating
Northbrook, Village of	Lake County, Cook County	6
Wheeling, Village of	Lake County, Cook County	6
Port Barrington, Village of	Lake County, McHenry County	7
Roxana, Village of	Madison County	9
Metropolis, City of	Massac County	8
Crystal Lake, City of	McHenry County	7
Lake-In-The-Hills, Village of	McHenry County	5
Woodstock, City of	McHenry County	10
McHenry County*	McHenry County	6
Ogle County*	Ogle County	7
Peoria County *	Peoria County	5
Rock Island County*	Rock Island County	7
Moline, City of	Rock Island County	8
Sangamon County *	Sangamon County	7
St. Clair County *	St. Clair County	10
Swansea, Village of	St. Clair County	6
Whiteside County*	Whiteside County	8
Tinley Park, Village of	Will County, Cook County	6
Naperville, City of	Will County, DuPage County	10
Aurora, City of	Will County, Kendall County,	7
Rockford, City of	Winnebago County	7

* unincorporated

[1] Federal Emergency Management Agency. (n.d.). "Flood Insurance". https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book

[2] Illinois Department of Natural Resources. (2021). "State of Illinois Flood Damage Packet". https://www2.illinois.gov/dnr/WaterResources/Documents/IL_Damage_Assess_Packet_March_2020.pdf

[3] *Community Rating System Overview and Participation | FEMA.gov*. Retrieved April 4, 2023, from https://www.fema.gov/fact-sheet/community-rating-system-overview-and-participation

2.5 STATE FACILITIES

The 2004 Illinois Natural Hazard Mitigation Plan established an initial list of state-owned or operated facilities. This data was obtained from the Department of Central Management Services (CMS) to comply with the requirement, regarding State owned or operated facilities, established in Title 44 Code of Federal Regulations part 201.4(c)(2)(ii). At that time, the SHMO thought that additional information would be available from CMS, specifically latitude/longitude of state facilities to enhance this section. In 2004, CMS contracted with Illinois Property Asset Management (IPAM), to compile an all-encompassing list of state owned and operated facilities. IPAM supplied a preliminary list in electronic format that contained 7,345 buildings. Of the buildings on that list, approximately 300 were listed as “Demolished”, leaving 7,095 buildings in the inventory. The inventory ranges from a privy at a state park to the State Capitol building.

The 2013 Illinois Natural Hazard Mitigation Plan incorporated an action item to coordinate with state agencies to develop an all-encompassing database of state-controlled buildings and facilities. Preliminary steps, including funding exploration, began in an effort to make this database available for future updates.

IEMA contacted CMS regarding updated information for state owned or operated facilities for the 2018 Illinois Natural Hazard Mitigation Plan. CMS provided the ‘Annual Real Property Utilization Report’ for 2017 for both ‘Sites and Buildings’. Based on the report, there are 6,360 sites and 8,466 buildings listed as state-owned or operated. These sites and buildings are operated by the following state agencies: Secretary of State, Department of Agriculture, Department of Veterans Affairs, Department of Military Affairs, Department of Human Services, State University System, Attorney General, Treasure’s Office, Comptroller’s Office, Department of Transportation, Department of Corrections, Toll Highway, Department of Natural Resources and Student Assistance Commission.

An updated list of state-controlled facilities was provided by CMS in the 2023 Illinois Hazard Mitigation Plan, but the planned updates have not been funded nor completed. As such, latitude/longitude, square footage, and accurate facility replacement cost are unavailable for the 2023 plan update. It also does not specify whether a facility is state-owned or state-leased.

IEMA does not have the statutory authority or the resources to develop or maintain such a detailed database; however, they do agree that such a database would be an asset to all phases of emergency management and would be a shared resource for all levels of government. The property data managed through CMS, joined with the data collected and maintained from cooperating state agencies, could create a basis for significant future analysis impacting functions such as:

- Preparedness
- Response
- Recovery
- Mitigation
- Economic Development
- Planning Efforts
- Homeland Security and Public Safety
- Land Management

The development and maintenance of this anticipated database is dependent on a number of variables and is included as an objective under 3.1 Goals, Objectives, & Actions.

The following narrative describes how the data for the State of Illinois owned or operated facilities was collected, and the methodology used for analysis of the data, in the plan and subsequently utilized in the 2013, 2018, and 2023 update.

As mentioned above, the list provided by CMS contains 8,466 buildings. A total of 7,095 were evaluated for loss estimations in the 2004 plan. The 2018 update focused on 8,466 essential state-owned and operated facilities that were obtained from the CMS database. The 2023 update will continue to use these facilities as CMS is unable to provide replacement cost values of state-owned structures.

Table 2.7 provides a list of state facilities by county and the total exposure represented as the replacement cost of the structures in the event of a disaster. For the 2018 plan update, replacement cost for the buildings had been based on a conservative estimate of 10% increase in cost from 2013 to 2017. When reviewing the previous plan updates for the 2023 plan, it was determined that the 2013 facility table was identical to the 2004 table with no updates to the facility replacement cost values. In the 2013 plan update it is stated that the 2004 plan determined replacement cost values from an average building replacement cost per square foot value referenced in the "State and Local Mitigation Planning how-to guide: Understanding Your Risks"[1] published by FEMA in 2001. The values in this document are represented in year 2000 U.S. Dollars (USD). Since this appears to be the origin of the replacement cost values for all of the plan updates, and no new valuation data is available, the 2023 plan will use replacement cost values that have been adjusted from the original 2000 USD used in the 2004 plan to 2021 USD by applying a multiplier of 1.575963 calculated using the U.S. Bureau of Labor Statistics Consumer Price Index (CPI).[2]

---

[1] Federal Emergency Management Agency. (August 2021). State and Local Mitigation Planning how-to guide: Understanding Your Risks. Retrieved from https://mitigation.eeri.org/wp-content/uploads/FEMA_386_2.pdf

[2] U.S. Bureau of Labor Statistics. Consumer Price Index. https://www.bls.gov/data/inflation_calculator.htm

Table 2.7. State facilities by county.

County Name	Administrative	Correctional	Education	Emergency	Health	Recreation	Utilities	Transportation	Other	Total Facilities	Total Exposure (2021 USD)
Adams	1	2	0	6	50	7	1	6	0	73	$110,753,916
Alexander	4	16	0	1	0	13	1	7	0	42	$65,731,116
Bond	0	0	0	0	0	0	0	4	0	4	$2,697,834
Boone	0	0	0	0	0	0	0	2	0	2	$1,729,260
Brown	0	28	0	0	0	0	0	2	0	30	$62,111,260
Bureau	1	0	0	0	0	12	1	13	0	27	$9,480,287
Calhoun	0	0	0	0	0	0	0	3	0	3	$1,335,673
Carroll	2	18	0	0	0	52	2	4	0	78	$98,615,261
Cass	2	0	0	2	0	46	0	5	0	55	$10,442,921
Champaign	24	0	0	9	2	0	3	9	0	47	$111,157,807
Christian	1	26	0	0	0	0	1	3	0	31	$31,677,846
Clark	1	0	0	0	0	25	0	7	0	33	$4,816,805
Clay	0	0	0	0	0	0	0	4	0	4	$4,365,241
Clinton	3	43	0	0	0	65	3	5	0	119	$58,449,154
Coles	2	0	28	5	0	75	2	7	0	119	$27,230,352
Cook	19	0	6	13	220	21	17	83	5	384	$1,076,152,830
Crawford	1	25	0	0	0	6	1	6	0	39	$31,909,827
Cumberland	0	0	0	0	0	0	0	5	0	5	$3,100,436
De Witt	1	0	0	0	0	48	2	5	0	56	$6,312,959
DeKalb	1	0	0	1	0	25	0	5	0	32	$11,142,833
Douglas	0	0	0	0	0	0	0	7	0	7	$3,540,344
DuPage	1	13	1	0	0	3	0	23	0	41	$32,123,936
Edgar	1	5	0	4	0	0	0	6	0	16	$33,164,719
Edwards	0	0	0	0	0	0	0	4	0	4	$1,372,437
Effingham	2	0	0	5	0	0	3	21	0	31	$32,306,327
Fayette	3	111	2	1	0	5	6	7	0	135	$79,527,680
Ford	0	0	0	0	0	0	0	4	0	4	$2,448,895

County Name	Administrative	Correctional	Education	Emergency	Health	Recreation	Utilities	Transportation	Other	Total Facilities	Total Exposure (2021 USD)
Franklin	3	0	1	2	0	50	0	10	0	66	$21,715,420
Fulton	2	29	8	0	0	31	4	4	0	78	$94,587,843
Gallatin	1	0	8	0	0	5	0	6	0	20	$8,360,981
Greene	1	3	0	0	0	0	0	6	0	10	$8,046,480
Grundy	2	0	1	0	0	23	0	7	0	33	$9,038,968
Hamilton	3	0	0	0	0	46	0	0	0	49	$3,687,110
Hancock	2	0	1	0	0	33	0	4	0	40	$4,323,331
Hardin	1	9	0	0	0	14	0	0	0	24	$7,048,790
Henderson	0	0	0	0	0	2	0	4	0	6	$2,112,307
Henry	7	9	11	5	0	50	4	24	0	110	$70,229,513
Iroquois	1	0	0	0	0	11	1	13	0	26	$10,193,397
Jackson	5	5	0	5	0	111	1	15	0	142	$55,748,766
Jasper	1	0	0	0	0	48	0	5	0	54	$5,608,871
Jefferson	3	21	0	2	0	26	2	6	0	60	$77,435,939
Jersey	1	11	0	1	0	210	4	6	0	233	$37,810,715
Jo Daviess	2	0	15	0	0	29	3	7	0	56	$9,383,230
Johnson	1	3	87	0	0	0	49	5	9	154	$156,295,660
Kane	4	96	9	4	39	0	8	10	1	171	$445,288,135
Kankakee	0	10	1	2	73	29	16	6	1	138	$231,019,368
Kendall	3	0	0	0	0	24	0	5	0	32	$7,940,423
Knox	2	27	4	5	0	2	0	7	0	47	$83,528,172
La Salle	7	56	2	46	3	118	17	15	0	264	$173,469,689
Lake	2	0	2	2	67	112	5	13	0	203	$87,917,169
Lawrence	0	24	0	1	0	24	2	6	0	57	$78,545,550
Lee	22	58	1	1	29	23	9	18	1	162	$183,713,484
Livingston	2	117	0	6	8	0	5	19	0	157	$213,450,967
Logan	4	86	1	1	26	8	2	5	1	134	$222,500,872
Macon	0	22	0	6	0	17	1	9	0	55	$67,525,196

County Name	Administrative	Correctional	Education	Emergency	Health	Recreation	Utilities	Transportation	Other	Total Facilities	Total Exposure (2021 USD)
Macoupin	0	0	0	0	0	19	1	4	0	24	$3,075,441
Madison	1	0	6	1	23	16	5	40	1	93	$98,719,322
Marion	2	0	1	1	14	46	3	7	0	74	$71,651,993
Marshall	0	0	0	0	0	11	0	3	0	14	$3,134,729
Mason	6	0	0	0	0	31	13	3	0	53	$18,101,902
Massac	4	0	1	0	0	70	0	5	0	80	$10,410,141
McDonough	1	0	0	4	0	7	1	3	0	16	$5,453,183
McHenry	3	0	0	1	0	34	5	10	0	53	$15,842,964
McLean	0	0	6	5	0	52	1	20	0	84	$31,970,937
Menard	0	0	90	0	0	0	1	2	0	93	$15,417,093
Mercer	1	0	0	0	0	3	0	5	0	9	$2,596,594
Monroe	0	0	0	0	0	0	0	6	0	6	$2,784,027
Montgomery	2	47	0	4	0	13	4	8	0	78	$66,015,065
Morgan	1	29	0	0	47	0	4	5	1	87	$205,109,422
Moultrie	10	0	0	1	0	7	0	4	0	22	$11,631,435
Ogle	1	0	0	0	0	87	1	11	0	100	$12,489,965
Peoria	5	33	8	3	10	123	4	15	0	201	$122,585,953
Perry	0	28	0	3	0	88	1	4	0	124	$139,420,940
Piatt	0	0	2	0	0	0	0	4	0	6	$2,851,774
Pike	1	6	0	4	0	2	0	7	0	20	$17,194,862
Pope	0	0	0	0	0	0	0	0	0	0	$0
Pulaski	0	0	0	2	0	0	2	0	0	4	$2,013,718
Putnam	0	0	0	0	0	0	0	0	0	0	$0
Randolph	3	116	44	1	26	64	2	10	0	266	$204,779,365
Richland	0	0	0	0	0	0	0	4	0	4	$1,209,331
Rock Island	0	28	12	6	0	0	2	11	0	59	$88,643,201
Saline	0	16	0	0	0	0	0	4	0	20	$30,647,705
Sangamon	30	0	21	68	8	203	4	52	17	403	$1,038,901,880

County Name	Administrative	Correctional	Education	Emergency	Health	Recreation	Utilities	Transportation	Other	Total Facilities	Total Exposure (2021 USD)
Schuyler	0	10	0	0	0	0	0	2	0	12	$30,753,595
Scott	0	0	0	0	0	0	0	4	0	4	$2,070,286
Shelby	0	0	1	0	0	89	2	3	0	95	$8,097,121
St. Clair	1	15	4	5	0	23	0	21	0	69	$60,380,535
Stark	1	0	0	0	0	7	0	7	0	15	$4,055,602
Stephenson	1	0	0	1	0	24	2	5	0	33	$8,838,050
Tazewell	3	0	0	1	0	8	0	14	0	26	$22,400,828
Union	3	0	0	0	43	48	2	13	1	110	$134,554,836
Vermilion	1	31	0	2	0	84	2	9	0	129	$86,275,175
Wabash	0	0	0	0	0	11	0	0	0	11	$968,164
Warren	1	0	0	2	0	0	0	4	0	7	$14,441,286
Washington	1	0	0	0	0	36	0	5	0	42	$3,909,523
Wayne	1	0	0	0	0	18	0	4	0	23	$3,913,696
White	1	18	0	6	0	0	0	6	0	31	$101,840,800
Whiteside	2	0	3	13	0	48	2	11	0	79	$26,685,945
Will	7	166	0	8	4	49	17	19	0	270	$412,002,055
Williamson	1	0	0	3	0	0	0	9	0	13	$17,863,502
Winnebago	4	0	0	6	12	6	2	5	0	35	$74,634,408
Woodford	0	0	2	4	0	12	0	7	0	25	$7,132,313
Totals	**251**	**1,416**	**390**	**291**	**704**	**2,788**	**259**	**887**	**38**	**7,024**	**$7,533,694,967**

Vulnerability of Essential Facilities and Utilities

State owned and operated facilities are important centers that link the government of the State of Illinois to the public it serves. These facilities can range from the Illinois State Capitol building in Springfield to one of the many Secretary of State's Driver Services Facilities throughout the state. These facilities are hubs for everything from administrative activities to public safety functions and every conceivable role in between. Should these facilities be rendered inoperable by a natural hazard, the public will lose a vital link between them and their government and the services the government provides. This analysis includes 10,037 local essential facilities and 1,875 utility facilities.

Due to Illinois' effective use of mutual aid, a number of the State's essential facilities are not state owned or operated. However, these facilities are just as vital to the State's operation as a state-owned facility. Locally and privately owned essential facilities were incorporated into the flood hazard vulnerability identification. It is anticipated that these initial facilities will be the foundation of building an all-encompassing database with latitude/longitude and building cost to create a more accurate loss estimate in future updates. The facilities found in this analysis remained consistent with the types of facilities agreed upon between FEMA and IEMA in the 2013 plan and maintained in the 2018 plan. For the 2023 update, this list was initially started with the Hazus 6.0[1] essential facility inventory which is derived from the U.S. Department of Homeland Security (DHS) Homeland Infrastructure Foundation-Level Data[2] (HIFLD) database and represented in 2022 USD. These values were then adjusted to 2021 USD values using the CPI to remain consistent with other values in this section.

Essential Facility types included are:

- Emergency Operation Centers (EOCs)
- Police Facilities
- Fire Facilities
- Schools
- Medical Centers

This data was then supplemented with facility data provided by the Illinois State Board of Education (ISBE) which provided locations for early childhood centers and non-public special education programs.

Table 2.8 below lists the essential facility counts and total exposure broken down by county. Total exposure represents the estimated replacement cost of the building and contents of each facility. It is important to note that in the Hazus database that was the source for most essential facilities, state universities are represented as one record per university. The database supplied by CMS shows that there are approximately 1,850 state university structures. The replacement cost value for all of these structures were all rolled into one record per university. The CMS database was delivered in an Excel format with site addresses being the only source for geocoding the structures to give them a spatial GIS component. Since geocoding addresses can be inaccurate, and manually correcting the location of all 1,850 structures would be prohibitively time consuming, it was determined to leave the structures as one record per state university as the replacement cost can still be represented in Table 2.8 below.

Table 2.8. Essential facility exposure values.

County	EOC	Fire Facilities	Police Facilities	School Facilities	Medical Facilities	Total Facilities	Total Exposure (2021 USD)
Adams	1	16	5	44	2	68	$1,820,896,367
Alexander	0	5	3	6	0	14	$67,239,302
Bond	1	8	5	12	1	27	$641,724,161
Boone	1	7	2	22	1	33	$881,436,541
Brown	1	3	2	4	0	10	$65,523,844
Bureau	1	21	13	24	2	61	$684,646,258
Calhoun	1	5	2	7	0	15	$136,945,578
Carroll	1	7	8	11	0	27	$208,896,324
Cass	1	5	5	10	0	21	$179,780,163
Champaign	1	40	15	100	3	159	$12,778,009,184
Christian	1	9	9	29	2	50	$683,622,397
Clark	2	6	5	10	0	23	$260,510,115
Clay	1	4	3	14	1	23	$264,507,410
Clinton	1	14	9	24	1	49	$857,530,747
Coles	1	14	6	24	1	46	$2,411,756,244
Cook	15	328	175	2,537	82	3,137	$155,466,294,516
Crawford	1	7	5	17	1	31	$457,590,880
Cumberland	1	3	4	7	0	15	$191,898,675
De Witt	1	6	3	7	1	18	$275,563,761
DeKalb	2	17	13	55	3	90	$5,207,082,852
Douglas	1	9	6	17	0	33	$307,975,386
DuPage	2	69	36	436	8	551	$27,304,668,761
Edgar	1	10	5	19	1	36	$398,878,055
Edwards	1	4	3	3	0	11	$147,367,758
Effingham	2	10	6	24	2	44	$916,696,082
Fayette	1	6	7	18	1	33	$506,738,381
Ford	1	8	4	9	1	23	$325,508,737
Franklin	1	16	14	32	1	64	$586,110,164
Fulton	1	18	11	28	1	59	$741,234,001
Gallatin	1	6	4	4	0	15	$84,110,741
Greene	1	6	5	8	1	21	$756,788,721
Grundy	1	11	6	29	1	48	$1,070,209,617
Hamilton	0	2	2	4	1	9	$130,853,720
Hancock	1	13	8	26	1	43	$470,116,660
Hardin	1	3	3	4	1	11	$181,258,334
Henderson	2	8	2	4	0	16	$150,639,157
Henry	1	17	11	31	2	62	$817,634,514
Iroquois	1	22	13	28	1	65	$644,649,846

County	EOC	Fire Facilities	Police Facilities	School Facilities	Medical Facilities	Total Facilities	Total Exposure (2021 USD)
Jackson	2	17	12	41	2	74	$3,115,306,226
Jasper	1	5	2	10	0	18	$176,238,233
Jefferson	1	12	4	34	3	54	$899,055,808
Jersey	1	4	4	12	1	22	$478,026,356
Jo Daviess	1	14	8	22	1	46	$450,063,278
Johnson	1	8	4	9	0	22	$142,069,214
Kane	4	46	27	235	7	319	$13,302,437,257
Kankakee	1	22	12	60	3	98	$3,337,148,796
Kendall	1	13	4	59	0	77	$2,079,631,519
Knox	1	19	10	28	3	61	$1,442,224,711
Lake	1	66	43	310	9	429	$15,385,637,269
LaSalle	1	29	20	60	5	115	$2,250,300,961
Lawrence	1	8	5	8	1	23	$298,433,480
Lee	1	12	6	22	1	42	$736,350,545
Livingston	1	14	5	29	1	50	$587,339,559
Logan	1	13	5	19	1	39	$810,497,592
Macon	1	20	6	58	3	88	$2,491,943,108
Macoupin	1	18	16	32	2	69	$877,233,102
Madison	1	47	33	134	5	220	$8,048,602,214
Marion	1	9	12	33	2	57	$795,193,281
Marshall	1	7	5	9	0	22	$233,727,683
Mason	1	10	9	11	1	32	$382,478,335
Massac	1	5	4	10	1	21	$276,787,654
McDonough	1	11	6	27	1	46	$1,920,253,345
McHenry	1	32	26	114	5	178	$5,904,098,852
McLean	1	34	17	85	2	139	$6,637,554,512
Menard	1	6	4	7	0	18	$219,985,451
Mercer	1	12	8	9	1	31	$295,119,925
Monroe	1	5	4	19	0	29	$360,208,012
Montgomery	1	13	12	26	2	54	$656,276,380
Morgan	2	12	9	38	1	62	$963,143,232
Moultrie	1	6	4	9	0	20	$210,870,403
Ogle	1	15	9	30	1	56	$645,732,817
Peoria	2	41	14	140	8	205	$6,804,974,575
Perry	1	7	5	15	3	31	$548,175,618
Piatt	2	10	5	17	1	35	$332,047,226
Pike	1	11	5	14	1	32	$302,220,830
Pope	1	5	2	2	0	10	$123,208,022
Pulaski	1	7	8	7	0	23	$202,164,359

County	EOC	Fire Facilities	Police Facilities	School Facilities	Medical Facilities	Total Facilities	Total Exposure (2021 USD)
Putnam	0	7	3	4	0	14	$158,870,131
Randolph	1	12	13	24	3	53	$909,987,626
Richland	1	5	2	11	1	20	$513,007,536
Rock Island	1	27	21	85	4	138	$3,842,148,722
Saline	1	5	5	18	2	31	$640,690,164
Sangamon	2	32	31	118	5	188	$6,628,089,109
Schuyler	1	5	2	5	1	14	$252,663,683
Scott	1	3	3	5	0	12	$74,829,600
Shelby	1	10	8	19	1	39	$399,949,949
St. Clair	1	54	29	137	6	227	$6,222,558,330
Stark	1	5	4	5	0	15	$86,561,140
Stephenson	1	17	7	39	2	66	$1,006,533,421
Tazewell	3	28	18	70	2	121	$2,512,578,465
Union	1	6	5	16	1	29	$292,728,112
Vermilion	1	26	19	50	3	99	$2,280,165,497
Wabash	1	4	2	8	1	16	$375,452,994
Warren	1	8	2	15	1	27	$454,611,339
Washington	1	10	5	17	1	34	$407,886,598
Wayne	1	6	3	17	1	28	$408,191,651
White	1	6	7	17	0	31	$266,002,865
Whiteside	1	11	12	58	2	84	$897,234,526
Will	2	77	28	290	6	403	$15,728,720,862
Williamson	1	21	13	33	3	71	$1,909,380,847
Winnebago	1	34	14	135	8	192	$7,279,809,529
Woodford	1	13	9	33	1	57	$714,851,795
Total	**129**	**1,840**	**1,097**	**6,714**	**257**	**10,037**	**$358,069,158,189**

Of the 10,037 facilities shown in Hazus, 148 were identified as state-owned. These mostly consist of state police and state-owned universities and colleges. As stated above, each state-owned university is represented by only one record in this table; a more accurate estimate of state-owned facilities would be 1,987.

The Hazus database was also queried to provide data on facilities related to utilities. The following facility types were identified:

- Communications
- Electrical Power
- Natural Gas
- Oil Refineries
- Potable Water
- Waste Water

Table 2.9 lists utility facilities by county. As in Table 2.8 above, the total exposure value represents the combination of estimated replacement cost of the structures and the contents located within. There are 1,875 utility facilities in the state.

Table 2.9. Utility facility exposure values.

County	Communications	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Adams	12	0	0	0	0	10	22	$3,511,778,847
Alexander	3	0	0	0	0	5	8	$1,755,126,081
Bond	3	0	0	0	1	7	11	$2,541,602,246
Boone	0	0	1	0	0	4	5	$1,451,855,188
Brown	0	0	0	0	1	3	4	$1,137,348,713
Bureau	4	5	1	0	6	17	33	$7,855,606,123
Calhoun	0	0	0	0	3	1	4	$605,065,759
Carroll	1	0	0	0	0	7	8	$2,456,362,280
Cass	2	0	0	0	0	3	5	$1,053,126,538
Champaign	21	3	0	0	11	11	46	$5,077,567,720
Christian	4	3	1	0	8	10	26	$21,987,325,059
Clark	3	2	0	0	3	3	11	$1,369,214,234
Clay	1	4	0	0	1	4	10	$2,721,058,403
Clinton	1	2	2	0	2	16	23	$6,189,362,208
Coles	8	0	0	0	5	4	17	$1,829,181,123
Cook	81	24	0	9	9	14	137	$15,242,075,910
Crawford	2	0	0	2	0	5	9	$1,755,380,528
Cumberland	2	0	0	0	1	4	7	$1,488,730,156
De Witt	2	2	0	0	4	4	12	$1,796,510,663
DeKalb	5	1	1	0	1	11	19	$5,123,052,714
Douglas	0	1	3	0	3	5	12	$2,439,860,410
DuPage	13	7	0	1	0	29	50	$14,580,382,023
Edgar	2	0	1	0	7	2	12	$1,373,933,917
Edwards	1	0	0	0	1	4	6	$1,488,475,708
Effingham	4	1	0	0	3	9	17	$3,432,965,633
Fayette	4	1	1	0	2	6	14	$2,542,374,231
Ford	2	3	0	0	3	2	10	$2,775,405,122
Franklin	2	0	0	0	1	12	15	$4,295,710,536
Fulton	2	1	0	0	4	15	22	$10,011,065,364
Gallatin	0	0	0	0	3	4	7	$1,657,683,401
Greene	0	0	0	1	4	5	10	$2,093,541,467
Grundy	5	2	1	0	0	7	15	$8,044,754,076
Hamilton	3	1	0	0	0	3	7	$1,078,810,943
Hancock	6	0	0	0	4	9	19	$3,498,303,895
Hardin	0	0	0	0	0	4	4	$1,403,490,190

County	Communications	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Henderson	0	0	0	0	1	3	4	$1,137,348,713
Henry	10	4	2	0	1	12	29	$6,191,367,485
Iroquois	3	1	0	0	6	7	17	$3,468,359,532
Jackson	8	2	0	0	2	10	22	$5,393,650,922
Jasper	1	1	0	0	1	3	6	$7,309,564,725
Jefferson	7	0	0	0	0	8	15	$2,808,761,514
Jersey	2	0	0	0	0	3	5	$1,053,126,538
Jo Daviess	2	0	1	0	0	9	12	$3,232,996,135
Johnson	2	0	0	0	3	5	10	$2,009,064,844
Kane	6	5	0	0	6	17	34	$7,723,158,185
Kankakee	6	2	2	1	1	9	21	$4,372,420,293
Kendall	4	1	1	0	1	4	11	$4,965,117,580
Knox	6	0	0	0	0	13	19	$4,562,869,804
Lake	6	7	0	0	2	18	33	$16,183,954,608
LaSalle	11	7	0	1	7	17	43	$8,218,481,723
Lawrence	2	0	0	5	2	4	13	$1,574,733,464
Lee	4	9	0	0	1	5	19	$7,721,460,194
Livingston	3	5	0	2	1	6	17	$4,466,155,807
Logan	3	2	0	0	7	3	15	$10,442,639,883
Macon	11	4	0	0	5	7	27	$7,822,169,270
Macoupin	4	0	0	0	4	18	26	$6,655,647,927
Madison	14	4	2	5	8	17	50	$8,939,965,217
Marion	6	1	0	0	2	9	18	$4,029,200,683
Marshall	1	1	0	0	4	5	11	$2,595,305,373
Mason	1	1	0	0	2	7	11	$7,504,213,218
Massac	4	2	1	0	0	3	10	$13,103,076,223
McDonough	9	1	0	0	4	10	24	$3,879,792,364
McHenry	4	3	1	0	0	20	28	$7,697,170,460
McLean	9	6	0	0	7	10	32	$6,270,817,620
Menard	1	0	0	0	3	3	7	$1,307,065,301
Mercer	1	0	0	0	1	8	10	$2,891,965,898
Monroe	0	1	0	0	1	8	10	$2,975,188,071
Montgomery	3	1	0	0	4	13	21	$14,951,711,268
Morgan	5	0	0	0	1	6	12	$2,191,238,594
Moultrie	1	1	0	0	2	6	10	$2,345,160,699
Ogle	5	5	0	0	1	9	20	$3,489,114,621
Peoria	4	3	0	1	4	8	20	$9,709,371,658
Perry	3	1	0	0	0	7	11	$3,442,561,519
Piatt	3	1	1	0	2	3	10	$3,297,587,054

County	Communications	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Pike	3	1	1	0	2	11	18	$4,350,469,139
Pope	1	0	0	0	0	3	4	$1,052,872,090
Pulaski	0	0	0	0	1	8	9	$2,891,711,450
Putnam	2	1	0	0	0	3	6	$4,115,115,255
Randolph	1	2	0	0	4	13	20	$23,876,730,115
Richland	5	0	0	0	0	5	10	$1,755,634,976
Rock Island	4	3	0	1	3	12	23	$6,281,430,380
Saline	2	0	0	0	0	6	8	$2,105,744,180
Sangamon	17	6	1	1	7	12	44	$11,931,918,637
Schuyler	2	0	0	0	2	1	5	$520,843,584
Scott	0	1	0	0	0	1	2	$799,621,046
Shelby	4	2	0	0	1	9	16	$6,317,658,707
St. Clair	8	1	0	1	6	24	40	$8,975,014,373
Stark	0	0	0	0	0	3	3	$1,052,617,643
Stephenson	3	2	0	0	0	10	15	$3,858,640,245
Tazewell	20	2	0	1	1	16	40	$23,890,321,631
Union	1	0	0	0	2	4	7	$1,573,206,778
Vermilion	8	3	1	0	10	13	35	$7,045,736,636
Wabash	3	0	0	0	1	5	9	$1,839,857,151
Warren	2	0	0	0	0	4	6	$1,403,999,085
Washington	1	1	0	0	2	11	15	$21,683,483,906
Wayne	3	1	1	0	3	4	12	$1,973,796,633
White	2	1	1	1	1	7	13	$2,654,846,813
Whiteside	3	2	1	0	1	9	16	$3,596,789,901
Will	14	13	4	4	0	30	65	$31,781,752,334
Williamson	12	1	0	0	3	15	31	$9,738,941,501
Winnebago	20	6	0	2	0	7	35	$4,785,326,675
Woodford	3	1	0	0	4	10	18	$4,517,431,641
Total	**518**	**195**	**33**	**39**	**242**	**848**	**1,875**	**$561,969,154,901**

All state owned/operated facilities are potentially vulnerable to damage and impacts caused by the hazards found below. These hazards have the potential to affect facilities statewide. The effect of these hazards on the facilities may not be location specific, but their location does have an impact on the frequency that these facilities may be exposed to these hazards. Loss estimates by each hazard can be found within the individual hazard profile in **Section 2.7 Hazard Profiles**.

Floods: Floods can inundate the facility rendering it inoperable. A GIS analysis was performed to identify the essential facilities and utilities located within 1% annual chance flood depth grids provided by First Street Foundation (FSF). These FSF flood depth grids are not the same as FEMA regulatory floodplain extents and as such are non-regulatory products. In most cases the 1% annual chance flood extent in the FSF depth grids are more expansive than what is represented on FEMA

Flood Insurance Rate Maps (FIRMs). This analysis included the 10,037 local essential facilities and 1,875 utility facilities shown in Table 2.8 and Table 2.9 above.

Of the essential facilities, 324 were identified to be within the FSF 1% annual chance depth grid, five of which are identified as state-owned. The facility type is as follows:

- EOCs: 7
- Police Facilities: 37
- Fire Facilities: 65
- Schools: 191
- Medical Care: 24
- Total: 324

This represents a total estimated exposure of $18.88 billion spread across 48 of the 102 counties in Illinois.

Table 2.10 shows these facilities aggregated to the county level.

Table 2.10. Essential facilities within the FSF 1% annual chance floodplain.

County	EOC	Fire Facilities	Police Facilities	School Facilities	Medical Facilities	Total Facilities	Total Exposure (2021 USD)
Adams	0	0	0	1	0	1	$4,610,133
Alexander	0	1	0	3	0	4	$20,545,346
Bureau	0	1	0	1	0	2	$11,391,626
Calhoun	0	0	0	1	0	1	$12,997,168
Carroll	0	1	1	0	0	2	$10,581,080
Champaign	0	0	0	2	0	2	$6,831,814
Clinton	0	0	1	0	0	1	$7,165,636
Coles	0	0	1	0	0	1	$7,158,461
Cook	2	23	5	100	13	143	$12,495,503,138
DeKalb	0	0	0	2	0	2	$25,514,750
Douglas	1	1	0	2	0	4	$31,497,924
DuPage	0	1	1	8	0	10	$69,745,323
Greene	0	1	0	0	0	1	$2,725,295
Grundy	0	0	0	1	0	1	$2,174,001
Hancock	1	1	0	0	0	2	$8,218,100
Henderson	0	1	0	0	0	1	$2,670,783
Iroquois	0	0	0	1	0	1	$1,617,077
Jackson	0	0	2	0	0	2	$38,069,679
Jersey	0	0	2	0	0	2	$14,345,621
Jo Daviess	0	2	2	0	0	4	$37,291,184
Kane	0	5	5	3	1	14	$741,120,325
Kankakee	0	3	1	3	1	8	$899,223,757
Kendall	0	0	0	1	0	1	$24,359,783
Lake	0	0	1	9	0	10	$156,918,119
LaSalle	0	3	1	3	1	8	$253,232,673

County	EOC	Fire Facilities	Police Facilities	School Facilities	Medical Facilities	Total Facilities	Total Exposure (2021 USD)
Lee	0	1	0	3	0	4	$61,460,791
Livingston	0	1	0	0	0	1	$2,995,101
Macon	0	0	0	1	0	1	$13,215,745
Madison	0	0	1	1	0	2	$30,322,936
Marion	0	1	0	0	0	1	$2,670,783
Marshall	0	1	1	0	0	2	$10,165,344
Mason	0	0	0	3	0	3	$60,043,321
McHenry	0	0	1	1	0	2	$21,924,228
Moultrie	0	0	0	1	0	1	$1,217,608
Ogle	1	0	0	1	0	2	$14,220,149
Peoria	0	0	1	1	2	4	$1,227,177,860
Piatt	1	0	0	0	0	1	$5,738,249
Pike	0	1	0	0	0	1	$2,643,528
Randolph	0	0	1	0	0	1	$7,165,636
Rock Island	0	4	4	2	2	12	$607,832,792
St. Clair	0	1	0	9	2	12	$736,932,135
Stephenson	0	0	0	3	0	3	$9,650,801
Tazewell	0	0	1	0	0	1	$19,758,663
Union	0	2	0	3	0	5	$18,975,313
Wayne	0	1	0	0	0	1	$2,670,783
White	0	1	1	0	0	2	$9,093,776
Will	1	4	2	17	1	25	$869,244,486
Winnebago	0	3	1	4	1	9	$259,575,366
Total	**7**	**65**	**37**	**191**	**24**	**324**	**$18,880,204,190**

The five state owned facilities that are shown to be at risk are all university or college structures (Table 2.11):

Table 2.11. State owned essential facilities within the FSF 1% annual chance floodplain.

Facility Name	Address	City	County	Total Exposure (2021 USD)
Joliet Junior College - City Center Campus	214 N. Ottawa St	Joliet	Will	$132,982,874
Kankakee Community College	100 College Dr	Kankakee	Kankakee	$220,895,251
Triton College - Robert M. Collins Center	2000 5th Ave	River Grove	Cook	$882,095,326
University of Illinois at Chicago - Medical Education Building	808 S. Wood St	Chicago	Cook	$271,157,122
Western Illinois University - Quad Cities	3300 River Dr	Moline	Rock Island	$205,510,841
Total Exposure: $1,712,641,414				

For utilities, out of the 1,875 known facilities, 474 were identified as being within the FSF 1% annual chance flood depth grids. The at-risk facilities are as follows:

- Communications: 71
- Electrical Power: 14
- Natural Gas: 2
- Oil Refineries: 4
- Potable Water: 66
- Waste Water: 317
- Total: 474

This represents a total exposure of $131.18 billion spread across 98 of the 102 counties in Illinois. Table 2.12 shows these facilities aggregated to the county level.

Table 2.12. Utility structures within the 1% annual chance floodplain.

County	Communication	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Adams	2	0	0	0	0	5	7	$1,754,871,633
Alexander	3	0	0	0	0	3	6	$1,053,380,985
Bond	1	0	0	0	1	3	5	$1,137,603,161
Boone	0	0	0	0	0	2	2	$701,745,095
Brown	0	0	0	0	0	1	1	$350,872,548
Bureau	0	0	0	0	4	6	10	$2,444,159,566
Calhoun	0	0	0	0	1	0	1	$84,731,070
Carroll	0	0	0	0	0	1	1	$350,872,548
Champaign	8	0	0	0	5	5	18	$2,180,053,671
Christian	1	0	0	0	0	1	2	$351,126,995
Clark	0	0	0	0	1	2	3	$786,476,165
Clay	0	0	0	0	1	2	3	$786,476,165
Clinton	0	0	0	0	0	5	5	$1,754,362,738
Coles	0	0	0	0	0	2	2	$701,745,095
Cook	8	1	0	3	3	3	18	$1,328,804,805
Crawford	2	0	0	0	0	4	6	$1,403,999,085
Cumberland	0	0	0	0	0	1	1	$350,872,548
De Witt	0	0	0	0	0	2	2	$701,745,095
DeKalb	2	0	0	0	0	4	6	$1,403,999,085
Douglas	0	0	0	0	0	3	3	$1,052,617,643
DuPage	0	0	0	0	0	15	15	$5,263,088,213
Edgar	0	0	0	0	2	0	2	$169,462,141
Effingham	0	0	0	0	0	3	3	$1,052,617,643
Fayette	2	0	0	0	0	1	3	$351,381,443
Ford	0	0	0	0	1	1	2	$435,603,618
Franklin	1	0	0	0	0	3	4	$1,052,872,090
Fulton	0	0	0	0	1	5	6	$1,839,093,808
Gallatin	0	0	0	0	0	2	2	$701,745,095
Greene	0	0	0	0	0	1	1	$350,872,548

County	Communication	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Grundy	2	0	0	0	0	2	4	$702,253,990
Hancock	0	0	0	0	2	4	6	$1,572,952,331
Hardin	0	0	0	0	0	3	3	$1,052,617,643
Henderson	0	0	0	0	1	0	1	$84,731,070
Henry	3	0	0	0	0	3	6	$1,053,380,985
Iroquois	0	0	0	0	2	5	7	$1,923,824,878
Jackson	0	1	0	0	0	3	4	$2,715,062,218
Jasper	0	0	0	0	0	2	2	$701,745,095
Jefferson	1	0	0	0	0	3	4	$1,052,872,090
Jo Daviess	1	0	0	0	0	4	5	$1,403,744,638
Johnson	0	0	0	0	1	2	3	$786,476,165
Kane	2	0	0	0	0	9	11	$3,158,361,823
Kankakee	1	0	0	0	1	8	10	$2,891,965,898
Kendall	2	0	0	0	1	0	3	$85,239,966
Knox	0	0	0	0	0	4	4	$1,403,490,190
Lake	0	0	0	0	0	3	3	$1,052,617,643
LaSalle	2	1	0	0	5	9	17	$3,723,580,413
Lawrence	0	0	0	0	2	2	4	$871,207,236
Lee	0	3	0	0	0	1	4	$1,467,155,401
Livingston	1	0	0	0	1	3	5	$1,137,603,161
Logan	0	0	0	0	1	1	2	$435,603,618
Macon	2	0	0	0	0	3	5	$1,053,126,538
Macoupin	2	0	0	0	1	6	9	$2,190,475,251
Madison	2	0	1	0	3	4	10	$1,690,402,894
Marion	0	0	0	0	1	3	4	$1,137,348,713
Marshall	0	0	0	0	3	2	5	$955,938,306
Mason	0	0	0	0	0	1	1	$350,872,548
Massac	1	0	0	0	0	1	2	$351,126,995
McDonough	0	0	0	0	3	3	6	$1,306,810,854
McHenry	1	0	0	0	0	6	7	$2,105,489,733
McLean	2	0	0	0	1	3	6	$1,137,857,608
Menard	0	0	0	0	1	1	2	$435,603,618
Mercer	0	0	0	0	0	6	6	$2,105,235,285
Monroe	0	0	0	0	0	2	2	$701,745,095
Montgomery	1	0	0	0	2	6	9	$2,274,951,873
Morgan	0	0	0	0	0	2	2	$701,745,095
Moultrie	0	0	0	0	1	3	4	$1,137,348,713
Ogle	2	1	0	0	1	4	8	$1,601,890,503
Peoria	1	0	0	0	0	4	5	$1,403,744,638
Perry	0	0	0	0	0	3	3	$1,052,617,643
Piatt	1	0	1	0	2	2	6	$1,171,962,993

County	Communication	Electrical Power	Natural Gas	Oil Refinery	Potable Water	Waste Water	Total Facilities	Total Exposure (2021 USD)
Pike	0	0	0	0	0	5	5	$1,754,362,738
Pope	0	0	0	0	0	1	1	$350,872,548
Pulaski	0	0	0	0	0	2	2	$701,745,095
Putnam	0	0	0	0	0	1	1	$350,872,548
Randolph	0	0	0	0	2	3	5	$1,222,079,783
Richland	0	0	0	0	0	1	1	$350,872,548
Rock Island	0	1	0	0	2	5	8	$2,119,925,374
Saline	0	0	0	0	0	2	2	$701,745,095
Sangamon	0	2	0	0	0	5	7	$8,111,938,368
Schuyler	0	0	0	0	1	0	1	$84,731,070
Scott	0	0	0	0	0	1	1	$350,872,548
Shelby	0	0	0	0	1	2	3	$786,476,165
St. Clair	1	0	0	0	0	8	9	$2,807,234,828
Stark	0	0	0	0	0	2	2	$701,745,095
Stephenson	0	0	0	0	0	5	5	$1,754,362,738
Tazewell	0	0	0	0	1	7	8	$2,540,838,903
Union	0	0	0	0	0	4	4	$1,403,490,190
Vermilion	3	0	0	0	2	5	10	$1,924,588,221
Wabash	0	0	0	0	0	1	1	$350,872,548
Warren	1	0	0	0	0	2	3	$701,999,543
Washington	0	0	0	0	0	2	2	$701,745,095
Wayne	0	0	0	0	0	3	3	$1,052,617,643
White	0	0	0	0	0	3	3	$1,052,617,643
Whiteside	0	0	0	0	0	2	2	$701,745,095
Will	5	3	0	1	0	9	18	$7,541,257,267
Williamson	0	0	0	0	0	4	4	$1,403,490,190
Winnebago	1	1	0	0	0	4	6	$1,424,700,259
Woodford	0	0	0	0	1	6	7	$2,189,966,355
Total	**71**	**14**	**2**	**4**	**66**	**317**	**474**	**$131,179,799,127**

The 2004 Illinois Hazard Mitigation Plan created an action item which became Executive Order Number 5 (2006) - Construction Activities in Special Flood Hazard Areas.[3] All state agencies engaged in any development within a SFHA are required to undertake such development in accordance with the following:

All development shall comply with all requirements of the National Flood Insurance Program (44 C.F.R. 59-80). It must also comply with all requirements of Illinois Administrative Code Title 17, Part 3700, Construction in Floodways of Rivers, Lakes, and Streams, or Illinois Administrative Code Title 17, Part 3708, Floodway Construction in Northeastern Illinois, whichever is applicable.

The following additional requirements apply where applicable:

1. All new critical facilities shall be located outside of the floodplain. Where this is not practicable, critical facilities shall be developed with the lowest floor elevation equal to

or greater than the 500-year frequency flood elevation or structurally dry floodproofed to at least the 500-year frequency flood elevation.

2. All new buildings shall be developed with the lowest floor elevation equal to or greater than the Flood Protection Elevation or structurally dry floodproofed to at least the Flood Protection Elevation.
3. Modifications, additions, repairs or replacement of existing structures may be allowed so long as the new development does not increase the floor area of the existing structure by more than twenty (20) percent or increase the market value of the structure by fifty (50) percent and does not obstruct flood flows.
4. Floodproofing activities are permitted and encouraged but must comply with the requirements noted above.

---

[1] Federal Emergency Management Agency. (November 2022). Hazus 6.0. https://www.fema.gov/flood-maps/products-tools/hazus

[2] U.S. Department of Homeland Security. (2022). Homeland Infrastructure Foundation-Level Data. https://hifld-geoplatform.opendata.arcgis.com/

[3] State of Illinois Executive Department. (2006). Executive Order Number 06-05. State of Illinois. https://www.illinois.gov/government/executive-orders/executive-order.executive-order-number-5.2006.html

2.6 LAND DEVELOPMENT CHANGE

In 2021, cultivated crops covered 62.4% of the state. The next largest category was deciduous forest with 12.7%, followed by hay/pasture with 7.0%. Cultivated crops, deciduous forest, and hay/pasture were also the top three land cover types in 2013, with slightly different percentages.

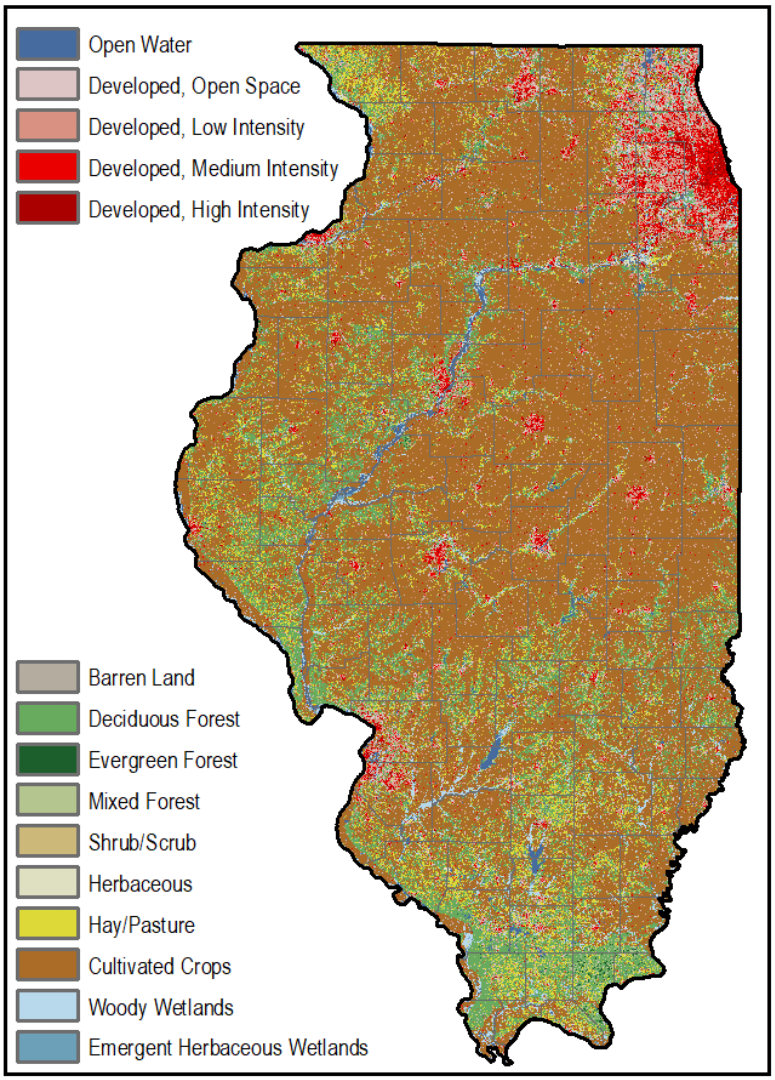


Figure 2.2. Land cover, 2021. Source: NLCD

There are some notable land cover shifts between 2013 and 2021 (Figure 2.3, Figure 2.4). The largest changes include a loss of 2.0% in mixed forest, a loss of 0.7% in developed open space, a gain of 1.4% in deciduous forest, and a gain of 0.7% in developed medium intensity. The developed low and high intensity subcategories both gained about 0.3% as well, indicating that development of all intensity levels has increased. Also notable was the loss of mixed forest and gain of deciduous forest, possibly a result of warmer spring temperatures that favor deciduous forests.[1]

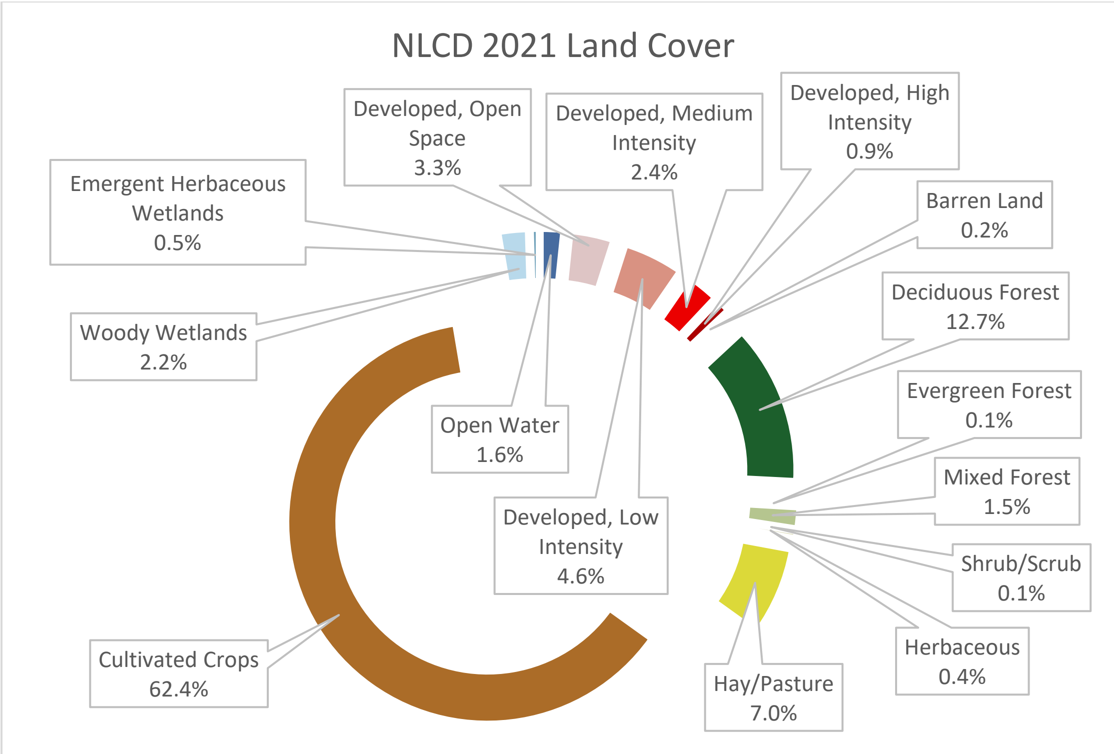


Figure 2.3. 2021 NLCD Land Cover with percentages

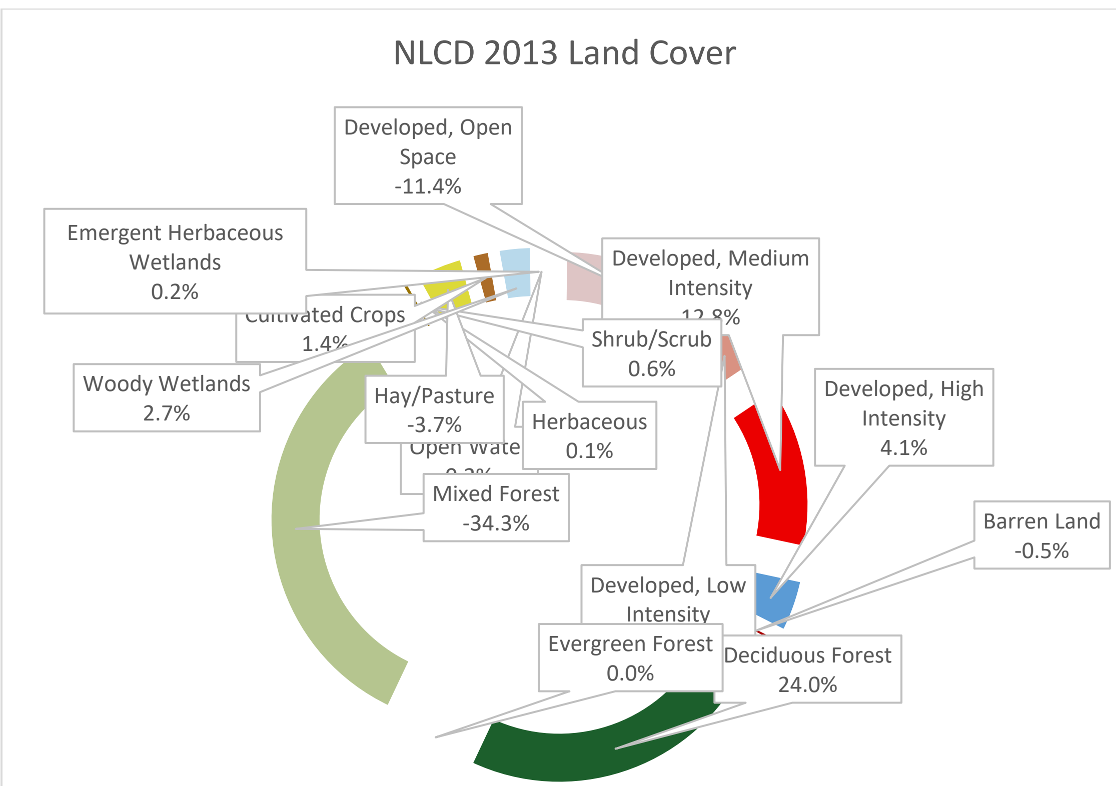


Figure 2.4. 2013 NLCD Land Cover with percentages

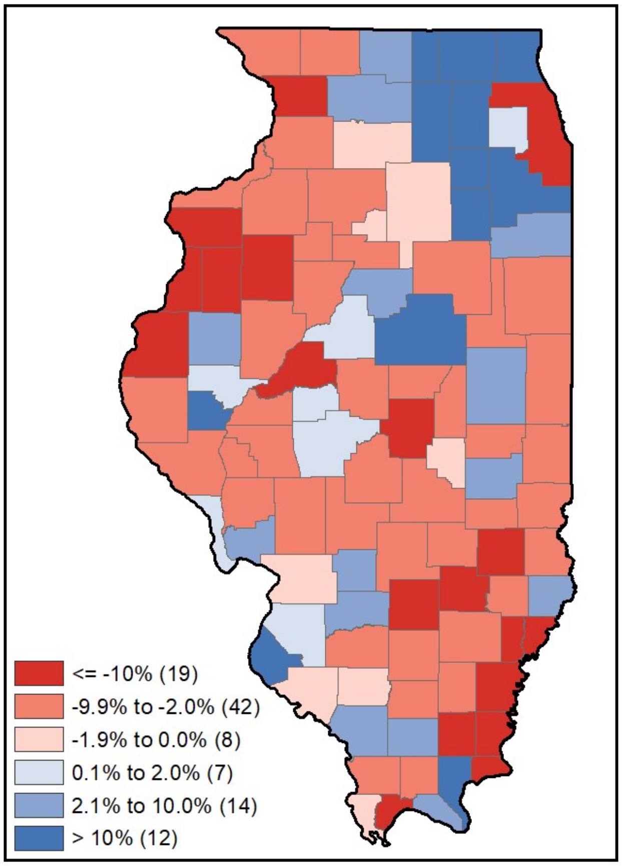


Figure 2.5. Projection population change, 2020-2030. Source: IDPH

As population increases, urban development is expected to increase. Urbanization is expected to impact the risk of flash and riverine flooding. In Illinois, 12 counties are projected to experience population growth: Boone, Brown, DeKalb, Grundy, Kane, Kendall, Lake, McHenry, McLean, Monroe, Pope, and Will (Figure 2.5). One-third of these counties have a Very High risk of flash flooding (Flash Flooding Risk Analysis) and all but one have a High or Medium risk of riverine flooding (Riverine Flooding Risk Analysis). In northeastern Illinois, housing development increased by 14% between 2000 and 2020, with most of the increase attributed to homes built before 2010. Single-family homes make up three-quarters of home permits in the "collar counties", which include DuPage, Kane, Lake, McHenry, and Will, although permits for large multifamily units have increased in some collar counties.[2] Single family homes take up more space than multifamily homes and cause urban sprawl that can exacerbate already present flash and riverine flooding problems.[3]

The prevalence of extreme heat can also be tied to an increase in urbanization. Urban heat islands occur when natural land cover is replaced with surfaces that absorb and retain heat, such as concrete, asphalt, and buildings. Although large urban areas experience a greater urban heat island effect, small towns and villages can likewise experience warming caused by built-up areas.[4]

Like changes in land cover can affect natural hazards, natural hazards can affect land cover. Agricultural land, which blankets more than half of Illinois, is particularly susceptible to natural hazards. Flash and riverine floods can destroy large swaths of agricultural land, temporarily or permanently changing the land cover. Wildfires can burn forests and cropland; recovery may precipitate land use changes.

Illinois is nicknamed the Prairie State. Prior to European settlement in the 1800s, prairies covered 61%, or 21.6 million acres, of the state.[5] Today, less than 0.01% of the nearly 22 million acres remains.[6] Prairie restoration projects in the state began 20 years ago and are still in progress today. Several successful prairie restorations have occurred on formerly agricultural or degraded land. [7] Two prairie restorations in Champaign County total more than 110 acres, making them the largest prairies in the state. The Midewin National Tallgrass Prairie in Will County, formerly the site of agricultural and industrialized land, is in the process of being converted to over 20,000 acres of prairie.[8]

Brownfield redevelopment programs are currently in place in Illinois. Brownfield are abandoned or under-utilized industrial or commercial properties that may be contaminated but have the potential for redevelopment.[9] Local governments can receive grants to clean up sites in their area, turning them into safe, toxin-free spaces in their community. Redevelopment projects in Illinois include turning brownfields into hospitals and workforce development centers, and recreation facilities (City of Chicago), hotels and college campuses (City of Rockford), urban parks, riverfront redevelopment (City of Ottawa, City of Sterling), urban parks (City of Monmouth), Des Plaines River Corridor revitalization (Will County), recreation and business development (City of Danville, City of Dixon), among others.[10, 11] Brownfield redevelopment is particularly important for environmental justice, as brownfield sites tend to be located in underserved, socially vulnerable communities.

---

[1] Smithsonian. (2022, August 10). New Research Reveals Forest Mitigation of Climate Change is Overestimated. https://nationalzoo.si.edu/news/new-research-reveals-forest-mitigation-climate-change-overestimated

[2] CMAP. (2022, January 19). Key housing market trends in northeastern Illinois. https://www.cmap.illinois.gov/updates/all/-/asset_publisher/UIMfSLnFfMB6/content/housing-trends-northeastern-illinois

[3] Feng, B., Zhang, Y., and Bourke, R. (2021). Urbanization impacts on flood risks based on urban growth data and coupled flood models. Nat Hazards 106, 613–627. https://doi.org/10.1007/s11069-020-04480-0

[4] Oke, T.R. (1973). City size and the urban heat island. Atmospheric Environment Volume 7, Issue 8, 769-779. https://doi.org/10.1016/0004-6981(73(90140-6

[5] USACE. (2014). Tallgrass Prairie. https://www.mvs.usace.army.mil/Portals/54/docs/recreation/lakeshelbyville/Education/Tallgrass%20Prairie%20Study%20Guide-Varsity%202014.pdf

[6] US Forest Service. (n.d.). Midewin National Tallgrass Prairie. Retrieved August 11, 2023, from https://www.fs.usda.gov/main/midewin/learning/nature-science

[7] University of Illinois. (n.d.). Prairie restoration. Retrieved August 11, 2023, from https://publish.illinois.edu/tallgrass-prairie/prairie-restoration/

[8] Ibid.

[9] Illinois Environmental Protection Agency. (n.d.). Brownfields. Retrieved August 11, 2023, from https://epa.illinois.gov/topics/cleanup-programs/brownfields.html#:~:text=The%20Illinois%20Brownfields%20Redevelopment%20Loan,EPA%20voluntary%20Site%20Remediation%20Program

[10] EPA. (2022, May 12). Biden Administration Announces $6.75 Million to Tackle Polluted Brownfield Sites in Illinois. https://www.epa.gov/newsreleases/biden-administration-announces-675-million-tackle-polluted-brownfield-sites-illinois

[11] EPA. (2023, May 25). Biden-Harris Administration Announces More Than $7.3 Million Through Investing in America Agenda for Cleanup and Technical Assistance at Polluted Brownfield Sites in Illinois. https://www.epa.gov/newsreleases/biden-harris-administration-announces-more-73-million-through-investing-america-agenda

2.7 HAZARD PROFILES

Hazard profiles were completed for 18 hazards that impact the State of Illinois. Each hazard profile contains the following information: description, historical events, impacts, social vulnerability, climate change, risk analysis, and loss estimates. The hazards included in this section are listed alphabetically below:

Hazards Included in Risk Analysis		
Drought	Flooding: Riverine	Severe Storms: Lightning
Earthquake	Flooding: Dam/Levee Failure	Severe Storms: Wind
Extreme Temperatures: Cold Wave	Landslide	Tornado
Extreme Temperatures: Heat Wave	Mine Subsidence	Wildfire
Flooding: Coastal	Pandemic	Winter Weather: Ice Storms
Flooding: Flash	Severe Storms: Hail	Winter Weather: Winter Storms

A summary of each hazards risk ranking by county can be found in Table 2.13 below. A complete breakdown of each county score by hazard as described using the methodology in **2.2 Data & Methodology** can be found in **Appendix 2.2 Loss Estimates Tables**.

Table 2.13. Hazard risk rankings by county.

County	Drought	Earthquake	Cold Wave	Heat Wave	Coastal Flooding	Dam/Levee Failure	Flash Flooding	Riverine Flooding	Landslide	Mine Subsidence	Pandemic	Hail	Lightning	Wind	Tornado	Wildfire	Ice Storms	Winter Storms
Adams	Low	Very Low	Medium	Medium	N/A	Low	Medium	Medium	Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Medium	Medium
Alexander	Medium	Medium	Medium	High	N/A	Low	Medium	High	Very Low	Very Low	Medium	High	Low	High	Medium	Very Low	Low	Very High
Bond	Low	Low	Medium	High	N/A	Very Low	Medium	Medium	Very Low	Medium	Medium	High	Low	High	High	Very Low	Low	High
Boone	Low	Low	Medium	Medium	N/A	Low	Medium	Medium	Low	N/A	Medium	High	Low	High	High	Low	Low	High
Brown	Low	Very Low	Medium	High	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	High	Very Low	High	Medium	Very Low	Medium	High
Bureau	Medium	Very Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Medium	Medium	High	Low	Medium	Medium	Very Low	Low	Medium
Calhoun	Low	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Carroll	Low	Very Low	Low	Low	N/A	Very Low	High	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Low	Very Low	Very Low	Medium
Cass	Medium	Very Low	Medium	Medium	N/A	Low	High	Medium	Very Low	Very Low	Medium	High	Very Low	High	Medium	Very Low	Medium	High
Champaign	High	Low	High	High	N/A	Low	Very High	High	Low	Low	High	Very High	Medium	Very High	Very High	Low	High	High
Christian	Medium	Very Low	Medium	Medium	N/A	Very Low	High	Medium	Very Low	Medium	Medium	Medium	Very Low	Medium	High	Very Low	Low	High
Clark	Low	Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Very Low	Very Low	Low	Medium
Clay	Medium	Low	Medium	Medium	N/A	Very Low	Very High	Medium	Very Low	Very Low	Medium	High	Low	High	Medium	Very Low	Low	High
Clinton	Low	Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Medium	Medium	Medium	Low	Medium	High	Very Low	Low	Medium
Coles	High	Medium	High	High	N/A	Low	Very High	High	Low	Low	High	High	Medium	High	Very High	Low	Medium	High
Cook	Low	Low	High	Very High	Very High	Medium	Very High	High	Low	Low	Medium	Very High	Medium	Very High	Very High	Medium	Medium	High
Crawford	Medium	Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Low	Very Low	Low	Medium
Cumberland	Low	Very Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Very Low	Very Low	Low	Medium
De Kalb	Very Low	Very Low	Low	Low	N/A	Very Low	Medium	Very Low	Very Low	N/A	Low	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
De Witt	High	Medium	High	High	N/A	Low	High	High	Low	Low	High	High	Medium	High	Very High	Low	High	High

County	Drought	Earthquake	Cold Wave	Heat Wave	Coastal Flooding	Dam/Levee Failure	Flash Flooding	Riverine Flooding	Landslide	Mine Subsidence	Pandemic	Hail	Lightning	Wind	Tornado	Wildfire	Ice Storms	Winter Storms
Douglas	Medium	Low	Medium	Medium	N/A	Very Low	High	High	Very Low	Low	Medium	Very High	Low	High	High	Very Low	Low	High
DuPage	Low	Very Low	Medium	Medium	N/A	Medium	Very High	Medium	Very Low	Very Low	Medium	High	Low	High	High	Low	Medium	High
Edgar	Medium	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
Edwards	Medium	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Low	Very Low	Low	Medium
Effingham	Medium	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Medium	Very Low	Very Low	Medium
Fayette	Low	Low	Medium	High	N/A	Medium	Medium	Medium	Very Low	Very Low	Medium	High	Very Low	High	High	Very Low	Low	High
Ford	Low	Low	Medium	Medium	N/A	Very Low	High	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Medium	Medium
Franklin	Medium	Low	Medium	High	N/A	Low	Very High	High	Low	Medium	Medium	High	Low	Very High	Medium	Low	Low	High
Fulton	Low	Very Low	Medium	Medium	N/A	Medium	Very High	Medium	Very Low	Medium	Medium	High	Very Low	Medium	Very High	Very Low	Low	Medium
Gallatin	Medium	Low	Medium	Medium	N/A	Very Low	Medium	High	Very Low	Low	Medium	Medium	Low	High	Low	Low	Low	Medium
Greene	Very Low	Very Low	Low	Medium	N/A	Very Low	Low	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Grundy	Low	Very Low	Medium	Medium	N/A	Very Low	High	Medium	Very Low	Medium	Medium	Medium	Low	High	High	Low	Low	Medium
Hamilton	Medium	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Hancock	Low	Very Low	Low	Low	N/A	Very Low	Medium	Medium	Very Low	Very Low	Low	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
Hardin	Medium	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	High	Low	Low	Low	High
Henderson	Low	Very Low	Low	Low	N/A	Very Low	Low	Medium	Very Low	Very Low	Low	High	Very Low	Medium	Low	Very Low	Low	Medium
Henry	Medium	Very Low	Medium	Medium	N/A	Very Low	High	Medium	Very Low	Very Low	Medium	Medium	Very Low	High	High	Very Low	Low	Medium
Iroquois	Low	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	High	Low	Medium	Medium
Jackson	High	Medium	High	Very High	N/A	Medium	High	Very High	Low	Medium	High	High	Medium	Very High	Very High	Medium	Medium	High
Jasper	Medium	Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Jefferson	Medium	Low	Medium	High	N/A	Low	High	Medium	Low	Low	Medium	High	Low	Very High	High	Low	Low	High

County	Drought	Earthquake	Cold Wave	Heat Wave	Coastal Flooding	Dam/Levee Failure	Flash Flooding	Riverine Flooding	Landslide	Mine Subsidence	Pandemic	Hail	Lightning	Wind	Tornado	Wildfire	Ice Storms	Winter Storms
Jersey	Low	Very Low	Medium	Medium	N/A	Low	Medium	Medium	Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Jo Daviess	Low	Very Low	Low	Low	N/A	Very Low	High	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Very Low	Very Low	Very Low	Medium
Johnson	Medium	Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	High	Very Low	Medium	Medium	Very Low	Low	Medium
Kane	Medium	Low	High	High	N/A	Medium	Very High	High	Low	Low	High	High	Medium	High	High	Low	Medium	High
Kankakee	Medium	Low	High	High	N/A	Low	High	High	Low	Low	High	Very High	Medium	High	Very High	Low	Medium	High
Kendall	Low	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	N/A	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Knox	Medium	Low	Medium	Medium	N/A	Low	Very High	Medium	Low	Low	Medium	High	Low	High	High	Low	Medium	High
La Salle	Low	Low	Medium	Medium	N/A	Low	Very High	High	Low	High	High	Very High	Low	High	Very High	Low	Medium	High
Lake	Low	Low	Medium	Medium	Medium	Low	Very High	Medium	Low	N/A	Medium	High	Medium	High	High	Low	Low	High
Lawrence	Medium	Medium	Medium	Medium	N/A	Low	High	High	Low	Low	Medium	High	Low	High	Medium	Low	Medium	High
Lee	Low	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	N/A	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Livingston	Low	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	High	Very Low	Low	Medium
Logan	Medium	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Medium	Medium	High	Very Low	High	High	Very Low	Medium	Medium
Macon	Medium	Low	Medium	Medium	N/A	Low	Very High	Medium	Low	Low	Medium	High	Low	High	Very High	Low	Medium	High
Macoupin	Very Low	Very Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Medium	Medium	High	Very Low	Medium	Medium	Very Low	Low	High
Madison	Low	Low	Medium	High	N/A	Medium	High	High	Low	Medium	Medium	High	Low	High	Very High	Very Low	Low	High
Marion	Low	Low	Medium	High	N/A	Low	High	Medium	Low	Medium	Medium	High	Low	High	High	Low	Low	High
Marshall	Low	Very Low	Low	Low	N/A	Very Low	High	Medium	Very Low	Very Low	Low	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Mason	Low	Very Low	Low	Low	N/A	Very Low	Low	Medium	Very Low	Low	Low	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
Massac	Medium	Medium	Medium	High	N/A	Low	Medium	Very High	Low	N/A	Medium	High	Low	Very High	High	Low	Low	Very High
McDonough	Medium	Low	Medium	Medium	N/A	Low	High	High	Low	Low	Medium	High	Low	High	Medium	Low	Medium	High
McHenry	Low	Very Low	Medium	Medium	N/A	Low	Medium	High	Very Low	N/A	Medium	High	Medium	High	High	Very Low	Low	High

County	Drought	Earthquake	Cold Wave	Heat Wave	Coastal Flooding	Dam/Levee Failure	Flash Flooding	Riverine Flooding	Landslide	Mine Subsidence	Pandemic	Hail	Lightning	Wind	Tornado	Wildfire	Ice Storms	Winter Storms
McLean	Medium	Low	Medium	Medium	N/A	Very Low	Very High	Medium	Very Low	Very Low	Medium	Medium	Low	High	High	Very Low	Medium	Medium
Menard	Medium	Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Medium	Medium	Medium	Low	Medium	Medium	Very Low	Medium	Medium
Mercer	Low	Very Low	Low	Low	N/A	Very Low	Medium	Medium	Very Low	Low	Low	Medium	Very Low	High	Medium	Very Low	Low	Medium
Monroe	Low	Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
Montgomery	Low	Low	Medium	Medium	N/A	Low	Medium	Low	Very Low	Medium	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Morgan	Medium	Low	Medium	Medium	N/A	Low	Very High	Medium	Low	Low	Medium	High	Low	High	High	Low	Medium	High
Moultrie	Medium	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	High	Very Low	Medium	Low	Very Low	Low	Medium
Ogle	Low	Low	Medium	Medium	N/A	Low	Medium	Medium	Low	N/A	Medium	High	Low	High	High	Low	Low	High
Peoria	Medium	Low	Medium	Medium	N/A	Medium	Very High	High	Low	Medium	Medium	High	Low	High	High	Low	Medium	High
Perry	Medium	Medium	Medium	High	N/A	Very Low	High	Medium	Very Low	Medium	Medium	High	Low	High	Medium	Very Low	Low	High
Piatt	Low	Very Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
Pike	Low	Very Low	Medium	Medium	N/A	Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Medium	Medium
Pope	Medium	Medium	Medium	High	N/A	Very Low	Medium	High	Very Low	Very Low	Medium	High	Very Low	High	Medium	Very Low	Low	Very High
Pulaski	Medium	Medium	Medium	High	N/A	Very Low	Medium	High	Very Low	N/A	Medium	High	Very Low	High	Medium	Very Low	Low	Very High
Putnam	Low	Very Low	Low	Low	N/A	Very Low	Low	Low	Very Low	Low	Low	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Randolph	Low	Low	Medium	Medium	N/A	Low	Medium	Medium	Low	Low	Medium	Medium	Low	Medium	High	Very Low	Low	Medium
Richland	Medium	Medium	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Rock Island	Medium	Low	Medium	Medium	N/A	Low	High	High	Low	Low	Medium	High	Low	High	High	Low	Medium	High
Saline	Medium	Medium	Medium	High	N/A	Low	High	High	Very Low	Medium	Medium	High	Very Low	High	Medium	Low	Low	High
Sangamon	Medium	Low	Medium	Medium	N/A	Low	Very High	Medium	Low	Medium	Medium	Very High	Medium	High	Very High	Medium	Medium	High
Schuyler	Medium	Very Low	Medium	Medium	N/A	Medium	High	Medium	Very Low	Very Low	Medium	High	Low	High	High	Very Low	Medium	High

County	Drought	Earthquake	Cold Wave	Heat Wave	Coastal Flooding	Dam/Levee Failure	Flash Flooding	Riverine Flooding	Landslide	Mine Subsidence	Pandemic	Hail	Lightning	Wind	Tornado	Wildfire	Ice Storms	Winter Storms
Scott	Low	Very Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Very Low	Very Low	Low	Medium
Shelby	Low	Very Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Medium	Very Low	Low	Medium
St. Clair	Medium	Medium	High	Very High	N/A	Medium	High	Very High	Low	High	High	High	Medium	Very High	Very High	Low	Medium	High
Stark	Low	Very Low	Low	Low	N/A	Very Low	Medium	Low	Very Low	Very Low	Low	Medium	Very Low	Medium	Low	Very Low	Low	Medium
Stephenson	Medium	Low	Medium	Medium	N/A	Low	High	High	Low	N/A	Medium	High	Low	High	Medium	Low	Low	High
Tazewell	Medium	Very Low	Medium	Medium	N/A	Low	Very High	High	Very Low	Low	Medium	Medium	Low	High	Very High	Very Low	Medium	Medium
Union	Medium	Medium	Medium	High	N/A	Very Low	High	High	Very Low	Very Low	Medium	High	Low	High	High	Very Low	Low	High
Vermilion	Medium	Low	Medium	Medium	N/A	Low	High	High	Low	Medium	Medium	High	Low	Very High	Very High	Low	Medium	High
Wabash	Medium	Medium	Medium	High	N/A	Very Low	Medium	High	Very Low	Very Low	Medium	High	Low	High	High	Very Low	Low	High
Warren	Medium	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	High	Low	High	High	Very Low	Medium	High
Washington	Very Low	Very Low	Low	Medium	N/A	Very Low	Low	Low	Very Low	Low	Low	Medium	Very Low	Medium	Low	Very Low	Very Low	Medium
Wayne	Medium	Medium	Medium	High	N/A	Very Low	High	High	Very Low	Very Low	Medium	High	Low	High	High	Low	Low	High
White	Medium	Medium	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	Very Low	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Whiteside	Medium	Very Low	Medium	Medium	N/A	Very Low	Medium	Medium	Very Low	N/A	Medium	Medium	Low	Medium	Medium	Very Low	Low	Medium
Will	Low	Low	High	Medium	N/A	Low	Very High	Medium	Low	Low	Medium	High	Medium	High	Very High	Low	Medium	High
Williamson	Medium	Medium	Medium	High	N/A	Low	High	Medium	Low	Medium	Medium	High	Low	Very High	High	Low	Low	High
Winnebago	Medium	Low	High	High	N/A	Medium	Very High	Very High	Low	N/A	High	High	Medium	Very High	High	Low	Medium	High
Woodford	Medium	Very Low	Medium	Medium	N/A	Very Low	Very High	High	Very Low	Very Low	Medium	Medium	Low	Medium	Very High	Very Low	Low	Medium

DROUGHT

Drought

HAZARD	GEOGRAPHIC EXTENT	# OF UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
DROUGHT	STATEWIDE	93	3.4	$1,506,115,000	0	0

Description

Drought is a normal and a recurrent feature of climate, however, it is only a temporary feature of climate. Drought characteristics vary from one region to another, rather drought occurs almost everywhere. All societies are vulnerable to this natural hazard; drought can affect vast territorial regions and large population numbers. A drought may not have a distinct start, and its termination may be difficult to recognize. Weather conditions, soil moisture, runoff, water table conditions, water quality and stream flow are all natural factors that are important in determining drought. High temperature, high wind and low relative humidity can significantly aggravate its severity.

Droughts originate from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group or environmental sector. Operational definitions help people identify the beginning, end and degree of severity of a drought. The National integrated Drought Information System (NIDIS) operational definitions for droughts:[1]

- **Meteorological Drought:** A period of well-below-average precipitation that spans from a few months to a few years.
- **Agricultural Drought:** A period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth.
- **Hydrological Drought:** A period of below-average stream flow and/or depleted reservoir storage (i.e., stream flow, reservoir and lake levels, ground water).
- **Socioeconomic Drought:** This definition deals with the supply and demand of water. Some years there is an ample supply of water and in other years there is not enough to meet human and environmental needs.
- **Snow Drought:** A period of abnormally little snowpack for the time of year, resulting in either a dry snow drought, below-normal cold-season precipitation, or a warm snow drought, a lack of snow accumulation despite near-normal precipitation. Often caused by warm temperatures and precipitation falling as rain rather than snow or unusually early snowmelt.
- **Flash Drought**: A rapid onset or intensification of drought often set in motion by lower-than-normal rates of precipitation, along with abnormally high temperatures, winds, and radiation.

Generally, drought is associated with a sustained period (which differs for each drought impact) of significant below average water or moisture supply. The degree of precipitation deficiency, the duration and the size of the affected area determine the severity of the drought. A drought can ruin agriculture- and tourism-based local economies, and increase the risk of fire, flash flood and possible landslides/debris flow.

Statewide meteorological droughts are also further subdivided into specific lengths of occurrence:

- A 3-month drought exists if the state average for rainfall is less than or equal to 60 percent of the mean;
- A 6-month drought exists if the state average for rainfall is less than or equal to 70 percent of the mean;
- A 12-month drought exists if the state average for rainfall is less than or equal to 80 percent of the mean.

One-month precipitation deficits on a statewide or regional basis do not usually constitute droughts, although there may be significant impacts on agriculture depending on the time in the growing season and on soil moisture conditions. Agricultural and hydrologic droughts have different lag times in relation to the timing of precipitation, and their intensities do not correlate exactly with one another. Agricultural droughts typically trigger the availability of several USDA emergency assistance programs.

Hydrologic droughts reduce run-off and river, lake and groundwater levels. Normally, such droughts are preceded by several months of below-normal precipitation and develop more slowly than a meteorological or agricultural drought. Noticeably reduced water levels may occur within one or two months of the start of a drought, but sometimes as much as three to twelve months after a precipitation deficit begins. Low river levels may result in navigation blockages and emergency dredging.

The Palmer Drought Severity Index (PDSI), developed by W.C. Palmer in 1965, is an attempt to compare weekly temperature and precipitation readings over a defined climatic region in order to identify periods of abnormally dry or wet weather (Table 2.14).[2]

Table 2.14. Palmer Drought Severity Index classifications.

Palmer Drought Severity Index Classifications	
4.0 or greater	Extremely Wet
3.0 to 3.99	Very Wet
2.0 to 2.99	Moderately Wet
1.0 to 1.99	Slightly Wet
0.5 to 0.99	Incipient Wet Spell
0.49 to -0.49	Near Normal
-0.5 to -0.99	Incipient Dry Spell
-1.0 to -1.99	Mild Drought
-2.0 to -2.99	Moderate Drought
-3.0 to -3.99	Severe Drought
-4.0 or less	Extreme Drought

These PDSI readings reflect the relative disparity between moisture supply (precipitation and soil moisture) and demand (evapotranspiration, soil recharge and runoff needs) for a particular region based upon what is considered normal for the area. The index is used to evaluate scope, severity, and duration of abnormal weather. Figure 2.6 below shows a time series of the state-wide monthly Palmer Drought Severity Index for Illinois from 1895 to 2022. Areas in blue represent wet periods while areas in red represent dry periods.

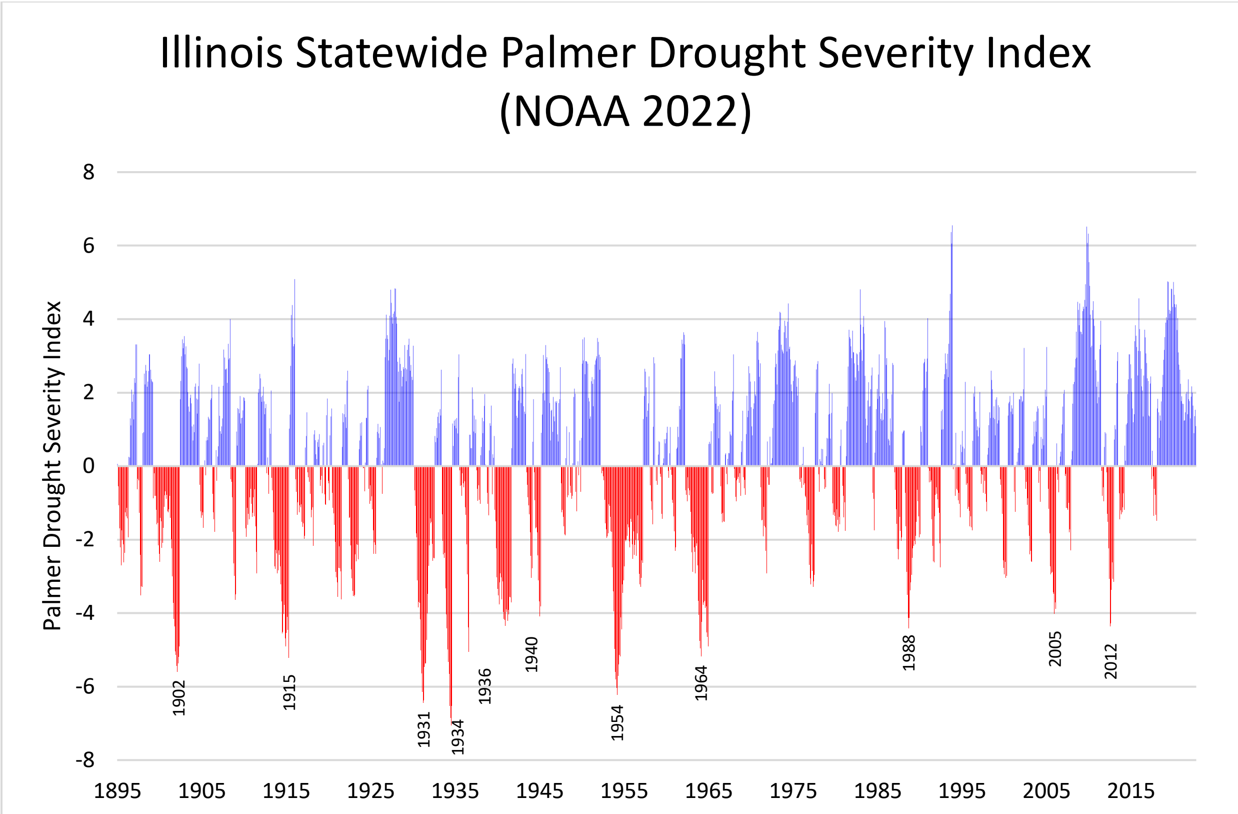


Figure 2.6. Palmer Drought Severity Index. Blue indicates wet periods; red indicates dry periods. Notable droughts are labeled with dates. Source: NOAA

Average yearly precipitation for Illinois varies from just over 48 inches (1,200 mm) at the southern tip to just under 32 inches (810 mm) in the northern portion of the state. Annual amounts fluctuate primarily within a 10-inch range of the median.

Historical Events

Numerous droughts have occurred in Illinois with the most significant occurring in the 1930's, 1950's, 1988, 2007, and in 2012. The most severe drought in the last 50 years was 1988, when rainfall was 88 percent of normal. The timing or distribution was also abnormal because 1988 saw less than 50 percent of the April through August normal rainfall. This drought saw 54 percent of the state impacted by drought-like conditions, resulting in disaster relief payments to landowners and farmers exceeding $382 million, but no state proclamations. In 1988, a plan was put in place to divert water from Lake Michigan into the Mississippi River during the 1988 drought to aid in riverine navigation. This plan was never followed through; however, emergency dredging was carried out successfully. Droughts of this magnitude occur about once every 20 years.

In September 1983, all 102 counties were proclaimed state disaster areas because of high temperatures and insufficient precipitation beginning in mid-June. Precipitation of less than 88 percent of normal also occurred in all of Illinois in September of 1994, northwestern Illinois in December of 1994, the northern half of the state in February of 1995, all of the state in March, and the northern half again in June of 1995. However, even though precipitation values were below average, none of these were considered drought-like conditions officially.

A severe drought struck Illinois in 2005-06, especially in the northern half of the state. Dry conditions in 2005 reached a historic level of severity in some parts of Illinois and ranked as one of the three most severe droughts in Illinois in 112 years of record. The timing of the dryness during the spring and summer, when water demand and use are high, ensured substantial impacts on agriculture and other sectors. The drought also had several unusual characteristics. The drought area was long and narrow, extending from south Texas to the Great Lakes, but within the Midwest, the drought had relatively minor impacts on states other than Illinois. A record number of remnants of hurricanes and tropical storms passed through Illinois during July, August and September, substantially ameliorating drought conditions in portions of central and southern Illinois. Crop yields were surprisingly high in parts of the state, perhaps providing evidence of increased drought resistance in modern varieties and the benefits of timely rains.

In 2012 another severe drought occurred in Illinois, affecting a large majority of the state. The drought conditions intensified throughout the summer months and into early fall. Agricultural impacts became evident in late July as hydrologic conditions continued to deteriorate. The statewide average precipitation total from June 21st to July 3rd was 0.5 inches, only 28 percent of normal. The statewide average temperature during this time was 78°F, 3.8°F above normal. Extremely hot weather occurred during the second half of this period with highs in the 90s and low 100s common across the state. At least 56 sites in Illinois broke their daily high temperature records on June 28 and 29. The statewide average precipitation for June 2012 was 1.8 inches, which is 2.3 inches below normal and 43 percent of normal. It was the eighth driest June on record. June 1988 was the driest on record at 1.1 inches. The statewide average precipitation for the first half of 2012 was 12.6 inches, making it the sixth driest on record.

The longest duration of drought in Illinois lasted 55 weeks beginning on April 6, 2021, and ending on April 19, 2022. The 2021 growing season drought in northern Illinois was, by some measures, as severe as those in 2012 and 1988. For example, the six-month period from March to September in 2021 was the driest on record in Rockford, half an inch drier than the same period in 1988 and over 2 inches drier than in 2012. The Illinois State Climatologist calculated and compared the precipitation from the 1988, 2012 and 2021 drought in Figure 2.7 below.[3]

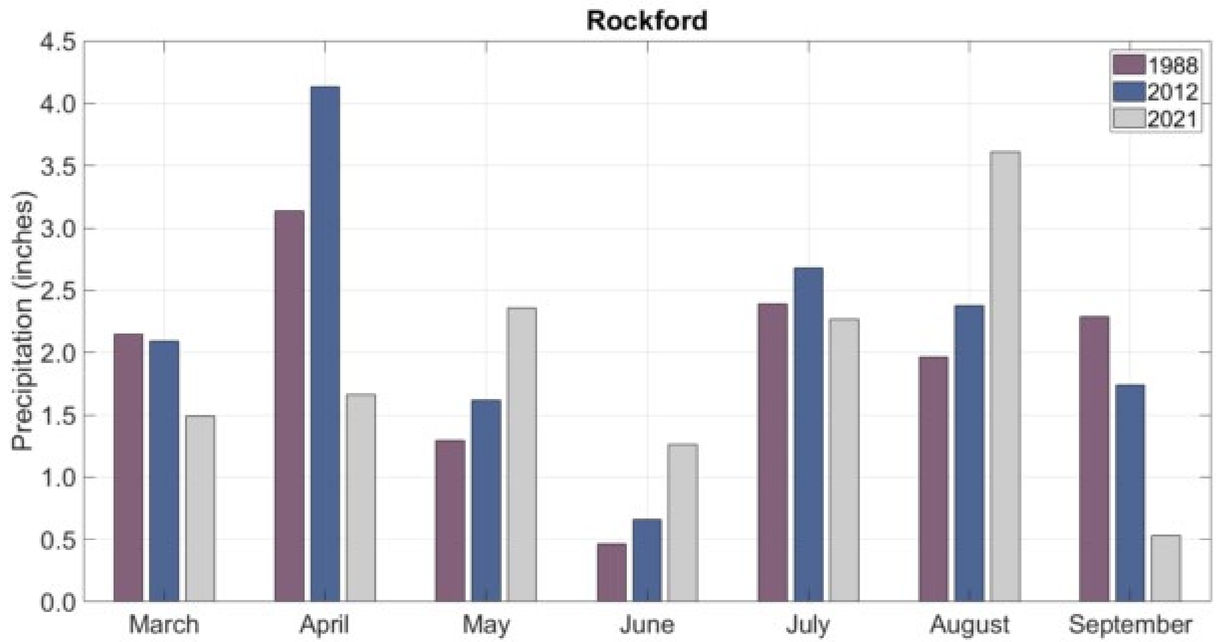


Figure 2.7. Monthly total precipitation at Rockford between March and September in the drought years of 1988, 2012, and 2021. Source: Illinois State Climatologist

Impacts

Infrastructure

Drought can affect infrastructure at different scales. If a building is located on expansive soils, foundation cracking can occur as soil moisture decreases and clay-based soils contract. Damage to underground pipelines and above ground infrastructure can occur due to shrink-and-swell cycles associated with periods of drought when soils dry out and shrink and wet periods when soils expand.

During drought conditions that result in low water levels on rivers and other waterways, port and water-borne transportation operations may be limited due to a reduction in available routes and cargo-carrying capacity. This can result in increased transportation costs. For example, the 2012 Great Plains drought closed the Mississippi River at least three times, costing an estimated $300 million per day that the river was closed to traffic. [4]

Environmental

Drought impacts on the environment can vary significantly based on the geographical extent and severity of the drought. Potential impacts a drought can have on the environment include; reduced plant growth over a season, reduction or extinction of local species, changes in vegetation coverage which may result in reduced water retention in soils, and changes in freshwater ecosystems including flow, water temperature and water quality. [5] The U.S. Drought Monitor is the standard for determining drought in the U.S. The National Drought Mitigation Center compiled state-specific drought impacts to provide a clearer picture of drought in Illinois as seen in Table 2.15 below.[6]

Table 2.15. Drought monitor categories and associated impacts.

Drought Monitor Categories		Impacts
	D0 – Abnormally Dry	• Soil moisture declines; lawns turn brown
	D1 – Moderate Drought	• Row crops and pasture show drought stress • Fireworks are banned • Trees show drought stress; wildlife eat more crops
	D2 – Severe Drought	• Row crop and vegetable conditions are poor; hay yield is low; corn is baled for feed • Outdoor burn bans are implemented • Lawns go dormant; weeds grow faster • Farmers are stressed; agriculture industry is hurting • Power plant intake is compromised • Water levels in wells, ponds, rivers, and lakes are low; streamflow is below average; voluntary water conservation is requested
	D3 – Extreme Drought	• Disease kills deer; fish are stressed • Vegetation is stressed • Well and reservoir levels are very low
	D4 – Exceptional Drought	• Feed prices are high; crop loss is widespread; livestock are culled • Wildlife are severely stressed; fish kills occur in lakes and rivers

Economic

Direct economic impacts of drought can affect industries such as agriculture, recreation, energy, tourism, timber, fisheries, and others that rely heavily on water. Local economies can be directly impacted by changes in recreation and tourism caused by drought. Adequate water levels in streams, lakes, and reservoirs are essential for activities such as hunting, fishing, boating and other water and outdoor activities. Other economic impacts of drought can include job losses, business failures, lost investments, economic uncertainty, and changed development and consumption patterns.

Social Vulnerability

Droughts can have significant impacts for vulnerable populations who rely on agriculture and natural resources for their livelihoods. This can include reduced income, loss of employment opportunities, and increased poverty. Droughts can lead to water shortages and reduced access to clean water, which can have negative impacts on health and wellbeing.

Climate Change

Drought is one of the most challenging hazards to define, identify, and manage because of its complex and diverse interactions and impacts and its relatively slow onset and demise. Projections of changes in drought are, therefore, highly dependent on the impact of interest (e.g., agricultural drought vs. hydrologic drought). Total annual precipitation in Illinois has increased by 3 to 6 inches over the past 100 years and has increased in all four seasons. The combination of this long-term change and natural climate variability has significantly limited drought frequency, severity, and extent in Illinois since the 1990s. As measured by the Palmer Drought Severity Index (PDSI), Illinois has experienced fewer extreme droughts since 1965 than during the period from 1895 to 1965, when extreme droughts were more common and more intense. Drought risk in Illinois is not only related to precipitation; changes in temperature also play an important role. Increasing temperatures have led to more atmospheric demand for evaporation from plants and soils. The combination of short-term dryness and very high evaporative demand can rapidly deplete soil moisture and induce crop or ecosystem stress, sometimes resulting in a flash drought. The relatively quick onset and intensification of flash drought reduce time available for preparation, communication, and management for impact mitigation. The combination of increasing growing season temperatures and more variable precipitation have caused a change in the characteristics of drought in Illinois, with more shorter-duration, but high severity and relatively quickly intensifying droughts, such as those in 2012 (statewide) and 2021 (northern Illinois).

Climate models project continued increases in annual precipitation across Illinois, which might suggest an overall diminishing drought risk. However, there are three points of concern for future drought risk in the state. First, the expected increases in temperature will drive up evaporation and transpiration rates throughout the year, leading to more rapid soil moisture depletion and potentially overall drier soils during the growing season. Second, the impact of increased evaporation may be exacerbated by projected increasing precipitation variability, which might manifest as fewer but heavy precipitation events interspersed by longer periods of dry weather. Despite projected increases in annual precipitation, increased precipitation variability may result in higher runoff rates and less water return to soil moisture. Research discussed in Section 2.1 has shown projected decreases in both summer soil moisture and minimum streamflow by mid- and late-century in Illinois due to the combination of higher evaporation and more precipitation variability. Lastly, while annual precipitation is projected to increase, models show large seasonal differences in the distribution of those increases. Specifically, model projections are in strong agreement that most of the increased precipitation will occur in winter and spring, with lesser magnitude changes in summer precipitation in Illinois. While summer precipitation projections are far from certain – given model weaknesses in simulating summer precipitation processes – even a small (2-5%) increase in summer precipitation would be outweighed by larger increases in evaporation and evaporative demand. These factors suggest that drought will continue to be a concern in Illinois in future decades despite an overall wetter climate.

Importantly, while the frequency of long-duration (i.e., > 1 water year) droughts may continue to decrease in the future, projections suggest a potential higher risk of short-duration flash drought conditions during the growing season by mid- and late-century. Drought prediction, early warning, and monitoring systems should be adapted to the potential changing drought characteristics across Illinois, including expanded soil moisture measurements, water infrastructure resilience initiatives, and more frequent updates to state- and local-level drought plans.

Risk Analysis

The entire state is at risk for drought. The majority of counties have a Medium risk and are located in southwestern and central Illinois. Counties with Low risk are also mostly located in northern and western Illinois (Figure 2 8). A complete breakdown of each county risk ranking score can be found in in Appendix 2.1 Risk Ranking Tables.

Loss Estimates

No property damage was reported by the NCEI Storm Events Database between 1996 and 2021. It is reasonable to expect that drought would cause limited to zero property damage in the future.

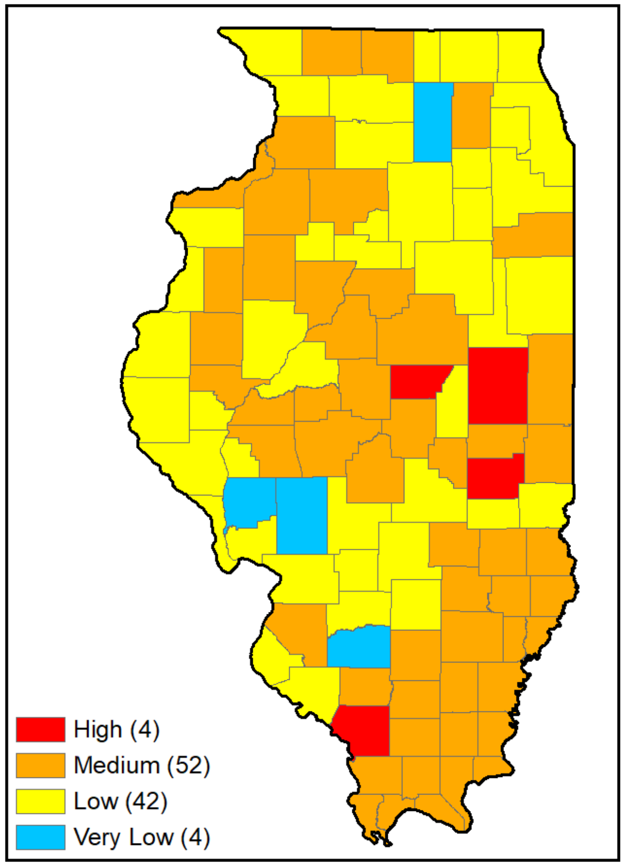


Figure 2 8. Drought risk rankings.

---

[1] Drought Basics. (n.d.). Drought.Gov. Retrieved April 16, 2023, from https://www.drought.gov/what-is-drought/drought-basics

[2] National Centers for Environmental Information (NCEI). (n.d.). Overview | Historical Palmer Drought Indices | Retrieved April 8, 2023, from https://www.ncei.noaa.gov/access/monitoring/historical-palmers/overview

[3] Historical Perspective of the 2021 Drought in Northern Illinois – Illinois State Climatologist. (2021, October 25). https://stateclimatologist.web.illinois.edu/2021/10/25/historical-perspective-of-the-2021-drought-in-northern-illinois/

[4] Schwab, J. C. (2013). Planning and drought. Retrieved March 21, 2023, from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1008&context=ndmcpub

[5] Ecological Drought. Drought.Gov. Retrieved March 21, 2023, from https://www.drought.gov/what-is-drought/ecological-drought

[6] Drought Impacts. (n.d.). Drought.Gov. Retrieved April 16, 2023, from https://www.drought.gov/impacts

EARTHQUAKE

Earthquake

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
EARTHQUAKE	LIMITED	1	4	0	0	0

Description

Earthquakes are caused by a sudden slip on a fault, which is a fracture in the Earth's crust where movement has occurred in the past. When a slip occurs, energy is released and energy waves travel through Earth's crust, causing the shaking that we feel during an earthquake. Magnitude and intensity are terms used to describe the severity of an earthquake, but they do not mean the same thing.

- **Magnitude:** A measure of the seismic energy released from the earthquake. It is calculated from measurements of the ground vibrations recorded by seismographs.
- **Intensity**: A measurement of the effects brought about by an earthquake; using observations of people in the area affected. Intensities are based on descriptive reports, rather than calculations from instrument readings.

The intensity of an earthquake is measured using the Modified Mercalli (MM) Intensity Scale (Figure 2.9). Using Roman numerals, the MM ranges from I to X. Lower numbers are generally based on how an earthquake is felt by people, while higher numbers are based on observed structural damage.

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Figure 2.9. Modified Mercalli Intensity Scale. Source: USGS

Earthquakes can be very dangerous and have the potential to cause widespread damage and loss of life. In Illinois, structures built on thick, loose sediments of river flood plains are more likely to be damaged than structures on glacial till (stiff, pebbly clay) or bedrock. In fact, seismic intensity may increase one or more units on the Modified Mercalli Intensity Scale if loose sediments are present. Earthquakes in Illinois originate within the crystalline basement rocks at depths of 1 to 25 miles, which is below the layers of sedimentary rock where coal, oil, and aggregate (gravel) are mined. They occur in the granitic rocks far below the sedimentary layers of rock where known faults are mapped. The earthquake vibrations move out away from the point of origin (hypocenter or focus) through the bedrock and then up though the overlying soils on top of the bedrock. In the central part of the U.S., the bedrock is flat-lying, old, intact, and strong. Earthquake vibrations travel very far through material such as this in comparison to the young, broken, weak bedrock of the west coast. Because of this difference, Central U. S. earthquakes are felt and cause damage over, an area 15 to 20 times larger than California earthquakes with similar magnitudes. They can also trigger other natural hazards such as landslides and secondary impacts such as hazardous waste spills or leaks, fires, and dam or levee ruptures.

There have been more than 650 reported earthquakes across the state since 1795. 539 have been recorded with a magnitude of 2 or more, with 30 causing minor to moderate damage. Although earthquakes are felt occasionally in northern Illinois, they are more frequent in the southern parts of the state where two major fault systems – the New Madrid Seismic Zone and the Wabash Valley Seismic Zone – are to be found (Figure 2.10).

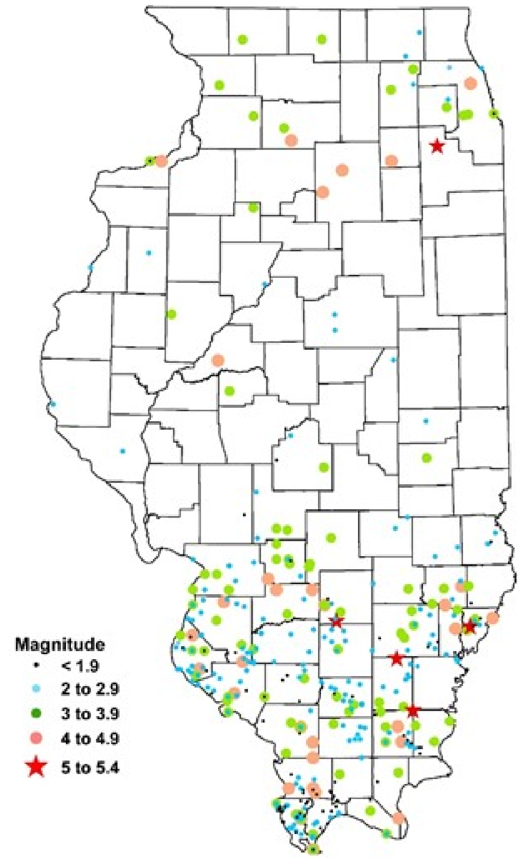


Figure 2.10. Earthquakes with epicenters in Illinois, 1795 – 2023. Source: USGS

The New Madrid Seismic Zone

The New Madrid Seismic Zone extends southwestward from Cairo, Illinois into Kentucky, Missouri, Tennessee, and Arkansas (Figure 2.11). There is a 25-40% chance of a M6 or greater earthquake in the next 50 years, and a 7-10% chance of a repeat of the 1811-1812 New Madrid earthquakes in the same time period (see Historical Events).[1] The New Madrid has not experienced a magnitude 6 or stronger earthquake in more than 100 years.[2] Larger earthquakes in the New Madrid region have caused more damage in Illinois than earthquakes originating in Illinois.

The Wabash Valley Seismic Zone

The Wabash Valley Seismic Zone covers parts of southeastern Illinois and southwestern Indiana (Figure 2.11). Although the New Madrid Seismic Zone is more studied and well-known, it is possible that the Wabash Valley Seismic Zone may cause more damage because of more repeating events. In the past 20 years, there were three magnitude 5 or stronger earthquakes in the region.

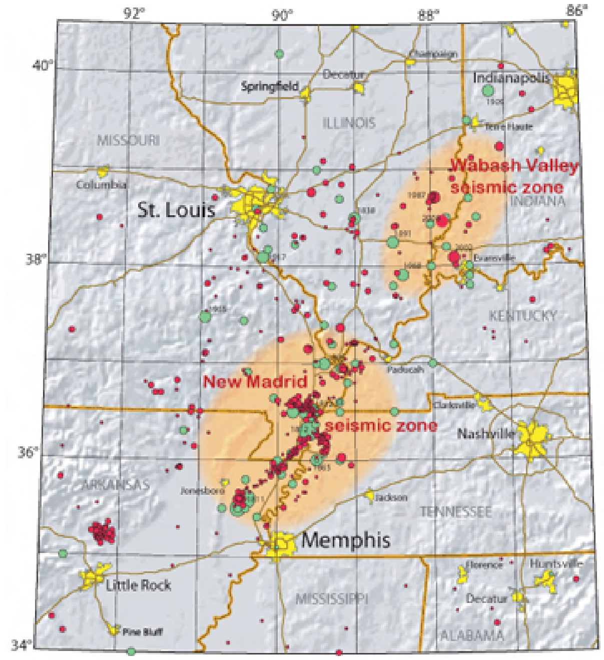


Figure 2.11. Seismic zones in Illinois. Source: USGS

Historical Events

The 1811-1812 New Madrid Earthquakes were a series of earthquakes, with the largest estimated magnitude of 7.8 occurred in the New Madrid Seismic Zone, which spans parts of Illinois, Missouri, Arkansas, Kentucky, Tennessee, and Mississippi. The earthquakes were felt as far away as Canada and the East Coast of the United States. While there are no exact records of fatalities or damages, it is believed that the earthquakes caused significant damage to buildings and infrastructure in the affected areas.

One of the largest historical earthquakes in Illinois occurred in northern Illinois on May 26, 1909. The exact location of the magnitude 5.1 (estimated) earthquake isn't known, but the largest intensities occurred in and near Aurora where many chimneys fell, a stove overturned, gas lines broke, and a fire started. The area encompassed by minor damage is shown in Figure 2.12. This map is modified from Prof. J. A. Udden of Augustana College, who based it on newspaper reports.[3, 4]

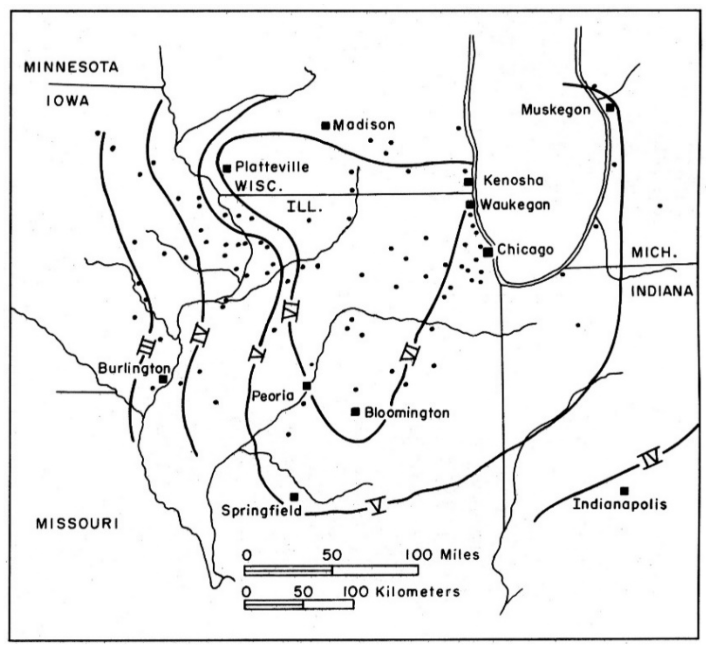


Figure 2.12. Intensity distribution of the 1909 northern Illinois earthquake.

On November 9, 1968, a (5.3) magnitude earthquake occurred Hamilton County. in Southern Illinois This earthquake caused Intensity VII damage. Fifteen percent of the chimneys in a 25-mile radius of the epicenter were damaged, foundations cracked and bricks were thrown from masonry parapets. There were no fatalities reported.

On April 18, 2008, a 5.2 magnitude earthquake occurred in the Wabash Valley Seismic Zone near the town of West Salem. The earthquake was felt as far away as Chicago and Indianapolis and caused minor damage to buildings and infrastructure in the affected areas. There were no fatalities reported.

The Illinois State Geological Survey provided data of the number of past earthquakes from 1795 to the end of 2022, by county, that were of a magnitude that could be felt or cause possible damage (Table

2.16). These numbers do not represent the total recorded earthquakes per county since some counties have had large numbers of small events that were not detected by people (below magnitude 2.0). Earthquakes recorded prior to about 1955 utilized estimated magnitudes and locations for the events based on damage amounts, aerial extent, and location. As seen in the table, 62 out of the 102 counties in Illinois (61%) have experienced earthquakes of a magnitude that could be felt by the public and 23 out of 102 (23%) counties had possible damaging earthquakes.

Table 2.16. Magnitude 2 and great earthquakes by county from 1795-2022. Source: ISGS.

COUNTY	FELT		SOME POSSIBLE DAMAGE					SOME POSSIBLE DAMAGE	
	Magnitudes		Magnitudes			Magnitudes		Magnitudes	
	2 to 2.9	3 to 3.9	4 to 4.9	5 to 5.4		2 to 2.9	3 to 3.9	4 to 4.9	5 to 5.4
Adams	1				**Madison**	7	4		
Alexander	44	20	4		**Marion**	1	6		1
Bond	2	6	1		**Mason**			1	
Bureau		1			**Massac**	1	2		
Carroll		1			**McHenry**	2			
Champaign	1				**McLean**	2		1	
Christian	2				**Menard**		1		
Clay	1	1			**Monroe**	15	6	3	
Clinton	2	1	2		**Montgomery**	3	1		
Coles	1				**Moultrie**		3		
Cook	3	2	1		**Ogle**		1		
Crawford	2	3			**Peoria**		1		
Douglas	1				**Perry**	6	2		
Du Page	2				**Piatt**		1		
Edwards	3	2	1		**Pike**		2		
Effingham	1	1	1		**Pope**		1	1	
Fayette		3			**Pulaski**	42	5		
Franklin	11	1			**Randolph**	16	6	1	
Fulton		1			**Richland**	29	5	2	
Gallatin	5	3	1		**Rock Island**	1	2		
Hamilton	10	2		2	**Saline**	10	5	1	
Hancock	1				**St. Clair**	23	6	1	
Henderson		1			**Stark**		1		
Jackson	5	3	2		**Stephenson**	1			
Jasper	2				**Union**	5	1	4	
Jefferson	5	2			**Wabash**	18	11	3	1
Jo Daviess		1			**Warren**	1			
Johnson	1	1			**Washington**	9	1		
Kane	2	1	1		**Wayne**	10	4		
Kendall			1		**White**	3			
LaSalle		1	2		**Whiteside**	1	1		
Lawrence		1			**Will**				1
Lee		1	1		**Williamson**	7	2		
Macon	1				**Winnebago**	1			

Impacts

Infrastructure

Damage to buildings, highways, power lines, pipelines and other structures only partly depends on the amount of energy released during the earthquake. Certain kinds of earth materials resting on the bedrock amplify the earthquake ground motions. In Illinois, structures built on thick, loose sediments of river floodplains are more likely to be damaged than structures on glacial till (stiff, pebbly clay) or bedrock. In fact, seismic intensity may increase one or more units on the Modified Mercalli Intensity Scale if loose sediments are present. Also, loose sandy sediments with high moisture content, such as along river systems, can turn to liquid – a quicksand type state - when shaken enough.

Many of Illinois' bridges are aging and in need of repair, and a major earthquake could cause further damage or collapse. Damaged roadways, bridges, and tunnels would make it difficult for emergency responders and residents to travel. Illinois is a major transportation hub, and a major earthquake could disrupt rail traffic, including both freight and passenger trains. As a major transportation corridor, tremendous volumes of hazardous materials pass through Illinois by rail, highway, and river. Oil and natural gas pipelines also crisscross near or through the New Madrid seismic zone, transporting 4 million barrels per day of crude oil, petroleum products and natural gas. As metropolitan areas in Illinois continue to grow, more and more people live and work near industrial and commercial facilities that process or store hazardous materials.

A major earthquake could damage telecommunications infrastructure, such as cell towers and fiber optic cables, leading to disruptions in phone and internet service. Power lines and substations could be damaged, leading to widespread power outages. A major earthquake could damage water supply and treatment facilities, leading to disruptions in water service and potentially contaminating water sources. This could create health risks and make it difficult for emergency responders to access clean water. Waste management facilities, such as landfills and waste treatment plants, could be damaged, which would lead to disruptions in garbage and sewage disposal.

Levees and dams are vulnerable to ground shaking. Given the large number of dams and the extensive network of reservoirs and levees along the region’s river systems, significant flooding from earthquake induced breaks in dams and levees should be expected at high water periods.

Environmental

Earthquakes can cause soil liquefication which can have long term impacts on the topography of an area. Earthquakes can also contribute to landslides and soil erosion. This is generic and typically does not apply to central and eastern US. These areas do not have surface rupture from earthquakes because of the deep location of the hypocenters in the Precambrian basement. There is only one surface expression of faulting in Central US and that is one of the three New Madrid faults which is a reverse fault.

Economic

The cost of repairs required after a major earthquake would be substantial and have a major economic impact on the area. Aside from structural damage repairs, there could be long lasting disruptions in infrastructure such as roads and railways that would significantly impact the businesses and households.

Social Vulnerability

Illinois does not have statewide building codes, but local buildings codes under home rule, making areas of the state without strong building codes more vulnerable to earthquakes. Smaller communities in particular may have no or limited building codes due to the lack of expertise and personnel to create and enforce them. Illinois has many small communities in the southern part of the state where most earthquakes occur.

In addition to the lack of building codes, lower income neighborhoods and people of color tend to live in areas with more buildings in disrepair. Buildings that are already structurally unsound are more prone to collapsing during an earthquake, putting people at greater risk.

Risk Analysis

Earthquakes pose a significant threat to the St. Louis Metro Area due to the high concentration of building, population, and infrastructure in the area (Figure 2.13). The St. Louis area is located near several active seismic zones, including the New Madrid seismic zone to the south and the Wabash Valley seismic zone to the east. While the St. Louis area has not experienced a major earthquake in recent history, there is evidence of past seismic activity.[5]

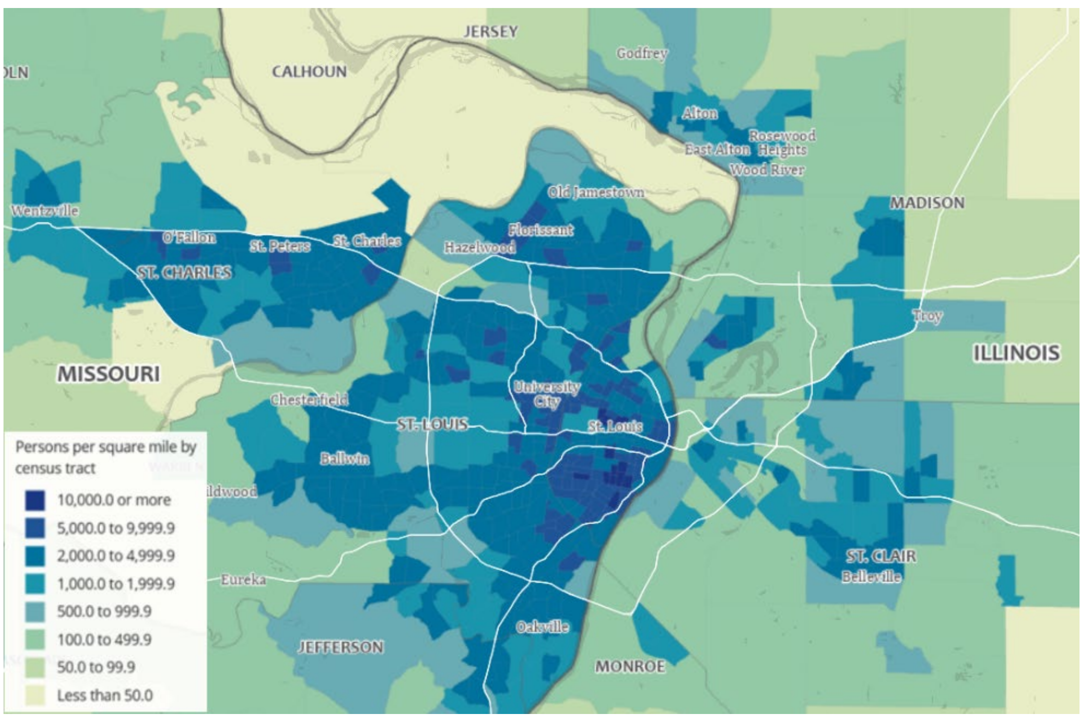


Figure 2.13. Population density of St. Louis Metro Area. Source: US Census

Several areas of the St. Louis metropolitan area may be more vulnerable to earthquake damage due to factors such as soil type and building construction. These areas include parts of St. Louis city and county, as well as several communities in Illinois. The potential for earthquake damage in the St. Louis Metro area is compounded by the presence of old, unreinforced brick buildings, which are particularly vulnerable to seismic activity.

Similarly, communities in southeastern Illinois may be affected by an earthquake in the Wabash Valley Seismic Zone. Although the region has fewer people and is less densely populated, an earthquake could still devastate infrastructure in the region. Notably, Illinois does not have statewide building codes, so areas with no or limited building codes may be more at risk to earthquakes. Many suggested actions and checklists for preparing for an earthquake can be found at state and federal websites, such as www.ready.illinois.gov or www.ready.gov and the Red Cross.

The entire state is at risk of an earthquake. Most counties have a Low or Very Low ranking (Figure 2.14). Counties with a Medium risk ranking are primarily located in the southern region. A complete breakdown of each county risk ranking score can be found in in Appendix 2.2 Loss Estimate Tables.

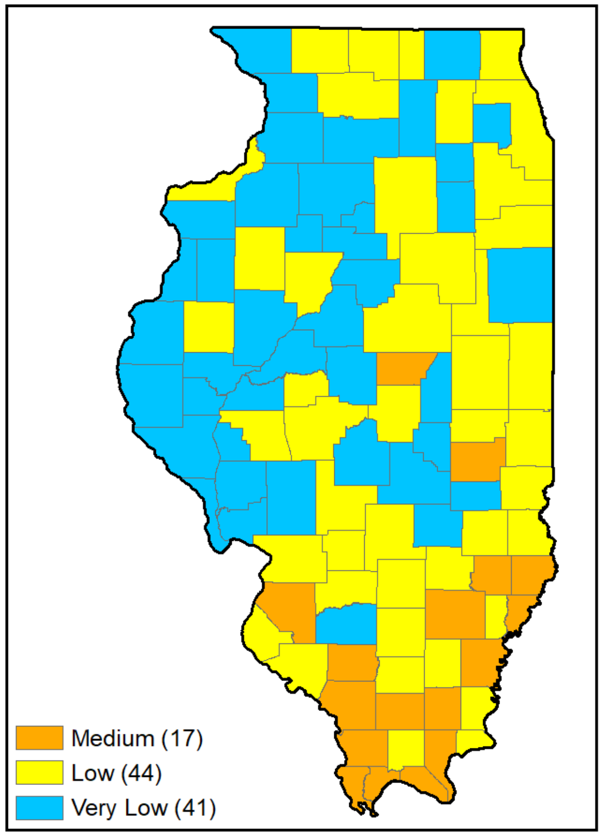


Figure 2.14. Earthquake risk ranking.

The numbers used in the risk analysis only use data from 1996 to 2022 in accordance with years of data available for other hazards. Arkansas, Ohio, Kansas, and Oklahoma are experiencing an increase in seismic activity from induced seismicity from wastewater disposal. Illinois has not seen an increase in earthquake activity or recorded earthquakes associated with wastewater disposal wells. In the past several years USGS has nearly doubled the seismic stations in Illinois.

Illinois has a adopted a normal operating procedure of a technique proposed to eliminate the induced earthquakes in Oklahoma from wastewater disposal.[6] In Illinois, much of the waters are pumped back into the formation from which they were extracted to help drive the oil to the production wells. Other disposal wells in Illinois are using highly porous sedimentary rock layers from 1 to >2 miles above the crystalline basement. The deep crystalline basement rock is the location of the majority of our natural earthquakes.

All of these wells are Class II regulated wells, associated with disposal of waters from the oil and gas industry. These wells have been operating for many decades without seismic issues and are regulated for maximum allowable pressures and volumes injected. Other regulated disposal wells are also using these same high porosity formations. One industrial complex has been disposing of fluids since 1966 with a total disposal of over 20 billion gallons with rates as high as 700,000 gallons a day, without recorded or felt seismic event.

Loss Estimates

Hazus Risk Analysis

For planning purposes, a Hazus Level 1 analysis was run on two historic earthquake scenarios that could impact the State of Illinois. Both scenarios use the Hazus general building stock database to estimate the impact of these events had they occurred in 2022. The magnitude of the earthquakes is measured using the Moment Magnitude (M) scale.

The two scenarios include:

- Scenario #1: New Madrid Historical Event
    - Replication of the M7.4 event that occurred February 7, 1812.
- Scenario #2: Aurora, Illinois Historical Event
    - Replication of the M5.2 event that occurred May 26th, 1909.

Hazus Building Damage

Scenario #1: New Madrid Historical Event

Hazus estimates that 44,373 buildings will be at least moderately damaged. This is over 1% of the total number of buildings in the region. The region consists of the State of Illinois. An estimated 1,667 buildings will be damaged beyond repair.

Scenario #2: Aurora, Illinois Historical Event

An estimated 90,179 buildings will be at least moderately damaged in this scenario. This is over 2% of the total number of buildings in the region. The region consists of the State of Illinois. It's estimated that 4,020 buildings will be damaged beyond repair.

Hazus Economic Loss

Scenario #1: New Madrid Historical Event

The total economic loss estimated for the earthquake is $9.216 billion, which includes building and lifeline-related losses based on the region's available inventory.

Scenario #2: Aurora, Illinois Historical Event

The total economic loss estimated for the earthquake is $35.048 billion, which includes building and lifeline-related losses based on the region's available inventory.

Hazus Building-Related Losses

Building losses are broken into two categories: direct building losses and business interruption losses. Direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. Business interruption losses are those associated with the inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include temporary living expenses for those people displaced from their homes because of the earthquake.

Scenario #1: New Madrid Historical Event

Total building-related losses were $7.189 billion; 24% of the estimated losses were related to the business interruption of the region. The largest loss was sustained by the residential occupancies, which made up over 32% of the total loss. Figure 2.15 shows the losses at the county level.

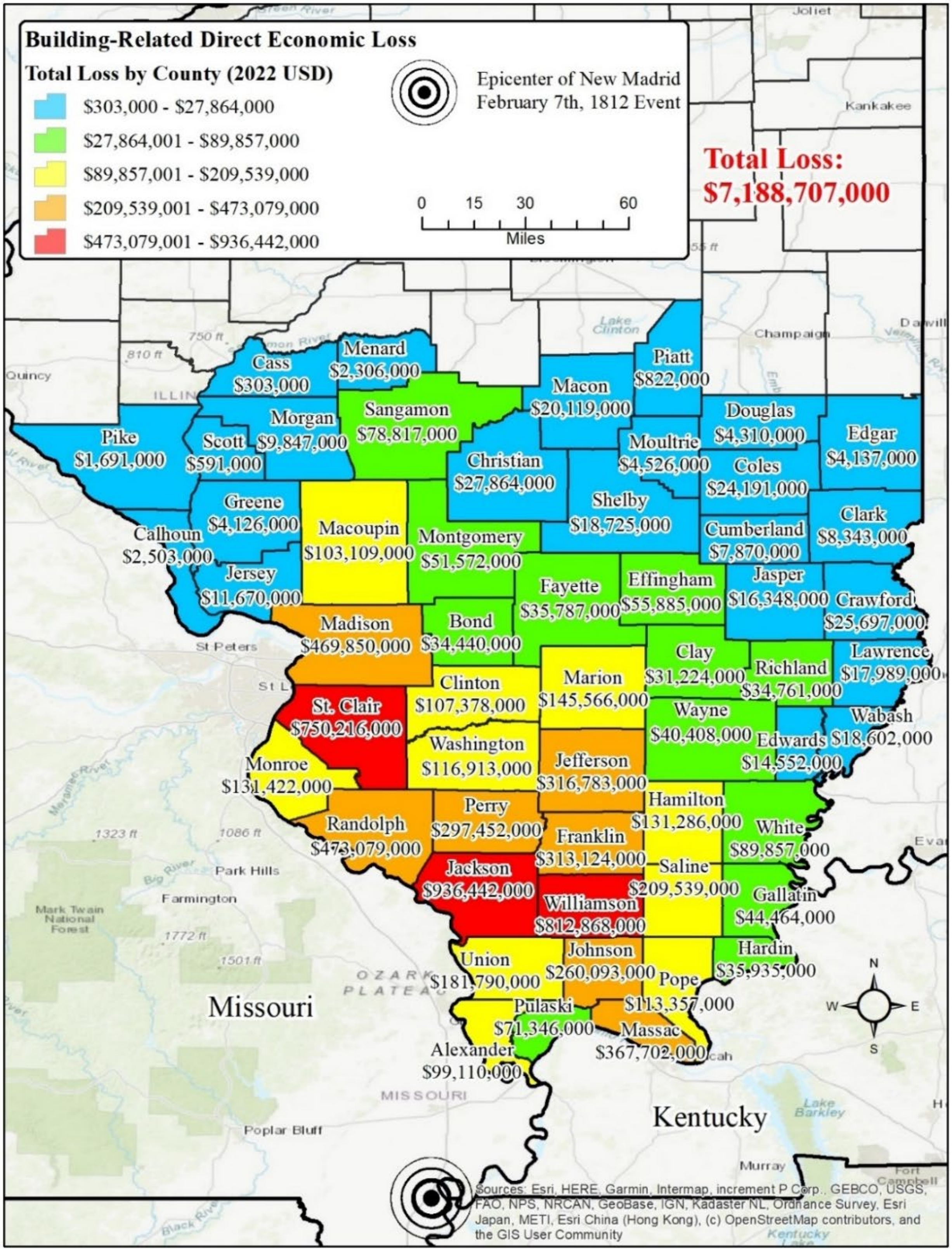


Figure 2.15. Building-related direct economic loss by county based on a simulation of the New Madrid 1812 earthquake. Source: Hazus.

Scenario #2: Aurora, Illinois Historical Event

Total building-related losses were $30.799 billion; 14% of the estimated losses were related to the business interruption of the region. The largest loss was sustained by residential occupancies, which made up over 48% of the total loss. Figure 2.16 shows the losses at the county level.

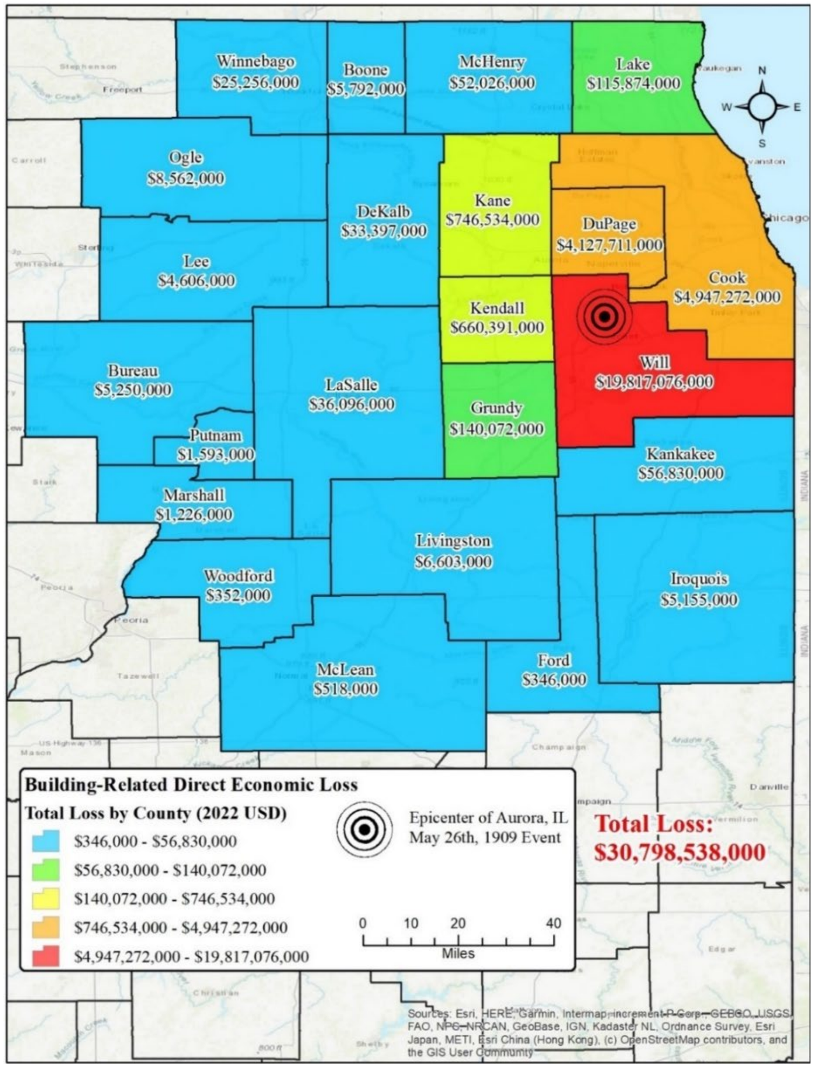


Figure 2.16. Building-related direct economic loss by county based on a simulation of the Aurora 1909 earthquake. Source: Hazus.

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages.

Scenario #1: New Madrid Historical Event

Economic losses to transportation infrastructure were estimated to be $317.27 million. This represents loss incurred by physical damage to highways, railways, bus, ferries, ports, and airports. Utility System losses were estimated to be $1.710 billion. This includes damages to pipelines, facilities, and distribution lines for utilities including potable water, wastewater, natural gas, oil systems, electrical power, and communication.

Scenario #2: Aurora, Illinois Historical Event

Economic losses to transportation infrastructure were estimated to be $284.83 million. This represents loss incurred by physical damage to highways, railways, bus, ferries, ports, and airports. Utility System losses were estimated to be $3.965 billion. This includes damages to pipelines, facilities, and distribution lines for utilities including potable water, wastewater, natural gas, oil systems, electrical power, and communication.

Summary of Scenario Losses

Selected results of the two earthquake scenarios are shown in Table 2.17. Both scenarios would potentially have a significant impact in their respective regions in terms of building damage and damage to infrastructure. Of the two, Hazus estimates that despite Scenario 1 representing a larger, M7.4 event, Scenario 2's M5.2 event causes significantly more damage due to the large amount of infrastructure in the affected region. *Table 2.17* below details the losses for both scenarios.

Table 2.17. Economic Losses by Scenario

	Category	Scenario #1 New Madrid M7.4	Scenario #2 Aurora M5.2
Buildings Damaged (Count)	Moderate	34,176	69,452
	Extensive	8,531	16,706
	Complete	1,668	4,021
	Subtotal	**44,375**	**90,179**
Building Related Economic Loss Estimate	Income Losses	$1,707,920,100	$4,182,594,400
	Capital Stock Losses	$5,480,783,800	$26,615,941,100
	Subtotal	**$7,188,703,900**	**$30,798,535,500**
Transportation System Economic Loss Estimate	Highway	$237,204,900	$64,388,400
	Railway	$38,478,100	$22,479,700
	Light Rail	$3,129,900	$1,600
	Bus	$448,700	$213,600
	Ferry	$277,400	$98,500
	Port	$25,493,700	$87,300,000
	Airport	$12,236,900	$110,345,900
	Subtotal	**$317,269,600**	**$284,827,700**
Utility System Economic Loss Estimate	Potable Water	$57,283,500	$13,358,700
	Waste Water	$593,728,500	$1,041,550,900
	Natural Gas	$13,303,300	$79,419,300
	Oil Systems	$3,500	$114,100
	Electrical Power	$1,044,920,800	$2,830,402,400
	Communication	$324,000	$536,300
	Subtotal	**$1,709,563,600**	**$3,965,381,700**
	Loss Totals	**$9,215,537,100**	**$35,048,744,900**

[1] The New Madrid Seismic Zone | U.S. Geological Survey. (n.d.). Retrieved April 23, 2023, from https://www.usgs.gov/programs/earthquake-hazards/new-madrid-seismic-zone
[2] Webb, J. (2021, April 26). New Madrid Fault: How a major earthquake could devastate the Tri-State. Courier & Press. Retrieved May 18, 2023, from https://www.courierpress.com/in-depth/news/2021/04/26/new-madrid-fault-how-earthquake-could-devastate-evansville-indiana-tri-state/4800331001/
[3] Udden, J. A. (1910). Observations on the earthquake in the Upper Mississippi Valley, May 26, 1909: Illinois Academy of Science Transactions, v. 3, pp. 132-141.
[4] Heigold, P.C. (1972) Notes on the earthquake of September 15, 1972, in northern Illinois: Illinois State Geological Survey Environmental Geology Note 59, 15 p.
[5] Cramer, C. H., Bauer, R. A., Chung, J., David Rogers, J., Pierce, L., Voigt, V., Mitchell, B., Gaunt, D., Williams, R. A., Hoffman, D., Hempen, G. L., Steckel, P. J., Boyd, O. S., Watkins, C. M., Tucker, K., & McCallister, N. S. (2017). St. Louis Area Earthquake Hazards Mapping Project: Seismic and Liquefaction Hazard Maps. Seismological Research Letters, 88(1), 206–223. https://doi.org/10.1785/0220160028
[6] Walsh, F.R. and Zoback, M.D. (2015). Oklahoma's recent earthquakes and saltwater disposal. Science Advances, *1*(5), e1500195.

EXTREME TEMPERATURES

Cold Wave

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
COLD WAVE	STATEWIDE	186	6.9	$8,000	6	202

Description

A cold wave is a weather phenomenon that occurs when a cold air mass moves into an area and brings unusually cold temperatures for an extended period of time.[1] Typically, a cold wave is defined as a rapid and significant drop in temperature over a 24-hour period, with the resulting temperatures significantly lower than the average for the time of year.[2]

Cold waves can be accompanied by other severe weather conditions, such as blizzards, ice storms, and strong winds, which can lead to dangerous and life-threatening situations. Very cold temperatures, usually in the single digits or below zero, which combined with the wind can cause frostbite or a potentially deadly condition known as hypothermia.

The National Weather Service (NWS) uses the following terms for cold wave related terms shown in Table 2.18 below.

Table 2.18. Cold wave terms. Source: NWS

	Definition
Cold Wave	A rapid fall in temperature within 24 hours and extreme low temperatures for an extended period.
Wind Chill Warning	Dangerously cold wind chill values are expected or occurring.
Wind Chill Watch	Dangerously cold wind chill values are possible.
Wind Chill Advisory	Seasonably cold wind chill values but not extremely cold values are expected or occurring.
Hard Freeze Warning	Temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.
Freeze Warning	Temperatures are forecasted to go below 32°F for a long period of time, killing some types of commercial crops and residential plants.
Freeze Watch	A potential for significant, widespread freezing temperatures within the next 24-36 hours.
Frost Advisory	Areas of frost are expected or occurring, posing a threat to sensitive vegetation.

The NWS Wind Chill Temperature index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures (Figure 2.17*)*.

Wind Chill Chart

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	29	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes / 10 minutes / 5 minutes

$$\text{Wind Chill } (°F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Figure 2.17. Wind chill chart. Source: NWS

The NWS will issue a wind chill advisory or warning in Illinois for the following wind chill conditions:

- North of I-80: Advisory for -20 to -30 degrees; Warning for colder than -30 degrees
- Between I-80 and I-64: Advisory for -15 to -25 degrees; Warning for colder than -25 degrees
- South of I-64: Advisory for -10 to -25 degrees; Warning for colder than -25 degrees

Historical Events

There have only been five winters since 1900 when temperatures in Illinois have NOT fallen below zero. Springfield observed the coldest temperature on Jan 1 and 2 of 2018 which was 13 degrees below zero. These were the coldest temperatures observed since February 27, 2015 (14 below Zero). The low for January 1st tied the record for the date, set in 1974. [3]

Chicago's third-coldest winter contributed to the deaths of 26 people by the end of January of 2018. According to separate data from the Illinois Department of Public Health and the National Oceanic and Atmospheric Administration, Cook County saw the highest number of cold-related deaths in the state. Slightly more than half of the county's cold-related deaths this year were in Chicago.[4]

Illinois experienced a very cold winter from 2013-2014. At the time, it went on record as the third coldest winter in Chicago an average temperature of 18.8°F. [5] Illinois suffered from a Polar Vortex in January of 2014. The coldest temperature observed in the area was -20° at City of McHenry on the morning of January 6, 2014.[6]

Late January 2019 saw record low temperatures in the state. The multi-day freeze broke the record for lowest temperatures recorded at -31°F in Rockford. Many locations in northern Illinois reported temperatures in the -20s and some going below -30 degrees. Minimum temperatures were below 0 degrees throughout most of the state. Daily mean temperatures were generally 15 to 20 degrees lower than the 30-year average temperature.[7]

A strong winter storm swept across the United States from February 14-16, 2021 bringing winter weather as far south as coastal Texas. In central Illinois, snow accumulations of 6" or more were common. In addition to snow, very cold temperatures were intensified by gusty conditions forcing wind chills below -15°F across central Illinois. Many cities set new temperature records across the state.[8]

Impacts

Infrastructure

Cold weather can also cause aging critical infrastructure and systems, such as electrical and water/wastewater systems to fracture and fail. The cold weather can cause water pipes to freeze and burst, leading to disruptions in water supply for homes and businesses. Damage to buildings can occur if they are not designed to withstand extreme cold temperatures. This can include damage to roofs, windows, and other structural components. Cold waves can cause power outages as a result of increased demand for electricity to heat homes and businesses.

Environmental

Cold waves can have negative impacts on plants and wildlife, particularly if the cold temperatures persist for an extended period of time. Cold waves can cause changes in water availability, particularly if they are accompanied by snow and ice buildup. This can include changes in stream flow, as well as impacts on groundwater resources. Depending on the time of the year, cold waves can significantly impact the agricultural sector and lead to crop loss if the cold wave happens during growing seasons.

Economic

Cold waves can significantly impact the economy. It can lead to loss of business function due to transportation disruptions or power outages. Cold waves can cause changes in water availability, particularly if they are accompanied by snow and ice buildup. This can include changes in stream flow, as well as impacts on groundwater resources. If a cold wave happens during growing seasons, the can be significant impact to the agricultural sector and possible crop loss.

Social Vulnerability

Extreme temperatures typically occur for a short period of time, but can cause a wide range of impacts, especially to vulnerable populations that may not have access to adequate heating or cooling. Research shows that excess morbidity and mortality occurs during cold weather periods. Older adults are more sensitive to cold than younger adults. Body temperature below 95°F, or hypothermia, increases their risk of heart disease and kidney or liver damage, especially if they have a history of low body temperature or have had hypothermia in the past.[9] Cold waves can lead to increased energy demand, which can drive up energy prices and result in energy insecurity for low-income individuals and other vulnerable populations. Extreme cold brings the possibility of power outages, which can lead to the inability to heat homes safely. This can lead people to resort to unsafe practices such as running a generator, gas stove, or using a barbecue or fire inside their house, which can in turn lead to fires or carbon monoxide poisoning.

Climate Change

Increased temperatures in Illinois have decreased the frequency and magnitude of extreme cold over the past 100 years. Winter has warmed at a faster rate than the other three seasons in every part of

Illinois over the past 100 years, resulting in a significant decrease in the frequency of nighttime temperatures at or below 0°F. This decrease has reduced the frequency of exposure risk to extreme cold. That said, extreme cold is still a dangerous hazard for Illinois, despite decreasing frequency. For example, Illinois' all-time lowest nighttime minimum temperature record of 38°F was set in 2019 in Mt. Carroll. Therefore, although extreme cold risk is decreasing, it still poses a threat to health and infrastructure in Illinois.

Climate models project significant decreases in extremely low temperatures, both daytime and nighttime, across Illinois by mid- and late-century. For example, the annual coldest 5-day minimum temperature in southern Illinois is projected to increase from 5°F currently to between 8 and 15°F by mid-century and between 10 and 17°F by late-century under the moderate emissions scenario. Similarly, the annual number of nights with a minimum temperature below freezing in northern Illinois is projected to decrease from 135 days currently to between 110 and 127 days by mid-century and between 100 and 120 days by late-century. The combination of projected decreased frequency of extreme cold and the frequency of nights with below freezing temperatures across Illinois suggests a significantly decreased risk of extreme cold hazard exposure across Illinois in the next 3 to 6 decades.

Risk Analysis

The entire state is at risk of a cold wave. The vast majority of counties have a Medium risk (Figure 2.18). Counties with a High risk ranking are primarily located in the Chicago region. A complete breakdown of each county risk ranking score can be found in Appendix 2.2 Loss Estimate Tables.

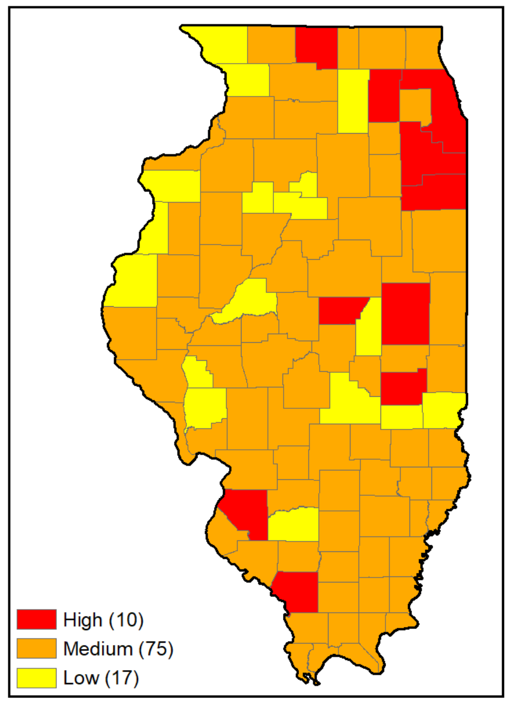


Figure 2.18. Cold wave risk rankings.

Loss Estimates

In 2015, $8,000 in damages due to a burst pipe at a public library were reported in Jackson County. No other property damage was reported by the NCEI Storm Events Database between 1996 and 2021. Due to the limited amount of loss data, it is not possible to create loss estimates for every county. It is reasonable to expect that extreme cold would cause limited damage, primarily to pipelines and road infrastructure, in the future.

---

[1] National Oceanic and Atmospheric Administration (NOAA). (2019). Cold Wave. Retrieved from https://www.weather.gov/safety/cold

[2] Aitsi-Selmi, A., Blanchard, K., & Murray, V. (2016). The Sendai framework for disaster risk reduction and its indicators – where does health fit in? International Journal of Disaster Risk Reduction, 15, 123-131. doi: 10.1016/j.ijdrr.2015.12.007

[3] US Department of Commerce, N. *Cold Weather Statistics for Central Illinois from the New Year's Arctic Outbreak*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/ilx/01jan2018-cold

[4] US Department of Commerce, N. *December 26, 2017 -January 6, 2018 Impressive Cold Stretch*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/lot/201718newyears_cold

[5] US Department of Commerce, N. *The Winter 2013-2014: Events & Numbers*. NOAA's National Weather Service. Retrieved April 23, 2023, from https://www.weather.gov/lot/201314_winterevents

[6] US Department of Commerce, N. *The January 5th-7th, 2014 Arctic Chill*. NOAA's National Weather Service. Retrieved April 23, 2023, from https://www.weather.gov/lot/2014Jan5-7_cold
[7] Illinois State Climatologist. (2019, February 1). *Previous records slashed with monumental cold conditions in Illinois* –https://stateclimatologist.web.illinois.edu/2019/02/01/previous-records-slashed-with-monumental-cold-conditions-in-illinois/
[8] US Department of Commerce, N. February 14-15 2021 Winter Storm Recap. NOAA's National Weather Service. Retrieved from https://www.weather.gov/ilx/Feb_15_2021_Winter_Storm_Recap
[9] *Older Adults and Extreme Cold*. (2021, December 3). https://www.cdc.gov/aging/emergency-preparedness/older-adults-extreme-cold/index.html

EXTREME TEMPERATURES

Heat Wave

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
HEAT WAVE	STATEWIDE	241	8.9	$775,000	444	420

Description

Heat wave events occur as a result of above normal temperatures, which often coincide with high relative humidity, which increase the likelihood of heat disorders with prolonged exposure or strenuous activity. The National Weather Service (NWS) uses the following definitions can be used to differentiate different heat related terms[1]:

- **Excessive Heat**: Excessive heat occurs from a combination of high temperatures (significantly above normal) and high humidities. At certain levels, the human body cannot maintain proper internal temperatures and may experience heat stroke.
- **Heat Wave:** A period of abnormally and uncomfortably hot and unusually humid weather. Typically, a heat wave lasts two or more days.
- **Heat Index**: The Heat Index (HI) or the "Apparent Temperature" is an accurate measure of how hot it really feels when the Relative Humidity (RH) is added to the actual air temperature.

Excessive heat for a region are temperatures that hover 10 degrees or more above the average high temperature for several days to several weeks. The definitions do vary by region; however, a heat wave is defined as a period of at least three consecutive days above 90°F. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility.

The heat index is a measure of how hot it feels combining both temperature and relative humidity. As relative humidity increases, a given temperature can feel even hotter. Figure 2.19 displays NOAA's National Weather Service Heat Index chart.[2] The heat index chart helps to identify the apparent temperature; locate the temperature across the top of the chart and the relative humidity down the left side of the chart and the intersect is the apparent temperature.

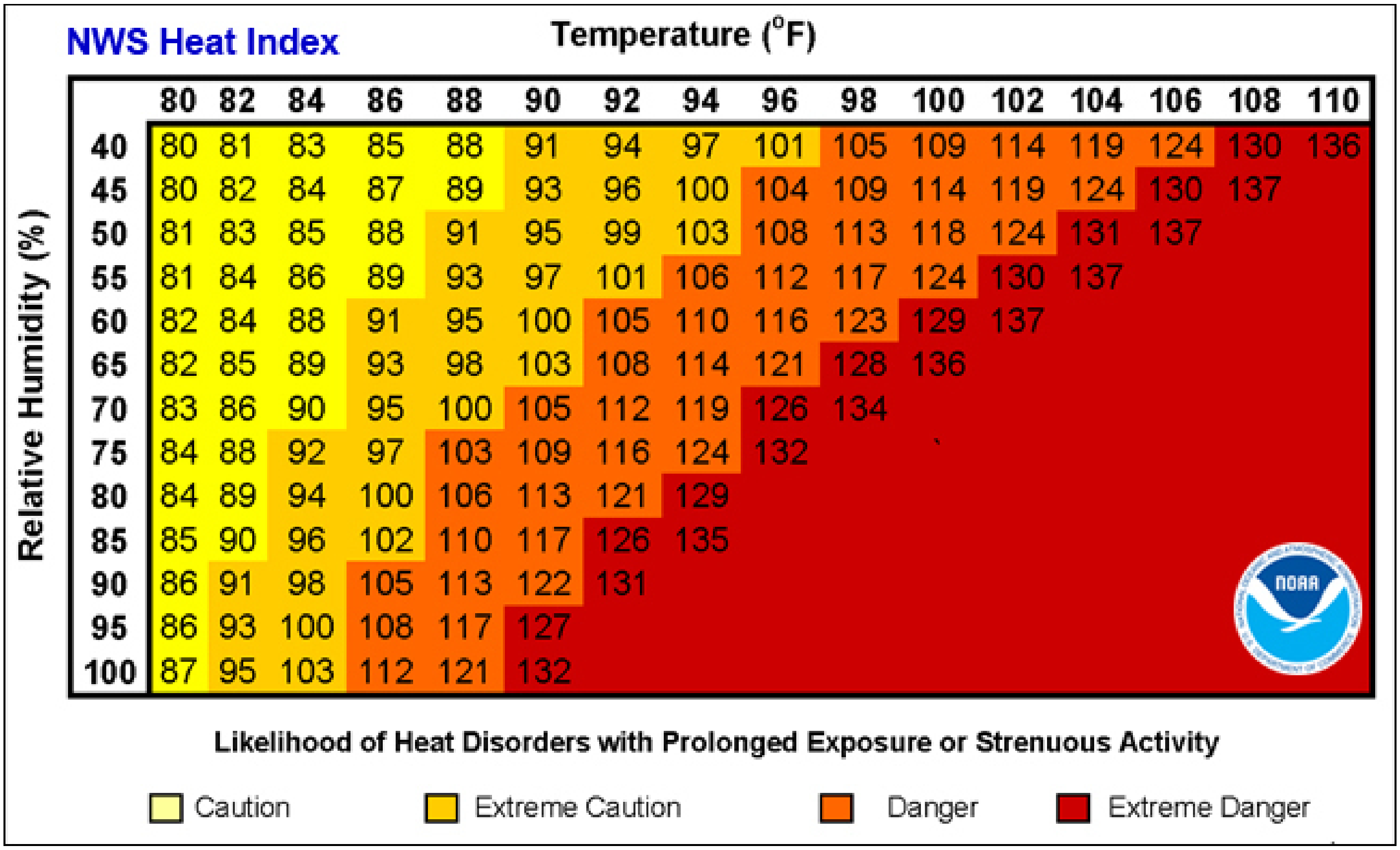


Figure 2.19. Heat index chart. Source: NWS

The National Weather Service issues heat warnings when the heat index exceeds given local thresholds. Table 2.19 shows the potential heat disorders people may face based on the heat index classification.[3]

Table 2.19. Heat Index effects on the body.

Classification	Heat Index	Effect on the body
Extreme Danger	125°F or higher	Heat stroke highly likely.
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90 °F -103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity.

Heat kills by pushing the human body beyond its limits. Normally the body's internal thermostat produces perspiration that evaporates to cool and regulate the body's temperature to 98.6 degrees. Sweating does nothing to cool the body unless the water is removed by evaporation. High humidity retards this process. Because the body has been robbed of its ability to cool itself, the body must work much harder to maintain a normal temperature in excessive heat and high humidity. A sunburn will also slow down the skin's ability to release excess heat.

Table 2.20. Heat-induced illnesses.

Heat Related Illness	Symptoms
Dehydration	Dry, sticky mouth; headache; not urinating much; dark yellow urine.
Heat Rash	Red bumps on skin usually on the neck, chest, and folds of skin.
Heat Cramps	Heavy sweating; muscle pain.
Heat Exhaustion	Heavy sweating; nausea or vomiting; dizziness; light headedness; weakness; irritability; fainting; fast breathing; fast pulse.
Heat Stroke	Very high body temperature; fast pulse; fainting; confusion; passing out; convulsions; coma, and in many cases, death.

Historical Events

The heat waves of the summer of 1995 caused deaths and injuries previously unseen in the State of Illinois from such a phenomenon. Throughout the entire State, the combination of record or near-record high temperatures and high dew point temperatures led to heat indices routinely above the 120-degree mark from July 12-17. The heat index peaked at 125 degrees on July 14 when the air temperature was 98°F and the relative humidity was 63 percent. Conditions such as these create hardships for respiratory and cardiovascular systems of every person, but especially in toddlers and the elderly. Scattered power outages compounded the problem when Commonwealth Edison, the supplier of electricity to virtually the entire Chicago metropolitan area, and other electric utilities could not keep up with the record demand. Of the 583 fatalities associated with the 1995 heat waves, 75 death certificates listed heat as the primary cause, and 508 as the secondary cause.[4] In a sampling of 134 of the heat victims, 61% were over the age of 65, but only 2 of the 134 fatalities (1.5%) were toddlers. The vast majority of deaths (504) were in Chicago. At the time there was a perception that the numbers were inflated, later studies indicated the opposite was true and the heat victims were significantly undercounted. Local officials believed that many of the elderly were scared to come out of their apartments because of high amounts of crime in their neighborhoods. Many were found in their rooms with air temperatures in excess of 120 degrees. The City of Chicago has taken a number of steps to mitigate the health hazards in the event of future heat waves, including a program for home visits to check the condition of people indicated as vulnerable.

In 1999, the entire Midwest was above normal in temperature for the month of July, with the last ten days consisting of a major heat wave. As a ten-day average, both maximum and minimum temperatures were 7 to 11 degrees above normal. The peak of the heat struck on July 29th and 30th in most of the Midwest. Minimums exceeded 78 degrees in cities like Chicago, St. Louis and Cincinnati, where many heat related deaths occurred. The maximum temperature exceeded 100 degrees in many of these same cities, with most of the Midwest recording maximums of 10 to 20 degrees above normal.

In 2012 a heat wave impacted a large portion of North America. From July 4th-7th, Illinois experienced above average temperatures. The highest temperature recorded during the heat wave at Chicago O'Hare International Airport (the official climate site) was 103°F on July 5th and 6th. These were the highest temperatures since July 13, 1995 when 104° was observed.[5]

Impacts

Infrastructure

Excessive heat can cause the surface of roads to deform as pavement expands in the heat. The pavement pushes up off the ground at its weak spots when there is no place for it to expand, or where cracks have weakened the pavement, particularly in areas of poor drainage. The risk for roads buckling is greatest when the temperature is over 90 degrees for extended periods. Airport runways are also vulnerable to extreme heat, which can cause asphalt to soften and deteriorate. Some airplanes themselves cannot fly in extremely high temperatures. While larger planes are able to operate in a wide range of temperature conditions, many smaller, regional aircraft cannot fly safely if temperatures exceed 118°F. Extreme heat can also cause rail lines to buckle (called “sun kinks”), causing derailments. When water supplies are depleted in drought, subsidence (the sinking of the ground) can occur as more groundwater is removed. This affects infrastructure, including roads, buildings, and water pipes, and can lead to the formation of sinkholes. Heat waves can increase demand for electricity, which can lead to power outages and blackouts, particularly in areas with aging or stressed energy infrastructure.[6] Heat waves can impact communication systems, including cell phone towers, internet infrastructure, and other communication networks, due to equipment failures due to extreme heat, as well as disruptions to power and transportation systems.

Environmental

The increased demand on water due to a heat wave can have impacts on water sources, which can lead to reduced water quality and availability. Excessive heat exposure can stress plants, stunt development, and potentially cause plant mortality, which can result in reduced quality and lower yield in agricultural crops.[7] Heat waves can also cause mass die-offs for plants and wildlife due to unfavorable living conditions.

Economic

Heat waves can have significant impacts on the economy. For areas that rely on outdoor recreation and tourism, they can experience reduced activity and visitors due to the heat. Heat waves can increase demand for electricity and other forms of energy, particularly for cooling purposes. This can lead to increased energy costs for homes and businesses.[8] They can also impact labor productivity, particularly in outdoor occupations such as agriculture and construction. Other impacts on agriculture can include crop loss if excessive heat temperatures are sustained for long periods of time and may lead to drought.

Social Vulnerability

Extreme heat is associated with more fatalities than any other severe weather event in the United States. Stagnant atmospheric (humid and muggy) conditions and poor air quality can induce heat-related illnesses. In addition to air quality, concrete and asphalt store heat longer and gradually release the heat at night which produces higher nighttime temperatures. Therefore, people living in urban areas may be at a greater risk than people in rural regions. As buildings, especially those with dark roofs, and dark paving materials replace vegetation in urban areas, the heat absorbed during the day increases and cooling from shade and evaporation of water from soil and leaves is lost. Urban areas can also have reduced air flow because of tall buildings, and increased amounts of waste heat generated from vehicles, factories, and air conditioners. These factors can contribute to the development of an urban heat island.[9]

Those most vulnerable during a heat wave are the elderly and those with underlying medical conditions. During the 1995 heat wave in the Midwest, the median age of those who died was 75.[10] An increase in energy demand during a heat wave can lead to energy insecurity due to an increase in energy costs. Those living below the poverty line do not have access to generators in the event of power outages which can make them more at risk during a heat wave.

Climate Change

The average daily temperature in Illinois has increased by 1-2°F over the past 100 years. While all four seasons have experienced warming, overnight minimum temperatures have increased more than daytime maximum temperatures. This pattern of disproportionate warming at night is largest in the summer, such that summer nighttime temperatures have increased at 3 to 4 times the rate of summer daytime high temperatures. Because of this differential warming, the frequency of hot days, those with a high temperature at or above 95°F, in the warm season in Illinois has not significantly increased over the past several decades. While the number of warm nights, those with a low temperature at or above 70°F, has increased throughout the state. Even without a significant increase in extremely high daytime temperatures, the increase in warm nights in spring and summer has increased the risk of health impacts from extreme heat. Researchers have consistently documented a strong response of excess mortality and morbidity to very high nighttime temperatures because extreme nighttime temperatures reduce the ability of humans to recover from hot days. The frequency of extreme heat has increased earlier in the warm season, especially in mid- to late-May. For example, the entire state experienced a serious heat wave from May 9-14, 2022, during which both Rockford and Chicago recorded their earliest 70°F nighttime low temperature on record. These kinds of early season heat waves are especially associated with elevated risk of heat-related health impacts because of the lack of human acclimatization to heat that is built up during the warm season. Therefore, a continued expansion of extreme heat occurrence in spring can increase risk of heat-related poor health outcomes even without a noticeable change in overall frequency.

Climate models project significant increases in extremely high temperatures, both daytime and nighttime, across Illinois by mid- (2050) and late- (2090) century. For example, the annual hottest 5-day maximum temperature in northern Illinois is projected to increase from 92°F currently to between 95°F and 101°F by mid-century and between 98°F and 104°F under the moderate emissions scenario. By comparison, the highest average 5-day maximum temperature in Chicago during the 1995 heat wave was 98°F. Nighttime temperatures are projected to continue warming in all seasons in Illinois, increasing the frequency of warm nights across the state. The annual number of warm nights – those with a minimum temperature at or above 70°F – in central Illinois are projected to increase from 15 currently to between 30 and 55 by mid-century and between 35 and 75 by late-century under the moderate emissions scenario. The projected increase in extremely high temperatures is expected to coincide with increased humidity levels during the warm season in Illinois. The combination of heat and high humidity increases the risk of poor health outcomes, including excess mortality. Currently, the National Weather Service issues heat warnings if the maximum 1-day heat index is expected to exceed 110°F. The annual frequency of these extremely dangerous heat days in southern Illinois are expected to increase from 1-2 days per year currently to between 4 and 20 days by mid-century and between 6 and 35 days by late-century under the moderate emissions scenario. The combination of projected increased frequency of both hot days and warm nights suggests a significantly increased risk of heat wave hazard exposure across Illinois in the next 3 to 6 decades. Importantly, the magnitude and extent of projected heat wave increases are sensitive to greenhouse gas emissions between now and late-century. This suggests that the potentially catastrophic health impacts from extreme heat could be mitigated by rapid and immediate reduction in global greenhouse gas concentrations.

The risk of impacts from extreme heat is a function of both exposure (i.e., heat wave frequency) and social vulnerability. Irrespective of likely increasing trends in extreme heat, some urban and rural communities are at higher risk of heat impacts because of underlying social vulnerability. For example, the census tracts covering all of the downtown Peoria area are in the top 10% of all census tracts in the entire country for vulnerability to extreme heat impacts, according to the National Integrated Heat Health Information System (NIHHIS, https://www.heat.gov). The adjacent census tracts in East Peoria are in the bottom 20% of all census tracts in the country for heat vulnerability. Projected increases in extreme heat frequency would exacerbate these existing inequities and disproportionate social vulnerabilities across Illinois. Likewise, many aspects of urban and rural development and economic stability can increase or decrease the risk of heat wave health impacts, including loss of life. For example, sprawl-based urban development increases the intensity of the urban heat island effect, which increases the exposure risk of residents to extreme heat. This type of development also tends to favor car-based transit and car-dependent communities, which increases the risk of social isolation, one of the best predictors of heat health outcomes. Compact urban development, including walkable, bikeable, and all-around accessible urban and rural communities are overall less vulnerable to heat-related poor health outcomes for residents. Adaptation strategies to reducing societal vulnerability to extreme heat are particularly important to help communities manage population change, as many Illinois communities are expected to either gain or lose population in the next few decades.

Lastly, recent research has shown human health impacts occur at temperatures and heat index values that are well below the current NWS heat warning thresholds. Updated and improved heat prediction, early warning, and monitoring systems are paramount for reducing heat-health impacts in the face of climate change. Collaboration between researchers, emergency managers, and communities is needed to ensure accurate weather forecasts translate to effective heat management and impact mitigation at the local level.

Risk Analysis

The entire state is at risk for a heat wave. Many counties received a risk ranking of Medium. Counties that received a risk ranking of High or Very High are primarily located in southern Illinois and the Chicago region (Figure 2.20). A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Loss Estimates

In 2012 and 2013, two instances of property damage were reported in Cook County. A road in Chicago buckled under the heat, causing $25,000 in damages. In Glenview, railroad line on a bridge expanded, causing a train to derail and freight cars to pile up on the tracks. The bridge collapsed due to the weight of the cars, ultimately causing $750,000 in property damage. Due to the limited amount of loss data, it is not possible to create loss estimates for every county. It is reasonable to expect that extreme heat would cause moderate damage, primarily to road, rail, and utility infrastructure, in the future.

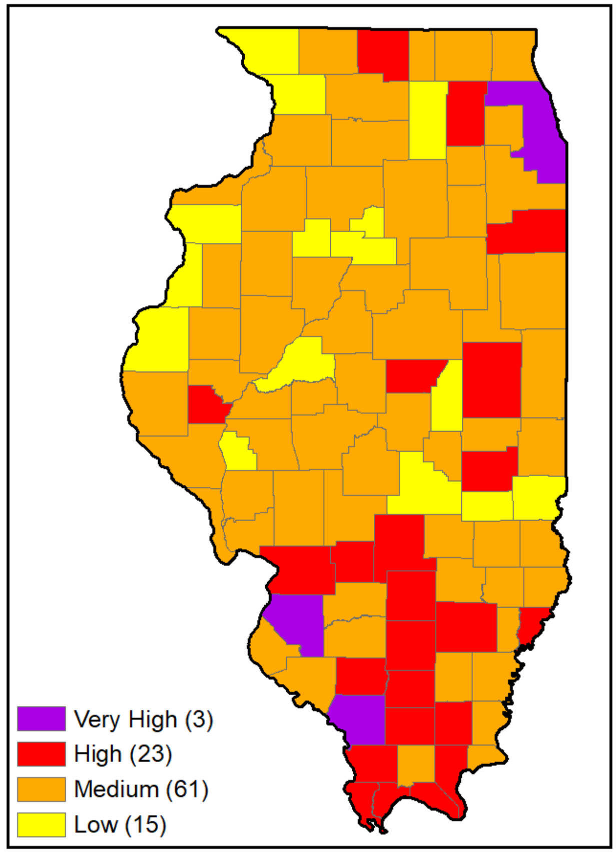


Figure 2.20. Heat wave risk rankings.

---

[1] Service, N. N. W. Glossary—NOAA's National Weather Service. Retrieved February 4, 2023, from https://w1.weather.gov/glossary/
[2] NOAA's National Weather Service. Heat Index. Retrieved April 4, 2023, from https://www.weather.gov/images/safety/heatindexchart-650.jpg
[3] US Department of Commerce, N. What is the heat index? NOAA's National Weather Service. Retrieved April 5, 2023, from https://www.weather.gov/ama/heatindex
[4] Heat-Related Mortality—Chicago, July 1995. (n.d.). Retrieved April 16, 2023, from https://www.cdc.gov/mmwr/preview/mmwrhtml/00038443.htm
[5] US Department of Commerce, N. (n.d.). July 4-7, 2012 Heat Wave. NOAA's National Weather Service. Retrieved April 16, 2023, from https://www.weather.gov/lot/2012July_heat
[6] United States. Environmental Protection Agency. Office of Atmospheric Programs. (2006). Excessive heat events guidebook. US Environmental Protection Agency, Office of Atmospheric Programs. https://www.epa.gov/sites/default/files/2016-03/documents/eheguide_final.pdf
[7] Parker, L. E., McElrone, A. J., Ostoja, S. M., & Forrestel, E. J. (2020). Extreme heat effects on perennial crops and strategies for sustaining future production. https://www.climatehubs.usda.gov/sites/default/files/ParkerEtal2020_PlantScience.pdf
[8] National Climate Assessment. (2018). Impacts of Climate Change on the United States: The Fourth National Climate Assessment. Retrieved from https://nca2018.globalchange.gov/
[9] United States. Environmental Protection Agency. Office of Atmospheric Programs. (2006). Excessive heat events guidebook. US Environmental Protection Agency, Office of Atmospheric Programs. https://www.epa.gov/sites/default/files/2016-03/documents/eheguide_final.pdf
[10] International Longevity Center-USA. (2006). Ageism in America. http://www.ilcusa.org/prj/ageism.htm

FLOODING

The most common hazard in the United States is flooding with thousands of events occurring each year. Flooding occurs along the coast, rivers, lakes, small streams, gullies, creeks, and in typically dry streambeds. Many factors can lead to flooding including heavy and/or prolonged periods of rainfall, snowmelt, soil saturation, ground freeze, severe wind events, and inadequate drainage systems. Ponding can occur in low lying ground. Street flooding and basement flooding are often associated with overwhelming storm water systems. Loss of life and property can result when people build structures and develop in flood hazard areas. In Illinois, maps area created to show Special Flood Hazard Areas (SFHA), which are areas having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V.[1] FIRM SFHAs can be viewed on the National Flood Hazard Layer (NFHL) (Figure 2.21).

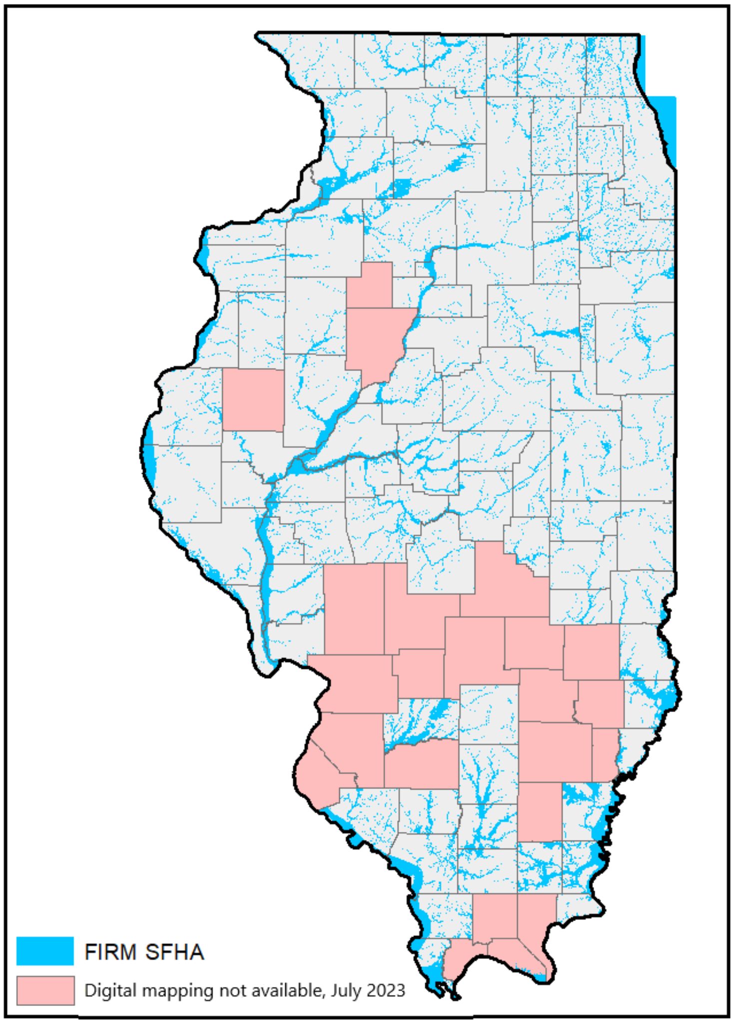


Figure 2.21. Illinois FIRM SFHA.

The SFHA is the regulated floodplain, where the National Flood Insurance Program (NFIP) requires enforcement of federal floodplain regulations. The state model floodplain ordinance include additional higher regulatory standards to further reduce flood risk. See **2.4 National Flood Insurance Program** for more information.

[1] FEMA. (n.d.). Special Flood Hazard Area (SFHA). Retrieved from https://www.fema.gov/glossary/special-flood-hazard-area-sfha

FLOODING

Coastal Flooding

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
COASTAL FLOODING	LIMITED	15	<1	$25,300,000	0	0

Description

Coastal flooding, or lakeshore flooding, occurs when water from a Great Lake inundates adjacent land. Coastal flooding can affect the immediate lakefront, bays, and the interfaces of lakes and rivers or other waterways.[1] In Illinois, coastal flooding only impacts coastal Cook and Lake counties, which border Lake Michigan in northeastern Illinois (Figure 2.22). Storm surge caused by the combination of high winds and high water is the primary driver of floods, but seiches – sudden, large waves caused by low air pressure and wind – have also caused damage in coastal Cook and Lake counties. Coastal flooding can cause erosion along the shoreline, leading to habitat, recreation, property, and infrastructure loss along the shore.[2]

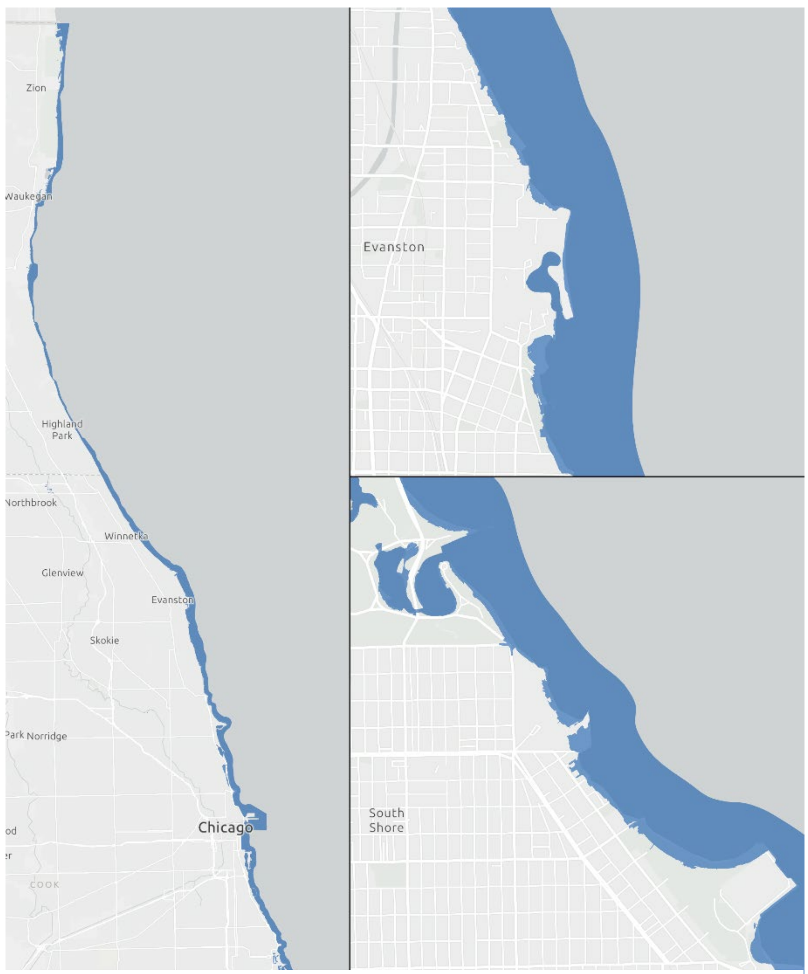


Figure 2.22. 1% annual chance flood. Flooding is shown along Cook and Lake counties' coastline (left), Northwestern University's campus (top right), and residential structures in Chicago's South Shore neighborhood (bottom right).

Historical Events

Since 1996, the NCEI Storm Events Database has recorded 13 lakeshore flooding events (Table 2.21). Only two of the 11 events in Cook County caused damage, and there were no recorded injuries or fatalities.

Table 2.21. Coastal flooding events and damages

County	No. of Events	Property Damage
Cook	11	$25,300,000
Lake	2	$0

On October 31, 2014, high lake levels and strong winds over Lake Michigan caused waves to overtop roads and bike paths along Chicago's lakefront. Lake Shore Drive was closed for several hours due to flooding and part of Lakefront Trail was washed out, causing $300,000 in damage.[3] Wave heights reached 21.7 feet at the south open water buoy, the second highest in recorded history (Figure 2.23).

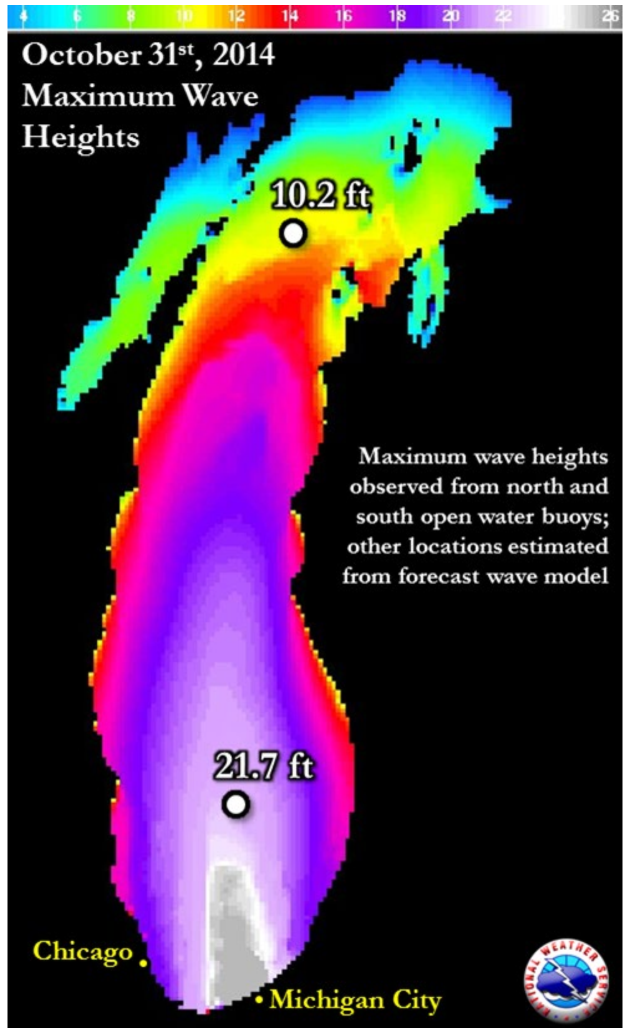


Figure 2.23. Maximum wave heights. Source: NWS

On January 11, 2020, winds gusts nearing 50 mph combined with high water levels produced 18-foot waves on Lake Michigan. Catastrophic damage totaling $25 million was reported in Cook County as flood waters with inches of standing water reached up to 400 feet inland. Rogers Park in northern Chicago was especially affected: several beaches were closed and floodwaters reached residential structures, flooding a parking garage and destroying several cars. Other beaches and parks across Chicago were also flooded, and asphalt on a bike path was damaged. There were no reported injuries or fatalities.[4]

Impacts

Infrastructure

Coastal flooding can cause road closures along major routes and in neighborhoods, reduced stormwater drainage capacity. Deterioration to infrastructure that is not meant to withstand frequent flooding can also occur.[5]

Significant essential infrastructure, including hospitals, emergency operation centers (e.g., police and fire stations), schools, transportation infrastructure (e.g., highways and rail systems) and utility infrastructure (e.g., power, water and wastewater, and telecommunication), are located within or adjacent to the coastal floodplain. Damage to essential infrastructure or limited access caused by coastal flooding can prolong recovery and leave residents without access to essential services.

Environmental

Coastal flooding poses risks to natural environments. The Illinois Beach State Park in Lake County stretches 6.5 miles down the coast of Lake Michigan. Its numerous ecosystems, including dunes, swales, marshes, and oak forests, are home to over 650 species of plants and several endangered species, such as the piping plover.[6] Fort Sheridan Forest Preserve in Lake County and the Rainbow Beach Dunes Natural Area in Cook County also contain delicate coastal dunes that host rare and endangered species. Coastal flooding can disturb marsh and dune ecosystems by displacing habitats, decreasing water quality, and causing erosion along Illinois' numerous coastal natural areas.

Coastal flooding may also indirectly impact natural areas. Shuttered nuclear power plants, old coal plants and ash ponds, four superfund sites, and other industrial sites containing hazardous materials span the Lake Michigan shoreline and the Calumet River in northeastern Illinois.[7] Flooding could cause hazardous waste from these sites to enter urban areas, exposing flora, fauna, and people to toxic floodwaters.

Economic

Coastal flooding has the potential to shut down businesses and economic sectors, such as the tourism sector along Lake Michigan, for a significant period of time, causing lost wages and GDP. Lake Shore Drive, a major road artery in Chicago, has experienced coastal flooding in the past. Commuters may be unable to get to work, negatively impacting the economy.

Social Vulnerability

Coastal flooding in Illinois has primarily affected beaches and other natural areas. Lack of access to beaches and green spaces may disproportionately affect socially vulnerable areas. The South Side of Chicago, although not necessarily directly impacted by coastal flooding, is a socially vulnerable area in part due to high poverty rates. Public beaches can be a means of heat relief, particularly for those who cannot afford air conditioning. Proximity to public parks also decreases rates of crime, strengthens community bonds, and provides safe recreation areas for children, elderly, and people with disabilities.[8] Decreased access to green spaces due to coastal flooding may further harm socially vulnerable communities.

Climate Change

Lake Michigan's water level has oscillated drastically over the last decades. Record low levels in 2013 hampered Chicago's ports as freighters were unable to be loaded, and recreation activities dried up as boats at marina docks were beached.[9] By 2020 lake levels had swung almost 6 feet: Lake Michigan levels had reached a record summertime high. Basements and basement apartments flooded, beaches disappeared, and waterlogged streets made travel within the city difficult and dangerous.

By 2049, projections show that Lake Michigan's average lake level could rise to 581 feet, over two feet higher than its current long-term average of 578.8 feet.[10] Figure 2.24 shows potential flooding should Lake Michigan rise to 584.8 feet, representing the upper end of lake level oscillations that have been common in the past several decades. Coastal flooding may reach further inland, inundating homes on the North and South sides of Chicago.

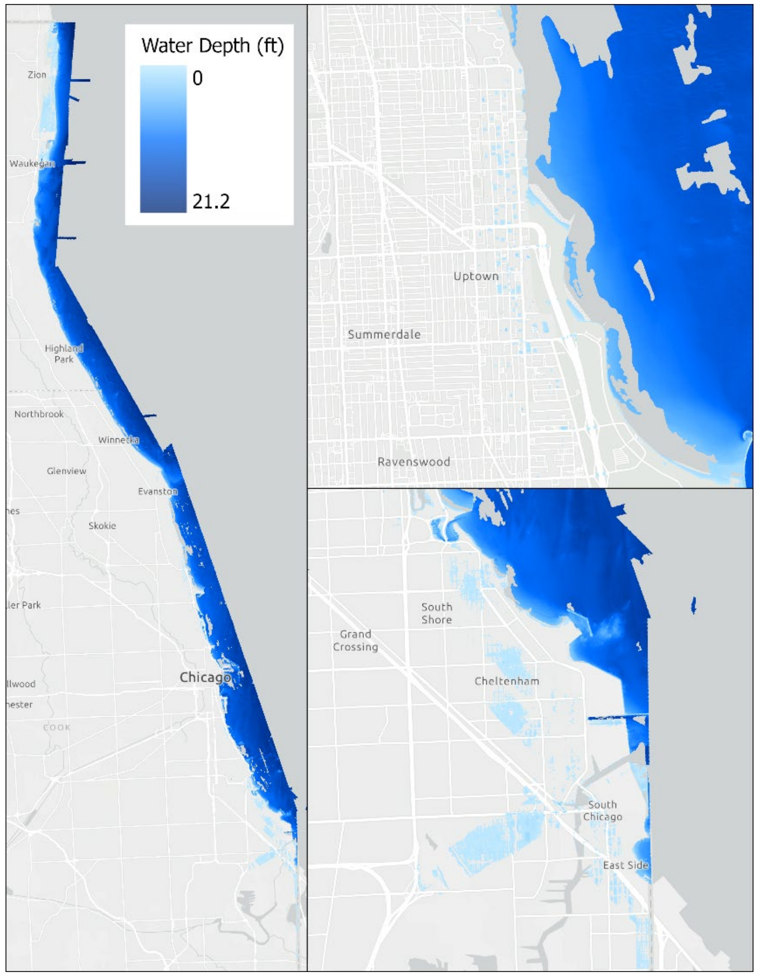


Figure 2.24. Potential flooding when Lake Michigan's average level is 584.8 feet, 6 feet above the current average. Flooding occurs along Illinois' coastline (left) and on the North and South sides of Chicago (right).

Risk Analysis

Only Cook and Lake counties are at risk of coastal flooding in Illinois. Cook County has a Very High risk, while Lake County has a Medium risk. A complete breakdown of both county risk ranking scores *can be found in* Appendix 2.1 Risk Ranking Tables.

Loss Estimates

Since 1996, coastal flooding in Illinois has resulted in $25,300,000 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** Cook and Lake County may experience damages of $973,077. Estimated annual essential facility exposure is $107,977 for Cook County, and $42,408 for Lake County. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

---

[1] NWS. (n.d.). Coastal/Lakeshore Flooding. National Weather Service Glossary. https://forecast.weather.gov/glossary.php

[2] U.S. Climate Resilience Toolkit. (n.d.). Coastal Erosion. NOAA. Retrieved April 28, 2023, from https://toolkit.climate.gov/topics/coastal-flood-risk/coastal-erosion

[3] NWS. (n.d.). October 31, 2014: Strong Wind, High Wave, & Early Season Snow Event. Chicago, IL Weather Forecast Office. Retrieved April 19, 2023, from https://www.weather.gov/lot/2014Oct31#met
[4] NWS. (n.d.). Storm Events Database. NWS. Retrieved April 19, 2023 from https://www.ncdc.noaa.gov/stormevents
[5] Climate Change Indicators: Coastal Flooding. (n.d). EPA. Retrieved April 28, 2023, from https://www.epa.gov/climate-indicators/climate-change-indicators-coastal-flooding
[6] Adeline Jay Geo-Karis Illinois Beach State Park. (n.d.). IDNR. Retrieved August 2, 2023, from https://dnr.illinois.gov/parks/park.adelinejaygeo-karisillinoisbeach.html
[7] Courtney, K. et al. (2022). Rising Waters: Climate Change Impacts and Toxic Risks to Lake Michigan's Shoreline Communities. (). Environmental Law & Policy Center. https://elpc.org/wp-content/uploads/2022/06/RisingWatersReport_ELPC2022.pdf
[8] Social Equity and Parks and Recreation. (n.d.). National Recreation and Park Association. Retrieved August 9, 2023, from https://www.nrpa.org/our-work/Three-Pillars/social-equity-and-parks-and-recreation/
[9] Egan, D. (2021, July 7). The climate crisis haunts Chicago's future. A Battle Between a Great City and a Great Lake. The New York Times. https://www.nytimes.com/interactive/2021/07/07/climate/chicago-river-lake-michigan.html
[10] Kayastha, M. B., Ye, X., Huang, C., and Xue, P. (2022). Future rise of the Great Lakes water levels under climate change. Journal of Hydrology, Volume 612, Part B. https://doi.org/10.1016/j.jhydrol.2022.128205 .

FLOODING

Dam/Levee Failure

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
DAM/LEVEE FAILURE	STATEWIDE	10	0.4	$2,650,000	0	0

Description

Dams

A dam is a barrier constructed across a watercourse in order to store, control, or divert water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet, with one acre-foot being the volume of water that covers one acre of land to a depth of one foot. Due to topography, even a small dam may have a reservoir containing many acre-feet of water. A dam failure is the collapse, breach, or other failure of the structure that causes downstream flooding. Dam failures may result from natural events, human-caused events, or a combination of these events. These man-made structures and dam failures are usually considered technological hazards; however, these failures are usually caused by prolonged periods of rainfall and flooding.

A system was created that categorizes dams according to the degree of adverse incremental consequences of a failure or mis-operation of a dam. The hazard potential classification does not reflect in any way on the current condition of the dam (e.g., safety, structural integrity, flood routing capacity). This system categorizes dams into Low, Significant and High Hazard Potential based on the probable loss of human life and the impacts on economic, environmental, and lifeline interests as seen in Table 2.22. Improbable loss of life exists where persons are only temporarily in the potential inundation area.

Table 2.22. Dam Hazard Potential Classification.

Hazard Potential Classification	
Low Hazard Potential	Dams where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.
Significant Hazard Potential	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.
High Hazard Potential	Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.

Illinois has more than 1,600 dams, the majority have a low hazard potential (Figure 2.25). A list of dams in Illinois from the National Inventory of Dams can be found in **Appendix 2.3 Illinois Dams.**

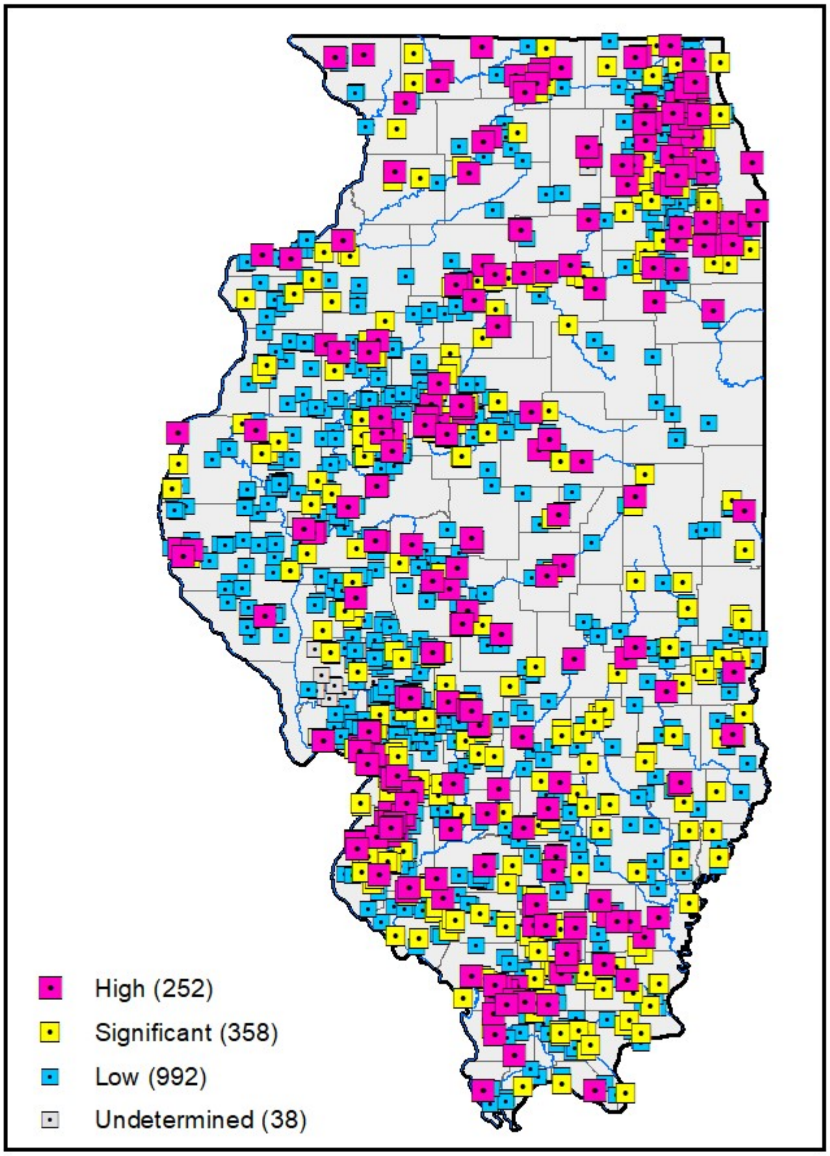


Figure 2.25. Illinois dams hazard potential.

Levees

A levee is a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to reduce risk from temporary flooding. The NFIP regulations define a levee system as “a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.” For the purposes of this document, levees and levee systems are referred to as “levees.”[1] Levees are designed to provide a specific level of protection. They can be overtopped or fail in larger flood events. The following are common terms used when flooding happens because of levees:[2]

- **Breach:** A rupture, break or gap whose cause has not been determined.

- **Failure breach:** A breach for which the cause of failure is known based on an investigation to determine the cause.
- **Overtopping:** Water levels exceed the crest elevation of a levee and flow into protected areas. The levee may be damaged but not compromised. Flooding occurs from overflow/overwash (waves) and other sources.
- **Overtopping breach:** A breach whose cause is known to be a result of overtopping (system exceeded). The levee has been compromised after overtopping and must be repaired to function prior to the next event.

When a levee is overtopped and there is a breach, the system design of the levee has been exceeded. If the levee overtopped and there was no breach, the system is resilient. If the levee did not overtop and there was a breach, this is a system failure. If the levee did not overtop and there was no breach the system performed as it should.

Levees also deteriorate over time. Regular maintenance and periodic upgrades are required to retain a levee's level of protection. Who maintains them depends on the type of levee. The USACE uses the following terms for types of levees:[3]

- **Federally authorized levee:** Typically designed and built by the Corps in cooperation with a local sponsor then turned over to a local sponsor to operate, maintain, repair and replace the levee.
- **Non-federally authorized levee:** Designed and built by a non-federal agency, which is responsible for the operation, maintenance, repair and replacement of the levee.
- **Private or corporate-owned levee:** Designed and built by a private citizen, company or other public entity, which is responsible for the operation, maintenance, repair and replacement of the levee. The Corps has no responsibility for private or corporate-owned levees.

Illinois has more than 2,000 miles of levee systems. Many of the levee systems in Illinois are along the Mississippi and Illinois Rivers (Figure 2.26). A list of levees in Illinois from the National Levee Database can be found in **Appendix 2.4 Illinois Levees**.

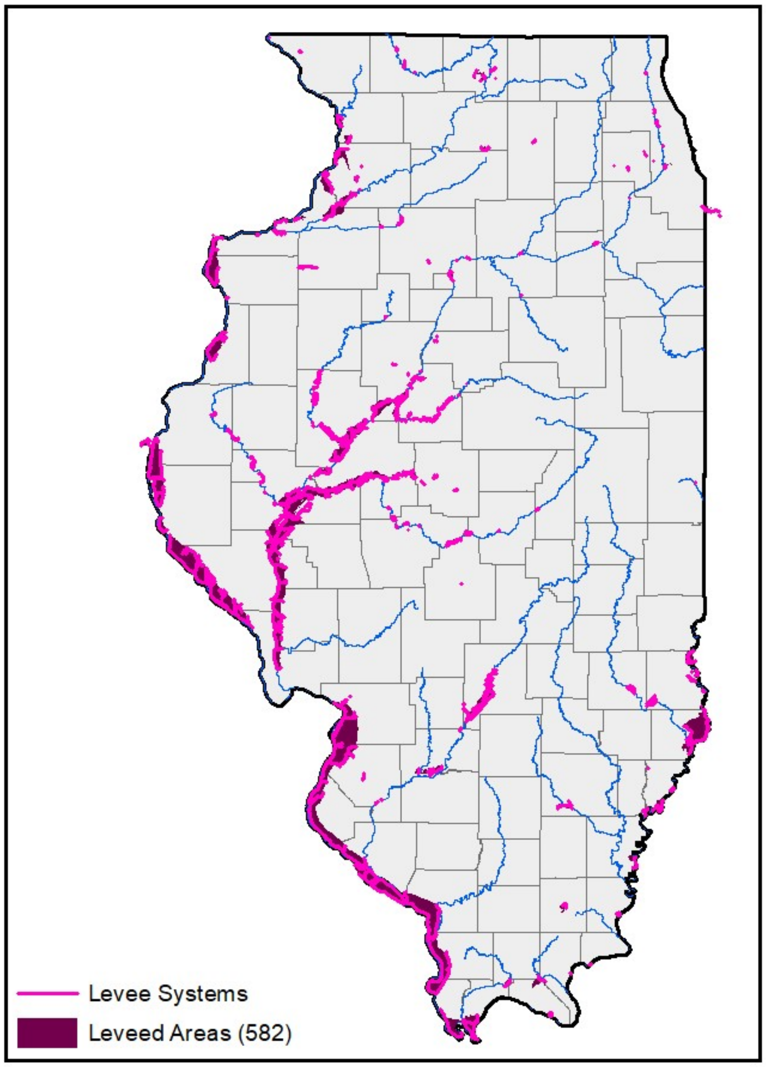


Figure 2.26. Illinois levee systems and leveed areas.

Historical Events

June 2008 saw intense rains across the Midwest leading to many flood occurrences. Clark, Coles, Crawford, Cumberland, Jasper and Lawrence counties were deemed disaster areas. A levee break in Lawrence County flooded portions of the county near Lawrenceville, inundating a campsite and forcing the evacuations of nearly 200 homes.[4] This same storm event led to a levee breach in Adams County, resulting in the unincorporated area of Meyer flooding, resulting in extensive damage and crop loss for many of the farmers in the area.[5]

On June 19, 2011, a levee on the Mauvaise Terre Creek failed in Scott County. This caused immediate flash flooding of farmland and roads in the bottoms nearby.[6] In late July 2011, a levee in Carroll County along the Plum River was breached, leading to flooding in Savanna, Illinois causing extensive damage.[7]

In April 2013, several storms moved through Illinois, causing record levels along the Spoon River. This storm event led to a levee in London Mills broke, leading to flash flooding in the town and causing extensive damage.[8]

Spring 2019 saw intense rains across Illinois and flooding on both the Illinois River and Mississippi River. Chouteau Island Levee in Madison County breached in May 2019, affecting the water supply in neighboring St. Clair County.[9] In June 2019, the breach of the Nutwood Levee in Calhoun County led to the flooding of thousands of acres of farmland and the closure of the Joe Page Bridge over the Illinois River at Hardin.[10]

Impacts

Infrastructure

Extreme rain events can cause severe damage to infrastructure. The most immediate impact of dam or levee failure is flooding. Floodwater can cause significant property damage and infrastructure disruptions. As in the flooding events of 2013, barges broke free and crashed into the Marseilles Dam causing damage and blocking the gates used to control excess water, leading to floodwaters backing up and flooding near the town of Marseilles.[11]

Flooding can damage or wash away roads or bridges making them unsafe for travel. Floodwater can obstruct travel networks causing delays in the movement of goods or people. Floodwater can also carry debris and other hazards, making it difficult for emergency responders to access affected areas. Floodwater can damage or disrupt utilities such as power, water, and sewer systems, leading to outages, contaminated water supplies, and other health hazards.

Environmental

When a dam or levee fails, it can cause rapid changes in water levels, which can result in the loss of aquatic and riparian habitats. It can also impact wetland ecosystems by altering water levels and hydrologic patterns. A dam or levee failure can release large amounts of sediment, debris, and other pollutants into nearby waterways impacting water quality and animal habitats. Dam or levee failures can impact nearby agricultural lands by causing soil erosion from floodwaters. They can also pose a risk to water quality and human or wildlife health if hazardous materials such as chemicals, pesticides, or other pollutants contaminate nearby waterways.

Economic

Dam or levee failure can result in significant property damage to homes, businesses, and other structures. This can be particularly devastating for property owners who may not have flood insurance. Floods caused by dam or levee failure can result in the closure of businesses, particularly those located in flood-prone areas. This can lead to lost income for business owners and their employees. Dam or levee failure can result in significant costs for repairs and rebuilding, both for individuals and for local, state, and federal governments. In addition, floods caused by dam or levee failure will result in increased costs for emergency response and cleanup efforts.

Social Vulnerability

Certain characteristics of dams and levees may put people more at risk. High-hazard potential dams and dams without emergency action plans (EAP) may leave downstream areas more at risk of catastrophic flooding. Privately owned dams and levees may not sufficiently protect people, buildings, infrastructure, or farmland behind them.

Communities with levees may also be at greater risk of flooding due to the perception that flood risk has been eliminated once a levee is constructed. Residents may decrease their flood preparedness activities, and communities may build structures in high-risk areas. In Illinois, fewer than 3% of people living behind levees carry flood insurance.[12] Communities may also be vulnerable for reasons beyond their control.[13]

In April 2011, heavy rainfall fell around the City of Cairo, which sits in southern Illinois at the confluence of the Mississippi and Ohio rivers. Cairo is a majority Black city with a poverty rate of over 40% and population of 2,800 in 2011.[14] As the Ohio River rose, the USACE had to decide whether to open the floodway in order to protect the city. Activating the floodway would involve blowing up a levee to intentionally flood 130,000 acres of Missouri farmland. Levees surrounding Cairo began to fail as the Ohio River surpassed 58 feet, the level at which the USACE had authority to activate the floodway. Five days later, after the river had crested to 61.7 feet, the USACE blew up the levee. A study by IDNR concluded that, if the floodway had been opened when the river was lower, nearly 50 of the 200 flooded structures and millions of dollars in damages could have been avoided in Cairo and the surrounding areas. Residents of Cairo felt that the floodway would have been activated much sooner in a whiter, wealthier community.[15]

Climate Change

As climate changes and heavy rainfall is predicted to increase in Illinois, more stress may be placed on dams and levees. Dams and levees in Illinois are on average 57 and 72 years old, respectively.[16,17] Many of these structures were built using less rigorous engineering standards that may not stand up to extreme precipitation and faster streamflow.[18]

Illinois does not currently have a funding program to assist dam owners with dam rehabilitation, although the state is removing aging low head dams.[19] Levees also need frequent maintenance and strengthening, which falls to the owner of the levee. As climate changes while dams and levees do not improve to catch up with changing precipitation and streamflow conditions, high-hazard dam failure has the potential to be catastrophic for areas downstream, and levee failures could flood cities along the Mississippi and Illinois rivers, where most of the state’s levees are located.

Risk Analysis

While Illinois has 565 levee systems which create 2,160 miles of levees and 1,639 dams, the majority of the state has a Low or Very Low risk ranking for dam or levee failure (Figure 2.27). A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Since 1996, flooding caused by dam or levee failure in Illinois has resulted in $2,650,000 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Estimated annual essential facility exposure is relatively low across the state. Counties with relatively high property damage per year values include Fulton County with $57,692, and Adams County with $19,231. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in Appendix 2.2 Loss Estimate Tables.

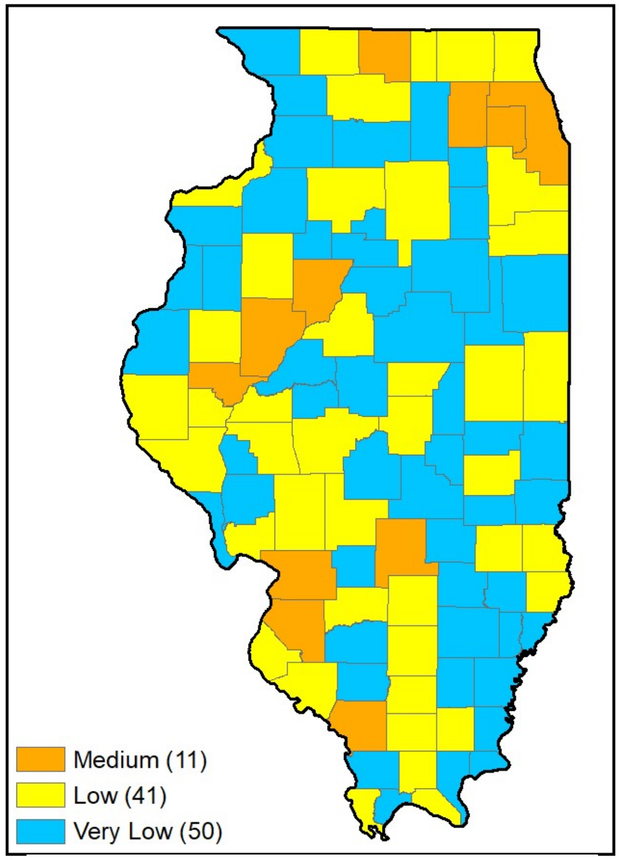


Figure 2.27. Dam/Levee failure risk ranking.

[1] Federal Emergency Management Agency. (n.d.). *What Is A Levee.* Retrieved from https://www.fema.gov/sites/default/files/2020-08/fema_what-is-a-levee_fact-sheet_0512.pdf

[2] *Rock Island District > Missions > Flood Risk Management > Levee Safety Program > Levees > Terms & Definitions*. Retrieved from https://www.mvr.usace.army.mil/Missions/Flood-Risk-Management/Levee-Safety-Program/Levees/Terms-Definitions/

[3] Ibid

[4] *Illinois Flooding*. (2008, June 13). https://web.archive.org/web/20080613145452/http://www.wifr.com/news/headlines/19766004.html

[5] O'Connor, A., & Davey, M. (2008, June 20). Mississippi Surges Over Nearly a Dozen Levees. *The New York Times*. https://www.nytimes.com/2008/06/20/us/20Floodcnd.html

[6] The State Journal-Register. (2011). *Creek levee fails in northern Scott County*. Retrieved from https://www.sj-r.com/story/news/2011/06/19/creek-levee-fails-in-northern/42931465007/

[7] Geyer, T. (2011, July 28). *Breach in levee allows Plum River to flood Savanna*. The Quad-City Times. https://qctimes.com/news/local/breach-in-levee-allows-plum-river-to-flood-savanna/article_2eb2062a-b99e-11e0-b36e-001cc4c03286.html

[8] *Storm Events Database—Event Details | National Centers for Environmental Information*. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=449403

[9] C. D., Contributing. (2019, May 6). *If It Keeps on Rainin', Levee's Goin' to Break: How Levee Breaches are Currently Affecting the Region*. RiverBender.Com. https://www.riverbender.com/articles/details/if-it-keeps-on-rainin-levees-goin-to-break-how-levee-breaches-are-currently-affecting-the-region-35326.cfm

[10] Brannan, D. (2019, June 6). *FLOOD OF 2019: Nutwood Levee District, Calhoun Residents are "Devastated" After Levee Breach, but Vow to Rebound*. RiverBender.Com. https://www.riverbender.com/articles/details/flood-of-2019-nutwood-levee-district-calhoun-residents-are-devastated-after-levee-breach-but-vow-to-rebound-35842.cfm

[11] Kenneth R. Olson & Lois Wright Morton. (2014). Runaway barges damage Marseilles Lock and Dam during 2013 flood on the Illinois River. *Journal of Soil and Water Conservation*, *69*(4), 104A. https://doi.org/10.2489/jswc.69.4.104A

[12] Martindale, B and Osman, P. (n.d.). Why the Concerns with Levees? They're Safe, Right?. IAFSM. Retrieved June 7, 2023, from https://www.illinoisfloods.org/news-file/download/6

[13] Burton, C. and Cutter, S.L. (2008). Levee Failures and Social Vulnerability in the Sacramento-San Joaquin Delta Area, California. Natural Hazards Review. https://doi.org/10.1061/(ASCE)1527-6988(2008)9:3(136)

[14] US Census. (n.d.). Explore Census Data. US Census Bureau. Retrieved June 7, 2023, from https://data.census.gov

[15] Song, L. and Michels, P. (2018, September 6). There Was a Plan to Save This City From Flooding. But When the Rains Came, So Did Hesitance. ProPublica. https://www.propublica.org/article/cairo-there-was-a-plan-to-save-this-city-from-flooding

[16] National Levee Database. (n.d.). Levees of Illinois. USACE. Retrieved June 7, 2023, from https://levees.sec.usace.army.mil/

[17] National Inventory of Dams. (n.d.). Dams of Illinois. USACE. Retrieved June 7, 2023, from https://nid.sec.usace.army.mil/

[18] Masters, J. (2021, March 3). New report: U.S. dams, levees get D grades, need $115 billion in upgrades. Yale Climate Connections. https://yaleclimateconnections.org/2021/03/new-report-u-s-dams-levees-get-d-grades-need-115-billion-in-upgrades/

[19] Illinois Section of the American Society of Civil Engineers. (2022). 2022 Report Card for Illinois Infrastructure. ASCE. https://infrastructurereportcard.org/wp-content/uploads/2016/10/Illinois_Report_Card_Report_2022.pdf

FLOODING

Flash Flooding

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
FLASH FLOODING	STATEWIDE	1116	41.3	$1,383,898,000	13	23

Description

A flash flood can be defined in several ways: a rapid and extreme flow of high water into a normally dry area; or a rapid water level rise in a stream above a predetermined flood level. Generally, flash flood events begin within six hours of the causative event, which includes heavy rainfall, dam/levee failure, and ice jams.[1] It is most often caused by heavy rainfall. The intensity of the rainfall, the location and distribution of the rainfall, the land use and topography, and soil type all determine where and how quickly a flash flooding event may occur.

Urban areas are especially prone to flash floods because concrete and asphalt surfaces prevent water from draining into the soil. On these surfaces, also known as impervious surfaces, rainfall does not soak into the land. Instead, it runs down the streets or across parking lots, often pooling in low-lying areas, increasing the risk of local flooding. Urban areas in Illinois such as the Chicago metropolitan area and Metro East are especially prone to this (Figure 2.28).

Flash floods are the mostly dangerous and deadly type of flooding across the continental U.S., although riverine floods have killed more people in Illinois than flash floods since 1996.

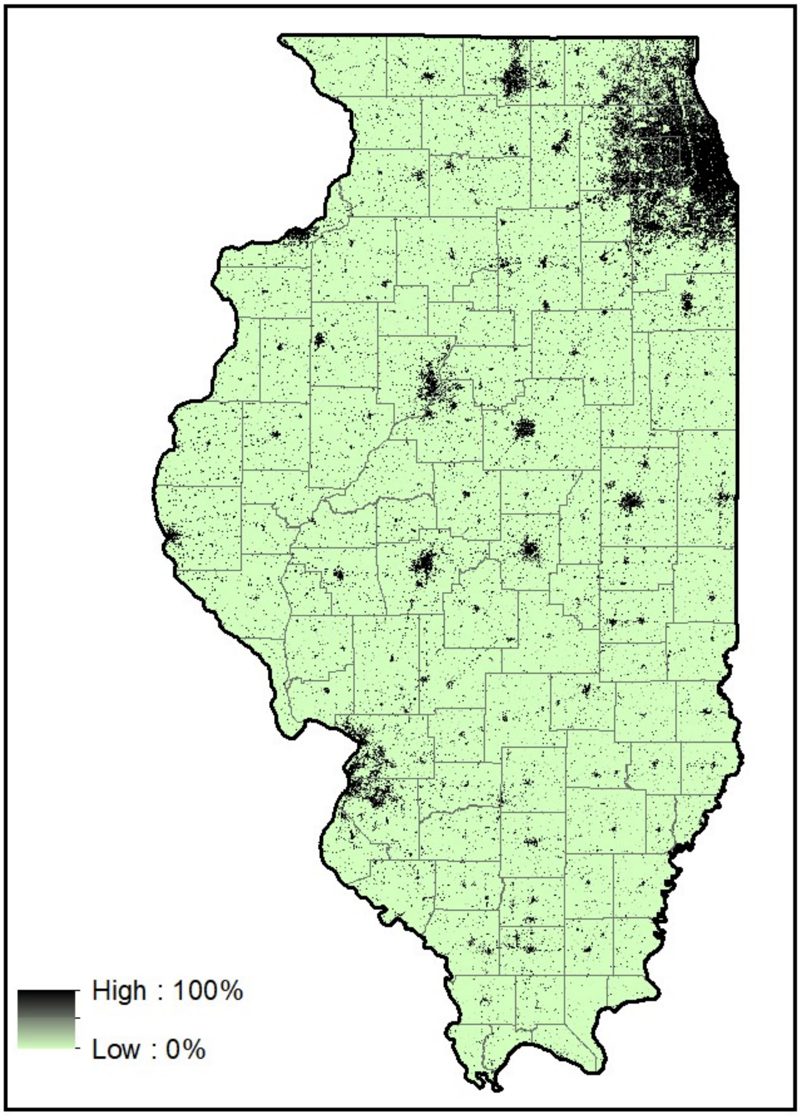


Figure 2.28. Illinois impervious surfaces. Source: NLCD

Flash floods can occur at any time of year but tend to occur most frequently during the spring and summer months in Illinois (Figure 2.29). Flash flooding peaks in the late spring and summer because severe thunderstorms accompanied by intense rainfall occur more frequently during warmer months.

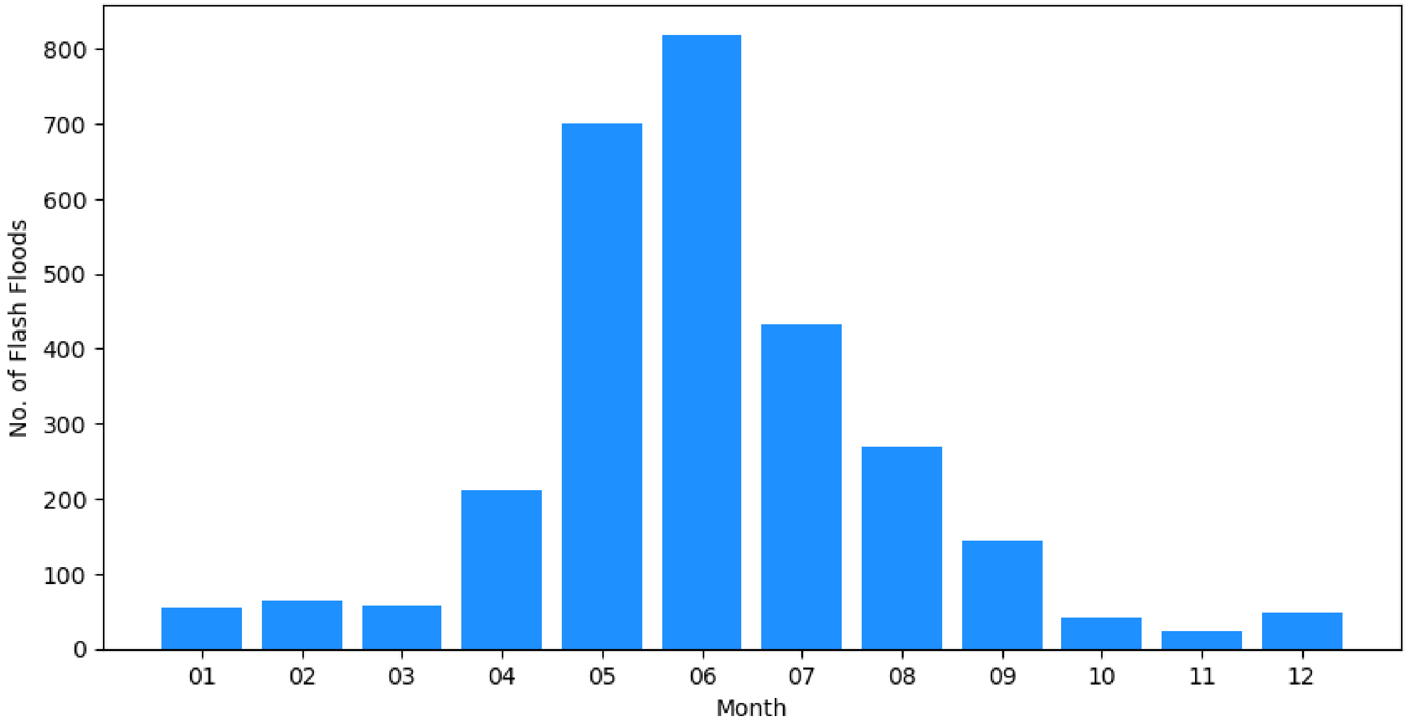


Figure 2.29. Number of flash floods by month (1996-2021).

Historical Events

In August 1997, Chicago experienced torrential rains that resulted in a federal disaster declaration (FEMA DR-1188). As a result of this storm, HMGP funds from FEMA paid $9.7 million towards the $13 million project to install inlet control valves in the city's storm water/sewer system. In August of 2001, Chicago was hit by two torrential rainstorms that were equal to or greater than the August 1997 storm. There was no presidential declaration in 2001 because the damage estimates were only 10% of the 1997 event or $6.7 million. The impact of these storms clearly illustrated the cost effectiveness of inlet control valves as a mitigation tool.

On September 4, 2009, thunderstorms developed over Winnebago County, resulting in 2-3 hours of heavy rain. This led to massive and severe flooding throughout the county. Flood waters as deep as nine feet were reported on Alpine Park in downtown Rockford. Dozens of people were rescued from the flood waters and hundreds were evacuated from their homes as flood waters rose. This storm event resulted in $20 million in damages.[2]

On July 23, 2010, severe thunderstorms moved across northern Illinois producing very heavy rain and widespread flash flooding in many parts of the Chicago Metro Area. Rainfall rates were 2-3 inches per hour in some areas. The Metropolitan Water Reclamation District (MWRD) of Greater Chicago estimated that over 60 billion gallons of water fell on Chicago and parts of Cook County, which quickly filled the Deep Tunnel system. Once the tunnel filled, floodgates were opened, releasing untreated stormwater into Lake Michigan. Portions of both Interstate 94 and Interstate 290 were closed due to flooding. This event led to over $250 million in reported damages in Cook County.[3]

Throughout 2017, 147 flood events were reported. Most affected were McHenry, Alexander, White and Rock Island counties. Total damage from these events were estimated at $12.7 million. In July of 2017, the Governor issued a state disaster proclamation for Lake, McHenry and Kane counties. About 6,800 buildings were affected by "unprecedented" flooding north of Chicago, and about 2,100 structures submerged.

On August 12, 2021, multiple thunderstorms moved across central Illinois producing torrential rain. Flash flooding in Ford County resulted in significant damage, over $12 million. Local officials estimated about 800 properties – businesses and residential homes – were affected by flooding. Most roads were closed and impassable with several feet of water. A senior citizen center was inundated with flood waters and multiple water rescues were performed to remove the residents.[4] The NWS estimated that this storm, which brought 11.5 inches of rain in 6 hours, had less than a 0.1% chance of occurring in a given year.[5]

Impacts

Infrastructure

Flash floods can cause major destruction to infrastructure and property. Roadway infrastructure can be particularly vulnerable in part because roads and bridges can be washed away, making recovery efforts more difficult. Utility infrastructure is also vulnerable: flash floods can down utility poles and expose underground water and sewer lines by eroding the ground above. Downed power lines are especially dangerous because of their potential to cause electric shocks or electrical fires.

Flash floods can cause major damage to homes and buildings. Flood waters can cause structural damage, making them dangerous to enter and, in severe cases, uninhabitable. Gas leaks, electrical system damage, and sewage and water line damage in a home can leave residents without basic utilities.[6] Basements are particularly vulnerable to flash flooding because they are below ground. People can lose appliances or other expensive property stored in basements, in addition to incurring costs from mitigation measures, like water pumps, to prevent flooding from occurring again.

Environmental

Health impacts are among the biggest environmental concerns during and after a flash flood. Floodwaters can contain sewage and toxic chemicals, exposing people to chemical hazards and diseases such as E. coli and Salmonella.[7] Downed power lines and sharp objects in floodwaters can cause injury or even death. Although NOAA's "Turn Around Don't Drown" campaign is designed to warn people about the dangers of driving through floodwaters, vehicles are frequently involved in flood-related deaths in the US. Cars are easily swept away by 12 inches of water; SUVs and trucks by 24 inches of water.[8]

Flash floods can also destroy wildlife habitat and cause soil erosion or landslides along streams. Squirrels, birds, and other tree dwellers can lose their habitat due to trees being uprooted, and animals that are not able to get to higher ground before a flash flood might drown.

Economic

The costs to repair damaged buildings and infrastructure from flash flood damage between 1996 and 2022 was higher than any other hazard assessed in this plan. As mentioned in the **Infrastructure** section, waterlogged basements, structural damage to homes, and the potential temporary housing costs if a home is deemed unsafe for living can be a financial burden to homeowners with and without flood insurance. Infrastructure such as roads and bridges may require extensive and expensive repairs.

Flash floods can cause devastating crop loss on farms. If plant roots are underwater for several days, water and soil pathogens may cause plant disease or even death. Agricultural chemicals, manure, and human waste from rural septic systems can also be found in floodwaters, making crops unsellable.[9] Other industries and individual jobs may be impacted, too. While flood damage is being cleaned up, businesses may be closed for days or weeks. People's ability to go to work may be hampered by reduced public transit or inoperable personal vehicles.

Social Vulnerability

Flooding has been well documented as having a disproportionate impact on socially vulnerable populations. Low-income populations and people of color in particular are more likely to live in floodplains. However, floodplains are not the only places where flooding occurs. In fact, nearly 40% of NFIP claims come from outside SFHAs.[10] Homeowners living outside SFHAs are not required to purchase flood insurance, meaning that they are at risk of incurring high out-of-pocket expenses if their home is flooded. Low-income households especially may not be able to afford extra expenses.

Although flash floods can occur anywhere, urban areas are especially susceptible because concrete and asphalt cannot absorb water. Chicago and Metro East, which have more socially vulnerable groups than many other areas in the state, are especially vulnerable to flash flooding.

Renters are also vulnerable in the face of urban flooding. Rental buildings tend to be repaired more slowly, if at all. Although FEMA provides monetary assistance for property owners to mitigate or repair flood damaged buildings, assistance is only available for a primary residence, meaning secondary properties, such as rental properties, are not covered. While Illinois law requires homeowners to disclose if their property is located in a floodplain and whether they have flood insurance, this does not apply to landlords and tenants, making tenants less aware of their flood risk. Furthermore, renters are typically not aware of the availability of federal flood insurance for the contents of their homes. Nearly 34% of housing units across Illinois were renter occupied in 2021.[11]

A flash flood risk analysis for socially vulnerable populations by census tract for each county was completed. A map highlighting this information can be found in

Climate Change

As climate changes, flash floods are expected to get "flashier", meaning that they will be shorter in duration but higher in severity. This is in part because precipitation is expected to increase across the state under multiple climate scenarios (Figure 2.30). Total precipitation is expected to increase the most in northern Illinois; extreme precipitation is expected to increase the most in southern Illinois. [12] The combination of increased total and extreme precipitation may lead to more severe flash floods. More precipitation may also lead to wetter soils, preventing drainage.

Water drainage is also a major issue in areas with storm sewers from over 50 years ago that were designed to handle less or slower rainfall. There is no state-wide stormwater ordinance in Illinois. Typically, storm sewer design standards in the state are based on a 10-year storm return, meaning that storm sewers are designed to handle a storm that has a 10% chance of occurring every year. In central and southern Illinois, sewer systems may be designed to only handle a 2 or 5-year storm (50% or 20% yearly chance occurrence, respectively). [13] As climate changes, 100 and 500-year storms (1% and 0.2% yearly chance occurrence, respectively) are expected to become more common due to heavier rainfall. Storm sewers across the state will likely not be able to handle these increasingly heavy precipitation storms, causing more severe flash floods.

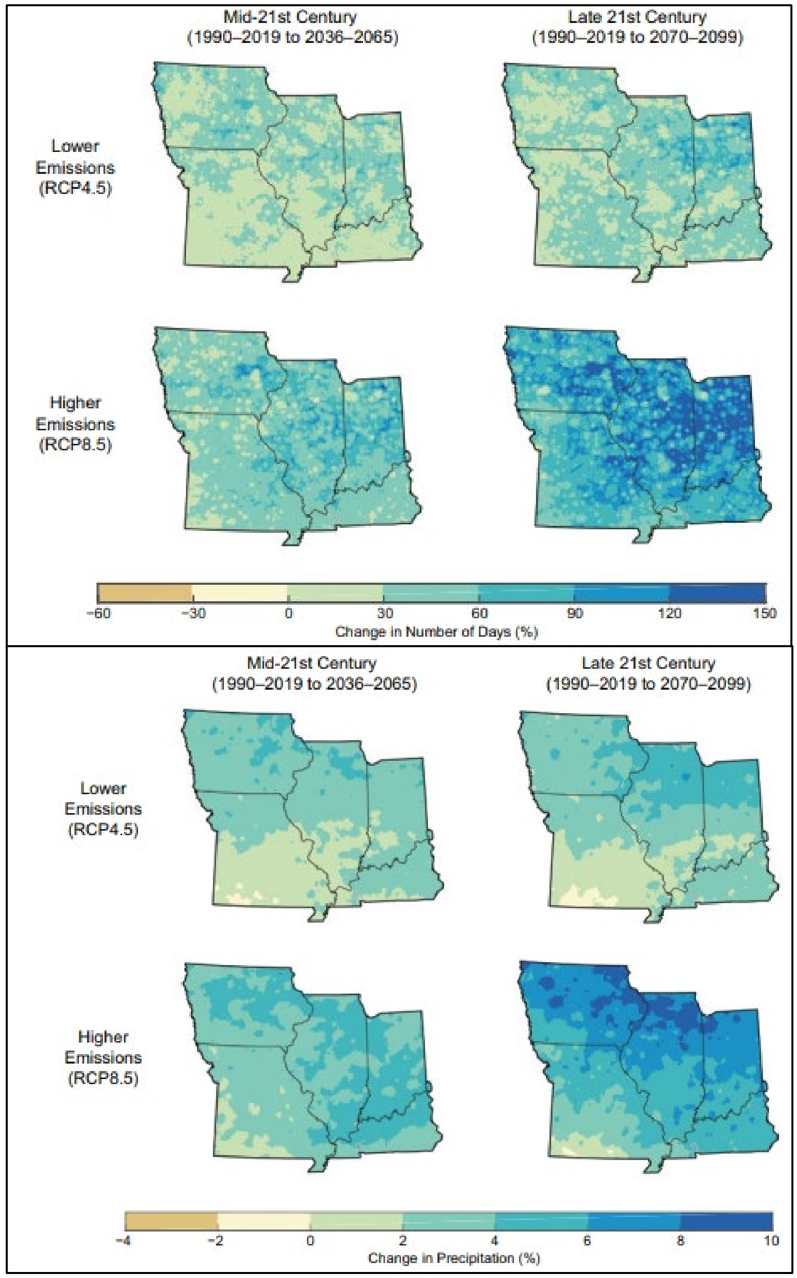


Figure 2.30. (Top) Changes in the number of days with > 2 inches of precipitation. (Bottom) Change in annual precipitation. Source: The Nature Conservancy

Risk Analysis

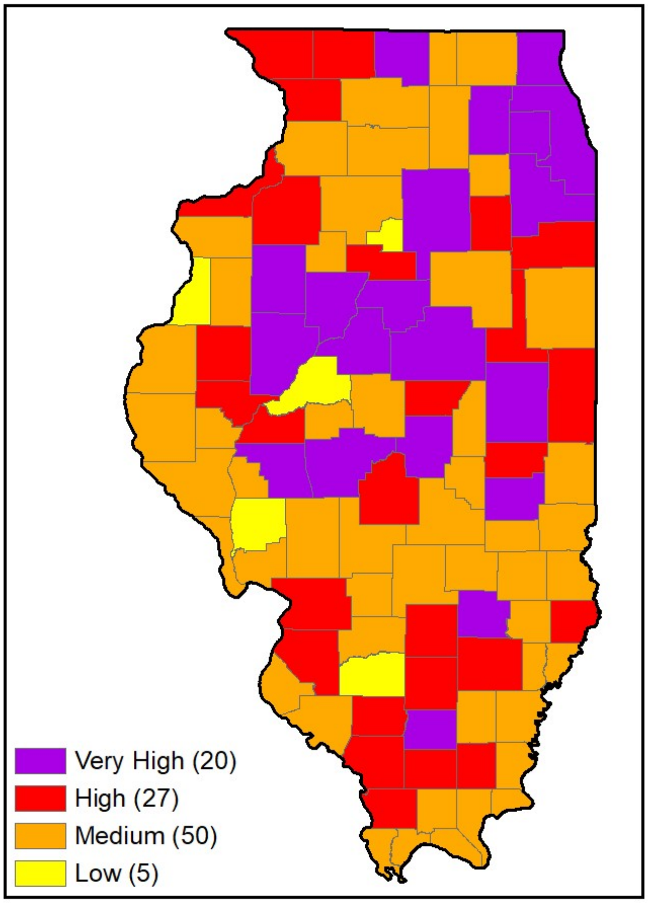


Figure 2.31. Flash flooding risk rankings.

The entire state is at risk for flash flooding (Figure 2.31). Nearly half of Illinois' counties have a High or Very High ranking. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Impervious surfaces can also contribute to flash flooding. Using data from the National Land Cover Database, the percentage of area of impervious surfaces for each county was calculated (Figure 2.32). The majority of counties have 6.1%-9% of their total county area as impervious surfaces.

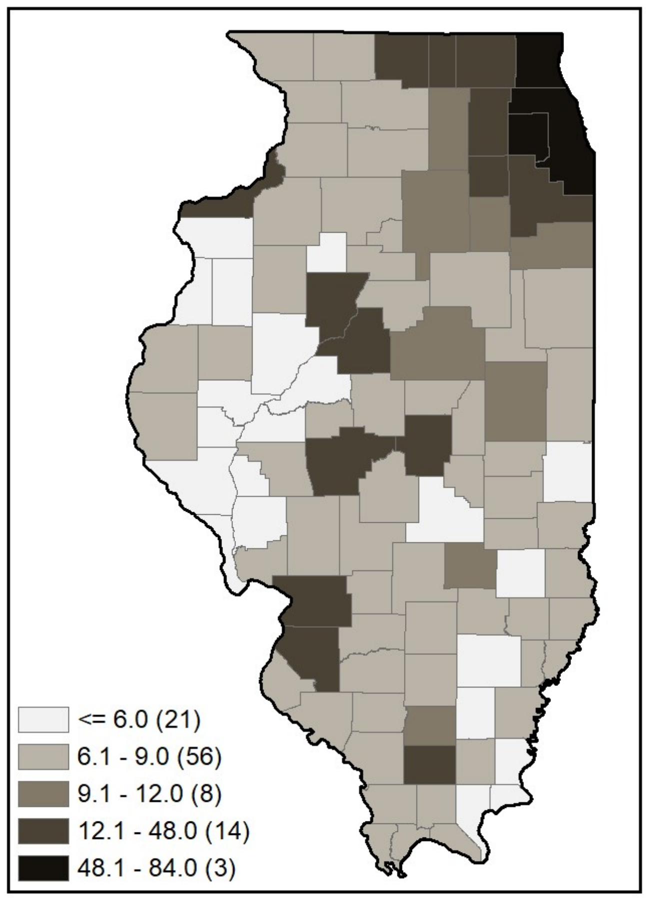


Figure 2.32. Percent of area in county that is impervious surface.

The Topographic Wetness Index (TWI) uses the effect of local topography on runoff flow direction and accumulation. TWI shows areas with increased accumulated runoff potential, and areas with low slope and large upslope contributing areas. The index can help identify rainfall runoff patterns, areas of potential increased soil moisture, and ponding areas. The Illinois State Water Survey has an interactive map that can be used to identify potential flooding areas across the state of Illinois.[14] Figure 2.33 shows the percentage of the area of the county that has accumulated runoff potential or low slope areas.

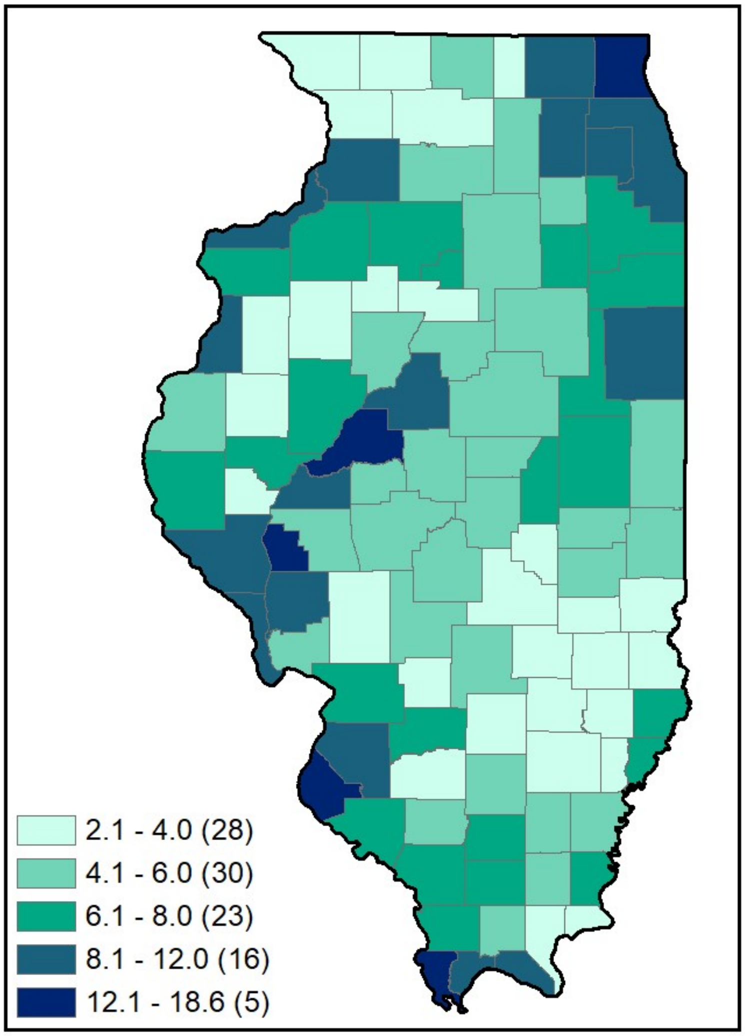


Figure 2.33. Percentage of county area with TWI areas.

Loss Estimates

Since 1996, flash flooding in Illinois has resulted in $1,383,898,000 in property damage, making it one of the costliest hazards for the state. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Cook County with $19,173,462, and Morgan County with $5,783,077. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found Appendix 2.2 Loss Estimate Tables..

The IDNR issued the *Report for the Urban Flooding Awareness Act* which examined both federal flood insurance claims as well as private claims for sanitary sewer flooding. Between 2007 and 2014, at least $2.319 billion in documented damages were reported. Around $1.240 billion were private claims that typically represent basement flooding and sewer backup.[15]

[1] NWS. (n.d.). National Weather Service Glossary. NOAA. Retrieved May 22, 2023, from https://w1.weather.gov/glossary/
[2] NCEI. (n.d.). Storm Events Database—Event Details. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=5535084
[3] NCEI. (n.d.). Storm Events Database—Event Details. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=254362
[4] NCEI. (n.d.). Storm Events Database—Event Details. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=979680
[5] Lincoln, W.S. (2021, September 15). Analysis of the August 12, 2021, Flash Flood in and near Gibson City, IL. NWS Chicago. https://www.weather.gov/media/lot/events/2021/2021_08_12/2021_08_12_GibsonCity_FlashFlood.pdf
[6] FEMA. (n.d.). Floods and Flash Floods. FEMA. Retrieved May 22, 2023, from https://www.fema.gov/pdf/library/floodpi.pdf
[7] CDC. (n.d.). Floodwater After a Disaster or Emergency. CDC. Retrieved May 22, 2023, from https://www.cdc.gov/disasters/floods/floodsafety.html
[8] NWS. (n.d.). Turn Around Don't Drown. NOAA. Retrieved May 22, 2023, from https://www.weather.gov/safety/flood-turn-around-dont-drown
[9] UMass Extension. (n.d.). Flooded Crops: Food Safety and Crop Loss Issues. UMassAmherst. Retrieved May 22, 2023, from https://ag.umass.edu/vegetable/fact-sheets/flooded-crops-food-safety-crop-loss-issues
[10] NFIP. (2022). Answers to Questions About the Map. FEMA. https://agents.floodsmart.gov/sites/default/files/fema-answers-to-questions-about-the-NFIP.pdf
[11] US Census. (n.d.). QuickFacts Illinois. US Census Bureau. Retrieved June 6, 2023, from https://www.census.gov/quickfacts/fact/table/IL/AFN120217
[12] Wuebbles, D., Angel, J., Petersen, K., and Lemke, A.M. (2021). An Assessment of the Impacts of Climate Change in Illinois. The Nature Conservancy, Illinois. https://doi.org/10.13012/B2IDB-1260194_V1
[13] Illinois Section of the American Society of Civil Engineers. (2022). 2022 Report Card for Illinois Infrastructure. ASCE. https://infrastructurereportcard.org/wp-content/uploads/2016/10/Illinois_Report_Card_Report_2022.pdf
[14] ISWS. *Illinois TWI*. (n.d.). Retrieved from https://www.illinoisfloodmaps.org/twi.aspx
[15] IDNR. (2015). Report for the Urban Flooding Awareness Act. State of Illinois. https://dnr.illinois.gov/content/dam/soi/en/web/dnr/waterresources/documents/final-ufaa-report.pdf

FLOODING

Riverine Flooding

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
RIVERINE FLOODING	STATEWIDE	698	25.9	$263,103,300	18	26

Description

A riverine flood is defined as when rivers or streams exceed the capacity of their channels to accommodate water flow, overflowing into normally dry land. Riverine floods are generally caused by heavy rainfall, dam/levee failure, rapid snowmelt, or ice jams, and occur over longer periods than flash floods.[1] Standing water can linger for days or weeks, disrupting daily life.

Many cities and towns in Illinois are located along streams or rivers and have had development in floodplains. Vegetation and soil removal and new storm sewers increase runoff into streams, which increases streamflow and stream volume. More and faster moving water increases the chance of flooding in the surrounding area and downstream.[2] Even with protection from dams and levees, which can fail, infrastructure and buildings on rivers are at risk of riverine flooding.

Illinois is home to many rivers and lakes including the Mississippi River, Illinois River, and Ohio River (Figure 2.34). Illinois is bordered by 880 miles of rivers and has 87,110 miles of rivers and streams within its borders. The Mississippi River, Ohio River and Wabash River are the bordering rivers of the state. The Illinois River flows entirely within the state and is 332 miles. The Kaskaskia is 292 miles long, Little Wabash is 237 miles long, and Wabash at 230 miles long.[3]

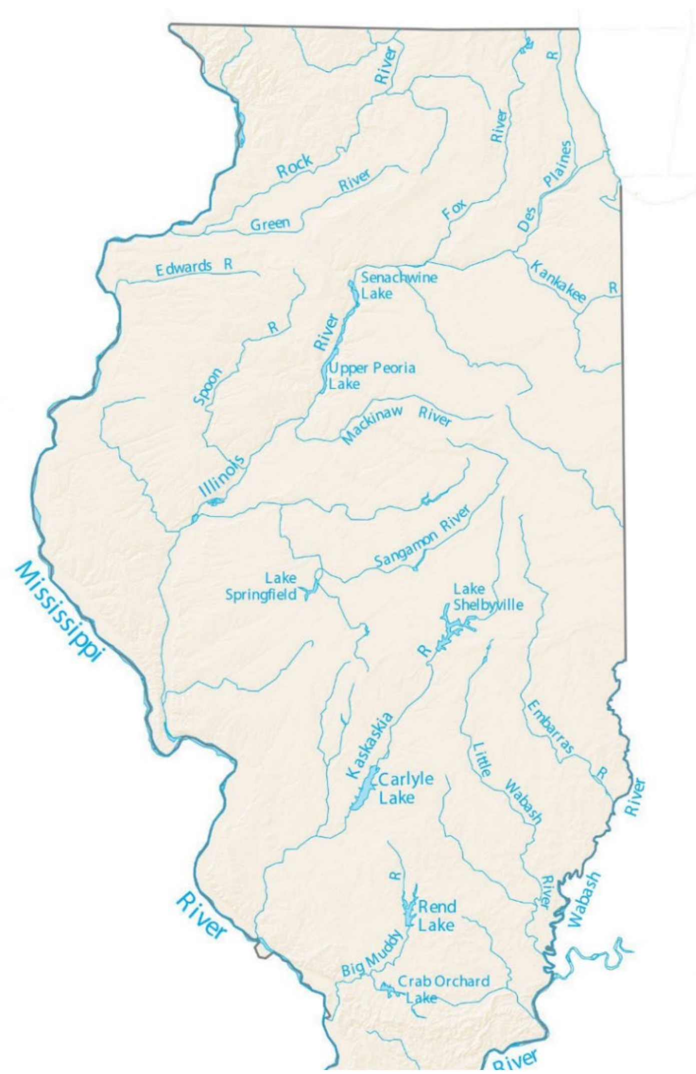


Figure 2.34. Major Illinois rivers and lakes. Source: GISGeography

Watersheds are an important component in understanding the accumulation and pathway of surface water. A watershed is all of the landscape that drains into a particular lake or river. Illinois is divided into 33 major watershed basins (Figure 2.35). Hydrologic Unit Codes (HUC) were developed by the US Geological Survey (USGS) to identify watershed boundaries.

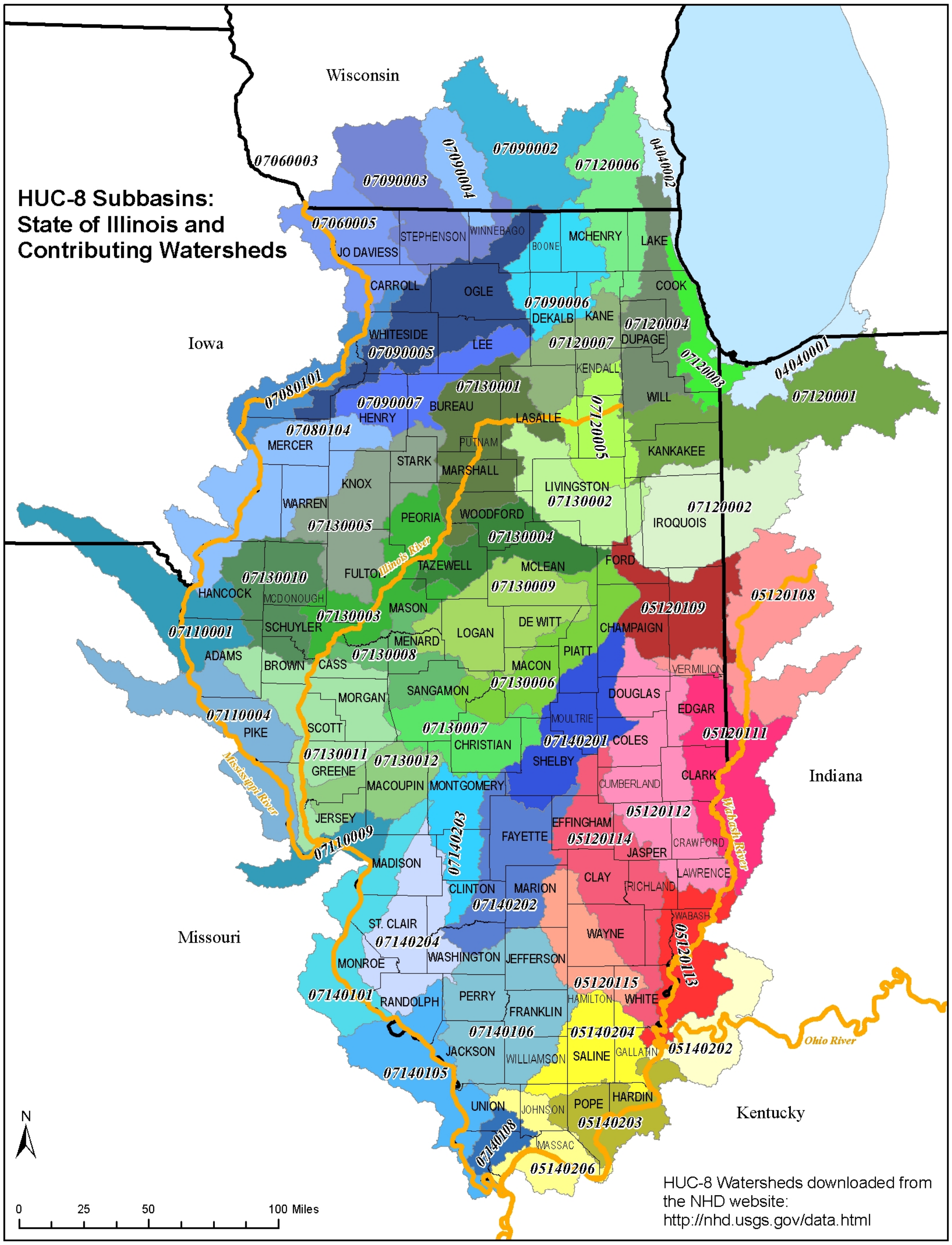


Figure 2.35. Illinois watersheds. Source: ISWS

Riverine floods can occur at any time of year but tend to occur most frequently between January and July in Illinois (Figure 2.36). Riverine flooding is common in late winter and spring months due to snowpack melt which enters rivers, causing them to rise. Spring and summer thunderstorm systems also contribute to riverine flooding.

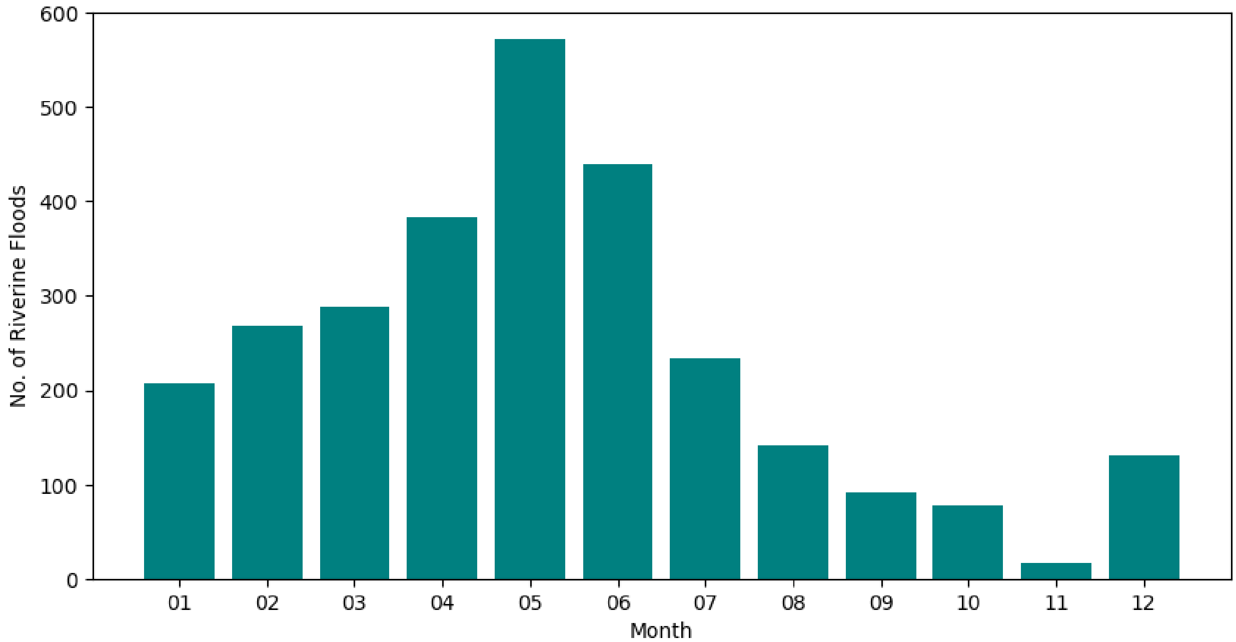


Figure 2.36. Number of riverine floods by month (1996-2021).

Historical Events

Between July 9 and August 27, 1993, 39 counties in Illinois were declared federal disaster areas as many levees failed along the Mississippi and Illinois rivers. This event became known as The Great Flood of 1993. The Great Flood severely impacted the agricultural industry in Illinois. Barge traffic above Cairo, Illinois, was halted for over eight weeks due to the record-high water, causing severe economic loss to their operators. Some bridges across the Mississippi and the Illinois rivers were impassable, requiring personal and commercial traffic to reroute well out of their way. In Illinois, the Great Flood of 1993 caused six deaths, displaced 16,000 people, destroyed or severely damaged 6,000 homes; and caused more than 10,000 jobs to be lost.[4]

On April 18, 2001, flooding began as a result of heavy rains and snow melt in the Upper Midwest and continued through the end of the month. On May 9, 2001, the President declared 10 counties a major disaster where near-record flooding occurred on the Mississippi River from the Wisconsin border down to the confluence of the Mississippi and Missouri rivers (FEMA DR-1368).

March 2008 saw torrential rainfall amounts of 6 to 12 inches occurred over a two-day period across southern Illinois. In Pulaski County, flooding of the Cache River closed Shawnee College Road for several days. Most of the county back roads were closed, and other areas of the county were evacuated. Portions of Route 37 and U.S. Highway 51 were closed. This storm event impacted 19 counties and caused over $30 million in damages, $16.8 million in damages was in Saline County alone.[5]

In 2013, excessive rainfall during the middle of April led to widespread flooding across northern and central Illinois, resulting in record flooding along the Illinois River in central Illinois. Another heavy rain event from May 2-4, 2013 prolonged the flooding into the middle of May for most of the Illinois River basin. Forty counties, including every county along the Illinois River, was declared a state and federal disaster area. DuPage County received $31.5 million from the Community Development Block Grant-Disaster Recovery (CDBG-DR), using the funds to remove structures from flood prone properties and construct new infrastructure to prevent future flooding.[6] Peoria County received over $3 million from IEMA to buy out up to 40 properties.[7]

June 2019 saw extensive damage along the Mississippi River. After a very snowy winter across the upper Midwest and numerous rounds of heavy rain across the Missouri and Mississippi River basins through the spring and early summer months, the rivers rose to record levels. The Mississippi River at Alton, IL remained at its highest levels between June 2nd and June 12th America's Central Port in Granite City sustained at least $11.25 million in damage from the river flooding. Overall, Madison County sustained at least $24.8 million, and St. Clair County reported $8.1 million in damages from this riverine flooding event.[8]

Impacts

Infrastructure

Riverine flooding can cause major destruction to infrastructure and property. Roadway infrastructure can be particularly vulnerable in part because roads and bridges can be washed away. For structures near rivers, riverine flooding can cause extensive damage. The flood waters can cause structural damage, making them dangerous to enter and, in severe cases, uninhabitable. Gas leaks, electrical system damage, and sewage and water line damage in a home can leave residents without basic utilities.[9]

Environmental

Riverine floods can cause soil erosion, landslides, and damage wildlife habitats. High water levels and strong currents can cause soil erosion, which can lead to nutrient loss and decreased soil fertility. This can reduce the ability of soil to absorb and retain water, increasing the risk of future flooding. Riverine floods can lead to contamination of water sources, as floodwaters can pick up pollutants such as agricultural runoff, sewage, and chemicals from industrial sites. This can harm aquatic life and make the water unsafe for human consumption.

Economic

As mentioned in the **Infrastructure** section, waterlogged basements, structural damage to homes, and the potential temporary housing costs if a home is deemed unsafe for living can be a financial burden to homeowners with and without flood insurance. Infrastructure such as roads and bridges may require extensive and expensive repairs.

Social Vulnerability

Flooding has been well documented as having a disproportionate impact on socially vulnerable populations. Homes in high-risk flood areas tend to be less expensive to purchase and neighborhoods that experienced redlining in the 1930s, which tend to have a higher population of Black residents, have a higher risk of flooding.[10] Low-income households and people of color have also been found to live in high-risk flood areas that are not considered special flood hazard areas (SFHA) by FEMA, meaning they are not required to buy flood insurance and may recover more slowly and at a greater financial cost.[11]

Socially vulnerable groups living in SFHAs may likewise have a more difficult time recovering from flooding than less socially vulnerable groups. The NFIP does not cover the cost of living in alternative residence while a flood damaged home is being repaired. Low-income households may not be able to afford the cost of a hotel, causing them to stay in an unsafe home or take on debt.

Non-homeowners are also vulnerable to riverine flooding. Rental buildings tend to be repaired more slowly, if at all. Although FEMA provides monetary assistance for property owners to mitigate or repair flood damaged buildings, assistance is only available for a primary residence, meaning secondary properties, such as rental properties, are not covered. Renters are also more vulnerable because they are not required to have flood insurance, even if living in a SFHA. In 2021, nearly 34% of housing units across the state of Illinois were renter occupied.[12]

A flood risk analysis for socially vulnerable populations by census tract for each county was completed. A map highlighting this information can be found in

Climate Change

Climate change has a less clear impact on riverine floods compared to flash floods. Unlike flash floods, runoff and streamflow heavily impact riverine floods. Snowmelt runoff may decrease due to decreasing snowpack as the climate warms, decreasing streamflow. However, heavy precipitation is increasing, which increases stream volume. In Illinois, riverine floods have broadly increased between 1965 and 2015.[13] If riverine floods continue this trend, Illinois' river-adjacent communities will become more at risk.

Dams and levees are an integral part of assessing climate change's impact on riverine flooding. Designed to prevent buildings, infrastructure, and farmland from riverine flooding, dams and levees may not be able to withstand increasing streamflow and flood volume, leading to more deadly and damaging riverine floods. The impact of climate change on dams and levees is further discussed in the **Dam/Levee Failure** hazard profile.

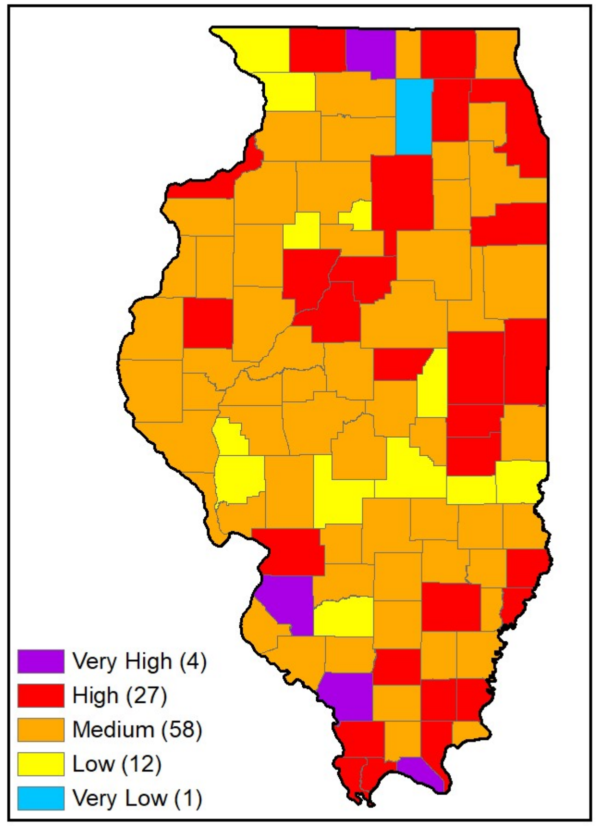


Figure 2.37. Riverine flooding risk ranking.

Risk Analysis

The entire state of Illinois is at risk for riverine flooding. The majority of counties have Medium risk, followed by High. Counties at Very High risk include; Jackson, Massac, St. Clair, and Winnebago (Figure 2.37). A complete breakdown of risk ranking scores can be found in Appendix 2.1 Risk Ranking Tables.

FEMA funds updated floodplain mapping annually across Illinois. These projects help better define the coastal and riverine flood risk across the state as climate changes and watersheds are developed. Statewide digital FIRM mapping is expected to be completed by 2030.

Loss Estimates

Since 1996, riverine flooding in Illinois has resulted in $263,103,300 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Peoria County with $1,076,923, and Madison County with $955,846. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in Appendix 2.2 Loss Estimate Tables.

[1] NWS. (n.d.). Flood Related Hazards. NOAA. Retrieved June 6, 2023, from https://www.weather.gov/safety/flood-hazards
[2] IAFSM. (n.d.). Floodplains. IAFSM. Retrieved June 7, 2023, from https://prepare.illinoisfloods.org/learn/flood-risk/floodplains
[3] IDNR. (n.d.). Illinois Rivers and Streams. Retrieved from https://dnr.illinois.gov/education/ilriversstreams.html

[4] U.S. Geological Survey. (2018, August 22). The Great Flood of 1993. Retrieved June 7, 2023, from https://www.usgs.gov/centers/cm-water/science/great-flood-1993
[5] National Centers for Environmental Information. (n.d.). Storm Events Database—Event Details. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=84944

[6] Ragona, C. (2018, June 13). Member Spotlight: DuPage County, IL Uses CDBG-DR to Build Resilient Communities. National Association for County Community and Economic Development. https://www.nacced.org/blogpost/1617856/303682/Member-Spotlight-DuPage-County-IL-Uses-CDBG-DR-to-Build-Resilient-Communities
[7] Kravetz, A. (2015, December 10). Peoria County will try to buy properties affected by 2013 flood. Journal Star. https://www.pjstar.com/story/news/politics/county/2015/12/11/peoria-county-will-try-to/32896044007/
[8] National Centers for Environmental Information. (n.d.). Storm Events Database—Event Details. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=861557
[9] FEMA. (n.d.). Floods and Flash Floods. FEMA. Retrieved May 22, 2023, from https://www.fema.gov/pdf/library/floodpi.pdf
[10] Cannon, C. and Capps, K. (2021, March 15). Redlined, Now Flooding. Bloomberg News. https://www.bloomberg.com/graphics/2021-flood-risk-redlining/
[11] risQ, Inc. (2021, July 20). Economic and Racial Inequality in FEMA SFHA Flood Zone Designations. Medium. https://risq-inc.medium.com/economic-and-racial-inequality-in-fema-sfha-flood-zone-designations-450b3019a78d
[12] US Census. (n.d.). QuickFacts Illinois. US Census Bureau. Retrieved June 6, 2023, from https://www.census.gov/quickfacts/fact/table/IL/AFN120217
[13] Mallakpour, I. and Villarini, G. (2015). The changing nature of flooding across the central United States. Nature Clim Change 5, 250–254 (2015). https://doi.org/10.1038/nclimate2516

LANDSLIDE

Landslide

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
LANDSLIDE	LIMITED	10	0.4	$2,115,444	0	0

Description

A landslide is a term used to describe the movement of soil, rock, and organic materials down a slope under the effects of gravity and also the landform that results from such movement. Landslides can be further categorized by the mode of slope movement, including falls, topples, slides, spreads, and flows, which are further explained in the table below.[1] Debris flows, also known as mudflows or mudslides and rock falls are some of the most common types of landslides. United States Geological Survey uses the definitions below:

Table 2.23. Landslide types.

Landslide Type	Definition	Velocity of Travel	Triggering Mechanism
Falls	Abrupt, downward movements of rock or earth, or both, that detach from steep slopes or cliffs	Very rapid – Extremely Rapid	Undercutting of slope by natural processes such as streams/ rivers/differential weathering, human activities, and earthquake shaking or other intense vibration.
Topples	The forward rotation out of a slope of a mass of soil or rock around a point or axis below the center of gravity of the displaced mass	Extremely Slow – Extremely Rapid	Sometimes caused by gravity, vibration, undercutting, differential weathering, excavation, or stream erosion.
Slides	A downslope movement of a soil or rock mass occurring on surfaces of rupture or on relatively thin zones of intense shear strain	Extremely Slow – Moderately Fast	Intense and sustained rainfall or snowmelt, rapid drops in river level.
Lateral Spreads	Occurs on gentle slopes or flat terrain, where a stronger upper layer of rock or soil undergoes extension and moves above an underlying weaker layer	Slow - Moderate	Liquefaction of lower weak layer.
Flows	A mass movement in which loose soil, rock and sometimes organic matter combine with water to form a slurry that flows downslope	Rapid – Extremely Rapid	Commonly caused by intense surface-water flow due to heavy precipitation or rapid snowmelt.

Most landslides have multiple causes that occur when downward acting forces, such as gravity, exceed the strength of the earth materials found within the slope. Landslides can be initiated by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors.

Illinois does not have a state-wide reporting system for landslides. The Illinois State Geological Survey (ISGS) had received some reports from individuals in the Illinois Department of Transportation (IDOT), Illinois Division of Highways, Natural Resource Conservation Service, Universities and ISGS staff.[2] An inventory based on this type of submitted information was published in 1985.[3] The ISGS has also performed a few systematic landslide inventories along rivers; part of the Illinois River by LaSalle/Peru, and part of the Ohio and Mississippi Rivers in southern Illinois by aerial studies.[4] [5]

The ISGS maintains a database which is being updated using the original forms, archived site reports performed by ISGS staff, ISGS picture and slide collection and new events added through review of imagery and field observations. To date, there are about 1,218 individual landslides reported in 57 counties with some details and 221 additional landslides located by an aerial study.[6] Nearly 25 percent are classified as related to human activity, most associated with cutting into slopes for roadways. In Illinois, there have been two known deaths associated with landslides, one in 1928 and the second in 1995.

Historical Events

Landslides are not especially common in Illinois. In April, 2013 a landslide occurred in the East Peoria subdivision of Pinecrest Hills. Four homes were evacuated when the nearby ravine began to collapse due to heavy rains.[7] The event resulted in a buyout of seven homes with plans to convert the affected area to green space.[8]

On May 29, 2013, a landslide caused property damage to a business in Quincy, Illinois. [9] Recent heavy rains had caused the land near the business to slide down into the parking lot, depositing trees and mud onto vehicles in the parking lot.

Grafton, Illinois has experienced more than one landslide in recent years. Located along the Mississippi River, the bluffs are extremely susceptible to landslides. Heavy rains caused dirt, mud, rocks and trees to slide down a bluff on April 1, 2008.[10] In December 2015, weeks of heavy rain caused a bluff to collapse, causing mud to and debris to fall on Route 100. This particular event caused the road to be blocked for weeks.[11] This same rain event caused a mudslide in nearby Alton, IL causing damage to a road.[12]

Impacts

Infrastructure

Landslides can cause significant damage to roads, bridges, railways, pipelines and other critical infrastructure. If even just a small portion of these infrastructure systems is affected, it can cause severe disruptions. Landslides can also impact water supply infrastructure, resulting in disruptions to water services.[13]

Environmental

Landslides can have a significant impact on the environment. Landslides can result in significant soil erosion, can impact soil fertility and water quality. The resulting loss of vegetation which can impact wildlife habitat. Landslides can also result in the release of sediment and other contaminants into waterways, which can impact aquatic ecosystems and water quality.[14]

Economic

Landslides can disrupt economic activity, particularly in areas that rely on tourism, agriculture, or other industries. This can result in lost revenue for businesses and reduced economic activity.[15] Landslides can cause damage to buildings and other structures, which can be costly to repair for property owners and insurance companies. This can result in the loss of tax revenues on properties devalued as a result of landslides.[16]

Social Vulnerability

Landslides can cause displacement and loss of shelter, which can have significant impacts on vulnerable populations. Areas along rivers are more susceptible to landslides caused by erosion. Populations that live near rivers or bodies of water should be made aware of the risks they face in these areas.

Climate Change

Climate change is expected to affect the frequency and intensity of extreme precipitation events, thus potentially increasing the frequency and intensity of landslides in prone areas. Changes in temperature and precipitation will have an impact on hydrological processes and impact stream flow which could trigger landslides due to erosion.

Risk Analysis

The majority of counties have a Very Low risk of landslides occurring (Figure 2.38). Adams, Carroll, Jersey, Madison, Peoria, Randolph, and Rock Island counties have experienced at least one landslide and have a risk ranking of Low. Although landslides in counties ranked Low may be very unlikely; social vulnerability, population, and population change still contribute to the potential risk of this hazard. other factors. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.**.**

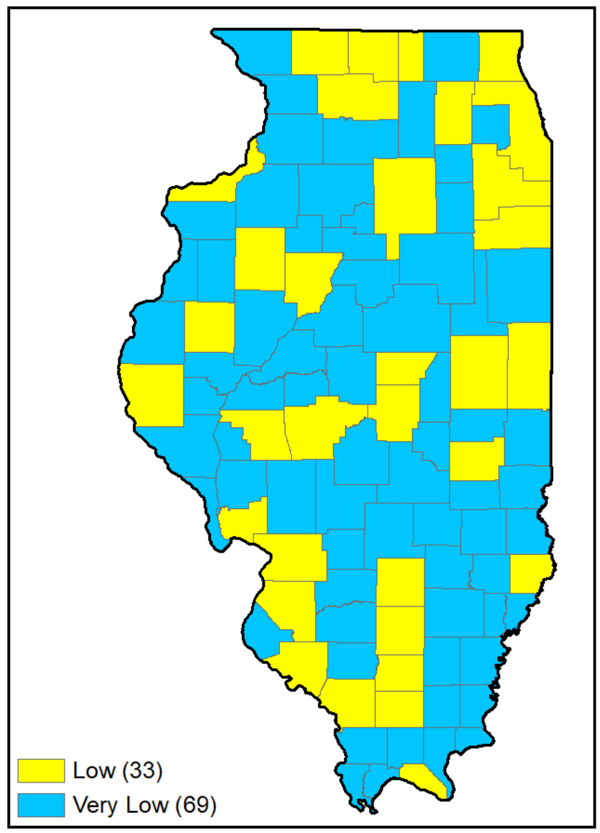


Figure 2.38. Landslide risk rankings.

Loss Estimates

The Illinois State Geological Survey collects data on cost reported for repair, for injuries and compensation for loss or disruption due to landslides. These typically aren't total costs combined for an event. The total in 2022 dollars for these cases is $38.5 million with a minimum of $12,000 to a maximum of $7.2 million.

Since 1996, landslides in Illinois have resulted in $2,115,444 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Estimated annual essential facility exposure is relatively low across the state. Notably, Peoria County has a relatively high property damage per year with $84,856. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in Appendix 2.2 Loss Estimate Tables.

[1] Highland, L.M., and Bobrowsky, Peter. (2008). The landslide handbook—A guide to understanding landslides: Reston, Virginia, U.S. Geological Survey Circular 1325, 129 p.
[2] Bureau of Materials, Illinois Division of Highways, Department of Public Works and Buildings, 1954, Landslide data prepared for Landslide Committee of the Highway Research Board.
[3] Killey, M.M., J.K. Hines and P.B. DuMontelle. (1985). Landslide Inventory of Illinois, Illinois State Geological Survey Circular 534, 28 pp.
[4] DuMontelle, P.B., N.C. Hester and R.E. Cole. (1971). Landslides Along the Illinois River Valley South and West of LaSalle and Peru, Illinois, Illinois State Geological Survey Environmental Geology Notes No. 48, 16 pp.
[5] Su, W.J. and C.J. Stohr. (1992). Landslides in the New Madrid Seismic Zone: Landslide Inventory and Risk Assessment in Illinois, Along the Ohio and the Mississippi Rivers from Olmsted to Chester, Illinois: Final Technical Report to the U.S. Geological Survey, 147 pp.
[6] Ibid
[7] Star, S. H. of the J. (2014, September 23). *Landslide lawsuit: East Peoria shouldn't have allowed homes to be built*. Peoria Journal Star. Retrieved April 23, 2023, from https://www.pjstar.com/story/news/2014/09/24/landslide-lawsuit-east-peoria-shouldn/36350380007/
[8] Hilyard, S. (2016, October 18). *Council approves East Peoria landslide buyouts*. Peoria Journal Star. Retrieved April 23, 2023, from https://www.pjstar.com/story/news/disaster/2016/10/19/council-approves-east-peoria-landslide/24746717007/
[9] *Quincy business battles landslides*. (2013, May 29). KHQA. https://khqa.com/news/local/quincy-business-battles-landslides
[10] *Mudslide has Grafton residents watching*. (2008, April 3). KHQA. https://khqa.com/news/local/mudslide-has-grafton-residents-watching
[11] *Jersey County Natural Hazard Mitigation Plan 2015.* (2015, December). https://iemaohs.illinois.gov/content/dam/soi/en/web/iema/recovery/documents/countyplans/plan-jerseycounty.pdf
[12] Writer, M. G., Staff. (2015, December 28). *Area flood waters causes numerous road closures, hazardous conditions*. RiverBender.Com. https://www.riverbender.com/articles/details/area-flood-waters-causes-numerous-road-closures-hazardous-conditions-10571.cfm
[13] Turner, A.K. (2018). Social and environmental impacts of landslides. *Innov. Infrastruct. Solut.* **3**, 70. https://doi.org/10.1007/s41062-018-0175-y
[14] Geertsema, M., Highland, L., & Vaugeouis, L. (2009). Environmental impact of landslides. *Landslides–disaster risk reduction*, 589-607.
[15] Wartman, J., Gariano, S. L., Rathje, E. M., & Anderson, S. A. (2020). Impacts of Landslides on Infrastructure. In Landslides: Global Risk Preparedness (pp. 411-425). Springer.
[16] Schuster, R. L., & Highland, L. (2001). *Socioeconomic and environmental impacts of landslides in the western hemisphere* (pp. 1-50). Denver (CO): US Department of the Interior, US Geological Survey.

MINE SUBSIDENCE

Mine Subsidence

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
MINE SUBSIDENCE	LIMITED	1,467	66.7	$192,938,353B	0	0

Description

Mine subsidence occurs when the ground surface sinks downward due to the failure of support in an underground mine. It can take place gradually or suddenly. Minor to severe damage may occur to structures in the vicinity of a subsidence event. While it is difficult to predict when subsidence will occur, a location's proximity to a mine is a good indicator of whether it will occur.

There are two types of mine subsidence in Illinois: sag and pit. Sag subsidence (Figure 2.39), the most common type of mine subsidence, and appears as a gentle depression in the ground which can spread over a large area, up to several acres. Pit subsidence (Figure 2.40), which is less common, forms a bell-shaped hole 6-8 feet deep, from 2-40 feet across, and occurs when a shallow mine roof collapses.[1] Pit subsidence tends to occur more rapidly than sag subsidence, which can take weeks or months.

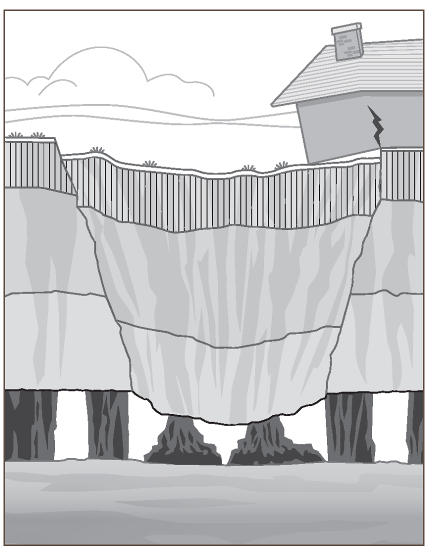


Figure 2.39. Diagram of sag subsidence. Source: IMSIF

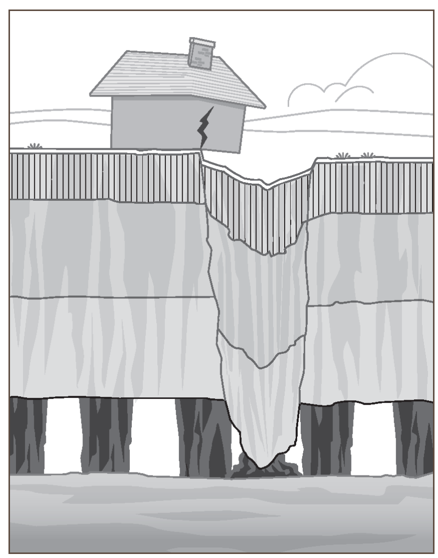


Figure 2.40. Diagram of pit subsidence. Source: IMSIF

Historical Events

There is no known publicly available database which entirely captures mine subsidence events in Illinois. However, some larger events (including those leading up to the legislation that created the Illinois Mine Subsidence Insurance Fund in 1979) have been documented.

In 1968, a story about several homeowners in Breese whose properties were damaged by mine subsidence was reported in the Belleville News-Democrat. An attempt by a local dairy association to stop the subsidence backfired, and the homeowners formed an association and successfully sued the dairy.[2] In 1972, one of the state's largest mine subsidence events (700 × 400 feet and >50 feet deep) took place over a lead-zinc mine near Galena.[3] As recently as July 2022, a high school in Springfield was closed to students and its summer camp had to relocate due to suspected mine subsidence.[4]

The Illinois Mine Subsidence Insurance Fund (IMSIF) does collect data on insurance claims. Figure 2.41 and Table 2.24 show the number of confirmed claims distributed by county and by the year determination was made. Note that these are only confirmed claims, and more subsidence events have possibly occurred to uninsured structures.

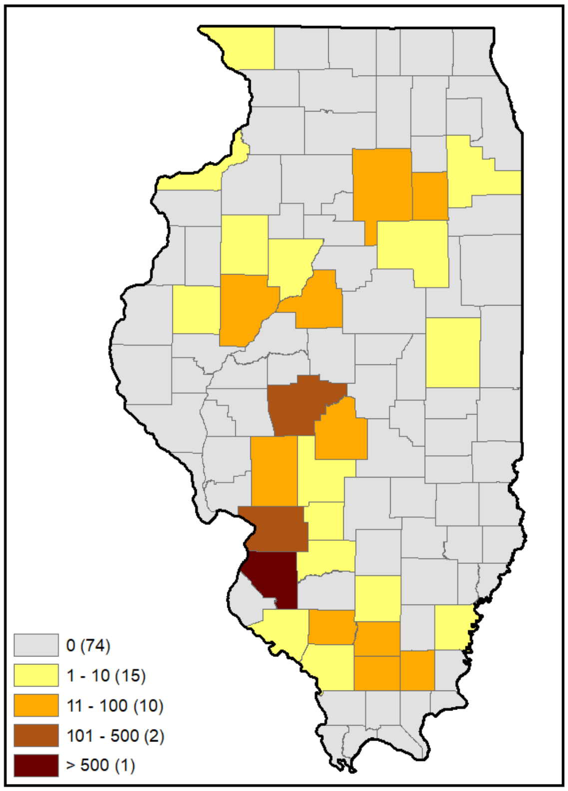


Figure 2.41. Reinsured confirmed claims distributed by county, 2000-2021. Source: IMSIF

Table 2.24. Reinsured confirmed claims distributed by year the claim was resolved. Source: IMSIF

Year	Number of Claims
2000	77
2001	71
2002	70
2003	62
2004	44
2005	35
2006	64
2007	117
2008	88
2009	106
2010	98
2011	52
2012	65
2013	47
2014	57
2015	94
2016	55
2017	57
2018	53
2019	56
2020	38
2021	61

Impacts

Infrastructure

Movement of the ground due to mine subsidence is not selective, and any structure on the surface can be damaged. Infrastructure at risk of being damaged during an event can include buildings and other structures, roads, sidewalks, sewer/water pipes and other utilities.[5] Since the pits created from pit subsidence are relatively small, a pit may form underneath a structure without being noticed. Anything within the area of sag subsidence will be affected and move towards the center of the event. Roads can also be affected by mine subsidence. Compression lines can form, buckling the road because of the ground movement.

Environmental

Mine subsidence can cause severe disruptions to the surface. This can lead to changes in surface water flow which can impact the water quality and quantity supplied to streams and lakes. The impacts of subsidence are potentially severe in terms of damage to surface utility lines and structures, changes in surface-water and ground-water conditions, and effects on vegetation and animals. A large area of subsidence can cause ponding in locations that did not typically have standing water before.[6] This can also lead to soil erosion and have an overall impact on the soil quality in the area.

Economic

When a structure is compromised by mine subsidence, it may become unsafe for occupancy. Depending on the location of the subsidence, a single-family residence may be affected, or even a commercial, industrial, or government building. Events scheduled to take place within a structure may need to be cancelled. Repair costs may be substantial, and property values can be impacted by mine subsidence.

Vulnerability

The main factor making a property vulnerable to mine subsidence is its proximity to an underground mine. To get an estimate of population in close proximity to mines, spatial data from the ISGS ILMINES database and the 2020 US Census were utilized. A map of the ILMINES data can be seen in Figure 2.42. Census blocks within 500 feet of an underground mine were selected, and their populations were tabulated by county. Counties with 25% or more of their population in a census block that is within 500 feet of a mine are considered to have High Vulnerability to this hazard. Counties with greater than or equal to 10% but less than 25% near a mine are deemed to have Medium Vulnerability. All other counties with less than 10% of their 2020 population within 500 feet of a mine have low vulnerability. Counties with high and medium vulnerability are listed in Table 2.25 and Table 2.26 below.

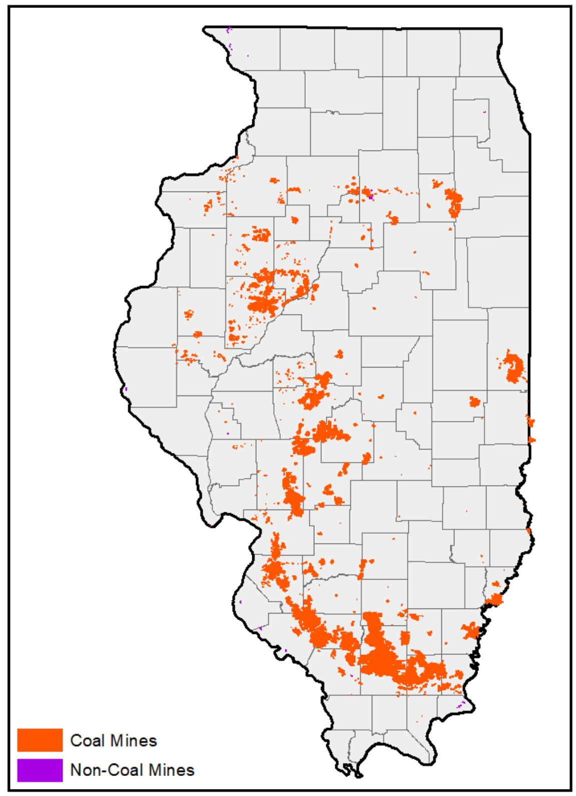


Figure 2.42. Coal and non-coal mines in Illinois. Source: IL MINES

Table 2.25. List of counties with >25% population within 500 feet of an underground mine.

Counties with High Vulnerability	
County	**2020 Population % near a mine**
Saline	79.72%
Franklin	74.57%
Perry	69.90%
Macoupin	61.69%
Christian	59.28%
St. Clair	54.90%
Sangamon	54.07%
Williamson	51.10%
Menard	48.78%
Grundy	45.91%
Fulton	43.52%
Montgomery	43.44%
LaSalle	33.92%
Madison	33.86%
Clinton	33.01%
Putnam	30.02%
Bureau	26.33%
Logan	25.58%

Table 2.26. List of counties with >10% and <25% population within 500 feet of an underground mine.

Counties with Medium Vulnerability	
County	**Population % near a mine**
Marshall	24.54%
Jackson	24.53%
Vermilion	23.77%
Marion	22.48%
Randolph	21.38%
Gallatin	20.60%
Washington	16.43%
Peoria	15.14%
Tazewell	13.94%
Mercer	13.10%
Henry	10.19%
Bond	10.07%

Climate Change

Generally speaking, climate change is not expected to have a major impact on the likelihood of mine subsidence occurring. Upon consultation with Chris Korose and Scott Elrick of the Illinois State Geological Survey, there are some factors of subsidence that could be affected by climate change. It must first be noted that each mine has individual attributes that influence if, when, and how subsidence occurs, and each of these attributes may or may not be affected by climate change. More specifically, mine subsidence is highly dependent on the local geology, and the thickness, strength, and character of the overlying bedrock, and/or thickness of the unconsolidated material (supported by bedrock).[7]

The majority of (if not all) mines in Illinois are deep enough underground that warmer temperatures at the surface are not expected to make a difference. While warmer air can hold more moisture and seasonal variations in humidity can play a role in weakening the roof of a mine over time, this would only affect actively ventilated mines, and the risk of subsidence still depends on the geologic makeup of the layers above an individual mine. Increased rainfall due to climate change may have an effect. Pit subsidence has been noted to occur after heavy rainfalls or snow melts[8], so increased precipitation may play a role in future pit subsidence events. However, most underground coal mines in Illinois are dry due to impermeable shales above the coal, unless sandstone channels happen to down cut through the shale layers to intersect the coal seam.

Risk Analysis

It is estimated that about 840,000 acres of Illinois land have been undermined for coal and other materials, and that about 201,000 acres of residential and other developed land lies in close proximity to these mines.[9] In 1979, the Mine Subsidence Insurance Act was passed to provide subsidence insurance for homeowners in mining areas. The risk of damage in some parts of the state was high enough that the law mandated private insurance carriers to include coverage as a part of their homeowner policies. Homeowners in counties where 1% or more of the land has been undermined (Figure 2.43) will automatically have subsidence insurance added to their policies when issued. Those individuals refusing coverage will be asked to sign a waiver. According to the Illinois Mine Subsidence Insurance Fund (IMSIF), residential and commercial insurance policies must include mine subsidence insurance in 34 of Illinois' 102 counties (Figure 2.44 below), where underground mining is the most prevalent.[10]

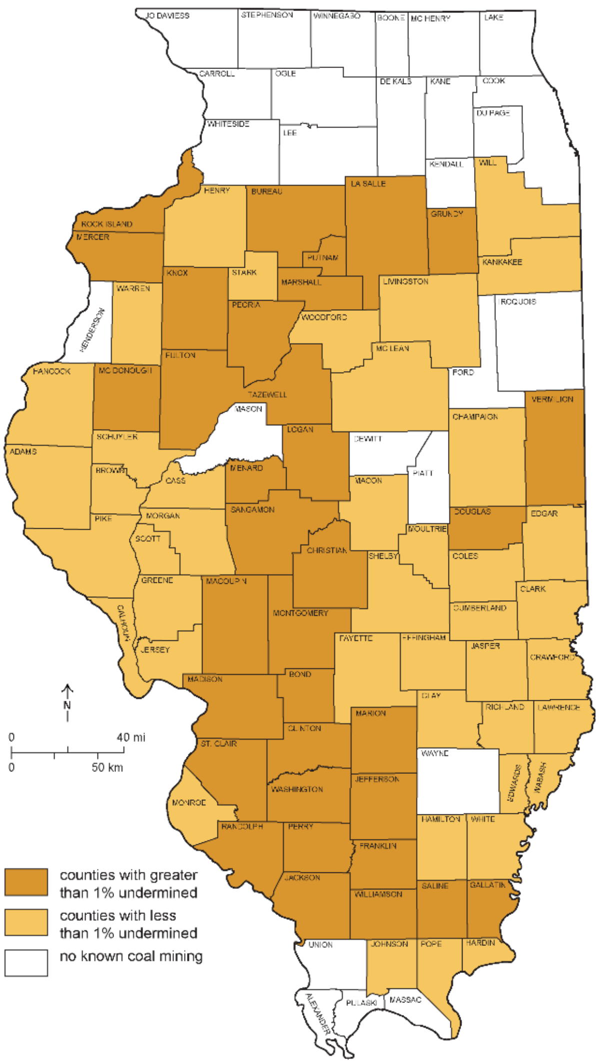


Figure 2.43. Counties of Illinois undermined for coal. Source: ISGS

Figure 2.44. Counties where mine subsidence insurance must be included. Source: IMSIF

In 2009, the Illinois State Geological Survey published Circular 575, which examined the proximity of urban areas to coal and non-coal underground-mined areas in Illinois. This study found that an estimated 333,000 housing units and approximately 201,000 acres of urban and developed lands are in close proximity to underground mines and may be exposed to subsidence. The total land area in Illinois overlying or immediately adjacent to underground mines is 1,676,000 acres.[11] Table 2.27 shows the top 15 Illinois counties with the most area above underground mines (within a buffer of 50 to 500 feet).

Table 2.27. Ranking of the top 15 mining counties by total acreage. Source: ISGS Circular 575, 2009

Rank	County	Acreage
1	Franklin	108,363
2	Saline	75,921
3	Macoupin	73,792
4	Williamson	71,782
5	Sangamon	70,503
6	Christian	58,767
7	St. Clair	53,677
8	Montgomery	43,221
9	Madison	33,879
10	Vermilion	32,284
11	Perry	32,078
12	Randolph	30,910
13	Jefferson	30,289
14	Fulton	28,500
15	Peoria	21,292

Loss Estimates

One of the tasks of the IMSIF is providing reinsurance to insurance companies for damage caused by mine subsidence. IMSIF provided the aggregated data on claims from 2000-2021 shown below. Caveats for these values include the fact that the statistics provided are based on reinsured claims filed with the Fund, and do not reflect uninsured properties, nor properties where reinsurance was waived by the insureds. Subsequently, the possibility exists that there are unaccounted properties with mine subsidence damage. Additionally, the maximum limits for both residential and commercial structures were increased to $750,000 in 2008 and 2011 respectively. and Table 2.28 show the amounts of reinsured claims reimbursed by county and by payment year.

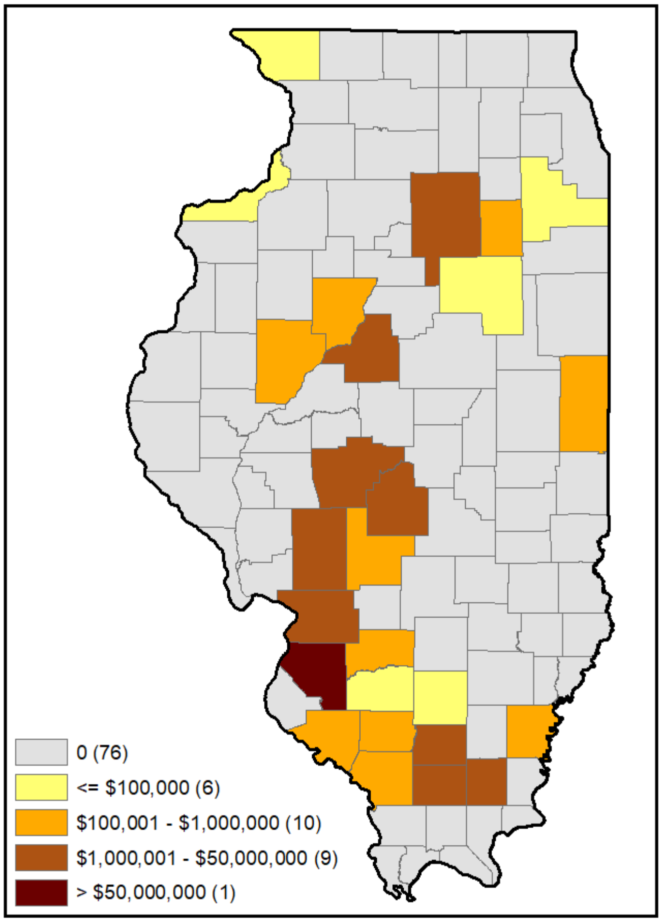


Figure 2.45.Reinsured claims reimbursed by county, 2000-2021. Source: IMSIF

Table 2.28. Reinsured claims reimbursed by payment year. Source: IMSIF

Year	Amount
2000	$6,141,826
2001	$5,708,849
2002	$4,527,670
2003	$4,021,325
2004	$10,025,654
2005	$5,561,257
2006	$5,444,497
2007	$7,605,006
2008	$15,270,358
2009	$13,432,750
2010	$12,289,510
2011	$9,760,583
2012	$5,596,288
2013	$10,172,246
2014	$9,651,678
2015	$8,653,192
2016	$10,151,135
2017	$10,374,625
2018	$9,029,688
2019	$10,430,657
2020	$12,508,948
2021	$6,580,611

[1] Moran, K. A. (2017) Illinois Mine Subsidence Insurance Fund Historical Record
[2] Ibid
[3] Bauer, R. A. (2013) Mine Subsidence in Illinois: Facts for Homeowners
[4] Spearie, S. (July 5, 2022) Mine subsidence problems hit Lutheran High School in Springfield, IL, State Journal-Register. Retrieved Apr 2023. https://www.sj-r.com/story/news/local/2022/07/05/mine-subsidence-problems-hit-lutheran-high-school-springfield-il/7813197001/
[5] Bauer, R. A. (2013) Mine Subsidence in Illinois: Facts for Homeowners
[6] Lee, F. T., & Abel, J. F. (1983). Subsidence from underground mining; environmental analysis and planning considerations (Report No. 876; Circular). USGS Publications Warehouse. https://doi.org/10.3133/cir876
[7] Bauer, R. A. (2013) Mine Subsidence in Illinois: Facts for Homeowners
[8] Ibid
[9] Ibid
[10] Illinois Mine Subsidence Insurance Fund. (n.d.). How to Obtain Mine Subsidence Insurance. Retrieved from https://www.imsif.com/about-mine-subsidence-insurance/how-to-obtain-mine-subsidence-insurance
[11] Korose, C. P., Louchios, A. G., and Elrick, S. D. (2009) The proximity of underground mines to urban and developed lands in Illinois

PANDEMIC

Pandemic

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
PANDEMIC	STATEWIDE	2	<1	N/A	N/A	36,665

Description

According to the World Health Organization, a pandemic involves the worldwide spread of a new infectious disease.

Pandemics occur when new diseases or viruses develop the ability to spread rapidly. Humans may have little or no immunity against a new virus. Usually, a new virus cannot spread between animals and people, but it can easily spread if it mutates, and a pandemic may result. Seasonal flu epidemics generally occur because of a viral subtype that is already circulating among people.

According to the United States Centers for Disease Control and Prevention (CDC), the expected number of people with a disease that is usually present in a community is referred to as the baseline or endemic level of the disease. The CDC uses the following definitions to describe the extent of infectious diseases[1]:

- **Endemic**: Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area.
- **Hyperendemic**: The persistent, high levels of disease occurrence.
- **Cluster**: Aggregation of cases grouped in place and time that are suspected to be greater than the number expected even though the expected number may not be known.
- **Epidemic**: An increase, usually sudden, in the number of cases of a disease above what is normally expected.
- **Outbreak**: The same as epidemic, but over a much smaller geographical area.
- **Pandemic**: Epidemic that has spread over several countries or continents, usually affecting many people.

Communicable diseases, also known as infectious diseases, are illnesses caused by an infectious agent or its toxins that occurs through the direct or indirect transmission of the infectious agent or its products from an infected individual or via an animal, vector or the inanimate environment to a susceptible animal or human host.[2] Signs and symptoms vary depending on the organism causing the infection. Hand washing and adequate personal hygiene practices can help prevent the spread of many communicable diseases. In any given year, a communicable disease can lead to an epidemic or outbreak within Illinois. Common infectious diseases in Illinois can be found in Table 2.29 below.[3]

Table 2.29. Infectious diseases.

Communicable Disease	Definition
Candida auris	Candida auris, also known as C. auris, is a type of yeast that can cause serious infections in humans, including bloodstream or wound infections.
Diphtheria	Diphtheria is a serious disease caused by a toxin (poison) made by bacteria. It causes a thick coating in the back of the nose or throat that makes it hard to breathe or swallow.
E. coli	Escherichia coli, is an emerging cause of foodborne illness. While most strains are harmless and live in the intestines of healthy humans and animals, this particular strain produces a powerful toxin that can cause severe illness.
Human immunodeficiency virus (HIV)	Human immunodeficiency virus, or HIV, is a virus that attacks the body's immune system. HIV can enter the body through blood, semen, vaginal fluid or breast milk.
Influenza (flu)	Influenza, commonly called "the flu," is an infection of the respiratory tract caused by the influenza virus and often causes a more severe illness.
Lyme disease	Lyme disease is a bacterial disease transmitted by infected ticks.
Measles	Measles is a serious, highly contagious disease caused by a virus. The virus is spread easily through the air when an infected person coughs or sneezes or by direct contact with infected nose or throat secretions.
Mumps	Mumps is an acute infectious viral disease that can cause swelling and tenderness of the salivary glands in the cheeks and jaw.
Poliomyelitis (polio)	Polio is an infectious disease caused by a virus that lives in the throat and intestinal tract.
Pneumococcal disease	Pneumococcal disease is caused by Streptococcus pneumonia, bacteria that can attack different parts of the body; infections of the lungs (pneumonia), the bloodstream (bacteremia) and the covering of the brain (meningitis).
Rubella	Rubella is a viral illness that is spread from person to person by breathing in droplets of respiratory secretions exhaled by an infected person.
Salmonella infections	Salmonella is a general name for a group of about 2,000 closely related bacteria that cause illness by reproducing in the digestive tract.
Severe acute respiratory syndrome (SARS)	Severe acute respiratory syndrome (SARS) is a respiratory illness caused by a virus.
Sexually transmitted diseases	Sexually transmitted diseases (STDs) are some of the most commonly reported diseases in the United States. They can include chlamydia, gonorrhea, syphilis, herpes, and pass from one person to another through vaginal, oral, and anal sex
Tuberculosis	Tuberculosis (TB) is a contagious and potentially life-threatening disease caused by a bacterium transmitted through the air that usually affects the lungs.
Viral hepatitis	Hepatitis is defined as an inflammation of the liver. Hepatitis is commonly caused by a virus. The most common types are Hepatitis A, Hepatitis B, and Hepatitis C.
West Nile virus	West Nile virus is a virus which can be transmitted to humans by the bite of an infected mosquito.
Whooping cough (pertussis)	Pertussis, more commonly known as whooping cough, is caused by a bacterium (germ), Bordetella pertussis, that lives in the mouth, nose and throat. The germ is highly contagious and is easily spread from person-to-person.

Historical Events

According to the Centers for Disease Control and Prevention (CDC), there have been five pandemics since 1918. The first four pandemics were caused by influenza viruses, each starting in 1918, 1957, 1968, and 2009 (Table 2.30). Of these, the influenza pandemic of 1918 by far caused the most deaths in the United States and around the world. The most recent pandemic, declared by the World Health Organization (WHO) in March 2020,[4] was caused by a coronavirus, SARS-CoV-2.[5]

Table 2.30. Pandemics since 1918.

Pandemic Declared	Cause	US Deaths (est.)	Global Deaths (est.)
1918	Influenza A (H1N1) virus	675,000	50,000,000
1957	Influenza A (H2N2) virus	116,000	1,100,000
1968	Influenza A (H3N2) virus	100,000	1,000,000
2009	Novel influenza A (H1N1)pdm09 virus	8,868 – 18,306	151,700 – 575,400
2020	Coronavirus SARS-CoV-2	1,095,149*	6,706,305*
*As January 6, 2023			

Monkeypox or, mpox, in the latest development of this rare disease caused by infection with the monkeypox virus. Monkeypox virus belongs to the Orthopoxvirus genus in the family Poxviridae.[6] Since early May 2022, cases of mpox have been reported from countries where the disease is not endemic, and continue to be reported in several endemic countries. Confirmed cases with travel history reported travel to countries in Europe and North America, rather than West or Central Africa where the mpox virus is endemic.[7] As of January 6, 2023 there are 1,424 confirmed cases of mpox in Illinois.[8]

Impacts

The impacts of a pandemic on Illinois can vary significantly. The duration of the incident can also cause unique impacts. In a short duration incident, there may be a medical surge at the beginning which tapers off as the incident goes on and may not result in significant disruption to everyday life. However, longer duration incidents may have significant impacts not only for the public health response, but also for business/industry and the economy.

Infrastructure

Infrastructure is not exposed to or vulnerable to communicable diseases, thus having a minimal impact on infrastructure. The type of communicable disease can significantly impact infrastructure development due to changes in productivity or supply chain issues, and thus result in long-term impacts on the State's infrastructure.

Environmental

The type of communicable disease will determine the severity of any effect on the environment. Livestock and poultry populations may become infected due to a health risk impacting the local economy and available food sources. Bacteria, pathogens, and other pollutants introduced into the State's water-cycle can also have long-term impacts on water resources, further contributing to adverse public health impacts.

According to NASA, "The COVID-19 pandemic and resulting limitations on travel and other economic sectors by countries around the globe drastically decreased air pollution and greenhouse gas emissions within just a few weeks."[9] Though the study did discover that emission rates returned to pre-pandemic levels later in 2020, due to increased demand and necessity for economic productivity. Cutting emissions in industrial and residential sectors is not practical currently to reduce emissions.

Economic

A pandemic have been shown to have a significant impact on the economy. With epidemics and pandemics, high levels of illness and, in some cases death, can lead to economic losses, social disruptions and interruption of supply chains as demand for certain goods and services increases or decreases.

The COVID-19 pandemic has impacted economies around the globe. With the recent COVID-19 pandemic causing store closures across the United States, many businesses had to turn to e-commerce. [10] Industries came to a standstill for an extended period of time impacting the supply chain of products necessary for economic productivity. The Council of Economic Advisor's released the 2022 Economic Report of the President and noted that while the economy has been moving towards recovery, the pandemic shed light on the shortcomings of the American economy. Inflation has emerged as a major challenge felt by many around the country, the trade deficit has widened and many trading partners have shifted from services to goods by demand. [11]

Social Vulnerability

Race, income, education and employment status can impact exposure to infectious diseases. People who are living paycheck-to-paycheck often must continue to work through illness increasing risk of exposure to others and thus, increasing their risk of contracting a virus. Additionally, Black, Indigenous, People of Color (BIPOC) and lower-income individuals often have pre-existing medical conditions that lead to increased risk of contracting a virus and more harmful impacts due to underlying health issues. Additionally, inequities exist in the ability of individuals, communities, regions and even countries to monitor and contain infectious diseases.

Climate Change

The World Health Organization states climate change as the single biggest health threat facing humanity. [12] Climate change has the potential to affect human health by increasing the occurrence of vector-borne diseases. According to the International Journal of Scientific Research (IJSR), there is an increase in many infectious diseases, including some newly circulating ones because of the combined impacts of rapid demographic, environmental, social, technological, and other changes in our ways of living. Climate change will also affect infectious disease occurrence. [13] As warmer global temperatures increase, average winter temperatures decrease and bring about shorter winters. Shorter and milder winters bring on earlier spring seasons which can result in an increasingly hospitable environment for carriers of vector-borne diseases and increase the likelihood of new pests and transmission of diseases. Climatic factors such as temperature, humidity and precipitation strongly influence the survival of ticks and the bacterium that causes Lyme disease. Pathogens like Zika, Dengue and West Nile virus, which are commonly found in tropical or temperate climates, can become more prevalent due to climate change. [14]

Risk Analysis

The majority of the state has Medium to Low risk ranking for a pandemic (Figure 2.46). Those with High rankings have a higher socially vulnerable population or have incurred more historic deaths. Counties with a High ranking include Champaign, Coles, De Witt, Jackson, Kane, Kankakee, La Salle, St. Clair, and

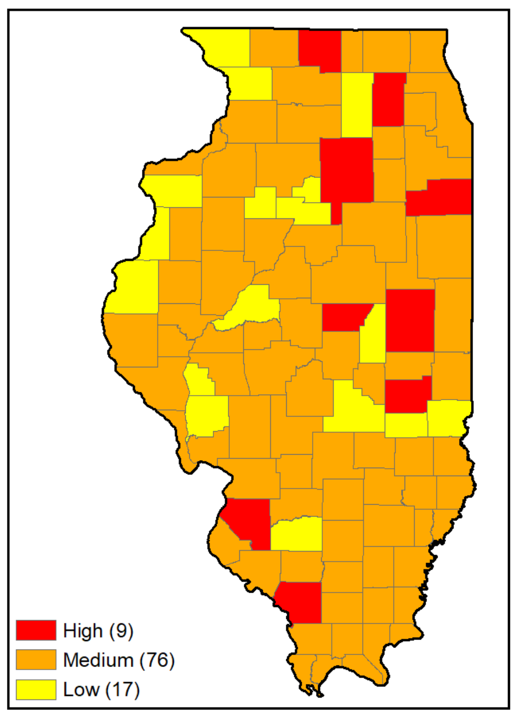


Figure 2.46. Pandemic risk rankings

Winnebago. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables..

Loss Estimates

The loss estimates of a future pandemic cannot be predicted accurately, as it will depend on the virulence of the virus, the speed at which the virus spreads, the availability of vaccines and antivirals, and the effectiveness of medical and non-medical containment measures.

The Illinois Department of Public Health released a Pandemic Influenza Preparedness and Response Plan in 2020. IDPH should be the source for preparedness for future outbreaks and pandemics for Illinois.[15]

---

[1] Center for Disease Control. (2021, December 20). *Principles of Epidemiology | Lesson 1 - Section 11*. https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section11.html.

[2] Center for Disease Control. (2020, April 15). *Definitions for Consideration | State TB Prevention & Control Laws | TB Laws & Policies | Resources & Tools | TB.* April 15, 2020. https://www.cdc.gov/tb/programs/laws/menu/definitions.htm.

[3] Illinois Department of Public Health. (n.d.). *Diseases and Conditions*. Retrieved from https://dph.illinois.gov/topics-services/diseases-and-conditions.html

[4] World Health Organization. (2020, March 11) *WHO Director-General's opening remarks at the media briefing on COVID-19*. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

[5] World Health Organization. (n.d.). *Coronavirus disease (COVID-19)*. Retrieved January 26, 2023, from https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19

[6] World Health Organization. (n.d.). *About Mpox*. Accessed January 12, 2023. https://dph.illinois.gov/mpox/about-mpox.html.

[7] World Health Organization. (n.d.). *Mpox (monkeypox) outbreak 2022*. Retrieved January 18, 2023, from https://www.who.int/emergencies/situations/monkeypox-oubreak-2022

[8] Illinois Department of Public Health. (n.d.). *Mpox Statistics*.Accessed January 12, 2023. https://dph.illinois.gov/mpox/data.html.

[9] Laboratory, By Carol Rasmussen, NASA's Jet Propulsion. (2021) "Emission Reductions From Pandemic Had Unexpected Effects on Atmosphere." Climate Change: Vital Signs of the Planet. https://climate.nasa.gov/news/3129/emission-reductions-from-pandemic-had-unexpected-effects-on-atmosphere.

[10] Roman, S., Cooke-Hull, S., Dunfee, M., Flaherty, M., Haskell, J., Holland, V., Jackson, C., & Shevlin, C. (2022, July). *The Coronavirus Pandemic's Economic Impact*.

[11] Advisers, C. O. E. (2002). Economic Report of the President. *Washington, DC: US GPO, Annual*.

[12] World Health Organization. (2021). *Climate change and health*. Retrieved January 26, 2023, from https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

[13] Dr. Sujatha P , Janardhanam PVS . (2013) "Climatic Change And Health Impact, *International Journal of Scientific Research(IJSR), IJSR | World Wide Journals*." 2(6). https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/article/climatic-change-and-health-impact/MTE2OA==/?is=1&b1=37&k=10.

[14] CDC. (2021, February 25). *Regional Health Effects—Midwest* https://www.cdc.gov/climateandhealth/effects/midwest.htm

[15] Illinois Department of public Health. (2020). "Pandemic Influenza Preparedness and Response Plan March 2020."

SEVERE STORMS

Severe storms are weather events that are characterized by high winds, heavy rain, lightning, and thunder, and they can cause damage to property and disrupt daily life. These storms can occur in various forms, such as thunderstorms, hailstorms, and tornadoes.[1] Of the estimated 100,000 thunderstorms each year in the US, approximately 10 percent are classified severe. Severe storms either produce hail at least one inch in diameter, have winds of 58 miles per hour or higher, or produce a tornado. Thunderstorms can bring heavy rain, strong winds, hail, lightning, and tornadoes.

Thunderstorms can produce some of nature's most destructive and deadly weather. In Illinois, thunderstorms occur when there is a collision of moist, warm air moving north from the Gulf of Mexico with colder fronts moving east from the Rocky Mountains resulting in cold air overriding a layer of warm air causing the warm air to rise rapidly. Thunderstorms have three stages in their life cycle: The developing stage, the mature stage, and the dissipating stage (Figure 2.47).[2]

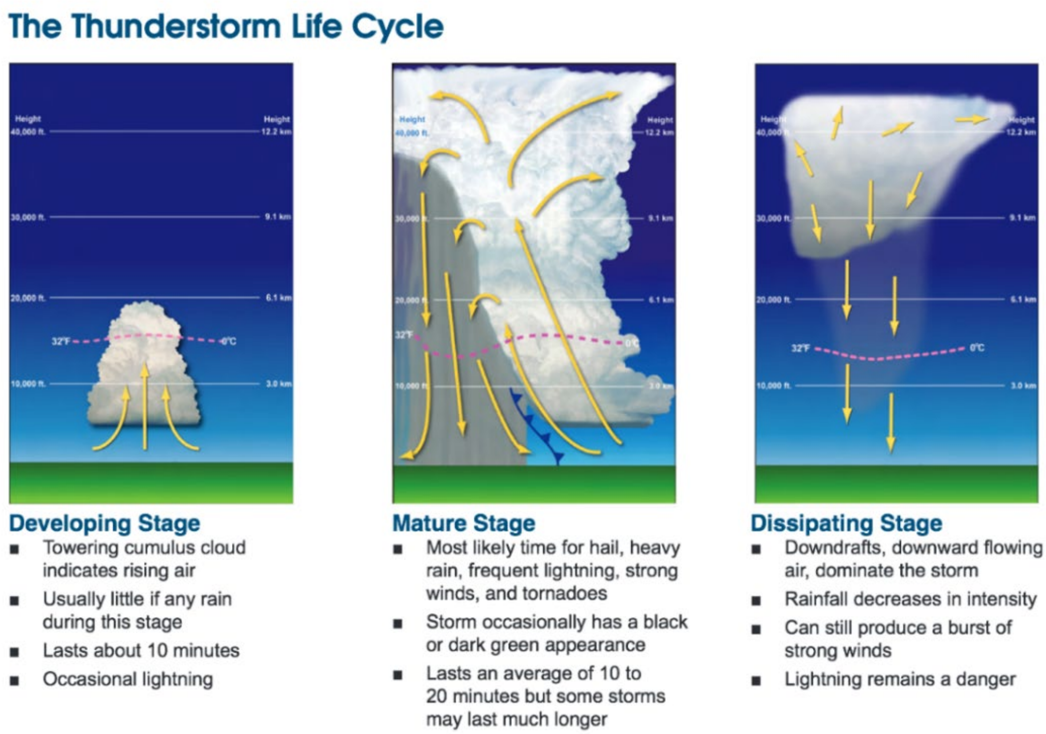


Figure 2.47. Thunderstorm life cycle. Source: NWS

Thunderstorms may occur singly, in clusters, or in lines. In the course of a few hours, it is possible for several thunderstorms to affect one location, or a single thunderstorm to affect one location for an extended time. Thunderstorms typically are 15 miles in diameter and produce heavy rain anywhere from 30 minutes to an hour.

---

[1] National Weather Service. (2021). Severe thunderstorms. Retrieved from https://www.weather.gov/safety/thunderstorm-why

[2] National Weather Service. (n.d.). *Thunderstorms, Lightning, and Tornadoes - Natures Most Violent Storms*. Retrieved from https://www.weather.gov/media/owlie/ttl6-10.pdf

SEVERE STORMS

Hail

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
HAIL	STATEWIDE	2970	110.0	$219,512,600	47	0

Description

Hail is precipitation in the form of balls of irregular lumps of ice, typically from a thunderstorm.[1] Most thunderstorms have hail, but not all thunderstorms produce hail at the ground. Hail occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. These balls of ice are large frozen raindrops. Super cooled water droplets hit ice crystals and freeze instantly.

The hailstones grow as more and more droplets hit these ice balls and freeze as they fall through the clouds. As the hailstones reach the bottom of the clouds the wind updrafts may send the hail back up into the cloud to repeat the process and continue to grow. When the weight of the hailstones becomes too heavy to be supported by the updrafts, they fall out of the clouds. Hail can be very destructive to plants/crops, animals and property causing over a billion dollars in damage each year nationally.

Hail can be the size of a pea or smaller, however larger hailstones can cause severe damage to buildings, vehicles, and plants.[2] Hailstones less than 1.0 inch in diameter are not considered severe by the National Weather Service because the likelihood of these causing damage is lower. However, once a hailstone is 1.0 inch in diameter it has the potential to cause significant damage.[3] The largest recorded hailstone in Illinois was over 5.6 inches in diameter and weighed 26 ounces. Most hailstorms are made up of a mix of different sizes, and only the very largest hail stones pose serious risk to people caught in the open. The National Severe Storms Laboratory (NSSL) uses the distinctions in Table 2.31 for hail size:[4]

Table 2.31. Hail sizes.

Reference Object	Size
Pea	¼-inch diameter
Mothball	½-inch diameter
Penny	¾-inch diameter
Nickel	⅞- inch diameter
Quarter	1 inch diameter — hail quarter size or larger is considered severe
Ping-Pong Ball	1 ½- inch diameter
Golf Ball	1 ¾- inch diameter
Tennis Ball	2 ½- inch diameter
Baseball	2 ¾- inch diameter
Teacup	3- inch diameter
Softball	4- inch diameter
Grapefruit	4 ½-inch diameter

Historical Events

Hail occurs frequently in Illinois, averaging 110 times a year, or 2,970 times since 1996. There have been no deaths, but there have been 47 injuries. The potential size of hail stones illustrates the damage they can cause.

On May 21, 2014, the City of Tuscola in Douglas County experienced very large hail up to four inches in diameter and caused $100 million in damage.

On May 2, 2018 there were severe storms across Northern Illinois and Northwest Indiana. The strongest storms produced 2-3 inch diameter hail near Rockford.[5]

Though irregular as many hail events occur during the summer months, a series of storms across northern Illinois produced straight line winds and hail resulting in damage in Kendall, Grundy and Will County.[6] Significant hail, larger than golf balls fell in parts of Lee and LaSalle Counties on September 7, 2021.

On April 4, 2023 a few supercell thunderstorms that tracked between Burlington, IA and Quincy, IL, congealed into one massive supercell, strengthening as it entered Fulton County around 7 pm. The supercell went on to produce baseball sized hail and a few tornadoes in Fulton and Peoria County (Figure 2.48).[7]

Figure 2.48. Baseball to softball size hail in Bernadotte, IL. Source: NWS

Impacts

Infrastructure

When a hailstorm strikes, the damage can be catastrophic for homes, businesses, agriculture and infrastructure. Annual mean property losses have begun to exceed 10 billion U.S. dollars and severe hail events that impact large cities routinely reach 1 billion U.S. dollars in losses.[8] Hail can cause severe damage to aircraft, homes and cars, in the form of dents, broken windows, and roof damage.

Environmental

Agricultural crop losses are typically related inversely to increasing hailstone size, experiencing greater impact with increased density of hailfall. Hail can damage crops by breaking stems, bruising and tearing leaves, and damaging fruit. This can lead to a reduction in crop yield and quality, and in severe cases, the loss of an entire crop.[9] Hail can also disrupt wildlife by causing damage to habitats.

Economic

The economic impacts from hail can be quite extensive. The cost of repairs to damaged property can be significant. Crop damage can lead to loss of income for households. Severe storms are some of the costliest disasters, and can have long lasting impacts on the economy when repairs to damaged infrastructure, households, and property is needed.

Social Vulnerability

The risk of impacts from severe storms is a function of both exposure (i.e., storm frequency and severity) and societal vulnerability. Irrespective of potential increasing trends in severe storms, tornado environments and hail intensity, certain aspects of development can increase the risk of severe storm impacts, including loss of life. Many counties in southern Illinois have a disproportionately high risk of injuries, fatalities and other impacts due to higher rates of poverty and a relatively high percentage of housing stock that is mobile homes. Impact vulnerability is particularly high among Hispanic and Latinx immigrants due to the lack of multilingual programming and disaster preparedness programming across the United States. Therefore, severe weather impacts to urban and rural areas of Illinois are expected to increase without effective climate change mitigation and impact adaptation.

Climate Change

The impact of climate change on severe weather in the Midwest – severe thunderstorms, hail, and tornadoes – is less well known than for other hazards such as heatwaves. Researchers have begun to address the complexity and uncertainty around climate change impacts to severe weather in Illinois. Overall, the frequency of storm environments conducive to producing severe weather, such as strong winds or tornadoes, have increased in frequency across much of the Midwest and mid-south over the past 40-50 years. Studies have documented an increase in the frequency of large hail environments, with significant impacts from extensive hail damage. There remains uncertainty of the extent to which climate change has caused these recent trends; however, it is thought the warmer and more humid climate in Illinois has had at least some effect on the increasing frequency in severe storm environments. More frequent severe weather environments have already played an important role in the larger number of billion-dollar disasters, recorded by the National Oceanic and Atmospheric Administration (NOAA). Illinois has experienced 81 billion-dollar disasters since 2003, 64 of which (80%) have been caused by severe storms.

Climate model projections show a potential shift in the seasonality of supercells, one of the most powerful types of severe storms experienced in Illinois. Supercells generate many, if not most, tornadoes in the Midwest, and virtually all hail. Model projections show a potential shift toward higher frequency of supercell storms in the late winter and early spring, with fewer in the fall. Most severe storms in Illinois occur between 3 pm and 8 pm, and therefore, a potentially increasing number of storms in late winter and early spring mean more nighttime storms, which increases risk of life-threatening impacts. Projections of changes in hail in Illinois are more uncertain than those for severe storms and supercells; however, models project the potential for decreased frequency of hail events but increased severity, meaning more intense and extensive impacts when hailstorms occur in the future.

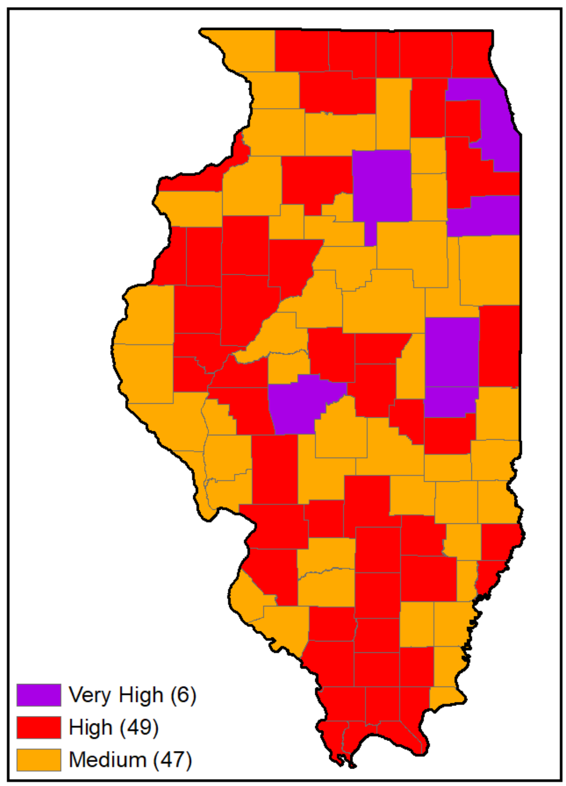


Figure 2.49. Hail risk rankings.

Risk Analysis

The entire state of Illinois is at risk for hail. The majority of the state has a ranking of Medium or High, while Champaign, Cook, Douglas, Kankakee, La Salle, and Sangamon County all have a ranking of Very High (Figure 2.49). A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Loss Estimates

Since 1996, hail in Illinois has resulted in $219,512,600 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Notably, Douglas County has a relatively high property damage per year value with $3,846,154 resulting in an estimated annual essential facility exposure of $153,952. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in Appendix 2.2 Loss Estimate Tables.

---

[1] American Meteorological Society Glossary. (n.d.). *Hail.* Retrieved April 2021, https://glossary.ametsoc.org/wiki/Hail

[2] National Weather Service. (n.d.). *Severe Thunderstorm Safety,* Retrieved from https://www.weather.gov/safety/thunderstorm

[3] National Weather Service. *National Implementation of the Use of 1-inch Diameter Hail Criterion for Severe Thunderstorm Warnings in the NWS.* Retrieved from https://nws.weather.gov/products/PDD/OneInchHail_Oper_PDD.pdf

[4] NOAA National Severe Storms Laboratory. (n.d.). Retrieved *Hail Basics*. Retrieved from https://www.nssl.noaa.gov/education/svrwx101/hail/

[5] US Department of Commerce, N. (n.d.). *May 2, 2018 Severe Event*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/lot/02May2018_wind_hail

[6] US Department of Commerce, N. *September 7, 2021: Swaths of Large Hail and Damaging Winds Across Northern Illinois*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/lot/2021sept07

[7] US Department of Commerce, N. (April 7, 2023). *April 4, 2023—Tornado & Large Hail Event (Updated April 7th)*. NOAA's National Weather Service. Ret(n.d.). rieved from https://www.weather.gov/ilx/april42023_severe

[8] Gunturi, P., & Tippett,M. K. (2017). *Managing severe thunderstorm risk: Impact of ENSO on U.S. tornado and hail frequencies* (Tech. Rep.). Minneapolis, MN, USA: Willis Re.

[9] Battaglia, M., Lee, C., Thomason, W., Fike, J., & Sadeghpour, A. (2019). Hail damage impacts on corn productivity: A review. *Crop Science*, *59*(1), 1-14.

SEVERE STORMS

Lightning

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
LIGHTNING	STATEWIDE	334	12.4	$24,767,000	76	20

Description

Lightning is a transient, high-current electric discharge most commonly produced by thunderstorms. Lightning discharges can happen within and between thunderstorm clouds. The National Weather Service uses the following definitions for lightning:[1]

- **Intra-cloud lightning**: An electrical discharge between oppositely charged areas within the thunderstorm cloud.
- **Cloud-to-ground lightning**: A discharge between opposite charges in the cloud and on the ground.

Lightning appears as a "bolt" when the buildup of electric charge becomes strong, with the flash of light (bolt) occurring between the clouds and the ground. In a split second the bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit. Thunder is the rapid heating and cooling of air near the lightning. Cloud-to-ground lightning strikes are the most studied. This type of lightning can severely injure or kill people, in addition to doing damage to structures, disrupting power/communications infrastructure, and starting fires.[2] Lightning occurs most frequently during the summer, although thunderstorms can happen at any time of year.[3]

Lightning kills more people than tornadoes or hurricanes. Most lightning fatalities and injuries occur outdoors at recreation events and under or near trees. Nationwide, it is estimated that 25 million cloud-to-ground lightning flashes occur each year. Illinois ranks high among the 50 states for lightning fatalities. Figure 2.50 shows the average yearly cloud to ground lightning strikes across the state of Illinois.

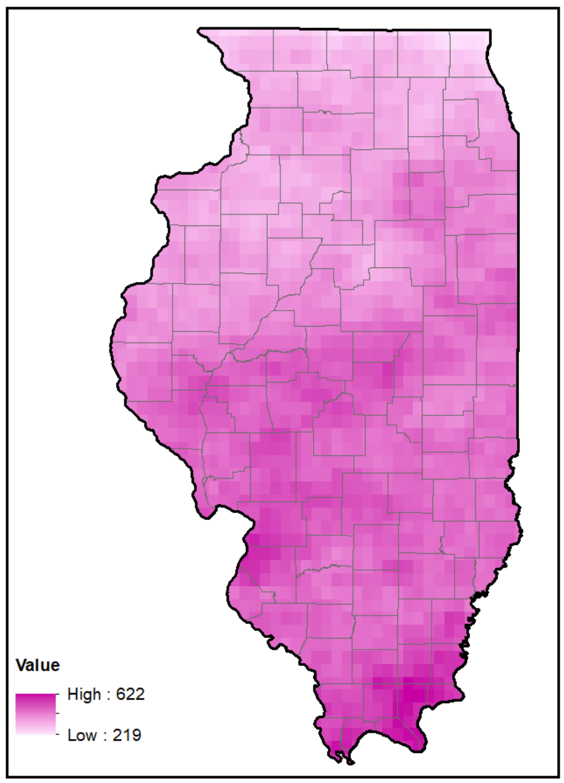


Figure 2.50. Average yearly cloud to ground lightning strikes. Source: NCEI

As noted in the summary table at the beginning of this section, there have been 334 unique events reported to the National Storms Events Database. Illinois has experienced far more lightning strikes, the events reported either resulted in an injury, fatality, property damage, or were part of another storm event reported.

Historical Events

In June 1999, a man and a woman were struck by lightning and killed while fishing along the Rock River in Rock Island County.[4]

On April 9, 2011,a lightning strike hit an unoccupied church in Springfield, Illinois. This resulted in a fire that engulfed the building resulting in complete loss of the building and all of its contents. Property damage was estimated at $1.8 million.[5]

A lightning strike hit a 39 unit apartment building in Mt. Prospect, Illinois on July 23, 2011 resulting in a fire. Fire departments were delayed due to flooded roads. The building was a total loss and would be demolished with all 75 residents having to find a new place to live. Estimated property damage was $3.5 million.[6]

On June 18, 2014, a lightning strike hit a home in unincorporated Wheaton in Du Page County, sparking a fire and causing extensive damage. A second lightning strike hit near a truck that three fire fighters were working on causing minor injuries to the fire fighters.[7]

Impacts

Infrastructure

Lightning strikes can damage infrastructure such as buildings, power lines, or cell phone towers. This can lead to disruption in power services, or damage that can be costly. Lightning is a known risk for aircraft. While governmental agencies require aircraft manufacturers to mitigate the effects of lightning, it still poses a risk and can cause damage to aircrafts.[8] Lightning is also a major cause of severe damage to wind turbines due to their rotating blades often acting to trigger lightning and thus increasing their own vulnerability.[9]

Environmental

Lightning is a major cause for damage to trees and forests, either by directly killing trees on strike or by igniting fires and burning large numbers of trees when conditions are conducive to the spread of wildfires.[10] Studies also show that lightning contributes to air pollution, though there is debate as to how much. The rapid heating and cooling of the gases within a lightning bolt produces nitric oxide (NO), which combines with oxygen to create nitrogen dioxide (NO_2). The combination of these is known as nitrogen oxides. When nitrogen oxides are created in the atmosphere during a storm, the result causes changes in one of the primary air pollutants, ground-level ozone (O_3). This gas is harmful to the environment and people.[11]

Economic

As mentioned previously, lightning can cause damage to infrastructure which can require repairs leading to significant replacement costs. Lightning has been known to cause housefires, resulting in property damage, which can be a financial burden for some. Lightning can also cause wildfires that not only damage our natural environment, but it can also lead to crop loss and therefore loss of income for households. Power outages caused by lightning strikes can lead to disruptions in services and result in loss of income for businesses that cannot operate.

Social Vulnerability

Among the most vulnerable to lighting are people who have outdoor occupations, such as construction workers, agricultural workers, utility repair workers, and landscapers. Lightning is an especially dangerous hazard for workers who use metal, due to metal’s conductivity properties.

Illinois' agricultural and construction sectors account for 6.5% of employment across the state. Although Cook County and its collar counties (DuPage, Will, Lake, Kane, and McHenry) have the highest number of people employed by these sectors, counties in southern Illinois, including Hamilton, Calhoun, Hardin, Stark, and Edwards, have the highest percentage of their populations employed by agriculture and construction, ranging from 17.7% (Edwards) to 21.7% (Hamilton).[12]

Nearly 24% of people employed in the construction sector in Illinois are foreign-born.[13] Illinois' foreign-born agricultural workers are rising too. In 2020, nearly 3,000 agricultural workers had H-2A visas, which allow nonimmigrants to work in the US. This represents an increase of over 250% since 2015.[14] People who are in the US without immigrant status and those who do not speak English may be less able to advocate for safe working conditions in the event of a severe storm, disproportionately exposing them to lightning. Safety materials that explain what to do during a severe storm may also not be available in the preferred language of a limited- or non-English speaking worker.

Climate Change

The impact of climate change on lightning is less well known. Researchers have begun to address the complexity and uncertainty around climate change impacts to severe weather in Illinois. It is thought the warmer and more humid climate in Illinois has had at least some effect on the increasing frequency in severe storm environments. Studies have shown that lightning activity will increase in a warmer climate.[15]

Some studies suggest that a warmer troposphere and higher surface temperature will result in increased heat and moisture, driving stronger convection and increasing the potential for cloud development, charge separation, and lightning. An expanded troposphere allows clouds to have a larger vertically dimension, which has been strongly correlated with higher flash rates.[16]

Climate models projections show a potential shift in the seasonality of supercells, one of the most powerful types of severe storms we experience in Illinois. Supercells generate many, if not most, tornadoes in the Midwest and virtually all hail. Model projections show a potential shift toward higher frequency of supercell storms in the late winter and early spring, with fewer in the fall. Most severe storms in Illinois occur between 3 pm and 8 pm, and therefore a potentially increasing number of storms in late winter and early spring mean more nighttime storms, which increases risk of life-threatening impacts.

Risk Analysis

The entire state of Illinois experiences lightning throughout the year. The majority of counties have Low risk, followed by Very Low. Counties at Medium risk are primarily located in the Chicago region (Figure 2.51). A complete breakdown of risk ranking scores can be found in Appendix 2.1: Risk Ranking Tables.

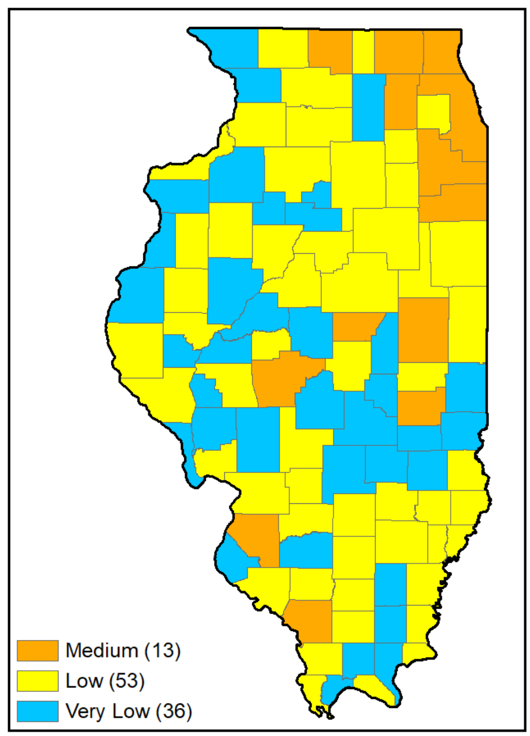


Figure 2.51. Lightning risk rankings.

Loss Estimates

Since 1996, lightning in Illinois has resulted in $24,767,000 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Notably, Cook County has a relatively high property damage per year value compared to the rest of the state with $251,423 resulting in an estimated annual essential facility exposure of $27,899. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

---

[1] US Department of Commerce, N. (n.d.). *Understanding Lightning: Types of Flashes*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/safety/lightning-science-types-flashes

[2] American Meteorological Society Glossary. (n.d.). *Lightning.* Retrieved from https://glossary.ametsoc.org/wiki/Lightning

[3] National Weather Service. (n.d.). *Lightning Safety Tips and Resources.* Retrieved from https://www.weather.gov/safety/lightning

[4] *Storm Events Database—Event Details.* (n.d.). *National Centers for Environmental Information*. Retrieved, from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=5716360

[5] *Storm Events Database—Event Details.* (n.d.). *National Centers for Environmental Information*. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=302706

[6] *Storm Events Database—Event Details.* (n.d.). *National Centers for Environmental Information*. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=337373

[7] *Storm Events Database—Event Details.* (n.d.). *National Centers for Environmental Information*. Retrieved from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=529785

[8] Lee, J. Y., & Collins, G. J. (2017, March). Risk analysis of lightning effects in aircraft systems. In *2017 IEEE Aerospace Conference* (pp. 1-9). IEEE. https://doi.org/10.1109/AERO.2017.7943671

[9] Montanyà J, van der Valde O., and Williams E.R. (2014). Lightning discharges produced by wind turbines *J. Geophys. Res* 119 1455—62. https://doi.org/10.1002/2013JD020225

[10] Latham, D., & Williams, E. (2001). Lightning and forest fires. In *Forest Fires* (pp. 375-418). Academic press. https://doi.org/10.1016/B978-012386660-8/50013-1

[11] US EPA, O. (2015, May 29). *Ground-level Ozone Basics* [Overviews and Factsheets]. https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics

[12] ACS. (2021). Table S2401. US Census Bureau. Retrieved May 18, 2023, from https://data.census.gov

[13] Siniavskaia, N. (2020). Immigrant Workers in the Construction Labor Force. NAHB Economics and Housing Policy. https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2020/special-study-immigrant-workers-in-the-construction-labor-force-march-2020.pdf

[14] Pintado, A. P. (2021, September 9). As labor pool shrinks, Illinois farmers turn to foreign workers. Investigate Midwest. Retrieved May 18, 2023, from https://investigatemidwest.org/2021/09/09/as-labor-pool-shrinks-illinois-farmers-turn-to-foreign-workers/

[15] Price, C. (2009). Will a drier climate result in more lightning?. *Atmospheric Research*, *91*(2-4), 479-484. https://doi.org/10.1016/j.atmosres.2008.05.016

[16] Yair, Y. (2018). Lightning hazards to human societies in a changing climate. *Environmental research letters*, *13*(12), 123002. https://iopscience.iop.org/article/10.1088/1748-9326/aaea86

SEVERE STORMS

Wind

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
WIND	STATEWIDE	4,173	154.6	$648,035,400	672	45

Description

Thunderstorms can cause several types of damaging wind. A downward rush of cool descending air from a thunderstorm is a downburst. The air rushing to the ground may look like a cloud or shaft of heavy rain. Once the air strikes the ground at a high speed, the air usually spreads out in all directions. The wind may be 100-150 miles per hour which is as strong as an EF1 or EF2 tornado and exceeds the lower limit of a hurricane. Downburst winds will damage roofs, overturn or push mobile homes off foundations, push vehicles off the road and may destroy structures. A linear group of thunderstorms, typically ahead of a cold front, can produce what is known as “straight-line” winds. High winds from straight-line gusts can reach speeds of 40 to 50 mph, and up to 110 mph. The width of the damage path can be several miles to tens of miles. The damage path length can extend from tens of miles to hundreds of miles. Thunderstorm downbursts and straight-line winds are the leading cause of wind related damage.

The National Weather Service uses the following definitions, which can be used to differentiate different wind related terms[1]:

- **Wind**: The horizontal motion of the air past a given point. Winds begin with differences in air pressures. Pressure that's higher at one place than another sets up a force pushing from the high toward the low pressure. The greater the difference in pressures, the stronger the force.
- **Wind Advisory**: Sustained winds 25 to 39 mph and/or gusts to 57 mph. Issuance is normally site specific.
- **Wind Gust**: Rapid fluctuations in the wind speed with a variation of 10 knots or more between peaks and lulls. The speed of the gust will be the maximum instantaneous wind speed.
- **Windy**: 20 to 30 mph winds.
- **Downburst**: A strong downdraft current of air from a cumulonimbus cloud, often associated with intense thunderstorms. Downdrafts may produce damaging winds at the surface.

The National Weather Service uses the following terms for assessing wind gust levels of severity:[2]

Table 2.32. Wind gust severity.

Severity	Description
Strong Wind Gusts	Thunderstorm wind gusts between 39 mph and 57 mph (between 34 knots and 49 knots).
Damaging Wind Gusts	Severe thunderstorm wind gusts between 58 mph and 74 mph (between 50 knots and 64 knots) causing minor damage.
Very Damaging Wind Gusts	Severe thunderstorm wind gusts between 75 mph and 91 mph (between 65 knots and 79 knots) causing moderate damage.
Violent Wind Gusts	Severe thunderstorm wind gusts greater than 92 mph (80 knots or greater) causing major damage.

According to the NWS, some weather patterns can produce what is called a derecho. A derecho is a widespread, long-lived windstorm. Derechos are associated with bands of rapidly moving showers or thunderstorms variously known as bow echoes, squall lines, or quasi-linear convective systems. These lines or storms can move very quickly and produce widespread straight-line winds over long periods of time. Derechos can move anywhere from 35-70 mph, and last 8 hours or more. Most derechos that produce severe weather move at speeds greater than 50 mph. For a wind event to be classified as a derecho, wind damage must extend at least 400 miles, be at least 60 miles wide, include wind gusts of at least 58 mph along most of its length, and also include several, well-separated 75 mph or greater gusts.

Illinois averages 860 reports of wind damage and large hail annually. Too often, people ignore severe thunderstorms because they believe only a tornado will cause damage or threaten their lives. The fact is a majority of the property damage and injuries each year are from high winds and large hail. Using NCEI data, the number of wind gusts greater than 58mph can be seen in Figure 2.52 below.

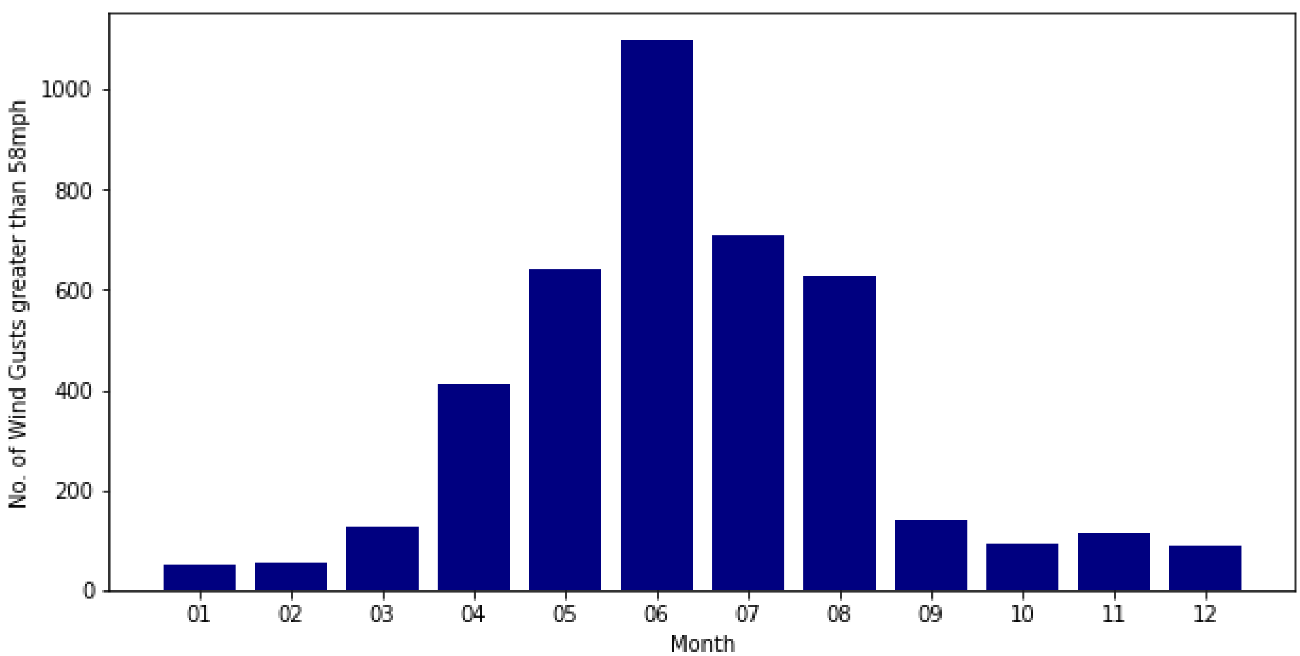


Figure 2.52. Number of wind gusts by month.

Historical Events

A strong storm system developed known as the "The Corn Belt Derecho of June 1998" on June 29, 1998. As it moved southeast across central Illinois, through early evening it caused widespread damage, especially to crops and trees, was continuous in a broad swath from the Iowa border into Indiana. Most of the damage was produced by strong straight-line winds on the leading edge of the gust front. Embedded supercells, mesocyclones and smaller-scale vortices produced narrower corridors of more intense damage, with measured wind gusts up to 110 mph. These winds toppled railroad cars, bent steel power transmission towers, and seriously damaged many buildings. The total damage in Illinois was estimated at $16 million, with a dozen people injured.

A complex of thunderstorms moved into northwest Iowa on July 21, 2008. As the severe thunderstorms continued moving southeast they further intensified and produced widespread and destructive straight-line winds of 60 to 90 mph through east central into southeast Iowa, and northwest into central Illinois. The highest measured wind gust was 94 mph in Moline, IL. Other measured wind gusts included 84 mph in Princeton, IL and 72 mph in Mount Pleasant, IA.
These extreme winds produced a large swath of wind damage 20 to 40 miles wide comprised largely of downed trees and power lines. Power was knocked out to over 130,000 residents in the Quad Cities.[3]

On May 8, 2009, an extremely progressive storm moved from southeastern Kansas, into southern Missouri and ended up in southwestern Illinois. The storm, a derecho, produced 39 tornadoes in its path including two F3s. Southern Illinois suffered damaging winds of above 80 mph, as well as numerous reports of flash flooding. It is estimated that at one point 68,000 people were left without power as a result of the storm.[4]

Intense winds affected central Illinois the weekend of April 2-3, 2016. With wind speeds reaching 66mph, 17 counties reported damage, including fallen tree branches, uprooted trees, vehicles blown over, and damages to structures.[5]

On August 10, 2020, a large derecho produced severe wind damage across portions of South Dakota, Nebraska, Iowa, Illinois, Wisconsin, Indiana, Michigan, and Ohio. A large area from central Iowa to north central Illinois experienced wind gusts of 70-80 mph, with maximum wind gusts of over 100 mph in a few isolated areas. This caused widespread power outages and downed trees, damaged structures, toppled semi-trailers, and flatted crops over a large area. Damaging winds covered an area of at least 90,000 square miles, which is home to over 20 million people. NOAA estimates indicate this is the costliest thunderstorm event in recorded history for the United States, causing more than $11 billion in damage.[6]

An intense storm system lifted northeast across the mid-Mississippi Valley on Saturday, November 5th, 2022. South winds began to increase significantly early in the morning, following the passage of an area of showers, and were strongest later in the morning. A skinny line of showers, which accompanied the cold front, helped bring down some of the strongest winds aloft to further enhance the winds at the surface. The strongest gusts were in east central Illinois, where 68 mph was reported at Willard Airport south of Champaign. Widespread winds of 50 to 60 mph were reported across much of the remainder of central Illinois.[7]

On March 3, 2023 a vigorous upper-level wave tracked eastward out of the southern Rockies. A surface low pressure formed over Texas, then lifted northeastward into the Ohio River Valley. This resulted in central Illinois getting battered with very strong gradient winds. Northeasterly gusts frequently topped 50mph, with the highest gusts in excess of 60mph focused along a corridor from Decatur and Mattoon northeastward to Champaign. The highest gust recorded was 73mph at the Mattoon Airport.[8]

Impacts

Infrastructure

High winds can cause power lines to sway, break or fall, which can lead to power outages and disrupt daily life. They can also cause damage to buildings, including roof damage, broken windows, and collapsed walls. Strong winds can uproot trees, break branches, and cause debris to fly around, which can damage homes and buildings, and block roads.[9] Blocked roads can severely disrupt transportation systems either by damage to the infrastructure itself or by limiting the capacity of roadways.[10]

Environmental

High winds can lead to soil erosion. The erosion of surface soil or bare land by wind renders the soil less productive by removing the most fertile part of the soil, namely, the clays and organic matter. The removal of organic matter reduces native productivity of the soil and damages soil structure and biological activity. Eroded soil can also be deposited into waterways where it impacts water quality and/or emitted into the air where it degrades the air resources. In addition to soil loss, high winds can damage habitats, such as forests, plants and wetlands, causing lasting impacts on wildlife.[11]

Economic

Severe storms can be extremely costly. As stated previously, windstorms can disrupt transportation systems which can cause delays in normal business operations leading to lost revenue, downtime, and increased costs. Property damage from windstorms can be very costly, and widespread damage can result in high repair and building costs.

Social Vulnerability

Those living in manufactured or mobile homes are at risk due to many not being built to withstand strong winds. In addition to the physical vulnerability of living in a mobile home, these residents tend to be lower-income, compounding risk to wind damages. Because Illinois has not adopted statewide building codes, counties or cities with less strict building codes may be more vulnerable to tornadoes than those with stringent building codes.

Climate Change

Overall, the frequency of storm environments conducive to producing severe weather, such as strong winds or tornadoes, has increased across much of the Midwest and mid-south over the past 40-50 years. Climate models project continued increases in severe convective environments that can result in the formation of tornadoes. Additionally, projections show a potential shift in the seasonality of supercells, one of the most powerful types of severe storms experienced in Illinois.

Risk Analysis

The entire state is vulnerable to high winds (Figure 2.53). Unfortunately, the state does not have a uniform standard building code and is thus unable to regulate building construction in the state. As seen in Figure 2.53, many counties in Illinois have a ranking of High to Very High risk ranking for wind. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Loss Estimates

Since 1996, wind in Illinois has resulted in $648,035,400 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Williamson County with $6,806,788, Jackson County with $4,055,115, and Henry County with $2,001,715. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

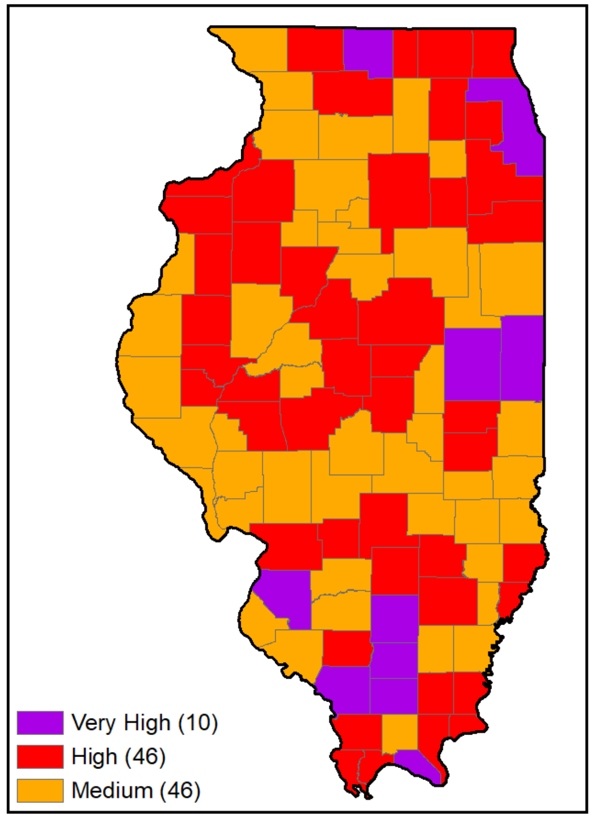


Figure 2.53. Wind risk rankings.

[1] Service, N. N. W. (n.d.). *Glossary—NOAA's National Weather Service*. Retrieved February 4, 2023, from https://w1.weather.gov/glossary/

[2] US Department of Commerce, N. (n.d.). *Wind Threat Defined*. NOAA's National Weather Service. Retrieved April 12, 2023, from https://www.weather.gov/mlb/wind_threat

[3] US Department of Commerce, N. (n.d.). *DVN July 2008 Derecho*. NOAA's National Weather Service. Retrieved April 11, 2023, from https://www.weather.gov/dvn/ev20080720wind

[4] Service, N. N. W. (n.d.). *The "Super Derecho" of 8 May 2009*. Retrieved April 12, 2023, from https://www.spc.noaa.gov/misc/AbtDerechos/casepages/may82009page.htm

[5] US Department of Commerce, N. (n.d.). *April 2-3, 2016 High Wind Event*. NOAA's National Weather Service. Retrieved April 11, 2023, from https://www.weather.gov/ilx/02apr2016-wind

[6] Service, N. N. W. (2021, August 6). *August 10, 2020, Midwest Derecho*. ArcGIS StoryMaps. https://storymaps.arcgis.com/stories/f98352e2153b4865b99ba53b86021b65

[7] US Department of Commerce, N. *Summary of High Wind Event on November 5, 2022*. NOAA's National Weather Service. Retrieved April 11, 2023, from https://www.weather.gov/ilx/05nov22-wind

[8] US Department of Commerce, N. *NWS Lincoln, IL -- SWOP event summary*. NOAA's National Weather Service. Retrieved April 11, 2023, from https://www.weather.gov/ilx/swop-030323

[9] Illinois Emergency Management Agency. (2021). Wind hazards. Retrieved from https://www2.illinois.gov/iema/Preparedness/hazards/Pages/Wind.aspx

[10] Illinois Department of Transportation. (2019). Transportation asset management plan. Retrieved from https://www2.illinois.gov/idot/Documents/2019%20TAMP%20Final%20Report.pdf

[11] Natural Resources Conservation Service (n.d.). *Wind Erosion Prediction System*. Retrieved from http://www.nrcs.usda.gov/resources/tech-tools/wind-erosion-prediction-system

TORNADO

Tornado

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
TORNADO	STATEWIDE	821	30.4	$3,050,175,000	4,539	231

Description

A tornado is a violently rotating column of air extending from the base of a thunderstorm to the ground. Typically spawned by thunderstorms or other warm, humid, and windy weather, tornadoes generally move southwest to northeast but can quickly change direction at any time.[1] Although tornadoes can occur at any time of day, half of all tornadoes in Illinois form between the hours of 3 p.m. and 7 p.m. They are particularly deadly when they occur at night, when many people are asleep, and are unable to hear sirens or receive alerts. In Illinois, the peak tornado season runs from March through June (Figure 2.54), but tornadoes can occur during any month.[2]

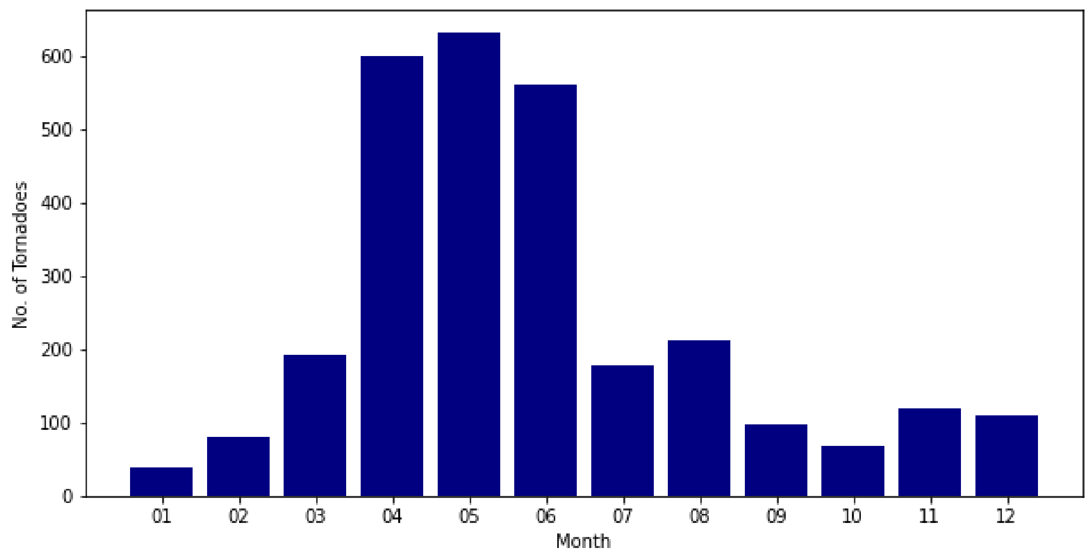


Figure 2.54. Number of tornadoes by month (1950-2021).

The Enhanced Fujita (EF) scale replaced the Fujita Scale on February 1, 2007. EF ratings are assigned to tornadoes based on their estimated windspeeds and infrastructure damage (Figure 2.55).

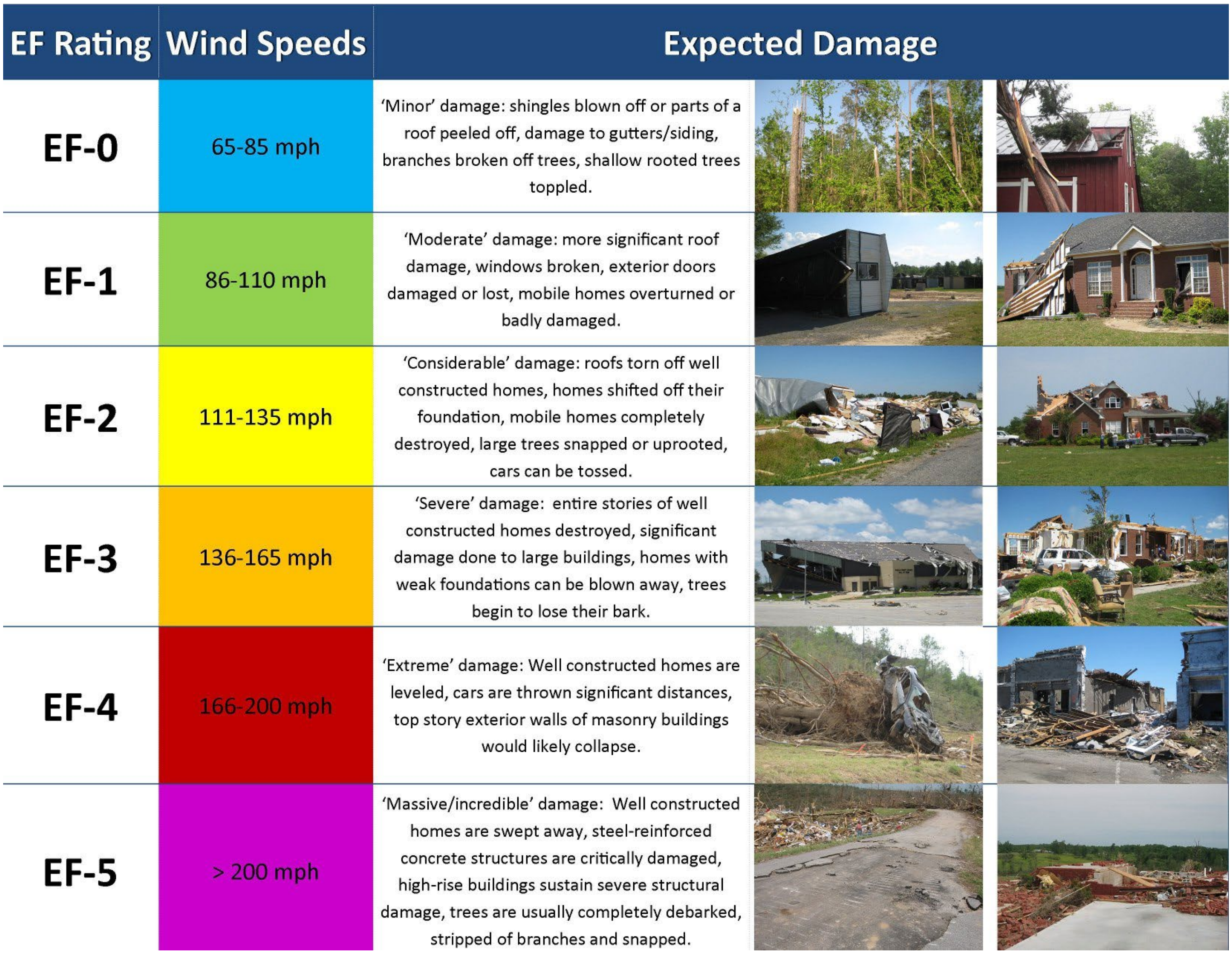


Figure 2.55. Enhanced Fujita Scale. Source: NWS

Historical Events

Since 1950, the NCEI Storm Events Database has recorded 2,885 tornadoes with a rating of F/EF-0 or above in Illinois. Fifty tornadoes had a rating of F/EF-4 or F/EF-5 (Table 2.33). Six EF-4 tornadoes have occurred since 2010.

Table 2.33. Number of tornadoes across the Enhanced Fujita and Fujita Scale (1950-2021).

Enhanced Fujita/ Fujita Scale	Number of Tornadoes	Number of Fatalities	Number of Injuries
F/EF-0	1,248	2	26
EFF/F-1	951	13	244
F/EF-2	484	61	850
EF/ F-3	152	57	925
F/EF-4	47	113	2,137
F/EF-5	3	30	356

On March 18, 1925, Illinois experienced the deadliest tornado in the US's history. At least 695 people were killed and over 2,000 were injured across Illinois, Indiana, and Missouri by what is now known as the Tri-State Tornado. Rated an F-5 on the Fujita Scale, the tornado travelled 219 continuous miles over three and a half hours.[3] Nearly 40% of buildings in Murphysboro was destroyed and 234 people were killed, a record number for a single community in the US.[4] Ten miles to the west, the Village of Gorham was levelled.

In addition to the Tri-State Tornado, the St. Louis/East St. Louis Tornado of 1896 and the Mattoon/Charleston Tornado of 1917, which killed 255 in Missouri/Illinois and 108 people in Illinois, respectively, are among the top 25 most deadly tornadoes in the US.

On August 28, 1990, Plainfield and adjacent communities in the southwestern Chicago metro area were struck by the only F/EF-5 tornado to have ever occurred in August. The tornado travelled 16.4 miles, killing 29 people and destroying nearly 500 homes. Doppler radar had not yet been installed in the NWS Chicago office, which may have impacted the decision not to issue a tornado warning.[5]

As warning systems and severe storm forecasting have improved, deadly tornadoes have become less common. However, Illinois still experiences tornadoes that leave devastating destruction in their paths.

On November 17, 2013, a severe tornado outbreak took place across central and southern Illinois. A tornado formed in East Peoria, developing into an EF-4 tornado as it moved northeastward through the City of Washington and continuing through Minonk with an EF-2 intensity. A tornado warning was issued 16 minutes before the tornado passed through Washington. Three people were killed, and most of the damage and injuries occurred in or around the city.[6] In Washington County, another EF-4 tornado passed through New Minden, destroying a church, several residences, and killing two people in a homestead slightly southwest of the village.[7] Less than a mile away from a mobile home park in Wamac, the tornado dissipated.[8]

On April 9, 2015, a storm system caused multiple tornadoes to form in Illinois and Missouri. The strongest tornado touched down in northern Illinois, reaching a maximum intensity of EF-4. The tornado passed through the counties of Lee, Ogle, DeKalb, and Boone. Two people were killed in the unincorporated community of Fairdale, and dozens of homes and farmsteads were destroyed.[9]

On December 10, 2021, severe thunderstorms and tornadoes formed ahead of a cold front in Missouri and southeastern Illinois, as well as Missouri. Two EF-3 tornadoes were produced by the storm, one of which travelled over 4 miles through Edwardsville. As the tornado moved through the city, it hit an Amazon warehouse. Six people were killed and numerous injured as the warehouse walls collapsed inward.[10]

Impacts

Infrastructure

Tornadoes can cause massive destruction to property and infrastructure. The magnitude of tornado damage is the main indicator of tornado intensity, which is translated to a ranking on the Enhanced Fujita Scale (Figure 2.55).

Residential structures – manufactured or mobile homes in particular – are especially susceptible to tornado damage as they tend to be less structurally sturdy than larger buildings and other large-scale infrastructure. Manufactured or mobile homes can sustain damage from tornadoes with an intensity as low as EF-1, while well-constructed residential structures will start to see structural damage with

EF-2 or EF-3 tornados. EF-4 and stronger tornadoes will level even sturdy residential structures. Large residential buildings, such as apartments or condominiums, will begin to sustain damage with EF-3 or EF-4 tornadoes and severe structural damage with an EF-5 tornado.

Tornadoes can devastate utility infrastructure, making recovery more difficult:

- **Power**: Aboveground power poles and lines are easily taken down by tornadoes, leaving residential homes and essential infrastructure, such as hospitals, without power. Underground power sources, such as gas and electric lines, can be exposed or even torn up by tornadoes.
- **Water and wastewater**: storage tanks, water distribution systems, and wastewater treatment plants can be damaged by tornadoes, leaving residents without safe drinking water. Fire hydrants may be uprooted or have inadequate water pressure due to ruptured service lines in damaged buildings.[11]
- **Telecommunication**: Cell towers and aboveground internet cables can be damaged or even downed by tornadoes. Underground internet cables, like underground power sources, can also sustain damage.

In addition to utility infrastructure, essential infrastructure such as hospitals, schools, emergency services, government buildings, transportation (e.g., roads, bridges), among others, are at risk of tornado damage. Large buildings, such as hospitals, are typically built using steel or concrete, making them better able to withstand tornado damage. Buildings made from stone, brick, or wood may be more susceptible to damage.

Environmental

Like infrastructure, tornadoes can have a negative impact on the environment. Tornadoes can rip up trees and other vegetation, causing wildlife habitat loss and increases in invasive plant species that thrive under full sunlight.[12] Debris from homes and other buildings can contain hazardous or even toxic substances, which can contaminate the surrounding air, water, land, and food if not disposed of correctly.[13]

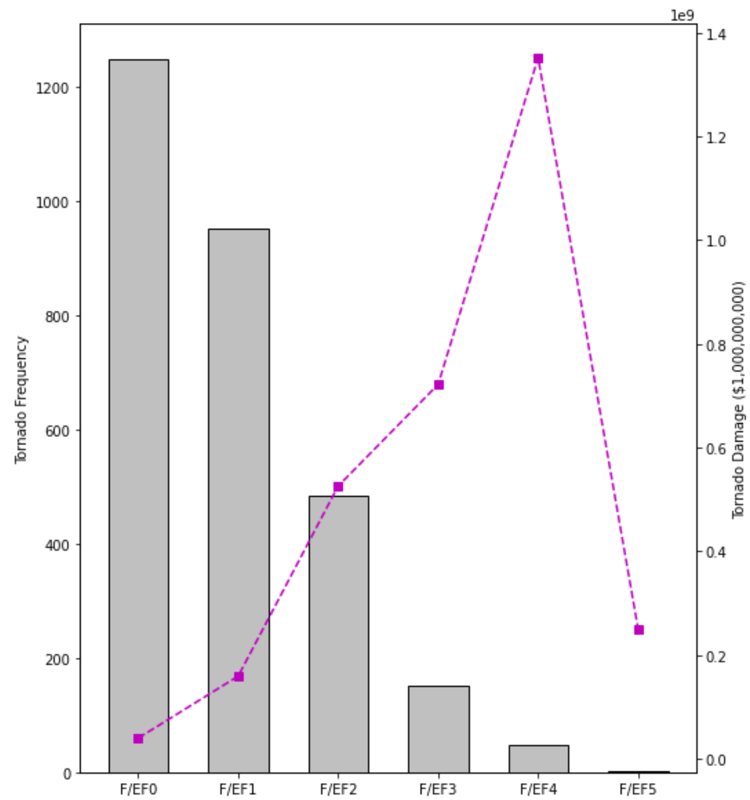


Figure 2.56. Number of tornadoes and associated damages (1950-2021).

Economic

Tornadoes can cause significant economic loss in their aftermath. Tornadoes can cause minor damage (e.g., ripping siding off a wall) to catastrophic damage (e.g., levelling residential homes and making essential infrastructure unusable). Essential infrastructure must be repaired immediately, which can be costly. Despite occurring the second least frequently, F/EF-4 tornadoes have caused the most damage in Illinois since 1950 (Figure 2.56). Although there have only been three F/EF-5 tornadoes in Illinois, they have the highest damage per tornado.

Social Vulnerability

Among the most socially vulnerable people to tornadoes are those who live in manufactured or mobile homes. Manufactured homes are not built to withstand the force of a tornado and are thus not safe structures in which to shelter.[14] Mobile home fatalities account for a large fraction of even the less powerful tornadoes (F/EF-1 to F/EF-3) across the US.[15] Although Illinois requires tie-downs (systems of heavy-duty straps and anchors designed to stabilize manufactured homes during high winds[16]) through the Illinois Mobile Home Tiedown Act, mobile homes can be thrown from the ground by an F/EF-0 tornado. Mobile home fatalities account for a large fraction of less powerful tornadoes (F/EF-1 to F/EF-3) across the US. In Illinois, 35% of mobile home fatalities occurred in mobile homes. Only 22% of mobile home parks had aboveground wind-resistant shelters in the state in 2007; only 8% had belowground shelters.[17] In addition to the physical vulnerability of living in a mobile home, these residents tend to be lower-income, compounding tornado risk.

Because Illinois has not adopted statewide building codes, counties or cities with less strict building codes may be more vulnerable to tornadoes than those with stringent building codes.

Climate Change

The impact of climate change on severe weather in the Midwest – severe thunderstorms, hail, and tornadoes – is less well known than for hazards such as heatwaves. Researchers have begun to address the complexity and uncertainty around climate change impacts to severe weather in Illinois. Overall, the frequency of storm environments conducive to producing severe weather, such as strong winds or tornadoes, have increased in frequency across much of the Midwest and mid-south over the past 40-50 years. The number of high frequency tornado days, those with at least 10 tornadoes occurring in a single day, have also increased in the Midwest over the past several decades. There remains uncertainty of the extent to which climate change has caused these recent trends; however, it is thought the warmer and more humid climate in Illinois has had at least some effect on the increasing frequency in severe storm environments. More frequent severe weather environments have already played an important role in the larger number of billion-dollar disasters, recorded by the National Oceanic and Atmospheric Administration (NOAA). Illinois has experienced 81 billion-dollar disasters since 2003, 64 of which (80%) have been caused by severe storms.

Climate models project continued increases in severe convective environments that can result in tornadoes. Additionally, projections show a potential shift in the seasonality of supercells, one of the most powerful types of severe storms we experience in Illinois. Supercells generate many, if not most, tornadoes in the Midwest. Model projections show a potential shift toward higher frequency of supercell storms in the late winter and early spring, with fewer in the fall. Most severe storms in Illinois occur between 3 pm and 8 pm, and therefore a potentially increasing number of storms in late winter and early spring mean more nighttime storms, which increases risk of life-threatening impacts. Recent research has found that while fatalities from daytime tornado events have decreased by 20% over the past century, fatalities from nighttime tornadoes have increased by 20% over the same time.

The risk of impacts from severe storms is a function of both exposure (i.e., storm frequency and severity) and societal vulnerability. Irrespective of potential increasing trends in severe storms and tornado environments, certain aspects of development can increase the risk of severe storm impacts, including loss of life. Many counties in southern Illinois have a disproportionately high risk of tornado fatalities and other impacts due to higher rates of poverty and a relatively high percentage of housing stock that is mobile homes. Impact vulnerability is particularly high among Hispanic and Latinx immigrants due to the lack of multilingual programming and disaster preparedness programming across the United States. Therefore, severe weather impacts to urban and rural areas of Illinois are expected to increase without effective climate change mitigation and impact adaptation.

Risk Analysis

All five risk categories appear in the tornado risk rankings for counties across Illinois (Figure 2.57). Unfortunately, the state does not have a uniform standard building code and is thus unable to regulate building construction in the state. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

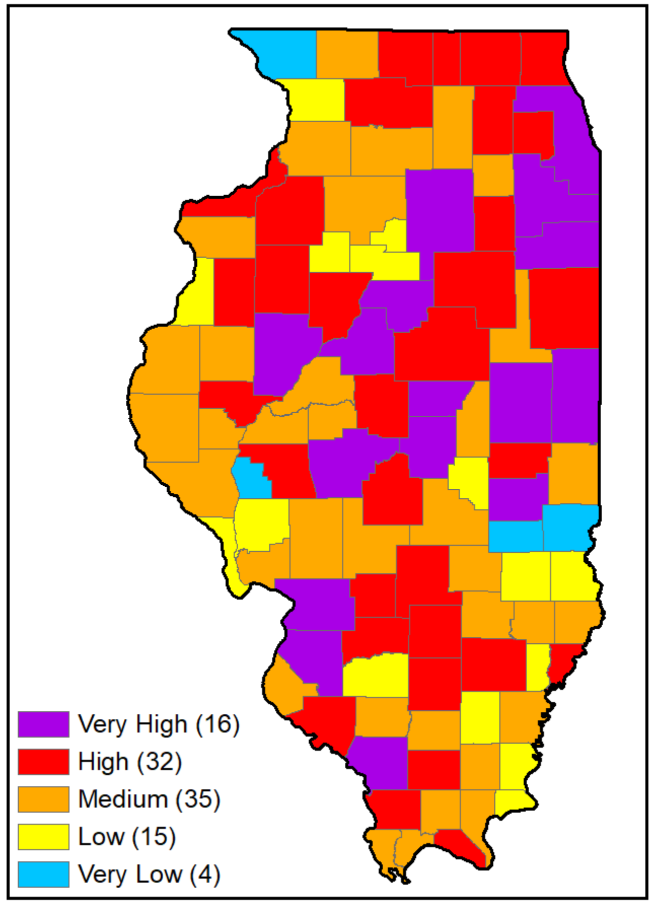


Figure 2.57. Tornado risk rankings.

Loss Estimates

Since 1996, tornadoes in Illinois have resulted in $3,050,175,000 in property damage, making it the costliest hazard for the state. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Tazewell County with $37,828,942, Will County with $13,474,887, and Williamson County with $10,708,577. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

---

[1] NOAA. (n.d.). A Preparedness Guide. Retrieved April 11, 2023, from https://www.weather.gov/media/owlie/ttl6-10.pdf
[2] Illinois State Climatologist. (n.d.). Tornadoes in Illinois. Retrieved April 11, 2023, from https://stateclimatologist.web.illinois.edu/climate-of-illinois/tornadoes-in-illinois/
[3] Ambrose, K. (2021, December 12). Tri-State Tornado of 1925 was deadliest in U.S. history. The Washington Post. https://www.washingtonpost.com/history/2021/12/12/tri-state-tornado-deadliest-midwest/
[4] NWS. (n.d.). 1925 Tornado. Paducah, KY Weather Forecast Office. Retrieved April 12, 2023, from https://www.weather.gov/pah/1925Tornado_ss
[5] Schmidt, W. E. (1990, August 30). Cleanup Begins At Tornado Site Where 25 Died. The New York Times. https://www.nytimes.com/1990/08/30/us/cleanup-begins-at-tornado-site-where-25-died.html
[6] NWS. (n.d.). Washington Tornado (Tazewell/Woodford Counties) of 11/17/2013. Lincoln, IL Weather Forecast Office. Retrieved April 13, 2023, from https://www.weather.gov/ilx/17nov13-tor2
[7] KSDK Staff. Remembering the New Minden, Ill. Tornado of 2013. (2015, March 18). KSDK. https://www.ksdk.com/article/weather/remembering-the-new-minden-ill-tornado-of-2013/63-211101302
[8] NWS. (n.d.). November 17th, 2021 Tornado Outbreak. St. Louis, MO Weather Forecast Office. Retrieved April 13, 2023, from https://www.weather.gov/lsx/11_17_2013
[9] Rosuck, E. (2022, April 9). April 9 marks the seventh anniversary of deadly Rochelle-Fairdale tornado. WIFR. https://www.wifr.com/2022/04/09/april-9-marks-seventh-anniversary-deadly-rochelle-fairdale-tornado/

[10] NWS. (n.d.). December 10th, 2021 Tornado Outbreak. St. Louis, MO Weather Forecast Office. Retrieved April 13, 2023, from https://www.weather.gov/lsx/12_10_2021
[11] EPA. (n.d.). Incident Action Checklist – Tornado. EPA. Retrieved April 13, 2023, from https://www.epa.gov/system/files/documents/2021-10/incident-action-checklist-tornado_508c-final.pdf
[12] Quinn, L. (2019, July 18). Tornadoes, windstorms pave way for lasting plant invasions. https://aces.illinois.edu/news/tornadoes-windstorms-pave-way-lasting-plant-invasions
[13] EPA. (n.d.). Tornadoes. Retrieved April 13, 2023, from https://www.epa.gov/natural-disasters/tornadoes
[14] NWS. (n.d.). Severe Weather Preparedness Week. Jackson, MS Weather Forecast Office. https://www.weather.gov/jan/swpw_mhsafety
[15] Sutter, D., & Simmons, K. M. (2010). Tornado fatalities and mobile homes in the United States. Natural Hazards, 53(1), 125–137. https://doi.org/10.1007/s11069-009-9416-x
[16] Gromicko, N. and Shephard, K. (n.d.). Tie-Downs for Manufactured Homes. Retrieved April 14, 2023, from https://www.nachi.org/manufactured-home-tie-downs.htm
[17] Sutter, D., & Simmons, K. M. (2010). Tornado fatalities and mobile homes in the United States. Natural Hazards, 53(1), 125–137. https://doi.org/10.1007/s11069-009-9416-x

WILDFIRE

Wildfire

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
WILDFIRE	LIMITED	14	0.5	$4,290,000	5	0

Description

A wildfire is an unplanned wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, and escaped prescribed fire projects.[1] Wildfires can occur in Illinois under certain conditions, such as during periods of drought or when dry, windy weather patterns occur. Wildfires can start naturally or be caused by human activities such as campfires, fireworks, or power lines. Wildfires can vary in size and severity. The National Wildfire Coordinating Group (NWCG) uses the following sizes for classifying fires.[2]

Table 2.34. Fire class size.

Fire Size Class	Size
Class A	one-fourth acre or less
Class B	more than one-fourth acre, but less than 10 acres
Class C	10 acres or more, but less than 100 acres
Class D	100 acres or more, but less than 300 acres
Class E	300 acres or more, but less than 1,000 acres
Class F	1,000 acres or more, but less than 5,000 acres
Class G	5,000 acres or more

The Wildland-Urban Interface (WUI) is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels.[3] This interface can be found in rural, suburban, and urban areas where homes and businesses are located near or within natural areas such as forests, grasslands, or wetlands. The WUI is often characterized by an abundance of highly flammable vegetation, which can act as fuel for the fire. When a wildfire enters the WUI, it can ignite homes and other structures, putting people's lives at risk and causing significant damage to property.

The Wildfire Hazard Potential (WHP) map (Figure 2.58) is a raster geospatial product produced by the USDA Forest Service, Fire Modeling Institute that can help to inform evaluations of wildfire hazard or prioritization of fuels management needs across very large landscapes.[4]

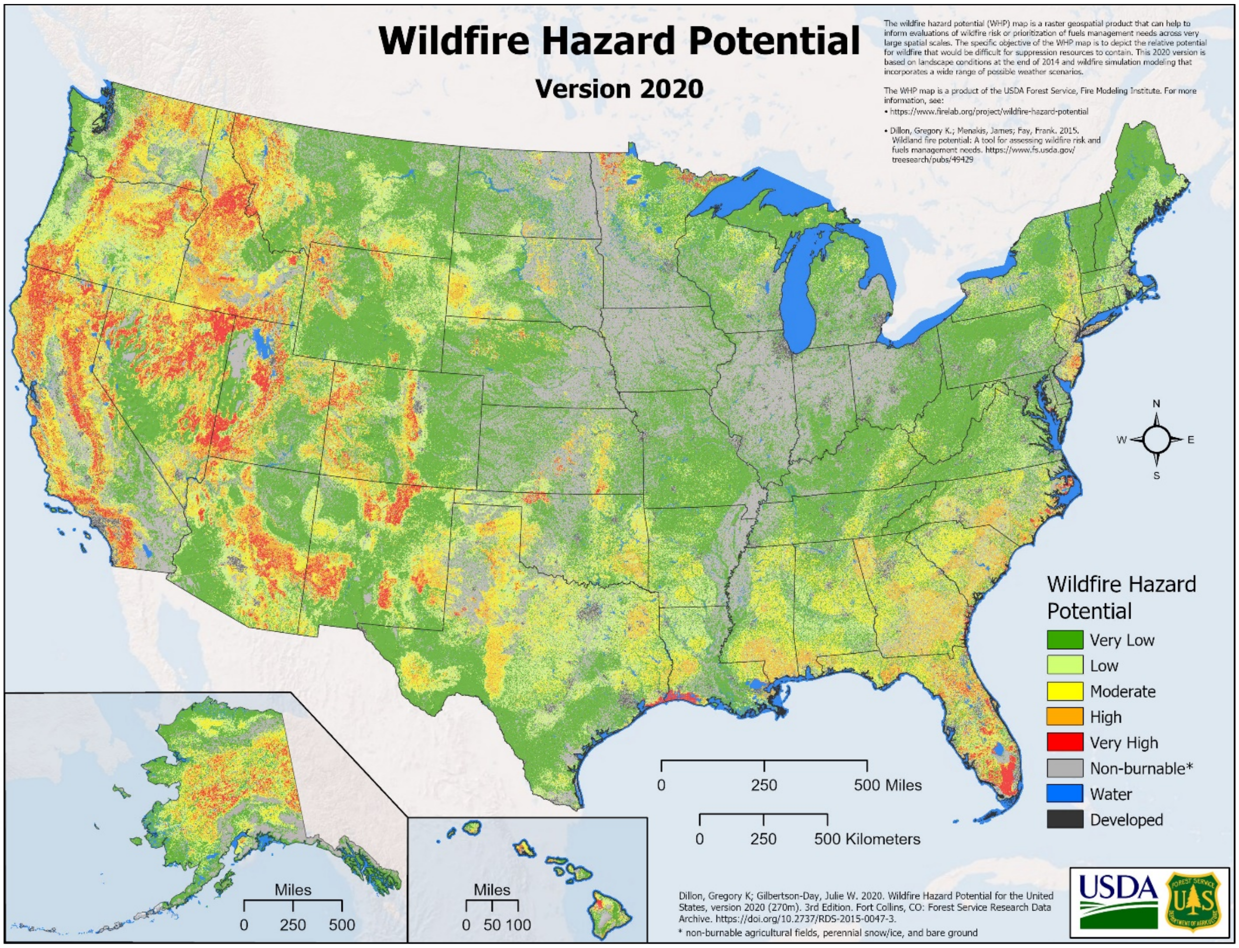


Figure 2.58. Wildfire hazard potential.

Historical Events

Illinois is among the US states with the fewest wildfires and fewest acres burned every year.[5] However, Illinois is not immune to wildfires, having experienced seven damaging ones since 2007.

On May 24, 2007, a fire started at an RV business in Bolingbrook. Strong winds combined with low relative humidity created ideal conditions for the fire to spread. Black smoke was blown across Interstate 55, causing closure for an hour while the fire was extinguished. On the same day, a brush fire started in southern Cook County. The fire rapidly spread, damaging buildings, utility poles, and power lines.[6]

In 2012, extreme drought across Illinois created ideal wildfire conditions. Although many areas across the state had implemented burn bans, a wildfire of unknown origin in Sangamon County burned 350 acres of grassland on July 27.[7] The fire destroyed a barn and several pieces of firefighting equipment.[8] Wildfires also occurred in Lake County in March, and Saline and Wayne counties in June, also spurred by abnormally dry conditions and wind gusts. Although none of the wildfires caused any fatalities, five firefighters were treated at hospitals for heat exhaustion while fighting the June 2012 fire in southern Illinois.

In 2020, Gallatin County experienced a fast-moving wildfire that burned nearly 250 acres across a reclaimed strip-mine.[9] Fire crews from across southeastern Illinois, including the Shawnee National Forest, assisted in the four-hour effort to extinguish the wildfire.[10]

Figure 2.59 shows fires reported within 1km of the Illinois state boundary since 1992.[11]

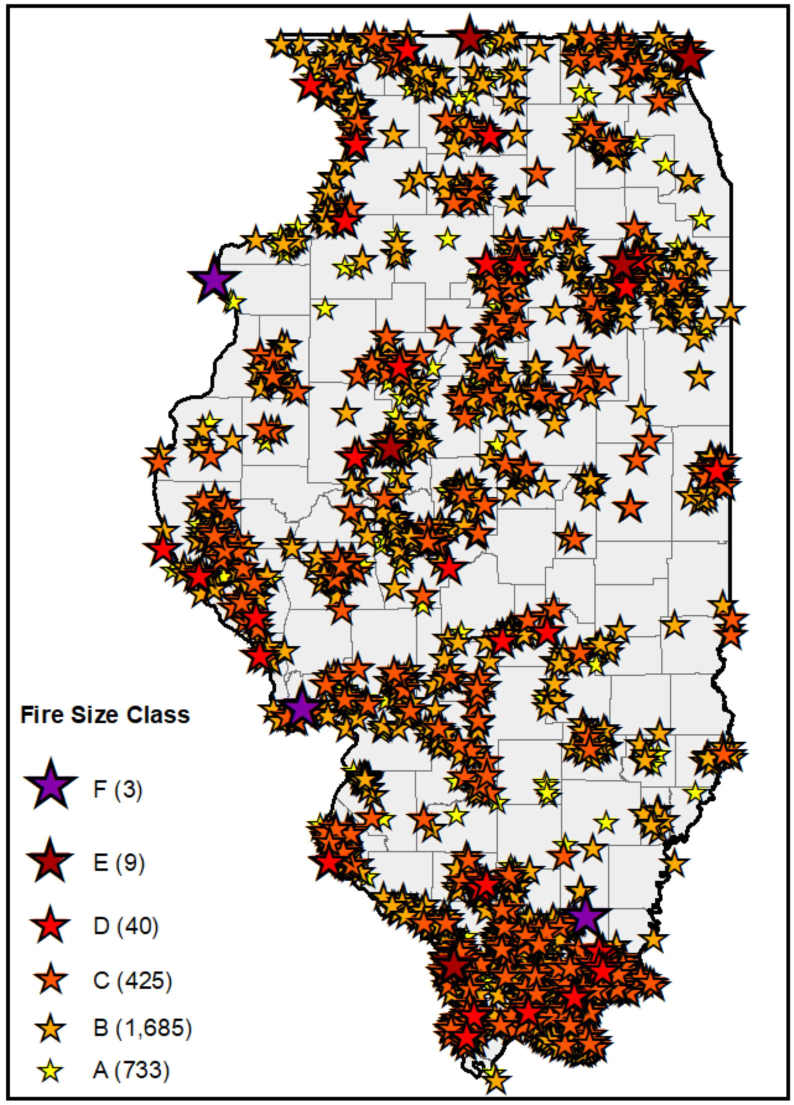


Figure 2.59. Reported fires within 1 km of state.

Impacts

Infrastructure

Wildfires that start near communities frequently move into populated areas and burn buildings and infrastructure. Transportation infrastructure is critical in the event of a wildfire; it is necessary for person mobility, goods movement, the rescue of people, and access to critical services. Depending on the severity, wildfires can result in road closures, which may have larger consequences in rural areas, where alternative routes are unrealistic or do not exist.[12]

Following a wildfire, the area is at higher risk of flooding due to loss of vegetation, which in turn may lead to soil erosion. Locations that are downhill and downstream from burned areas are highly susceptible to flash flooding or debris flows.[13] These flood events can also lead to further damages due to the higher demand placed on infrastructure elements like culverts, bridges, and drainage systems.

Environmental

Wildfires are naturally occurring and play an important role in the life of a wildland area. As such, many of the environmental impacts are naturally recovered as the wildland area returns to its pre-fire state. Completely preventing forest fires can have a negative effect, resulting in underbrush growing in overabundance and acting as fuel resulting in more damaging fires. Prescribed fires are a mitigation effort to actively reduce the impact of wildfires. Following a fire, many parks will actively reseed almost immediately after a fire. The vegetation loss can result in soil erosion which can have an impact on watersheds and water quality.[14]

Economic

Wildfires can have long-lasting impacts on the economy. Wildfires can cause devastating damage for farmers resulting in loss of income. Damage to homes and structures can be costly to repair. A wildfire can result in long-lasting economic impacts by experiencing a decrease in economic activity due to disruption in business activity for the area or a decrease in population due to displaced households.[15]

Social Vulnerability

The impacts of wildfire are too often felt disproportionately by historically marginalized communities, and are compounded by systemic inequities. Among the most socially vulnerable to wildfires are the elderly, children, and people with underlying respiratory health conditions.[16] Air pollution and other particulates associated with wildfires are more harmful to these socially vulnerable groups, making wildfire-smoke inhalation dangerous and deadly. Existing respiratory diseases, such as asthma, can be exacerbated by wildfire-smoke. Cardiorespiratory-related excess deaths have been reported in the days following wildfires, particularly among the elderly.[17]

Rural and low-income communities may also be more susceptible to wildfires. These communities may not have the resources, personnel, or training required to extinguish wildfires.[18] People without access to transportation, which frequently intersects rural and low-income populations, may not have the ability to evacuate in case of a wildfire.

Climate Change

The wildfire season has lengthened in many parts of the US due to factors including warmer springs, longer summer dry seasons, and drier soils and vegetation.[19] While Illinois has a relatively low risk for wildfires, studies have shown an increase in wildfire season length, wildfire frequency, and burned area due to climate change.[20] Climate change threatens to increase the frequency, extent, and severity of fires through increased temperatures and drought which enhances the drying of organic matter in forests.[21]

Risk Analysis

Illinois has a low risk of wildfire, lower than 88% of states in the US.[22] Predicting exact likelihoods of future wildfires is challenging, as it depends on many factors, including weather patterns, fuel availability, and human activities. Illinois is prone to lightning strikes which may increase the likelihood of future occurrences of wildfires. Climate change continues to have an impact on hazards, and while drought duration is anticipated to decrease in the future, Illinois is expected to experience more frequent flash droughts which could impact the future probability of wildfires. In addition to climate change, other factors such as land use and future development, fuel availability, and management practices play a role in wildfire frequency and intensity.

The Shawnee National Forest in southern Illinois primarily, could be impacted by a wildfire. The Shawnee National Forest consists of approximately 280,000 acres of federally managed lands. The majority of the forest is located in parts of Pope, Jackson, Union, Hardin, Alexander, Saline, Gallatin, Johnson, and Massac counties.

The WUI is also a contributing factor for communities at risk for wildfires. Wildfires can start naturally or be caused by human activities. Once a fire starts, it can spread quickly in dry and windy conditions, and if it reaches the WUI, it can have devastating consequences. When a wildfire enters the WUI, it can ignite homes and other structures, putting people's lives at risk and causing significant damage to property. As seen in Figure 2.60, the majority of the counties in Illinois have a ranking of Very Low for Wildfires, while the counties of Cook, Kane, Sangamon, and Will have a ranking of Low. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

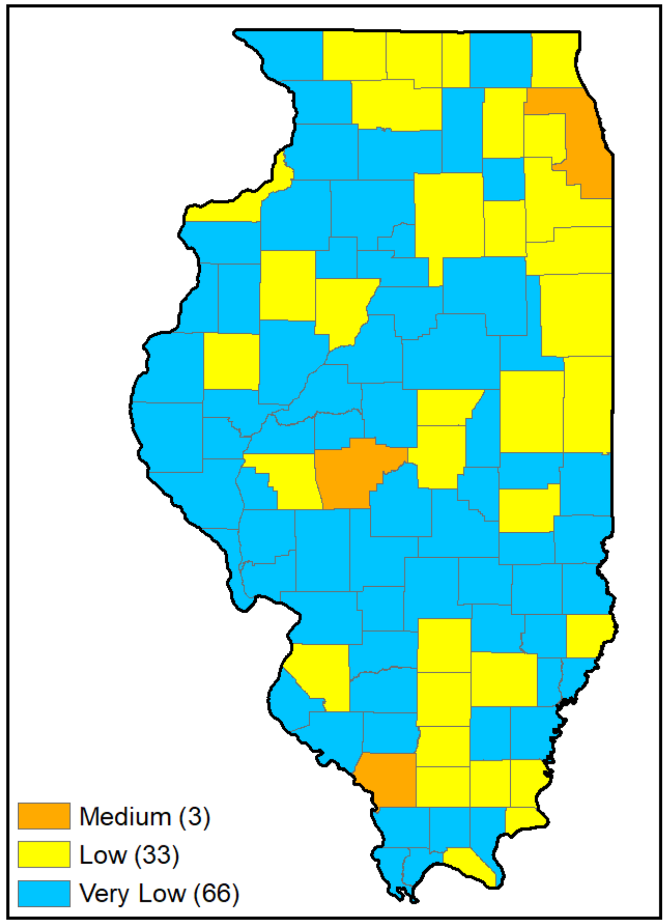


Figure 2.60. Wildfire risk rankings.

Since 1996, wildfires in Illinois have resulted in $4,290,000 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Sangamon County with $80,769, and Cook County with $76,923. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

---

[1] FEMA. (n.d.) *Wildfire | What*. Retrieved from https://community.fema.gov/ProtectiveActions/s/article/Wildfire-What

[2] NWCG. (n.d.). Size Class of Fire | NWCG. Retrieved from https://www.nwcg.gov/term/glossary/size-class-of-fire

[3] N*WCG.* Glossary of Wildland Fire, *PMS 205* | *NWCG*. Retrieved from https://www.nwcg.gov/publications/pms205

[4] Dillon, Gregory K; Gilbertson-Day, Julie W. (2020). Wildfire Hazard Potential for the United States (270-m), version 2020. 3rd Edition. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2015-0047-3

[5] MRCC. (n.d.). Living with Wildfires. https://mrcc.purdue.edu/living_wx/wildfires/index.html

[6] NCEI Storm Events Database. (n.d.). Storm Events Database. NOAA. Retrieved April 17, 2023, from https://www.ncdc.noaa.gov/stormevents

[7] NWS. (n.d.). A Look Back at 2012 in Central and Southern Illinois. NWS Lincoln Weather Forecast Office. Retrieved April 17, 2023, from https://www.weather.gov/media/ilx/Climate/2012%20Annual%20Summary.pdf

[8] NCEI Storm Events Database. (n.d.). Storm Events Database. NOAA. Retrieved April 17, 2023, from https://www.ncdc.noaa.gov/stormevents

[9] Ibid.

[10] Ross, J. (2020, October 15). Winds fuel fire that burns hundreds of southern Illinois acres. WSILTV. https://www.wsiltv.com/news/winds-fuel-fire-that-burns-hundreds-of-southern-illinois-acres/article_b5e5edf5-bc6f-5670-9ac8-88eebcdc7248.html

[11] Short, Karen C. (2022). Spatial wildfire occurrence data for the United States, 1992-2020 [FPA_FOD_20221014]. 6th Edition. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2013-0009.6
[12] Fraser, A. M., Chester, M. V., & Underwood, B. S. (2022). Wildfire risk, post-fire debris flows, and transportation infrastructure vulnerability. *Sustainable and Resilient Infrastructure*, *7*(3), 188-200.
[13] US Department of Commerce, N. (n.d.). *Flood After Fire—Burned Areas Have an Increased Risk of Flash Flooding and Debris Flows*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/bou/floodafterfire
[14] Thomas, D. , Butry, D. , Gilbert, S. , Webb, D. and Fung, J. (2017), The Costs and Losses of Wildfires, Special Publication (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], https://doi.org/10.6028/NIST.SP.1215
[15] Ibid
[16] D'Evelyn, S. M., Jung, J., Alvarado, E., Baumgartner, J., Caligiuri, P., Hagmann, R. K., Henderson, S. B., Hessburg, P. F., Hopkins, S., Kasner, E. J., Krawchuk, M. A., Krenz, J. E., Lydersen, J. M., Marlier, M. E., Masuda, Y. J., Metlen, K., Mittelstaedt, G., Prichard, S. J., Schollaert, C. L., … Spector, J. T. (2022). Wildfire, Smoke Exposure, Human Health, and Environmental Justice Need to be Integrated into Forest Restoration and Management. Current Environmental Health Reports, 9(3), 366–385. https://doi.org/10.1007/s40572-022-00355-7
[17] Kochi, I., Champ, P. A., Loomis, J. B., & Donovan, G. H. (2012). Valuing mortality impacts of smoke exposure from major southern California wildfires. Journal of Forest Economics, 18(1), 61–75. https://doi.org/10.1016/j.jfe.2011.10.002
[18] Ojerio, R., Lynn, K., Evans, A., DeBonis, M., & Gerlitz, W. (2008). Resource Innovations, University of Oregon Forest Guild, New Mexico Watershed Research and Training Center, California.
[19] USGCRP (U.S. Global Change Research Program). (2018). Impacts, risks, and adaptation in the United States: Fourth National Climate Assessment, volume II. Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.). https://nca2018.globalchange.gov/downloads. doi:10.7930/NCA4.2018.
[20] USGCRP (U.S. Global Change Research Program). (2018). Impacts, risks, and adaptation in the United States: Fourth National Climate Assessment, volume II. Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.). https://nca2018.globalchange.gov/downloads. doi:10.7930/NCA4.2018.
[21] USGCRP (U.S. Global Change Research Program). (2017). Climate science special report: Fourth National Climate Assessment, volume I. Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.). https://science2017.globalchange.gov. doi:10.7930/J0J964J6.
[22] *Wildfire Risk to Communities*. Retrieved March 23, 2023, from https://wildfirerisk.org/explore/overview/17/

WINTER WEATHER

Winter can bring a variety of weather events to Illinois including snow, ice, freezing temperatures, and wind chill. The National Weather Service uses the following terms when talking about winter weather threat to the public:[1]

- **Winter Weather Advisory:** Snow, blowing snow, ice and/or sleet is expected to produce potentially dangerous travel conditions within the next 12 to 36 hours.
- **Winter Storm Watch:** Issued for potentially significant winter weather, including heavy snow ice, sleet, and/or blowing snow within the next day or two. Now is the time to prepare!
- **Winter Storm Warning:** Indicates heavy snow, blowing snow, sleet or a combination of winter weather hazards are expected to cause a significant impact to life or property. Stay indoors and adjust travel plans.
- **Snow Squall Warning:** Sudden whiteout conditions with near zero visibility and flash freezing of road surfaces resulting in potentially life threatening conditions for travelers.
- **Blizzard Warning:** Strong winds (35 mph or greater) will produce blinding snow and near zero visibility, resulting in potentially life-threatening conditions – particularly for travelers. Blizzards can occur with minimal accumulations of snow.
- **Ice Storm Warning:** Heavy accumulations of ice are expected to cause a significant impact to life or property, resulting in hazardous travel conditions, tree damage and extended power outages.

The type of precipitation that can occur during the winter can range from snow to rain, as depicted in Figure 2.61 below. Most precipitation that forms in wintertime clouds starts out as snow because the top layer of the storm is usually cold enough to create snowflakes.

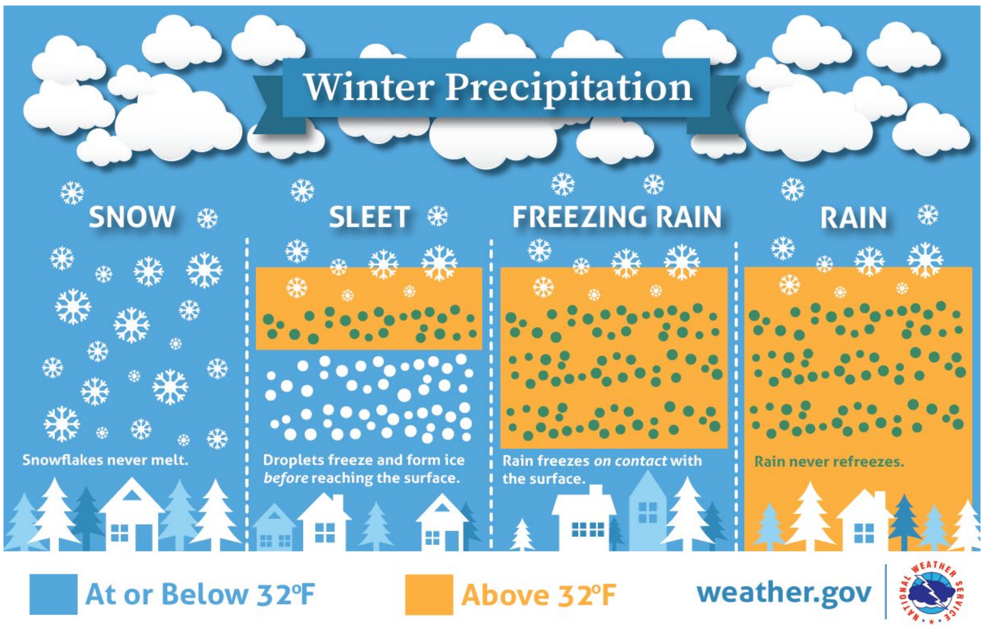


Figure 2.61. Winter precipitation. Source: NWS

[1] US Department of Commerce, N. (n.d.). *Winter Weather Resources and Frequently Asked Questions*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/safety/winter-education

Ice Storms

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
ICE STORMS	STATEWIDE	63	2.3	$11,702,000	3	1

Description

An ice storm is a storm which results in the accumulation of at least ¼ inches of ice on exposed surfaces. An ice storm can be caused by sleet or freezing rain.[1] The National Weather Service uses the following definitions to define sleet and freezing rain: [2]

- **Sleet** occurs when snowflakes only partially melt when they fall through a shallow layer of warm air. These slushy drops refreeze as they next fall through a deep layer of freezing air above the surface, and eventually reach the ground as frozen rain drops that bounce on impact.
- **Freezing rain** occurs when snowflakes descend into a warmer layer of air and melt completely. They instantly refreeze upon contact with anything that is at or below 32°F, creating a glaze of ice on the ground, trees, power lines, or other objects.

It is not uncommon to have freezing rain and sleet together. Another common hazard associated with ice storms is black ice. Black ice is a deadly driving hazard, defined as patchy ice on roadways or other transportation surfaces that cannot easily be seen.[3] Bridges and overpasses are particularly dangerous as they freeze before other road surfaces.

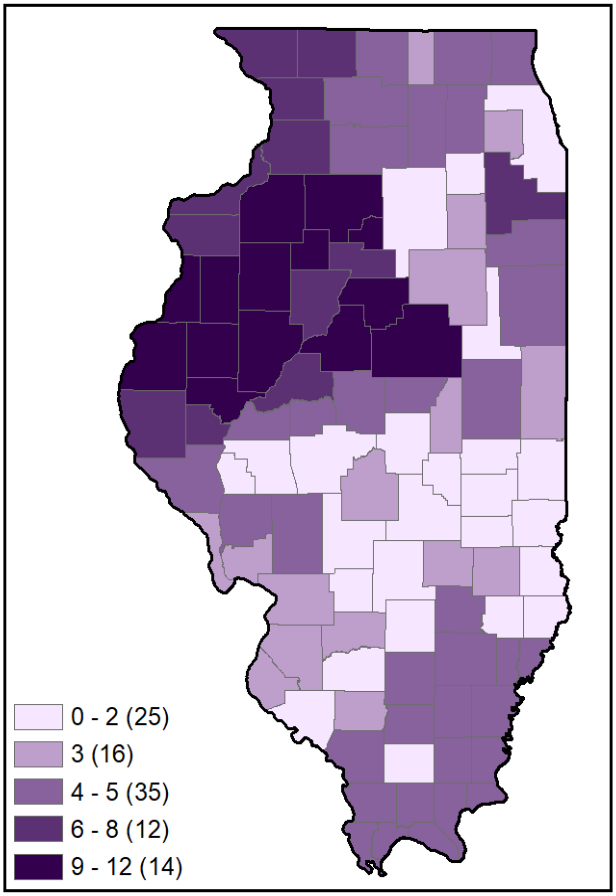


Figure 2.62. Ice storm events by county. Source: NCEI

All of Illinois is prone to ice storms. As seen in Figure 2.62, there have been 63 unique ice storm events in Illinois since 1996.

Historical Events

The Valentine's Day storm of 1990 (FEMA DR-860) was among the two or three worst ice storms in the last 30 years because (1) its area of impact stretched across central Illinois from Jacksonville (Morgan County) to Danville (Vermilion County); (2) the thickness of accumulated ice on wires and trees measured between one-half to three-fourths inches in and around the Champaign-Urbana area; (3) the duration of freezing precipitation lasted 10-12 hours; (4) the duration of time without electrical services (30 hours) was common and some homes and businesses were without power for 5 to 7 days; and, (5) the damage to trees was much more extensive than the 1979 ice storm. This was the first time in the last 20 years that a severe winter storm, without associated tornadoes or flooding, resulted in a federal declaration. Lessons were learned and procedures written as the response progressed. Ten east-central Illinois counties received federal disaster declarations.

On November 30, 2006, through December 1, 2006, a severe winter storm passed through central and northern Illinois. This storm resulted in heavy snowfall, ice accumulation, frigid temperatures, power outages, strong winds and downed trees and branches. A presidential declaration (FEMA DR-1681) was received for the ice storm that covered 18 central to mid-southwestern counties. Refer to the Illinois Federal Disaster Declaration History for details on the location in Section 2.3: **Historic Disaster Declarations**.

A winter storm brought heavy, freezing rain, and snow to the Midwest from the night of December 20 through the night of December 21, 2013. The storm caused extensive damage to power lines, resulting in widespread power outages. Some areas reported more than an inch of ice accumulation, leading to hazardous travel conditions and downed trees.

Impacts

Infrastructure

Freezing rain and ice storms can occur during winter storms when rain freezes upon contact with cold surfaces. This ice accumulation can be particularly damaging to trees, power lines, and infrastructure. The weight of ice can cause branches and power lines to break, leading to power outages and hazardous conditions. The weight of ice can cause building roofs to collapse. Freezing temperatures accompanied by ice storms can lead to pipes bursting, causing damage to water supply and wastewater systems. Ice storms can also cause widespread transportation disruptions, including flight cancellations, road closures, and delays in rail and public transportation services.

Environmental

Freezing rain and ice storms can occur during winter storms when rain freezes upon contact with cold surfaces. This ice accumulation can be particularly damaging to trees, due to the weight of the ice. Ice can make it difficult for animals to find food and access their regular habitats. Burrowing animals may face challenges in digging through frozen ground or ice. Ice storms also contribute to ice jams which can obstruct waterways and cause damage to bridges or dams, leading to localized flooding.[4]

Economic

Ice storms can be very costly. Repairing and restoring infrastructure can be expensive and result in significant economic costs for governments, businesses, and households. Downed power lines and trees are not only a hazard but can be extremely costly to remove or repair. Ice storms can lead to increased demand for heating and other energy sources, which can drive up energy prices and result in economic impacts for consumers and businesses. Ice storms can lead to the closure of businesses, particularly in sectors heavily dependent on physical presence, resulting in loss of income for some. Disruptions in transportation networks can also result in economic losses due to delayed delivery of goods and services.

Social Vulnerability

Among the most socially vulnerable people to ice storms is elderly populations. Ice storms create hazardous driving and walking conditions and often result in road closures, and many services are unable to operate, leaving many individuals at an additional risk. Elderly populations are at risk for health concerns in cold weather due to being more susceptible to hypothermia. This increases their risk of heart disease and kidney or liver damage, especially if they have a history of low body temperature or have had hypothermia in the past.[5] Ice storms bring the possibility of power outages, which can lead to the inability to heat homes safely. This can lead people to resort to unsafe practices such as running a generator, gas stove, or using a barbecue or fire inside their house, which can lead to fires or carbon monoxide poisoning. Those who rely on public transportation often face isolation during a winter storm due to service interruptions.

Climate Change

The historical record of snowfall, winter storms, and ice storms do not show any significant trends despite a strong trend toward warmer overall winter temperatures in Illinois. The lack of trend in winter weather events is partly attributable to large year-to-year variability, incomplete observation records (especially for ice), and the complex relationship between air temperature, water vapor content, and snowfall.

Future changes in ice storm frequency, severity, and extent remain uncertain because of (1) the challenge of observing and constraining model ice simulations and (2) models' difficulty capturing ice storm processes at necessarily fine scales. Damaging ice storms occur when supercooled water droplets fall onto a surface (tree, power line, road, etc.) with a temperature near or below freezing, immediately freezing the water droplet and resulting in ice accumulation. These processes occur at a small spatial scale, and are very dependent on temperature gradients between the surface and cloud. Therefore, not only are models unable to properly capture all of these important processes to simulate the effects of climate change on ice storms, but warming winter temperatures in Illinois do not necessarily portend fewer ice storms. In fact, warmer winters – especially in northern Illinois – could increase the frequency of temperatures that are ideal for ice formation, given the right storm setup. Given these complexities, no reliable summary of projected changes in ice storms through mid- or late-century in Illinois can be presented.

Risk Analysis

Most of the state is at risk for ice storms (Figure 2.63). The majority of counties have a Low risk, followed by Medium risk counties which are primarily located in central and northeastern Illinois. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

Loss Estimates

Since 1996, ice storms in Illinois have resulted in $11,702,000 in property damage. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Peoria County with $84,615, and Tazewell County with $55,769. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

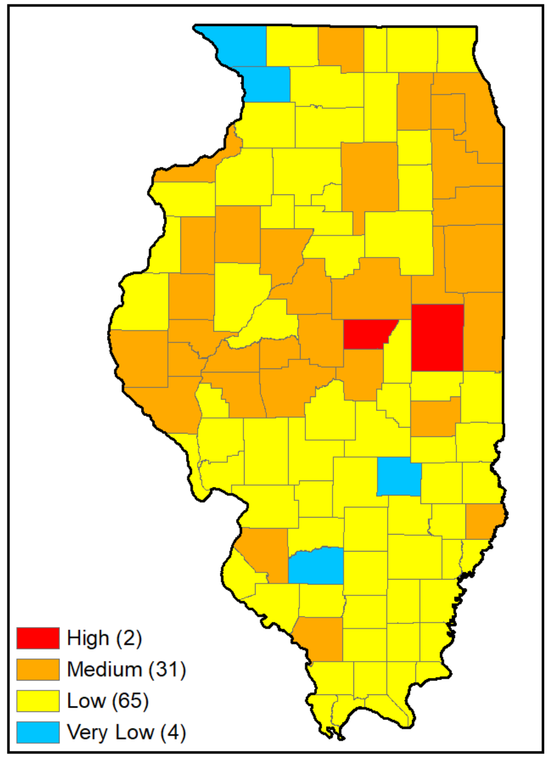


Figure 2.63. Ice storm risk rankings.

[1] NOAA National Severe Storms Laboratory. (n.d.). *Winter Weather Types*. Retrieved from https://www.nssl.noaa.gov/education/svrwx101/winter/types/

[2] US Department of Commerce, N. (n.d.). *What is the Difference between Sleet, Freezing Rain, and Snow?* NOAA's National Weather Service. Retrieved from https://www.weather.gov/iwx/sleetvsfreezingrain

[3] US Department of Commerce, N. (n.d.). *Ice Storms*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/safety/winter-ice-frost

[4] US Department of Commerce, N. (n.d.). *National Flood Safety Awareness Week, Day 3: Ice Jams and Snowmelt*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/fgf/FloodAwarenessWeekDay3

[5] *Older Adults and Extreme Cold*. (2021, December 3). https://www.cdc.gov/aging/emergency-preparedness/older-adults-extreme-cold/index.html

Winter Storms

HAZARD	GEOGRAPHIC EXTENT	UNIQUE EVENTS	EVENTS/YEAR	PROPERTY DAMAGE	INJURIES	FATALITIES
WINTER STORMS	STATEWIDE	664	24.6	$87,985,500	65	20

Description

A winter storm is a combination of heavy snow, blowing snow and/or dangerous wind chills. Precipitation falls as snow when the air temperature remains below freezing throughout the atmosphere. The National Weather Service (NWS) uses the following terms when talking about snow:[1]

- **Snow Flurries:** Light snow falling for short durations. No accumulation or light dusting is all that is expected.
- **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes Region.
- **Blowing Snow:** Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.
- **Blizzards:** Winds over 35mph with snow and blowing snow, reducing visibility to 1/4 mile or less for at least three hours.

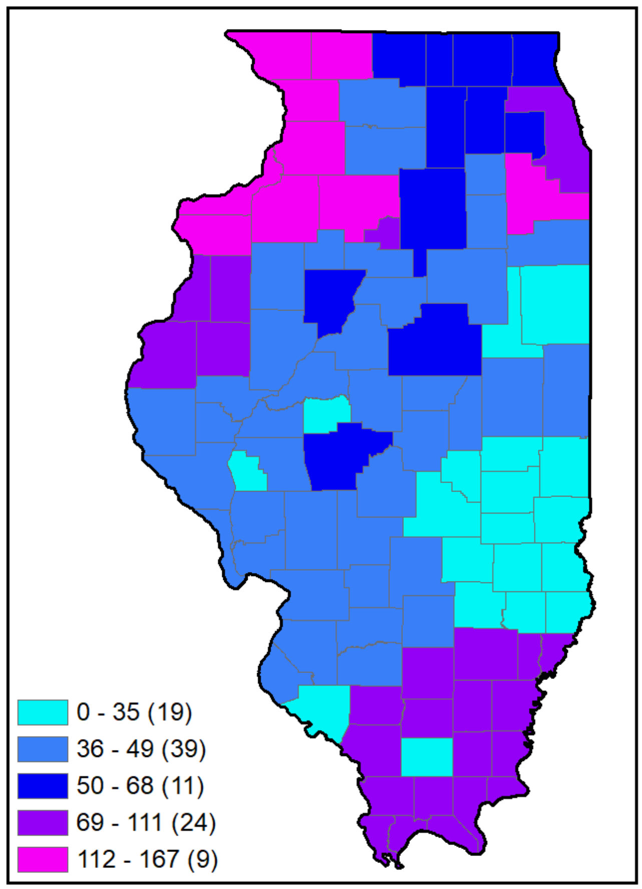


Figure 2.64. Winter storm events by county. Source: NCEI

According to Illinois Emergency Management Agency's 2021 Winter Weather Preparedness Guide, there has not been a winter without at least one winter storm in the past century in Illinois. The average snowfall ranges from 27 inches of snow in Rockford and Chicago to only 6 to 10 inches in the southern tip of Illinois.[2] Using NCEI data of storm event report for winter storms in Illinois, Figure 2.64 shows the number of events by county since 1996.

Historical Events

Winter storms are a common weather hazard in Illinois, particularly in the northern and central parts of the state. These storms can bring heavy snowfall, high winds, and extremely cold temperatures, which can cause a range of impacts on infrastructure, the economy, and human health and safety.

The 1999 New Year's Day storm, which intensified from January 1-3, resulted in record snowfall across the northern half of the state. High winds and frigid temperatures caused blizzard conditions behind the snowfall which left 21.6 inches in Chicago, second only to the 1967 January storm. On January 8, 1999, an all-time low temperature of -36 degrees F., was recorded in Congerville (Woodford County). During the first week of the year, the American Red Cross and other organizations sheltered more than 1,600 people. Eventually, 51 counties sought and received federal public assistance as a result of the storm, which severely taxed the personnel, equipment and budgets of both state and local governments (FEMA EM-3134 declared January 8, 1999). FEMA approved nearly $40 million in federal assistance. IEMA reimbursed these funds to local applicants in the 51 counties included in the declaration.

From December 10 through December 31, 2000, the cumulative effects of severe winter storms caused extensive road closures, school closings and hazardous road conditions and severely taxed snow removal resources. During this time, the Chicago area received a record 41.3 inches of snow. Twenty-seven counties either had a record or near-record snowfall or were contiguous to a county which did. This was the first emergency in Illinois to allow contiguous counties to be approved in the federal emergency declaration (11 counties had record snowfall, three near record and 14 contiguous). This extensive snowfall, combined with blowing snow, record low temperatures, and freezing rain and ice led to a request for a federal emergency in January, 2001. As of March 2004, FEMA EM-3161 approved nearly $23 million in federal assistance to the 27 counties for reimbursement for snow removal, de-icing, salting and sanding roads. These 27 counties were scattered throughout the top three-fourths of the state from Winnebago south to St. Clair and from McDonough on the western side of Illinois to Cook, Clark and Will on the eastern state line.

On December 21-25, 2004, a severe winter storm struck the 17 southern counties. In several counties in southern Illinois, the storm produced record or near-record snowfall, blowing and drifting snow and frigid temperatures. The cumulative effects of the storm included road closures, school closings, hazardous road conditions, and the snow removal resources of state and local governments being severely taxed. Over a million dollars was spent on emergency protective measures (FEMA EM-3199).

On November 30, 2006, through to December 1, 2006, a severe winter storm passed through central and northern Illinois. This storm resulted in heavy snowfall, ice accumulation, frigid temperatures, power outages, strong winds and downed trees and branches. The governor declared 49 counties disaster areas due to record snowfall and/or extraordinary ice formations. A presidential emergency declaration (FEMA EM-3269) was received for the record, or near-record, snowfall in 26 northern and west-central Illinois counties.

On January 31 through February 2, 2011, a widespread severe winter storm passed over the majority of Illinois, resulting in large accumulations of heavy snow. The overall strength of the system produced widespread one to two inches per hour snowfall rates, with thundersnow enhancing those rates. Three-day snowfall totals ranged from as much as 19 to 20 inches in parts of western Illinois and northeast Missouri, with significant blowing and drifting widespread. Moline, Illinois observed 16.7

inches of snow from the evening of February 1 to the morning of February 2, setting a new 24-hour snowfall record by topping January 3, 1971 by 0.3 inches. The Moline three-day totals of 18.4 inches tied the record for a single storm set in January of 1979. This severe winter storm resulted in a federal major disaster declaration (DR-1960), approving approximately $10.5 million in federal assistance to 65 counties for reimbursement for snow removal, de-icing, and salting and sanding roads.

A major snowstorm struck central Illinois on March 24, 2013, bringing significant snow accumulations to much of the area. Due to the convective nature of this event, impressive snowfall rates of two to three inches per hour were observed. While all of central and southeast Illinois picked up significant snowfall, the highest totals of 10 to 18 inches were concentrated between the I-72 and I-70 corridors. The maximum amounts were observed across portions of Sangamon and Christian Counties. Further north and south, snowfall amounts steadily decreased, with four to five inches across Stark and Marshall Counties, and only one to three inches across Richland and Lawrence Counties in southeast Illinois.

The Great Lakes Blizzard of 2015 affected Illinois and other states in the Great Lakes region. This event brought heavy snowfall, high winds, and freezing temperatures. Some areas in Illinois experienced over a foot of snow, leading to significant travel disruptions and school closures. Chicago reported 19.3 inches of snow, while Rockford received 11.9 inches. The highest amounts of snow reported in the area were 22.0 inches in Lincolnshire.[3]

In November of 2018, a major winter storm struck Illinois during the Thanksgiving holiday period, bringing a mix of freezing rain, sleet, and snow, causing hazardous driving conditions and numerous accidents. Many residents experienced power outages due to ice accumulation on power lines and trees.

February 2021 brought a severe winter storm, commonly referred to as the "Polar Vortex" or "Winter Storm Uri," that affected Illinois and several other states in the central and southern United States. This event brought record-breaking cold temperatures and heavy snowfall. The extreme cold led to widespread power outages, water supply issues, and dangerous conditions.[4]

Impacts

Infrastructure

Winter storms, particularly those accompanied by heavy snow or strong winds, can cause damage to infrastructure such as power lines, roadways, bridges, and buildings. Roofs can collapse under the weight of snow or ice, and high winds can cause structural damage or topple trees onto buildings. Power outages can disrupt daily activities, including heating systems, telecommunication networks, and other essential services. If a winter storm is accompanied by extreme cold temperatures, water supply and wastewater systems can be vulnerable to freezing and bursting pipes. Winter storms can cause widespread transportation disruptions, including flight cancellations, road closures, and delays in rail and public transportation services.

Environmental

Winter storms often bring heavy snowfall. While snow can provide insulation for plants and small animals, excessive snow accumulation can lead to damage, especially if it is wet and heavy. Heavy snow can break tree branches, damage shrubs, and put stress on structures. Heavy snow can make it difficult for animals to find food and access their regular habitats. Burrowing animals may face challenges in digging through frozen ground or snow. Winter storms can impact natural water systems in several ways. Heavy snowmelt resulting from warmer temperatures or rain can cause rapid runoff, leading to flooding and erosion. Winter storms contribute to ice jams which can obstruct waterways, damage bridges and dams, and potentially lead to localized flooding and changes in water flow patterns.[5]

Economic

Winter storms can be costly. Preparation for winter storms is a cost that many local governments incur. Repairing and restoring infrastructure can be expensive and result in significant economic costs for governments, businesses, and households. Winter storms can lead to increased demand for heating and other energy, which can drive up energy prices and result in economic impacts for consumers and businesses. Severe winter storms can lead to the closure of businesses, particularly in sectors heavily dependent on physical presence, resulting in loss of income. Disruptions in transportation networks can result in economic losses due to delayed delivery of goods and services.

Social Vulnerability

During a winter storm, accessibility is a major challenge for many people. With roads closures and many services unable to operate, many individuals are at an additional risk. Those who rely on public transportation often face isolation during a winter storm due to service interruptions. Elderly populations are at risk for health concerns in cold weather due to being more susceptible to hypothermia, which increases their risk of heart disease and kidney or liver damage, especially if they have a history of low body temperature or have had hypothermia in the past.[6] Winter storms bring the possibility of power outages, which can lead to the inability to heat homes safely. People may resort to unsafe practices such as running a generator, gas stove, or using a barbecue or fire inside their house, which can lead to fires or carbon monoxide poisoning.

Climate Change

The historical record of snowfall, winter storms, and ice storms do not show any significant trends despite a strong trend toward warmer overall winter temperatures in Illinois. This lack of trend is partly attributable to large year-to-year variability, incomplete observation records, and the complex relationship between air temperature, water vapor content, and snowfall.

Climate models project significant declines in winter snowfall across Illinois, and projections under higher emissions scenarios indicate the potential of snow-free winters in the southern half of the state by late-century. Research shows the reduction in snowfall is partly due to projected decreases in winter storm frequency, severity, and extent across the Midwest by mid- and late-century under moderate and high emissions scenarios. Recent estimates indicate the potential for three to nine fewer winter storms affecting Illinois by late-century, representing a 60% reduction in winter storm frequency in the southern part of the state. The snowfall season – and the time over which Illinois experiences winter storms – is projected to shrink, reducing the risk of early- or late-season snowfall events. Overall, projections have some uncertainty as to changes in winter storm characteristics, and it is expected that snowfall and winter storm frequency will continue to exhibit large year-to-year variability. However, a stronger signal is emerging from recent research indicating snowfall and winter storm frequency, severity, and extent may decrease in coming decades as Illinois winters continue to warm, which would reduce overall risk of public health, infrastructure, and economic damages from winter storms.

Risk Analysis

The entire state of Illinois is at risk for a winter storm (Figure 2.65). Counties with a Very High risk ranking are Alexander, Pulaski, Massac, and Pope, located in southern Illinois. A complete breakdown of each county risk ranking score can be found in Appendix 2.1 Risk Ranking Tables.

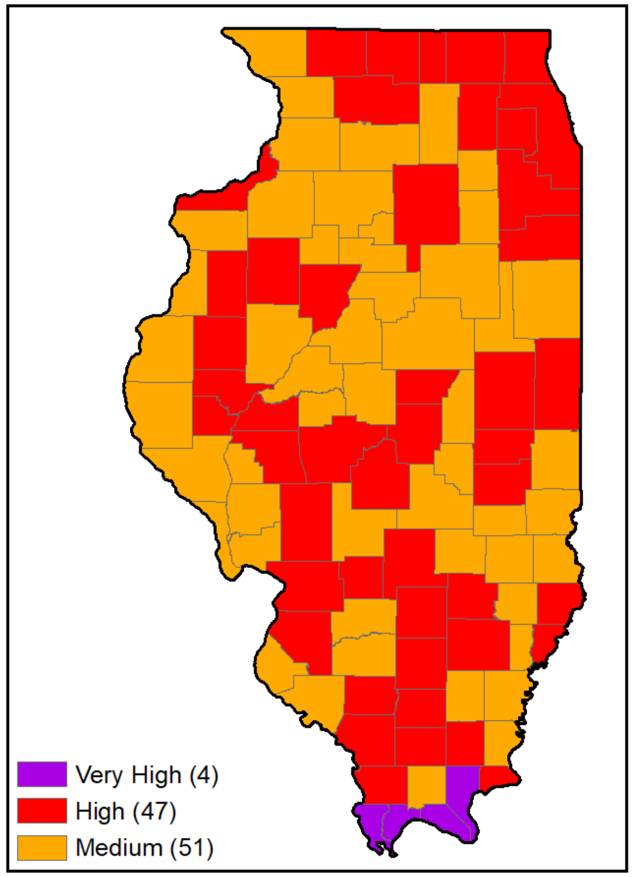


Figure 2.65. Winter storms risk ranking.

Loss Estimates

Since 1996, winter storms in Illinois have resulted in $87,985,500 in property damage, making it one of the costliest hazards for the state. Using this value and the methodology explained in **Loss Estimate Methodology,** estimated annual state facility and essential facility exposure was calculated for each county. Counties with relatively high property damage per year values include Massac County with $500,000, Alexander County with $425,000, Pulaski County with $424,615, and Pope County with $403,846. A complete breakdown of exposure for all facilities, state facilities, and essential facilities by county can be found in **Appendix 2.2 Loss Estimates Tables**.

---

[1] NOAA National Severe Storms Laboratory. (n.d.). *Winter Weather Types*. Retrieved from https://www.nssl.noaa.gov/education/svrwx101/winter/types/

[2] Illinois Emergency Management Agency. (2021). *Winter Weather Preparedness Guide,* Retrieved from https://ready.illinois.gov/content/dam/soi/en/web/iema/preparedness/documents/winter-storm-preparedness-guidebook.pdf

[3] US Department of Commerce, N. (n.d.). *Historic Winter Storm of January 31-February 2, 2015*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/lot/2015_Feb01_Snow#Overview

[4] US Department of Commerce, N. (n.d.). February 14-15 2021 Winter Storm Recap. NOAA's National Weather Service. Retrieved from https://www.weather.gov/ilx/Feb_15_2021_Winter_Storm_Recap

[5] US Department of Commerce, N. (n.d.). *National Flood Safety Awareness Week, Day 3: Ice Jams and Snowmelt*. NOAA's National Weather Service. Retrieved from https://www.weather.gov/fgf/FloodAwarenessWeekDay3

[6] *Older Adults and Extreme Cold*. (2021, December 3). https://www.cdc.gov/aging/emergency-preparedness/older-adults-extreme-cold/index.html

SECTION 3

MITIGATION STRATEGY

3.1 GOALS, OBJECTIVES, & ACTIONS

Mission Statement

The mission of the Illinois Natural Hazard Mitigation Plan
is to identify natural hazards that affect Illinois, assess the vulnerability of Illinois to each hazard, and implement a strategy for the mitigation the effects of the hazards on the State's residents, businesses, environment, and built infrastructure.

Vision Statement

The State of Illinois will implement a comprehensive mitigation program to reduce the effects of natural hazards and create more disaster resistant communities throughout the state.
This program will educate the public on mitigation methods they can use in their homes and businesses, promote local mitigation planning, and assist eligible organizations with the development of mitigation projects. Federal, State, and local government resources, along with private sector resources, will be used to support cost-effective mitigation measures.

The Illinois Natural Hazard Mitigation Planning Committee (INHMPC) worked in partnership with University of Illinois Extension and Illinois State Water Survey (ISWS) to update and prepare the goals, mitigation actions, and Mitigation Action Plan included in the Illinois State Hazard Mitigation Plan. During the update process, meetings between IEMA-OMS mitigation staff and state agency representatives were conducted to provide a more focused and coordinated approach to mitigation planning at the state agency level.

The goals and mitigation actions were developed based on the experience of INHMPC members, presentations and discussions about the natural hazards that impact the State, information from the State Risk Assessment, review and discussion of previous mitigation planning and activities, and review and discussion of the mitigation goals of the state's local mitigation plans. For the 2023 version of the Plan, Illinois Emergency Management Agency - Office of Homeland Security (IEMA-OHS), gathered input from state agencies in meetings and through interest area focus groups.

Through the planning process established by the INHMPC and the IEMA-OHS Mitigation Division, the mitigation goals below were developed for the State Hazard Mitigation Plan. The goals guided the development of mitigation actions and the Mitigation Action Plan and will foster a vision for hazard mitigation and disaster resistance throughout the state.

State Mitigation Goals 2023

1. Protect Illinois residents from natural hazards.
2. Create, support, and expand systemic efforts to lessen the vulnerability of the State to natural hazards and risks associated with them.
3. Improve coordination, capacity, communications, and partnerships among jurisdictions and agencies to support mitigation efforts.
4. Increase public understanding, support and education for hazard mitigation planning and projects.

The state's goals are long-term general guidelines to establish and serve as the State's vision and direction for hazard mitigation and loss reduction measures. The overriding goal is to reduce the damages to people and property from natural hazards.

The 2023 goals listed in this plan are similar in substance to goals from 2018. Goal 1 was simplified to reflect the focus on protecting the lives of Illinois residents. Objectives and mitigation actions were created to address disaster preparedness and resiliency for vulnerable populations within the state. Ultimately, protecting the lives of Illinois residents is the top priority for mitigation.

Goal 2 was re-written to focus on protecting the built environment in the state and reducing the risks associated with disasters. New objectives and mitigation actions focused on adapting to climate change and the implementation of nature-based solutions to mitigation activities were included in this section. This section also covers the institutionalization of hazard mitigation practices, objectives, and actions related to flooding mitigation, and objectives and mitigation actions relating to wildfires and earthquakes.

Goal 3 remains similar to the 2018 version and is focused on coordination and partnership with jurisdictions and other organizations to support hazard mitigation practices in those organizations, and the provision of technical assistance to support those objectives and actions.

The final goal was updated to focus on individuals and how IEMS-OHS can educate and involve Illinois residents in mitigating their hazards. This includes disaster awareness and preparedness education efforts, as well as the promotion of State and partner organization programs that support the protection of homeowners and businesses from potential hazards. Under each objective is a list of mitigation actions to accomplish or support the objectives and, ultimately, the goals.

Goal 1 – Protect Illinois residents from natural hazards.

Goal Discussion: The State of Illinois has a population of nearly 13 million, with nearly 70% residing in the Chicago Metropolitan area in the Northeast area of the state. Population centers are located across the state beyond Chicago, and include Rockford, Peoria, the Quad Cities (Moline and Rock Island in Illinois and Davenport and Bettendorf in Iowa), Metro East (Illinois suburbs of St. Louis), Champaign-Urbana, Springfield, and Bloomington. While the state has more urban residents than rural, major areas of the state are rural. The 2020 census noted that Illinois' population decreased between 2010-2020. Like most states, the population of Illinois is aging, becoming more diverse, and rural areas are declining faster in population than urban areas.

Because of the size of the state's population, its location in the Midwest climatic region, and its importance as a commerce center due to its central location on transportation routes (including Lake Michigan and its rivers), natural disasters have had a significant impact on Illinois residents.

One of the deadliest natural disasters to strike Illinois was the 1995 Chicago Heat Wave that claimed 750 lives. Another disaster is the 1871 Chicago Fire that resulted in the deaths of 300 and the displacement of one-third of the city's population.

The 1925 Tri-State tornado, the deadliest tornado in American history, tore a path across Missouri, Southern Illinois, and Southwest Illinois, killing 695 and injuring over 2,000. Other significant tornado disasters in Illinois included the 1896 St. Louis/East St. Louis tornado (118 dead, 1,000 injured), the 1917 Mattoon tornado (101 dead, 638 injured), the April 1967 Chicago-area tornadoes (57 dead, 1,000 injured), and the 1990 Plainfield tornado (29 dead, 350 injured). Of all the states, Illinois has the most tornado deaths at schools with 90 (69 of those deaths occurred during the Tri-State tornado).

The 1913 Midwest floods, 1927 Mississippi floods, 1937 Ohio River floods, and 1993 Mississippi floods caused death and extreme damage in Illinois. However, with better warning systems and weather predictions, more recent flooding events have resulted in fewer deaths and injuries. Adequate and early warnings allow residents to move out of harm's way.

The deadliest blizzard in Illinois history struck the Chicago area in 1967 and resulted in 60 deaths. Winter storms and blizzards in Illinois can result in power outages, traffic accidents, and the disruption of emergency services that impact the lives of residents.

Less known, but more widespread, are injuries from hazard events. In addition to physical injuries that can occur, the trauma that survivors feel is of concern. Both injuries and loss of life are possible not only for direct victims of a hazard event, but also for those in emergency services who are responding with assistance.

The purpose of the natural hazard mitigation plan is to protect human lives. Vulnerable populations, particularly those with limited income, limited English proficiency, and accessibility and functional needs, must be protected and informed about how to respond in a disaster. New actions developed in under Goal 1 focus on reaching out and developing disaster awareness among these populations. More generally, the actions in this section focus on helping residents protect themselves through hazard resistant construction for homes, special attention to early warning systems, and securing personal protective actions.

Objective 1: Expand and disseminate disaster preparedness education and procedures to Illinois residents, with a focus on vulnerable populations.

- <u>Action:</u> Develop and practice evacuation procedures for vulnerable populations with language, accessibility, and functional needs.
- <u>Action:</u> Work with nonprofit and community groups to establish and expand preparedness and mitigation efforts among vulnerable and low-income populations.

- Action: Identify means to develop translated disaster preparedness materials for Limited English Proficient (LEP) populations.

Objective 2: Help educate the public on the benefits of hazard-resistant construction and site planning.

- Action: Work with the American Red Cross to promote hazard resistant construction by having representatives at home shows and at other public presentations.
- Action: Work with local building officials to promote the understanding of flood resistant construction.
- Action: Provide the public and construction industry with a one-stop shop for building codes information on the IEMA-OHS mitigation website.
- Action: Promote building codes that require back-up generators in high-rise, multi-unit housing for heating and cooling functions, as well as elevator evacuations.
- Action: Promote building codes that require wind resistant safe rooms in manufactured home parks, multi-unit buildings, camping/RV parks, and high traffic tourist venues. Implement in State owned properties.
- Action: Develop plans for affordable disaster resistant housing in lower income areas with higher vulnerability to disasters.

Objective 3: Publicize and encourage the use of early warning systems.

- Action: Work with communities to develop Flood Warning Response Plans, per NFIP Community Rating System guidelines, using the existing stream gauging network.
- Action: Work with communities with identified flood risks to establish flood gauging and early warning systems.
- Action: Develop policy that suspends weight limits on state, county, and township roads to allow moving livestock and equipment from floodplains or flood-prone areas when flooding is imminent.
- Action: Create and disseminate a list of free cell phone apps that have emergency notifications built in.
- Action: Develop pilot program focused on communities with historic urban flooding issues that allows them to purchase and install urban flood warning systems for sewers and roads.

Objective 4: Encourage the use of personal protective actions to prevent loss of life and injuries during disasters.

- Action: Promote the Installation of smoke detectors and carbon monoxide detectors in residences throughout Illinois.
- Action: Organize wind-resistant construction and/or safe room workshops.
- Action: Support the construction of tornado safe rooms in public buildings, public schools, and eligible private non-profit facilities to FEMA standards.
- Action: Support family preparedness programs throughout the state through existing community education sources.

Goal 2 – Create, support, and expand systemic efforts to lessen the vulnerability of the State to natural hazards and risks associated with them.

Goal Discussion: A primary feature of any natural hazard mitigation plan is to lessen the impact of weather- related disasters on assets and property. Based on data from NOAA, Illinois is particularly vulnerable to significant disaster impacts to its built infrastructure and economy. In fact, Illinois ranks second to Texas as the state most at risk for billion-dollar climate events (this represents the number of events, not total cost).

The number of $1 billion climate disasters has been increasing across the U.S. since 1980. Between 1980 and 2023, there have been 355 climate disasters with over $1 billion in damages resulting in a total cost of over $2.5 trillion. In Illinois, there have been 110 climate related disasters during that time, exceeding $1 billion in costs. The total cost of these disasters to Illinois is estimated to be $50 to $100 billion. Damage from severe storms accounts for 41.7% of total costs, followed by droughts at 32.5%, and flooding at 18.6%.

High-cost disaster events in Illinois over the past two decades include Hurricane Ike ($40.8 billion), the 2012 heat wave and drought ($39.3 billion), the February 2021 winter storm and cold wave ($25.6 billion), the 2011 heat wave and drought ($16.2 billion), and the Spring-Fall 2002 drought ($15.1 billion). The Great 1993 Mississippi River flood inundated tens of thousands of acres of farmland and communities in the state and resulted in $36 billion in damages throughout the Mississippi River Valley, and a new focus from FEMA on mitigation of flood-prone regions.

Because of its location on the Mississippi River and its enviable system of waterways, Illinois is particularly vulnerable to flooding. Efforts continue to protect Illinois communities from riverine flooding. Changing climatic patterns in the state may result in increased and prolonged precipitation events, temperatures, and potential for flash flooding in riverine and urban areas, as well as flash droughts and heat waves.

Climate change is also shifting the traditional “tornado alley” from the Great Plains into the Midwest and South-Central U.S., expanding the potential for severe storms in Illinois.

While not weather-related, Illinois sits on two faults – New Madrid and Wabash – that have been relatively inactive over the past couple of hundred years. As a result, Illinois residents are not prepared for a significant earthquake. Preparation and mitigation efforts are needed, especially in the southern portion of the state.

Actions in this goal seek to mitigate the property losses and infrastructure disruption that result from natural hazard events. New actions focus on climate change adaptability, the implementation of nature-based solutions as mitigation strategies, earthquake mitigation, and wildfire mitigation, as well as a continued focus on flood management and mitigation efforts for the 5,671 repetitive loss properties in the state.

Objective 1: Expand mitigation opportunities and institutionalize hazard mitigation practices across the State.

- <u>Action:</u> Track community hazard mitigation plans to ensure completion of new plans and updates to existing plans as their five-year cycle expires.
- <u>Action:</u> Work with IEMA-OHS staff to encourage and track policies, capabilities, and implementation of actions in local mitigation plans.

- Action: Pursue mitigation of state owned/operated facilities.
- Action: Support community flood mitigation projects through federal grant support and local technical assistance.

Objective 2: Assist jurisdictions in developing mitigation projects and identifying funding for cost-beneficial mitigation efforts.

- Action: Provide federal HMA planning grants to communities willing to provide 25% local match, and based upon established criteria, to develop local mitigation plans.
- Action: Assist communities with identifying and securing 25% match (when available and meets regulations) by coordinating with other State and Federal agencies or facilitating partnerships between non-profit organizations, benevolent associations, and faith-based groups and local jurisdictions.
- Action: Provide federal Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM), and Project Grants to communities willing to contribute the non-federal cost match, with an adopted and federally approved mitigation plan, and based upon criteria established through a competitive cycle.
- Action: Provide federal Hazard Mitigation Grant Program (HMGP) Project Grants to communities, who are completing within one year an adopted and federally approved local mitigation plan or currently have such a plan, based upon established criteria (in the event of a Federal Disaster).
- Action: Prioritize funding for grant proposals that address hazards with appropriate mitigation measures.
- Action: Explore advances in technology and utilize data from new sources (LiDAR, and other available data) to generate preliminary-level 2-D models for the entire state for use at the planning and response/recovery stages and for prioritizing where more detailed modeling is required.
- Action: Assist communities with enrollment in FEMA's Direct Technical Assistance program.

Objective 3: Improve compliance with State floodplain regulations and management.

- Action: Continue to develop digital Countywide floodplain mapping for entire State and maintain community floodplain management information database. Continue annual support and education outreach to the NFIP communities in the state.
- Action: Encourage participation of local communities in the floodplain mapping process, participating in flood risk review meetings, open houses, and data collection.
- Action: Inform local jurisdictions on new floodplain compliance requirements as they are developed and distribute the model Flood Damage Prevention Ordinance. This includes notifying communities of new flood risks and encouraging them to adopt local floodplain regulations and seek mitigation alternatives.
- Action: Encourage communities to develop Substantial Damage Management Plans, using NFIP CRS templates, to prepare for post-flood response.
- Action: Identify public water supply sources repeatedly affected by flooding and encourage mitigation efforts to limit losses associated with water quality.
- Action: Work with USACE to ensure the National Levee Database has complete coverage of all levees in Illinois, including areas at risk of flooding if they are overtopped or fail.

- Action: Monitor data collected through the Illinois State Water Plan to address water-related issues identified across the state.
- Action: Develop priority list of where inundation mapping would be beneficial, and data is available and correlate with list of disadvantaged communities.
- Action: Generate flood forecast dynamic inundation mapping tied to river gauges for 3 communities per year. Upload mapping into a new GIS-based website to serve as a pilot program. Information will be housed at the Integrated Water Information Center (IWIC) and outreach will be conducted with select communities.

Objective 4: Encourage participation the National Flood Insurance Program (NFIP)

- Action: Continue to promote Flood Insurance and the NFIP Program, in partnership with IDNR/OWR, as the cornerstone of mitigation planning and funding; encourage expanded participation in the NFIP and CRS programs.
- Action: Provide workshops and distribute informational materials to improve understanding and awareness of flood insurance.
- Action: Require three hours of flood insurance training for all licensed property line insurance producers.
- Action: Continue to provide technical assistance to non-NFIP communities that have had flood damage and encourage them to join NFIP.

Objective 5: Focus mitigation efforts on repetitive and severe repetitive loss properties as well as Substantially Damaged properties..

- Action: Ensure that grant application review tools and processes prioritize repetitively damaged and highest risk properties.
- Action: Encourage minimum compliance and higher floodplain regulatory requirements.
- Action: Conduct community audits to ensure compliance with minimum NFIP regulations.

Objective 6: Encourage the use of natural infrastructure and nature-based solutions in mitigating natural hazards.

- Action: Develop and maintain a database on all protected lands, including existing flood buyout parcels, identifying possible partners in the acquisition and maintenance of contiguous hazard prone parcels.
- Action: Use IDNR/OWR Flood Mitigation Assistance Program funds to acquire flood prone property.
- Action: Prioritize nature-based mitigation projects in floodplains and create demonstration sites on buyout lots (rain gardens, bioswales, permeable pavers, etc.).
- Action: Encourage restoration of natural wetland and floodplain functions.
- Action: Develop training programs for installation of nature-based solutions for natural hazard mitigation, as well as programming on how to maintain the solutions once installed.
- Action: Work with Illinois EPA to develop and distribute information on the benefits of nature-based solutions for natural hazard mitigation on both environmental impacts and cost.

Objective 7: Encourage mitigation projects that look at projected climate change and adaptations.

- Action: Evaluate climate adaptation strategies adopted by other states for applicability to Illinois to reduce future risks.
- Action: Research ways to quantify resilience and changing future conditions to allow extra points for pre-applications that incorporate resilience.
- Action: Consider updating IEMA-OHS's local plan review tool to include criteria on assessing changing future conditions and the analysis of projects that reduce vulnerability to these conditions.
- Action: In designated community disaster resiliency zones (CDRZ), strengthen community resiliency by encouraging communities to leverage federal, state, and private funding to mitigate the impacts of climate change**.**

Objective 8: Promote wildfire prevention programming and develop policies/strategies to mitigate the impacts of wildfire on residents and communities.

- Action: Develop and fund programs, publications, and initiatives to educate Illinois residents about the history and increasing risks associated with wildfires.
- Action: Create and fund data collection on wildfire preparedness and mitigation for local jurisdictions.
- Action: Encourage collaborative assessments of timbered areas and vulnerable cultivated areas.
- Action: Develop system to monitor air quality at disaster event sites.

Objective 9: Expand earthquake awareness programming and develop policies/strategies to mitigate earthquake impacts on residents and communities.

- Action: Support the IEMA-OHS Earthquake Program's efforts to mitigate earthquake damages.
- Action: Support the distribution of public education materials regarding earthquake mitigation measures.
- Action: Support the implementation of seismic resistant construction in earthquake zones.

Objective 10: Continuously demonstrate and capitalize upon the connection between natural hazard mitigation and sustainable development.

- Action: Coordinate with non-profit organizations that are responsible for promoting and/or implementing sustainable growth or "smart growth" initiatives.
- Action: Work to amend the "smart growth" legislation to include hazard mitigation.
- Action: Provide incentives for communities to include disaster resiliency and climate friendly projects in new developments, both commercial and residential.

Objective 11: Improve the disaster resistance of buildings, structures, and infrastructure whether it be new construction, expansion, or renovation.

- Action: Use Public Assistance (PA) costs to identify locations that experience continual infrastructure damage.
- Action: Review the risk assessment tool to determine potential mitigation projects for state facilities and develop a prioritized list of projects.

- Action: Use past disaster intelligence information to identify possible mitigation projects for state critical and essential facilities.
- Action: Involve construction and building trade associations (builders, contractors, electric, plumbing etc.) and research institutions in natural hazard mitigation planning efforts and studies.
- Action: Engage private sector businesses in promoting disaster resistant construction of new buildings and the retrofitting of existing buildings in Illinois.
- Action: Encourage higher education institutions to complete campus specific mitigation plans and risk assessments.
- Action: Encourage private and parochial schools to complete campus specific mitigation plans and risk assessments.
- Action: Incorporate Code Plus construction into state facilities, historic sites, and school facilities construction of new or existing structures.
- Action: Promote the implementation of building codes in municipalities and counties to protect built structures from natural hazards.

Goal 3 – Improve coordination, capacity, communications, and partnerships among jurisdictions and agencies to support mitigation efforts.

Goal Discussion: While the IEMA-OHS Mitigation Program is the primary state agency focused on natural hazard mitigation planning, its work cannot be completed without the assistance and cooperation of other state agencies, organizations, counties, and communities. Mitigation staff strive to integrate hazard mitigation principles to make Illinois communities and residents more disaster resilient.

The IEMA-OHS Mitigation Program provides leadership in the provision of technical assistance to all levels of jurisdiction to support hazard mitigation planning. This includes information and training, as well as guidance on the hazard mitigation grant application process. The training helps counties and communities build capacity and expertise in hazard mitigation strategies.

To improve coordination among agencies and jurisdictions, and deliver high quality technical assistance, IEMA-OHS is at the forefront of using and sharing technology that informs planning with up-to-date mitigation and disaster data.

The IEMA-OHS Mitigation Program provides information about building codes, NFIP and floodplain regulations, the different types of disaster declarations, and requirements for existing and emerging FEMA grant programs. The IEMA-OHS Mitigation Program staff provide the framework for hazard mitigation not only during recovery, but on a year-round basis.

Besides encouraging the incorporation of hazard mitigation principles into the work of traditional partners and state facilities, the IEMA-OHS Mitigation Program works to encourage other agencies and organizations to adapt mitigation planning to their missions. These organizations include schools, universities, the state historical agency, and the private sector.

Program staff are active in state and federal associations and workgroups that offer opportunities to provide the technical assistance, coordination assistance, and hazard mitigation guidance that align with the agency's mission.

Objective 1: Provide leadership and planning/technical assistance for natural hazard mitigation planning and projects at all jurisdiction levels.

- Action: Provide technical assistance with mitigation projects through annual training.
- Action: Create an all-encompassing list of Illinois natural hazard occurrences including impact data for future planning.
- Action: Conduct public health hazard risk assessments at all local health departments in the state.
- Action: Continue to build a database of individual structure risk assessments.
- Action: Provide presentations to local jurisdictions explaining all types of mitigation funding sources that are or might become available.
- Action: Provide education to local and officials on the Incident Command Structure (ICS) and its role in local disaster response and recovery functions.
- Action: Provide training and technical assistance to local governments on FEMA GO online grant application process.
- Action: Develop an outreach tool/flow schematic that community leaders and organizers can use to determine what funding options are available to them based on their needs.
- Action: Maintain and improve the "Local Mitigation Action Item Database" to track local mitigation plan actions and associated projects. Move here from Objective 7
- Action: Work with University of Illinois to establish, fund, and staff an Integrated Water Information Center (IWIC) in the Prairie Research Institute to serve as a library for water-based information, programs, and technology to connect resources to stakeholders.
- Action: Utilizing information already provided in County Hazard Mitigation Plans regarding flood mitigation needs, combine the data into a statewide GIS based database of existing flood protective infrastructure (storm sewers, detention basins, floodwalls, non-federal levees, etc.) and future flood management needs. Allow communities to link their existing infrastructure catalogs and assessments to the database. Add specific community assessments and needs to the database as they are developed.

Objective 2: Maximize the use of best technology for decision making.

- Action: Coordinate with State agencies to develop and maintain an agency database with GPS latitude and longitude coordinates to develop an all-encompassing database of state-controlled buildings and facilities.
- Action: Coordinate with the CMS and other state agencies to explore grant funding opportunities to develop a comprehensive state facility database.
- Action: Work with State and federal agencies to ensure all current risk databases are used (e.g., weather studies and rainfall data).
- Action: Use HAZUS MH (and other advanced tools) to determine the dollar amount of potential losses to update the INHMP.
- Action: Coordinate the earthquake HAZUS MH (and other advanced tools) risk assessments with the IEMA Earthquake Program and continue to coordinate local data collection to include in the INHMP.

- Action: Promote and provide training to local jurisdictions to use HAZUS MH (and other advanced tools) for risk assessment.

Objective 3: Increase awareness and knowledge of hazard mitigation principles and practices among local public officials and community leaders.

- Action: Use IEMA-OHS' website as a primary portal for information regarding hazard mitigation resources including strategies, funding, and technical information as well as historical information, natural hazards data, and mapping information useful for jurisdictions in the development of mitigation plans. Eventually this information will be moved to the statewide Integrated Water Information Center (IWIC) as defined in the 2020 State Water Plan.
- Action: Provide presentations to local jurisdictions explaining all types of mitigation funding sources that are or might become available.
- Action: Explore possibilities for the creation of a mobile support team and legislation to provide technical engineering and architectural staff capable of assessing the structural safety of facilities for disaster resilience.
- Action: Provide instructional and training opportunities for local code officials to enable them to conduct pre-disaster assessments of structural safety of facilities for disaster resilience.
- Action: Help Local and State officials better understand Agricultural Disaster Declarations vs. Presidential Disaster Declarations.
- Action: Develop more situational awareness between IEMA-OHS and Farm Services Agency (FSA) for better response.

Objective 4: Encourage communities to develop, adopt, and implement local hazard mitigation plans.

- Action: Send updated information on the PDM initiative to all eligible municipal and county managers, along with local planners and floodplain administrators.
- Action: Publicize Section 322 of the Disaster Mitigation Act of 2000 to local public officials in all outreach activities.
- Action: Make HMGP planning grant funds available to non-NFIP compliant counties for the development of a natural hazard mitigation plan.

Objective 5: Encourage other organizations, public and private, to incorporate natural hazard mitigation best practices into their operations.

- Action: Participate in conferences and give presentations to promote mitigation to local interest groups and associations.
- Action: Survey state facilities to determine the presence of a NOAA weather alert radio and severe weather response plans. Provide information about NOAA radios and seek funding sources to obtain weather radios for facilities lacking them.
- Action: Develop an Economic Recovery Framework to help businesses recover following a disaster.
- Action: Target business–related mitigation materials to vulnerable areas.
- Action: Share instructions for mitigation techniques for storage of historic artifacts and documents being stored in below grade locations, such as basements.

- Action: Work with IHPA to identify elevations of historic structures in the floodplain or Mercalli zone 8 or above and evaluate and fund mitigation activities.
- Action: Work with CMS to identify the elevations of state owned/operated facilities in the floodplain or Mercalli zone 8 or above and evaluate and fund mitigation activities.
- Action: Provide workshops on wind refuge areas for local ESDA/EMA staff, CMS building managers and university safety officers.
- Action: Make presentations on the importance of and available funding for hazard resistant construction to park district associations.
- Action: Create and maintain a tracking system for all Privately Owned Wastewater Treatment Systems.
- Action: Perform hazard mitigation reviews for electric, natural gas, and water utility construction projects.
- Action: Survey state historic sites, parks, and campgrounds to determine shelter locations and availability for visitors and staff.

Objective 6: Provide local and state officials with information related to state floodplain regulations and the benefit of participation in the NFIP.

- Action: Continue to work with IDNR/OWR to conduct floodplain management and flood mitigation workshops.
- Action: Provide public education and continued enforcement of septic and sewer regulations to locations in floodplains.
- Action: Identify potential CRS communities and notify IDNR/OWR to encourage enrollment.
- Action: Expand the Illinois Mitigation Advisory Group (IMAG) mitigation and resiliency building mission to include representatives from various state agencies of the State Water Plan Task Force to coordinate grant programs and projects to promote program efficiencies and consistent program funding and implementation requirements.

Goal 4 – Increase public understanding, support, and education for hazard mitigation planning and projects.

Goal Discussion: Building community resiliency and taking effective mitigation actions requires that residents and communities have access to current, accurate information. This begins by researching and identifying the best medium by which to convey the importance of hazard mitigation planning to individuals and communities. An effective state mitigation program requires residents to be aware of natural hazards and incorporate mitigation activities into their daily lives.

Goal 4 focuses on raising awareness of the hazards most likely to impact them, and to prepare to respond. Actions included in this section focus on informing the public on the benefits of taking mitigation initiatives to minimize disaster impacts on their households. This includes providing information about existing or emerging programs that can aid in mitigation efforts and the development of a workforce proficient in the use of hazard resistant construction techniques.

Actions include encouraging the creation of COADs (Community Organizations Active in Disaster) and Long-Term Recovery Committees to cover more Illinois communities and to enhance disaster preparedness and recovery efforts in those areas, and the development of extreme weather toolkits that can be distributed to communities, especially smaller and more rural communities, that provide information about responding to disasters.

Objective 1: Heighten public awareness of natural hazards.

- Action: Inform the public through a variety of weather and natural hazard awareness days and weeks each year (Severe Winter Storm, Tornado, Earthquake, Lightning and others).
- Action: Develop and assess methods to communicate the importance of hazard mitigation strategies and principles to residents, businesses, non-profits, and governmental organizations.
- Action: Promote the National Weather Service (NWS) Storm Ready Program and Weather Ready Nation (WRN) Ambassador Program.
- Action: Develop and conduct workshops for local officials regarding flood protection standards.

Objective 2: Inform the public about the benefits of mitigation measures.

- Action: Integrate hazard mitigation concepts into Extension programming, and work with Illinois Extension to share disaster education materials throughout the state.
- Action: Distribute hazard mitigation material to insurance companies, agents, and consumers, to assist in the development, establishment, and implementation of statewide mitigation programs.
- Action: Create a homeowner awareness project focused on stormwater and floodplain requirements and mitigation strategies.
- Action: Provide restricted income residents with energy assistance for extreme heat and extreme cold.
- Action: Provide information to the public on methods to minimize effects of extreme heat or cold through "Keep Cool Illinois" and "Keep Warm Illinois."
- Action: Continue to inform the public about safety issues related to natural hazards at electric and natural gas utilities.
- Action: Provide information to media reporting on disasters and mitigation in the aftermath of a disaster.
- Action: Work with IAFSM to conduct flood proofing workshops.
- Action: Using the Earthquake Coordinator, share information on the potential impact of earthquakes on Illinois businesses and residents.

Objective 3: Help create a workforce trained in hazard resistant construction techniques.

- Action: Work with the Illinois State Board of Education (ISBE) to provide hazard resistant construction information and workshops to vocational school teachers.
- Action: Provide workshops for construction workers on hazard resistant construction. Work with construction unions and building associations to organize these workshops.

Objective 4: Maximize post-disaster "windows of opportunity" to implement major mitigation outreach initiatives.

- Action: Develop and maintain post-disaster outreach procedures and assign staff to mitigation outreach and/or recovery teams.

- Action: Coordinate with Illinois State VOAD members, University of Illinois Extension, and local officials to encourage and enhance local preparedness and recovery efforts through the establishment of Community Organizations Active in Disasters (COADs) and Long-Term Recovery Committees (part of COADs in the long term).
- Action: Create extreme weather toolkits to help people prepare for and respond to emergencies.

3.2 ACTION PLAN

Operationalizing the mitigation strategy for the State of Illinois will require communicating mitigation priorities, informing potential applicants of funding opportunities, soliciting funding applications, and prioritizing mitigation funding applications. Illinois has reviewed mitigation actions from the 2018 plan, removed items which were administrative, reworded actions to encompass more diverse projects, and added action items to address new priorities, such as climate adaptation, nature-based solutions, and assistance to vulnerable populations. These actions will be prioritized by the methodology outlined in the following section and reviewed by IMAG to ensure adherence to the mission and vision of the mitigation plan.

3.2.1 Prioritization of Mitigation Actions

The INHMP contains mitigation action items which are intended to reduce losses and vulnerability from the summarized hazards in the plan. In accordance with 44 CFR §201.4(c)(3)(iii), mitigation actions should be prioritized by cost effectiveness, environmental soundness, and technical feasibility. The Illinois Mitigation Advisory Group (IMAG) and its subcommittees review all proposed mitigation projects to determine if they meet eligibility based on federal requirements for grant programs as applicable, and/or if they are covered by approved mitigation actions within the Illinois mitigation plans. Other than the initial eligibility of whether a project can be executed, the decision regarding if the project should or can be funded needs to be determined using a prioritization methodology.

The order of targeted outcomes of mitigation actions by importance to Illinois is:

1. mitigation actions executed by the project are listed in an approved mitigation plan or in a developing mitigation plan,
2. projects that mitigate against the loss of human life,
3. the project decreases the probability of future hazardous events to include reducing the negative impacts of climate change,
4. the project reduces repetitive loss properties,
5. the project reduces significant damage that leads to over 50% of property value loss,

6. the project uplifts underserved communities and protects socially vulnerable populations,
7. the project targets the most severe hazards,
8. the project uses or promotes nature-based solutions,
9. the project goals and direct impacts are (in order of importance):
   I. natural resource protection
   II. critical facility protection
   III. conducting structural projects
   IV. retrofitting critical facilities
   V. providing leadership or planning/technical assistance for hazard mitigation planning
   VI. projects regarding alert systems for hazard announcements, warning, and evacuations
   VII. providing public education and awareness of personal mitigation strategies
   VIII. providing public education and awareness of hazard risk
10. the project maximizes benefit-cost analysis (BCA) calculated by FEMA standards, and
11. projects with the quickest completion of target goal.

IMAG considers projects to mitigate against the loss of human life and property as projects that have a direct impact on reducing loss probability. Similarly, projects are considered to reduce the negative impacts of climate change if climate change forecasting is used to measure the reduction of risk of a hazard occurrence. IMAG defines vulnerable populations as populations of people greatly susceptible to the negative impacts of a disaster, based on increased dependance to property, industry, resources, ecosystems, or historical buildings and artefacts. IMAG defines nature-based solutions as sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. FEMA's BCA calculation is necessary for applications to certain federal grants for designated project types but is not required for all project applications. Finally, IMAG considers projects with a quick completion of target goals as projects that are finished with construction/implementation within 36 months.

To eliminate bias in project selection, IMAG developed a method of numerically measuring the benefit of a mitigation project based on the importance ranking outlined above. The equation to numerically calculate the benefit of proposed mitigation projects can be found in **Appendix 3.2 Prioritization Formula and Tool.** Once the benefit calculation of proposed mitigation projects is completed, all the projects will be segregated by funding source and grant type, so only the projects competing for the same funding source are compared to one another. Once the refined list of projects is given, the mitigation projects are prioritized by maximizing overall project benefit while staying within financial constraints. The concluding combination is the priority project selection for consideration of funding.

The mitigation action plan which follows attempts to provide a concise table of the mitigation actions identified in the previous section, along with hazards each action is addressing, lead and supporting agencies responsible for each action, potential funding sources, status of action item, and term of action for each of the identified actions.

"Term of Action" represents the prioritization schedule established by IEMA-OHS. Actions are identified as "Short Term" or "Long Term." Short term actions have been identified as being completed within the life of the plan (five years or less). Long Term actions are considered "ongoing," such as educational workshops regarding FEMA grant opportunities or those that, because of time commitment and investment requirements, will exceed the five-year planning cycle and cannot be completed before the next plan update.

Table 3-1 outlines the goals, objectives, and action items for the 2023 Plan. Each action item number indicates an “O” for an ongoing action item that has been carried over from the previous planning period, or a “N” for an action item that was new for this planning period.

TABLE 3- 1 Mitigation Action Plan Table

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
Goal 1 - Protect Illinois resident from natural hazards.							
Goal 1, Objective 1 - Expand and disseminate disaster preparedness education and procedures to Illinois residents, with a focus on vulnerable populations.							
1-N	Develop and practice evacuation procedures for vulnerable populations with language, accessibility, and functional needs.	Goal 1, Objective 1	Multi-Hazard	IEMA-OHS. Supporting Agencies: Illinois State VOAD and Local COADs	General Revenue Funds	New action item	Short Term
2-N	Work with nonprofit and community groups to establish and expand preparedness and mitigation efforts among vulnerable and low-income populations.	Goal 1, Objective 1	Multi-Hazard	IEMA-OHS. Supporting Agencies: Illinois State VOAD and Local COADs	General Revenue Funds	New action item	Long Term
3-N	Start a pilot program to help 2 disadvantaged communities per year to survey and assess their existing flood management infrastructure and identify future needs. Staff will work with the community to develop a list of their needs and local action items.	Goal 1, Objective 1	Flood	IEMA-OHS. Supporting Agencies: IDNR/OWR	General Revenue Funds	New action item (State Water Plan)	Long Term
Action Number – 0=Ongoing	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**

N=new							
4-N	Identify means to develop translated disaster preparedness materials for Limited English Proficient (LEP) populations.	Goal 1, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term
Goal 1, Objective 2 - Help educate the public on the benefits of hazard-resistant construction and site planning.							
5-O	Work with the American Red Cross to promote hazard resistant construction by having representatives at home shows and at other public presentations.	Goal 1, Objective 2	Multi-Hazard	IEMA-OHS, American Red Cross	HMGP 5% Funds	American Red Cross has not been engaged on this effort since the 2018 Plan update. IEMA-OHS plans to re-engage in the coming year.	Long Term
6-N	Work with local building officials to promote the understanding of flood resistant construction.	Goal 1, Objective 2	Flood	IEMA-OHS, IDNR/OWR. Supporting Agencies: Illinois Council of Code Administrators, Illinois Members of the International Code Council.	General Revenue Funds	New action item	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
7-O	Provide the public and construction industry with a one-stop shop for building codes information on IEMA-OHS mitigation website.	Goal 1, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, IDOI	HMGP 5% Funds	IEMA continues to provide funding to update building codes through BRIC and HMGP 5%. This continues to be a priority funding focus.	Long Term
8-N	Promote building codes that require back-up generators in high-rise, multi-unit housing for heating and cooling functions as well as elevator evacuations.	Goal 1, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, IDOI	General Revenue Funds	New action item	Long Term
9-N	Promote building codes that require wind resistant safe rooms in manufactured home parks, multi-unit buildings, camping/RV parks, and high traffic tourist venues. Implement in State owned properties.	Goal 1, Objective 2	Wind	IEMA-OHS. Supporting agencies: CDB, IDNR, IDPH	General Revenue Funds	New action item	Long Term
10-N	Develop plans for affordable disaster resistant housing in lower income areas with higher vulnerability to disasters.	Goal 1, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB and IDHA	General Revenue Funds	New action item	Long Term

Goal 1, Objective 3 - Publicize and encourage the use of early warning systems.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
11-O	Work with communities to develop Flood Warning Response Plans, per NFIP Community Rating System guidelines, using the existing stream gauging network.	Goal 1, Objective 3	Flood	IEMA-OHS; Supporting agency: IDNR/OWR, ISWS	CAP and CTP Funds	IEMA-OHS continues to work with communities on this effort. INDR/OWR will work with IAFSM to host a workshop on developing these plans.	Long Term
12-N	Develop policy that suspends weight limits on state, county, and township roads to move livestock and equipment from floodplains or flood-prone areas when flooding is imminent.	Goal 1, Objective 3	Flood	IEMA-OHS	General Revenue Funds	New action item	Short Term
13-N	Create and disseminate a list of free cell phone apps with built-in emergency notifications.	Goal 1, Objective 3	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
Goal 1, Objective 4 - Encourage the use of personal protective actions to protect the public from disaster.							
15-O	Promote the Installation of smoke detectors and carbon monoxide detectors in residences throughout Illinois.	Goal 1, Objective 4	Fire/Carbon Monoxide	IEMA-OHS. Supporting agencies: ARC, CMS, DCEO, DHS, DOI, IESMA	General Revenue Funds	IEMA-OHS works with partner agencies on awareness and installation projects throughout the state.	Long Term
16-O	Organize wind-resistant construction and/or safe room workshops.	Goal 1, Objective 4	Wind	IEMA-OHS. Supporting agency: NWS	General Revenue Funds, HMGP 5% Funds	IEMA-OHS partners with FEMA to hold saferoom funding workshops. IEMA-OHS funded a safe room project at Illinois State University.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
17-N	Support the construction of tornado safe rooms in local communities' public buildings, public schools, and eligible private non-profit facilities to FEMA standards.	Goal 1, Objective 4	Wind	IEMA-OHS. Supporting Agency: ISBE	General Revenue Funds	New action item	Long Term
18-N	Support family preparedness programs throughout the state through existing community education sources.	Goal 1, Objective 4	Multi-Hazard	IEMA-OHS: Supporting agencies: Illinois State VOAD, University of Illinois Extension, American Red Cross	General Revenue Funds	New action item	Long Term
Goal 2 – Create, support, and expand systemic efforts to lessen the vulnerability of the State to natural hazards and risks associated with them.							
Goal 2, Objective 1 - Expand mitigation opportunities and institutionalize hazard mitigation practices in Illinois communities and across the State.							
19-N	Track local community hazard mitigation plans to ensure completion of new plans and updates to existing plans as their five-year cycle expires.	Goal 2, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
20-N	Use IEMA-OHS staff to encourage and track policies, capabilities, and implementation of actions in local mitigation plans.	Goal 2, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term
21-N	Pursue mitigation of state owned/operated facilities.	Goal 2, Objective 1	Multi-Hazard	IEMA-OHS. Supporting Agency: CDB	General Revenue Funds	New action item	Long Term
22-N	Support community flood mitigation projects through federal grant support and local technical assistance.	Goal 2, Objective 1	Flood	IDNR/OWR. Supporting Agency: IEMA-OHS	General Revenue Funds	New action item	Long Term

Goal 2, Objective 2 - Assist jurisdictions in developing mitigation projects and identifying funding for cost-beneficial mitigation efforts.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
23-O	Provide federal HMA planning grants to communities willing to provide 25% local match and based upon established criteria to develop local mitigation plans.	Goal 2, Objective 2	Multi-Hazard	IEMA-OHS; Supporting agencies: DCEO, IDNR	HMA Funds	IEMA-OHS provided funding for all 102 counties to either develop a new or update their current hazard mitigation plans. In 2025, all Illinois residents will be covered by a hazard mitigation plan.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
24-O	Assist communities with identifying and securing 25% match (when available and meets regulations) by coordinating with other State and Federal Agencies or facilitating partnerships between non-profit organizations, benevolent associations, and faith-based groups and local jurisdictions.	Goal 2, Objective 2	Multi-Hazard	IEMA-OHS; Supporting agencies: DCEO, IDNR	State and Federal Grants and General Revenue Funds	Using HMGP funding, IEMA-OHS identifies and selects projects to be Global Match projects to support the local 25% match.	Long Term
25-O	Provide federal Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM), and Project Grants to communities willing to contribute the non-federal cost match and with an adopted and federally approved mitigation plan and based upon criteria established through a competitive cycle.	Goal 2, Objective 2	Flood	IEMA-OHS; Supporting agencies: DCEO, IDNR	FMA, PDM, BRIC	IEMA supported BRIC 20/21/22 and FMA 20/21/22 sub-applications.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
26-O	Provide federal Hazard Mitigation Grant Program (HGMP) Project Grants to communities, who are completing, within one year, an adopted and federally approved local mitigation plan or currently have such an existing plan, based upon established criteria (in event of a Federal disaster).	Goal 2, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR	HMGP	IEMA-OHS provided funding for all 102 counties to either develop a new or update their current hazard mitigation plans. In 2025, all Illinois residents will be covered by a hazard mitigation plan.	Long Term
27-O	Prioritize funding for grant proposals that address hazards with appropriate mitigation measures.	Goal 2, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR	General Revenue Funds	IEMA supports projects submitted to implement mitigation actions listed in county hazard mitigation plans.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
28-N	Explore advances in technology and utilize data from new sources (LiDAR, and other available data) to generate preliminary-level 2-D models for the entire state for use at the planning and response/recovery stages and for prioritizing where more detailed modeling is required.	Goal 2, Objective 2	Flood	IEMA-OHS. Supporting agencies: ISWS, IDNR/OWR	General Revenue Funds	New action item (State Water Plan)	Long Term
29-N	Assist communities with enrollment in FEMA's Direct Technical Assistance program.	Goal 2, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR	General Revenue Funds	New Action Item	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
Goal 2, Objective 3 - Improve compliance with State floodplain regulations and management.							
30-O	Continue to develop digital Countywide floodplain mapping for entire State and maintain community floodplain management information database, and continue annual support and education outreach to the NFIP communities in the state.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISGS, ISWS	CAP and CTP Funds	FEMA, IDNR, and ISWS have an annual work plan and a long range plan for updating the floodplain mapping across the state based on FEMA's priorities. Locally funded map updates are processed by the ISWS through the Letter of Map Revision process.	Long Term
31-O	Encourage participation of local communities in the floodplain mapping process, participating in flood risk review meetings, open houses, and data collection.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISWS	CAP and CTP Funds	IEMA funds risk assessmet plan activities as part of planning processes and grant applications.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
32-O	Inform local jurisdictions on new floodplain compliance requirements as they are developed and distribute model Flood Damage Prevention Ordinance. This includes notifying communities of new flood risks and encouraging them to adopt local floodplain regulations and seek mitigation alternatives.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISWS	CAP and CTP Funds	In coordination with FEMA, IDNR works with communities to adopt new floodplain mapping and update their floodplain regulations. IDNR also presents workshops on updated model regulations.	Long Term
33-O	Encourage communities to develop Substantial Damage Management Plans, using NFIP CRS templates, to prepare for post-flood response.	Goal 2, Objective 3	Flood	IDNR/OWR	CAP Funds	IDNR/OWR hold Substantial Damage Workshops across the state and contacts communities following a flood to discuss post-flood inspections.	Long Term
34-O	Identify public water supply sources repeatedly affected by flooding and encourage mitigation efforts to limit losses associated with water quality.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IDPH, IEMA-OHS, IEPA, ISGS, ISWS	General Revenue Funds	During flooding situations and after disaster declarations, IEMA-OHS accepts sub-applications, statewide, to mitigate the potential for continuing flooding.	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
35-O	Work with USACE to ensure the National Levee Database has complete coverage of all levees in Illinois including areas at risk of flooding if they are overtopped or fail.	Goal 2, Objective 3	Flood	IEMA-OHS. Supporting agency: USACE	CAP Funds and USACE Funds	IEMA-OHS works to ensure all project sub-applications do not conflict with any USACE activities in project locations. USACE and IEMA-OHS are considering a partnership for the Southwest Levee System in St. Clair County.	Short Term
36-N	Monitor data collected through the Illinois State Water Plan to address water-related issues identified across the state.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISWS	General Revenue Funds and CAP Funds	New action item	Long Term
37-N	Develop priority list of where inundation mapping would be beneficial, and data is available and correlate with list of disadvantaged communities.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISWS	General Revenue Funds and CAP Funds	New action item	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
38-N	Generate flood forecast dynamic inundation mapping tied to river gauges for 3 communities per year. Upload mapping into a new GIS-based website to serve as a pilot program. Information will be housed at the Integrated Water Information Center (IWIC) and outreach will be conducted with select communities.	Goal 2, Objective 3	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, ISWS	General Revenue Funds and CAP Funds	New action item	Long Term

Goal 2, Objective 4 - Encourage participation the National Flood Insurance Program (NFIP)							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
39-O	Continue to promote Flood Insurance and the NFIP Program, in partnership with IDNR/OWR, as the cornerstone of mitigation planning and funding; encourage expanded participation in the NFIP and CRS programs.	Goal 2, Objective 4	Flood	IDNR/OWR. Supporting agency: IEMA-OHS	CAP Funds	IEMA-OHS has been selected under the FMA 22 grant cycle to receive funds to enhance the management of floodplains in Illinois. IEMA-OHS and FMA will be partnering to enhance floodplain management. IDNR/OWR promotes enrollment in the NFIP and the CRS Program through annual outreach.	Long Term
40-O	Provide workshops and distribute informational materials to improve understanding and awareness of flood insurance.	Goal 2, Objective 4	Flood	IDNR/OWR. Supporting agencies: IDOI, IEMA-OHS	General Revenue Funds and CAP Funds	IDNR/OWR provides an annual outreach program to NFIP communities and realtor associations on flood insurance.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
41-O	Require 3 hours of flood insurance training for all licensed property line insurance producers.	Goal 2, Objective 4	Flood	IEMA-OHS. Supporting agenices: CDB, IDOI, IDNR	General Revenue Funds	FEMA and the Illinois Department of Insurance held NFIP training for licensed insurance agents after the Disaster 4676 Declaration (July 2022 flood in St. Clair County).	Long Term
42-N	Continue to provide technical assistance to non-NFIP communities that have had flood damage and encourage them to join NFIP.	Goal 2, Objective 4	Flood	IDNR/OWR. Supporting agency: IEMA-OHS	General Revenue Funds and CAP Funds	New action item	Long Term
Goal 2, Objective 5 - Focus mitigation efforts on Repetitive and Severe Repetitive loss properties, as well as Substantially Damaged properties.							
43-N	Ensure that grant application review tools and processes prioritize repetitively damaged and highest risk properties.	Goal 2, Objective 5	Flood	IEMA-OHS. Supporting agency: IDNR/OWR	General Revenue Funds	New action item	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
44-O	Encourage minimum compliance and higher floodplain regulatory requirements.	Goal 2, Objective 5	Flood	IDNR/OWR. Supporting agency: IEMA-OHS	CAP Funds	IDNR/OWR conducts workshops on the state's model floodplain ordinance, which includes higher standards.	Short Term
45-O	Conduct community audits to ensure compliance with minimum NFIP regulations.	Goal 2, Objective 5	Flood	IDNR/OWR. Supporting agency: IEMA-OHS	CAP Funds	IDNR and FEMA conduct community audits annually for about 20 communities per year.	Long Term
Goal 2, Objective 6 - Encourage the use of natural infrastructure and nature-based solutions in mitigating natural hazards.							
46-O	Develop and maintain a database on all protected lands, including existing flood buyout parcels, identifying possible partners in the acquisition and maintenance of contiguous hazard prone parcels.	Goal 2, Objective 6	Multi-Hazard	IDNR/OWR. Supporting agencies: IEMA-OHS, IEPA, IDOT	General Revenue Funds	IEMA-OHS is in coordination with IDNR to maintain information.	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
47-O	Use IDNR/OWR Flood Mitigation Assistance Program funds to acquire flood prone property.	Goal 2, Objective 6	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, IEPA, IDOT	Illinois Flood Mitigation Program	IDNR/OWR operates a flood prone parcel buyout program when state funds are appropriated. IEMA-OHS has partnered with IDNR during DR 1960, 1992, and 1935 to acquire flood prone properties, using state funds to provide match for federal funds.	Long Term
48-N	Prioritize nature-based mitigation projects in floodplains and create demonstrate sites on buyout lots (rain gardens, bioswales, permeable pavers, etc.)	Goal 2, Objective 6	Flood	IEMA-OHS. Supporting Agencies: IDNR/OWR and University of Illinois Extension Master Naturalist Program	General Revenue Funds	New action item	Long Term
49-N	Encourage restoration of natural wetland and floodplain functions.	Goal 2, Objective 6	Flood	IEMA-OHS. Supporting Agency: IDNR/OWR	General Revenue Funds	New action item	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
50-N	Develop training programs for installation of nature-based solutions for natural hazard mitigation, as well as programming on how to maintain the solutions once installed.	Goal 2, Objective 6	Flood	IEMA-OHS. Supporting Agencies: IDNR/OWR and University of Illinois Extension Master Naturalist Program	General Revenue Funds	New action item	Long Term
51-N	Work with Illinois EPA to develop and distribute information on the benefits of nature-based solutions to natural hazard mitigation on both environmental impacts and costs.	Goal 2, Objective 6	Flood	IEMA-OHS. Supporting agency: IEPA	General Revenue Funds	New action item	Long Term
Goal 2, Objective 7 - Encourage mitigation projects that look at projected climate change and adaptations.							
52-N	Evaluate climate adaptation strategies adopted by other states for applicability to Illinois to reduce future risks.	Goal 2, Objective 7	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term
53-N	Research ways to quantify resilience and changing future conditions to allow extra points for pre-applications that incorporate resilience.	Goal 2, Objective 7	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
54-N	Consider updating IEMA-OHS' local plan review tool to include criteria on assessing changing future conditions and the analysis of projects that reduce vulnerability to these conditions.	Goal 2, Objective 7	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term
55-N	In designated community disaster resiliency zones (CDRZ), strengthen community resiliency by encouraging communities to leverage federal, state, and private funding to mitigate the impacts of climate change.	Goal 2, Objective 7	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term

Goal 2, Objective 8 - Promote wildfire prevention programming and develop policies/strategies to mitigate the impacts of wildfire on residents and communities.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
56-N	Develop and fund programs, publications, and initiatives to educate all Illinois about the history and increasing risks associated with wildfires.	Goal 2, Objective 8	Wildfire	IEMA-OHS. Supporting agency: IDNR Division of Forestry	General Revenue Funds	New action item	Long Term
57-N	Create and fund data collection on wildfire preparedness and mitigation for local jurisdictions.	Goal 2, Objective 8	Wildfire	IEMA-OHS. Supporting agency: IDNR Division of Forestry	General Revenue Funds	New action item	Short Term
58-N	Encourage collaborative assessments of timbered areas and vulnerable cultivated areas.	Goal 2, Objective 8	Wildfire	IEMA-OHS. Supporting agency: IDNR Division of Forestry	General Revenue Funds	New action item	Long Term
59-N	Develop system to monitor air quality at disaster event sites.	Goal 2, Objective 8	Wildfire	IEMA-OHS. Supporting agency: IDNR Division of Forestry	General Revenue Funds	New action item	Short Term
Goal 2, Objective 9 - Expand earthquake awareness programming and develop policies/strategies to mitigate earthquake impacts on residents and communities.							
60-O	Support the IEMA-OHS Earthquake Program's efforts to mitigate earthquake damages.	Goal 2, Objective 9	Earthquake	IEMA-OHS	General Revenue Funds	This effort was put on hiatus during COVID emergency but will be focused on in 2023 plan.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
61-N	Support the distribution of public education materials regarding earthquake mitigation measures.	Goal 2, Objective 9	Earthquake	IEMA-OHS	General Revenue Funds	New action item	Long Term
62-N	Support the implementation of seismic resistant construction in earthquake zones.	Goal 2, Objective 9	Earthquake	IEMA-OHS	General Revenue Funds	New action item	Long Term
Goal 2, Objective 10 - Continuously demonstrate and capitalize upon the connection between natural hazard mitigation and sustainable development.							
63-O	Coordinate with non-profit organizations that are responsible for promoting and/or implementing sustainable growth or "smart growth" initiatives.	Goal 2, Objective 10	Multi-Hazard	IMAG	General Revenue Funds	IEMA-OHS is in the process of collecting information on environmental features and past disasters to use in developing this strategy.	Long Term
64-O	Work to amend the “smart growth” legislation to include hazard mitigation.	Goal 2, Objective 10	Multi-Hazard	IMAG	General Revenue Funds	Ongoing effort to enhance building code development, adoption, and enforcement together with state and local officials.	Short Term
65-N	Provide incentives for communities to include disaster resiliency and climate friendly projects in new developments, both commercial and residential.	Goal 2, Objective 10	Multi-Hazard	IMAG	General Revenue Funds	New action item	Long Term

Goal 2, Objective 11 - Improve the disaster resistance of buildings, structures, and infrastructure whether it be new construction, expansion or renovation.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
66-O	Use Public Assistance (PA) costs to identify locations that experience continual infrastructure damage.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: ARC, DCEO, IDNR, IDOT	General Revenue Funds	Public Assistance program assesses, monitors, and funds infrastructure damages.	Long Term
67-O	Review the risk assessment tool to determine potential mitigation projects for state facilities and develop a prioritized list of projects.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS: Supporting agency: CMS	General Revenue Funds	In cooperation with IEMA-OHS, CMS is leading the effort to maintain the risk assessment database with GIS information related to state facilities.	Long Term
68-O	Utilize past disaster intelligence information to identify possible mitigation projects for state critical and essential facilities.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS	General Revenue Funds	In cooperation with IEMA-OHS, CMS is leading the effort to maintain the risk assessment database with GIS information related to state facilities.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
69-O	Involve construction and building associations (builders, contractors, electric, plumbing etc.) and research institutions in mitigation planning efforts and studies.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: AIEC, CDB, DCEO, ICC, IHPA, IMEA, ISBE, University of Illinois Extension	General Revenue Funds	Ongoing. During county hazard mitigation planning process, associations are invited to participate. The Safe Electricity program at the University of Illinois Extension has been added as a new partner.	Long Term
70-O	Engage private sector businesses in promoting disaster resistant construction of new buildings and the retrofitting of existing buildings in Illinois.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, DCEO, ICC, IHPA, ISBE	Private Sector Funds	IEMA-OHS will be requesting BRIC 2023 funding to create partnerships between IEMA-OHS and private sector entities.	Long Term
71-O	Encourage higher education institutions to complete campus specific mitigation plans and risk assessments.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, DCEO, ICC, IHPA, ISBE	General Revenue Funds	IEMA-OHS funded a campus hazard mitigation plan for Illinois State University.	Long Term
72-O	Encourage private or parochial schools to complete campus specific mitigation plans and risk assessments.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, DCEO, ICC, IHPA, ISBE	General Revenue Funds	Ongoing. Plan to reach out with assistance of ISBE and local EMAs to encourage planning efforts	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
73-O	Work to incorporate Code Plus construction into state facility, future historic site, and future school facility construction of new or existing structures.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, DCEO, ICC, IHPA, ISBE	General Revenue Funds and HMGP Funds	The Illinois Capital Development Board (CDB) has a requirement but no mandate that state facilities should used the 2018 building codes.	Long Term
74-N	Promote the implementation of building codes in municipalities and counties to protect built structures from natural hazards.	Goal 2, Objective 11	Multi-Hazard	IEMA-OHS. Supporting agencies: CDB, DCEO, ICC, IHPA, ISBE	General Revenue Funds	New action item	Long Term

Goal 3 – Improve coordination, capacity, communications, and partnerships among jurisdictions and agencies to support mitigation efforts.							
Goal 3, Objective 1 - Provide leadership and technical assistance for natural hazard mitigation planning and projects at all jurisdiction levels.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
75-N	Provide technical assistance with mitigation projects through annual training.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term
76-O	Create an all-encompassing source of the past natural hazard occurrences including impact data in Illinois for future planning efforts.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: IDPH, IESMA, ISGS, ISWS, ISGS, NWS	General Revenue Funds and PDM	IEMA-OHS collects information on previous disasters to use in developing this strategy. Collection is on a continuous basis.	Short Term
77-O	Conduct public health hazard risk assessments at all local health departments throughout the state.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: IDPH, IESMA, ISGS, ISWS, ISGS, NWS	Public Health Emergency Preparedness Grants	The IDPH conducts workshops and assessments before and after disaster events.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
78-O	Continue to build a database of individual structure risk assessments.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: IDNR/OWR, IDPH, IESMA, ISGS, ISWS, ISGS, NWS, USACE	General Revenue Funds	IEMA-OHS, as a participating agency, holds community meetings to discuss at-risk structures. Recent meetings were held in March 2023 in Pearl, IL to discuss flooding issues and an IDOT bridge. The Structures At Flood Risk (SAFR) database is being developed as a Silver Jackets Project joint effort between USACE, ISWS and IDNR/OWR. Over 5000 structures have been surveyed.	Short Term
79-O	Provide presentations to local jurisdictions explaining all types of mitigation funding sources that are or might become available.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR	General Revenue Funds	IEMA-OHS held HMGP workshops in November and December 2020 regarding the availability of funds to develop and implement mitigation projects.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
80-N	Provide education to local and officials on the Incident Command Structure (ICS) and its role in local disaster response and recovery functions.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term
81-N	Provide training and technical assistance to local governments on FEMA GO online grant application process.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Long Term
82-O	Develop an outreach tool/flow schematic that community leaders and organizers can use to determine what funding options are available to them based on their needs.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR/OWR	General Revenue Funds	Updating IEMA-OHS Mitigation website to include funding resources or examples of mitigation projects (nature-based solutions, green infrastructure).	Short Term
83-O	Maintain and improve the "Local Mitigation Action Item Database" to track local mitigation plan actions and associated projects.	Goal 3, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agencies: DCEO, IDNR/OWR	General Revenue Funds and HMGP Funds	IEMA-OHS will work with supporting agencies to develop a system and database to track mitigation actions and projects at the state and local level.	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
84-N	Work with University of Illinois to establish, fund, and staff an Integrated Water Information Center (IWIC) in the Prairie Research Institute to serve as a library for water-based information, programs, and technology to connect resources to stakeholders.	Goal 3, Objective 1	Flood, Multi-Hazard	IDNR/OWR. Supporting Agencies: IEMA-OHS, ISWS	General Revenue Funds	New action item	Short Term
85-O	Utilizing information already provided in County Hazard Mitigation Plans regarding flood mitigation needs, combine the data into a statewide GIS based database of existing flood protective infrastructure (storm sewers, detention basins, floodwalls, non-federal levees, etc.) and future flood management needs. Allow communities to link their existing infrastructure catalogs and assessments to the database. Add specific community assessments and needs to the database as they are developed.	Goal 3, Objective 1	Flood	IEMA-OHS. Supporting Agencies: IDNR/OWR, ISWS	General Revenue Funds	IEMA-OHS will work with supporting agencies to develop a system and database to track existing and future mitigation infrastructure at the state and local level.	Long Term

Goal 3, Objective 2 - Maximize the use of best technology for decision-making.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
86-O	Coordinate with State agencies to develop and maintain a specific agency database with GPS latitude and longitude coordinates to develop an all-encompassing database of state-controlled buildings and facilities.	Goal 3, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS, DCEO, ICC, IDNR/OWR, IDOT	General Revenue Funds and Department of Energy Grants	In cooperation with IEMA-OHS, CMS is leading the effort to maintain the risk assessment database with GIS information related to state facilities.	Short Term
87-O	Coordinate with the CMS and other state agencies to explore grant funding opportunities to develop a comprehensive state facility database.	Goal 3, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS, DCEO, ICC, IDNR/OWR, IDOT	Department of Energy Grant Funds	In cooperation with IEMA-OHS, CMS is leading the effort to maintain the risk assessment database with GIS information related to state facilities.	Short Term
88-O	Work with State and Federal agencies to ensure all current risk databases are utilized (i.e. weather studies and rainfall data).	Goal 3, Objective 2	Multi-Hazard	IEMA-OHS	General Revenue Funds	In cooperation with IEMA-OHS, CMS is leading the effort to maintain the risk assessment database with GIS information.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
89-O	Use HAZUS MH (and other advanced tools) to determine the dollar amount of potential losses for future update to the INHMP.	Goal 3, Objective 2	Multi-Hazard	IEMA-OHS. Supporting Agency: IDNR/OWR, ISWS	General Revenue Funds	During the county hazard mitigation plan update, IEMA-OHS provides funds to counties to update their risk assessments using HAZUS.	Long Term
90-O	Coordinate the earthquake HAZUS MH (and other advanced tools) risk assessments with the IEMA-OHS Earthquake Program and continue to coordinate local data collection to include in the INHMP.	Goal 3, Objective 2	Earthquake	IEMA-OHS. Supporting Agency: ISWS	General Revenue Funds	During the county hazard mitigation plan update, IEMA-OHS provides funds to counties to update their risk assessments using HAZUS.	Long Term
91-O	Encourage and provide training to local jurisdictions to use HAZUS MH (and other advanced tools) for risk assessment.	Goal 3, Objective 2	Multi-Hazard	IEMA-OHS. Supporting Agency: ISWS	General Revenue Funds	Ongoing effort through local planning coordination and technical assistance efforts.	Long Term

Goal 3, Objective 3 - Increase awareness and knowledge of hazard mitigation principles and practices among local public officials and community leaders.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
92-O	Use IEMA-OHS' website as a primary portal for information regarding hazard mitigation resources including strategies, funding, and technical information as well as historical information, natural hazards data, and mapping information useful for jurisdictions in the development of mitigation plans. Eventually this information will be moved to the statewide Integrated Water Information Center (IWIC) as defined in the 2020 State Water Plan.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS. Supporting Agency: IDNR/OWR	General Revenue Funds	Ongoing. IEMA-OHS' website serves as the main information portal for information associated with hazard mitigation planning, disaster information, and funding sources.	Long Term
93-O	Provide presentations to local jurisdictions explaining all types of mitigation funding sources that are or might become available.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS. Supporting Agency: IDNR/OWR	General Revenue Funds	Presentations and workshops are held on an as needed and as requested basis.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
94-O	Explore possibilities for the creation of a mobile support team and legislation to provide technical engineering and architectural staff capable of assessing the structural safety of facilities for disaster resilience.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS and IDOT	General Revenue Funds	Ongoing. IEMA-OHS is working with CMS and IDOT on this intiative.	Short Term
95-O	Provide instructional and training opportunities for local code officials to enable them to conduct pre-disaster assessments of structural safety of facilities for disaster resilience.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS	General Revenue Funds	IEMA-OHS' Public Sections provides training related to damage assessments. IEMA-OHS has created a training section to conduct on-site training for local jurisdictions.	Long Term
96-N	Help local and State officials better understand Agricultural Disaster Declarations vs. Presidential Disaster Declarations.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS. Supporting agencies: IDOA and University of Illinois Extension	General Revenue Funds	New action item	Long Term
97-N	Develop more situational awareness between IEMA-OHS and Farm Services Agency (FSA) for better response.	Goal 3, Objective 3	Multi-Hazard	IEMA-OHS. Supporting agencies: IDOA and University of Illinois Extension	General Revenue Funds	New action item	Long Term

Goal 3, Objective 4 - Encourage communities to develop, adopt, and implement local hazard mitigation plans.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
98-O	Send updated information on the PDM initiative to all eligible municipal and county managers, along with local planners and floodplain administrators. (annually)	Goal 3, Objective 4	Flood	IEMA-OHS. Supporting agencies: IESMA, IMAG	General Revenue Funds	IEMA-OHS, through the annual maintenance of the State's hazard mitigation plan, will update the IMAG team and share information with local agencies.	Long Term
99-O	Publicize Section 322 of the Disaster Mitigation Act of 2000 to local public officials in all outreach activities.	Goal 3, Objective 4	Multi-Hazard	IEMA-OHS. Supporting agencies: IESMA, IMAG	General Revenue Funds	Presented on IEMA-OHS' monthly calls with Illinois counties.	Long Term
100-O	Make HMGP planning grant funds available to Non-NFIP compliant counties for the development of a natural hazard mitigation plan.	Goal 3, Objective 4	Multi-Hazard	IEMA-OHS. Supporting agencies: IESMA, IMAG	HMGP Funds	Use local planning map to reach out to Non-NFIP Counties to encourage planning. Nearing completion.	Long Term
Goal 3, Objective 5 - Encourage other organizations, public and private, to incorporate natural hazard mitigation best practices into their operations.							
101-O	Participate in conferences and give presentations to promote mitigation to local interest groups and associations.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting agencies: ARC, Illinois State VOAD, University of Illinois Extension	General Revenue Funds and HMGP Project Funds	IEMA-OHS conducts workshops on federal grant programs on an as needed, as requested basis.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
102-O	Survey state facilities to determine the presence of a NOAA weather alert radio and severe weather response plans. Provide information about NOAA radios and seek funding sources to obtain weather radios for facilities lacking them.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting agency: CMS	HMGP Funds	CMS conducts surveys of state facilities on a continuous basis.	Short Term
103-O	Develop an Economic Recovery Framework to help businesses recover following a disaster.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting Agencies: CDB, DCEO, SBA	CDBG Funds	Through CDB and SBA, IEMA-OHS works to develop recovery plans as part of disaster recovery efforts.	Short Term
104-O	Target business – related mitigation materials to vulnerable areas.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting Agencies: CDB, DCEO, SBA	CDBG Funds	Through CDB and SBA, IEMA-OHS works to target mitigation-related information to businesses.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
105-O	Share instructions for mitigation techniques for storage of historic artifacts and documents being stored in below grade locations such as basements.	Goal 3, Objective 5	Flood	IEMA-OHS. Supporting agencies: IHPA, SHPO	General Revenue Funds	IEMA-OHS provides ongoing support to the State Historic Preservation Office (SHPO) in efforts to provide mitigation-related information to interested organizations.	Long Term
106-O	Work with IHPA to identify elevations of historic structures in the floodplain or Mercalli zone 8 or above and evaluate and fund mitigation activities.	Goal 3, Objective 5	Flood	IEMA-OHS. Supporting agencies: CMS, DCEO, IDNR/OWR, ICC, IDHP, IDOC, IDOT, IEPA, IHPA, SHPO	General Revenue Funds	IEMA-OHS works with SHPO, IHPA and supporting agencies to identify historic structures' elevations and provide mitigation-related information.	Short Term
107-O	Work with CMS to identify the elevations of state owned/operated facilities in the floodplain or Mercalli zone 8 or above and evaluate and fund mitigation activities.	Goal 3, Objective 5	Flood	IEMA-OHS. Supporting agencies: CMS, DCEO, IDNR/OWR, ICC, IDHP, IDOC, IDOT, IEPA, IHPA	General Revenue Funds	IEMA-OHS works with CMS and supporting agencies to identify elevations for state-owned facilities.	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
108-O	Provide workshops on wind refuge areas for local ESDA/EMA staff, CMS building managers and university safety officers.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS, DCEO, IDNR/OWR, ICC, IDHP, IDOC, IDOT, IEPA, IHPA	General Revenue Funds	IEMA-OHS works with CMS to provide these workshops.	Long Term
109-O	Make presentations on the importance of and available funding for hazard resistant construction to Park District Associations.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting Agency: IDNR/OWR	General Revenue Funds	IEMA-OHS will be requesting BRIC 2023 funding to create partnerships with Park District Associations across the state.	Long Term
110-O	Create and maintain a tracking system for all Privately Owned Wastewater Treatment Systems.	Goal 3, Objective 5	Flood	IEMA-OHS. Supporting Agency: IDNR/OWR	General Revenue Funds	IEMA-OHS and CMS are working together to initiate this effort.	Short Term
111-O	Perform hazard mitigation reviews for electric, natural gas, and water utility construction projects.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS, DCEO, IDNR/OWR, ICC, IDHP, IDOT, IEPA, IHPA, USDOE	General Revenue Funds and Department of Energy Grants	Ongoing. US DOE conducts hazard mitigation reviews for utility projects.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
112-O	Survey state historic sites, parks, and campgrounds to determine shelter locations and availability for visitors and staff.	Goal 3, Objective 5	Multi-Hazard	IEMA-OHS. Supporting agencies: CMS, DCEO, IDNR/OWR, ICC, IDOT, IEPA	General Revenue Funds and HMGP Funds	IEMA-OHS will work with IHPA and SHPO on developing and conducting survey.	Short Term
Goal 3, Objective 6 - Provide local and state officials with more education related to state floodplain regulations and the benefit to participation in the NFIP.							
113-O	Continue to work with IDNR/OWR to conduct floodplain management and flood mitigation workshops.	Goal 3, Objective 6	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, IEPA, IDHP	General Revenue Funds	IEMA-OHS has been selected under the FMA 22 grant cycle to receive funds to enhance floodplain management.	Long Term
114-O	Provide education and continued enforcement of septic and sewer regulations in floodplains locations.	Goal 3, Objective 6	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, IEPA, IDHP	General Revenue Funds	IEMA-OHS has been selected under the FMA 22 grant cycle to receive funds to enhance floodplain management. This will include a focus on septic and sewer regulations in floodplains.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
115-O	Identify potential CRS communities and notify IDNR/OWR to encourage enrollment.	Goal 3, Objective 6	Flood	IDNR/OWR. Supporting agencies: IEMA-OHS, IEPA, IDHP	General Revenue Funds	IEMA-DHS and IDNR-OWR will continue to partner and promote the adoption of CRS for eligible communities to mitigate risk and reduce NFIP Costs.	Short Term
116-N	Expand the Illinois Mitigation Advisory Group (IMAG) mitigation and resiliency building mission to include representatives from various state agencies of the State Water Plan Task Force to coordinate grant programs and projects to promote program efficiencies and consistent program funding and implementation requirements.	Goal 3, Objective 6	Multi-Hazard	IEMA-OHS. Supporting agencies: IDNR, IEPA, IDOT, IDOA, IDPH, ISWS, IWRC, IPCB	No Funds Needed	New action item (State Water Plan)	Long Term

Goal 4 – Increase public understanding, support, and education for hazard mitigation planning and projects.							
Goal 4, Objective 1 - Heighten public awareness of natural hazards.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
117-O	Educate the public through a variety of weather and natural hazard awareness days and weeks each year (Severe Winter Storm, Tornado, Earthquake, Lightning, and others).	Goal 4, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agency: NWS	General Revenue Funds	Continue promotion of awareness events through media, webinar, and printed material.	Long Term
118-O	Develop and assess various potential methods for outreach to communicate the importance of hazard mitigation strategies and principles to residents, businesses, non-profits, and governmental organizations.	Goal 4, Objective 1	Multi-Hazard	IMAG. Supporting agencies: ARC, IAFSM, IEMA-OHS	General Revenue Funds	Ongoing effort. IEMA-OHS increased its outreach to Coles, Ford, Kankakee, and Iroquois counties in 2022 with plans for more outreach in 2023 and 2024.	Short Term
119-O	Promote the National Weather Service (NWS) Storm Ready Program and Weather Ready Nation (WRN) Ambassador Program.	Goal 4, Objective 1	Multi-Hazard	IEMA-OHS. Supporting agency: NWS	General Revenue Funds	Ongoing effort. NWS continues to promote weather awareness programs and IEMA encourages participation.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
120-N	Develop and conduct workshops for local officials regarding flood protection standards.	Goal 4, Objective 1	Flood	IEMA-OHS. Supporting agencies: IDNR/OWR	General Revenue Funds	New action item	Long Term
Goal 4, Objective 2 - Educate the public on the benefits of mitigation measures.							
121-N	Integrate hazard mitigation concepts into local Extension programming and use Illinois Extension as a conduit for community disaster education throughout the state.	Goal 4, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agency: University of Illinois Extension	General Revenue Funds	New action item	Long Term
122-O	Distribute hazard mitigation material to insurance companies, agents, and consumers, to assist in the development, establishment, and implementation of statewide mitigation programs.	Goal 4, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: IDNR/OWR, IDOI	General Revenue Funds	Information is shared on a continuous basis.	Long Term
123-N	Create a homeowner awareness project focused on stormwater and floodplains requirements and mitigation strategies.	Goal 4, Objective 2	Flood	IEMA-OHS. Supporting agencies: IDNR/OWR	General Revenue Funds	New action item	Short Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
124-N	Provide restricted income citizens with energy assistance for extreme heat and extreme cold.	Goal 4, Objective 2	Extreme Temperatures	IEMA-OHS. Supporting agencies: DCEO, IDHS, IDPH	General Revenue Funds	New action item	Long Term
125-O	Provide information to the public on methods to minimize effects of extreme heat of cold through “Keep Cool Illinois” and “Keep Warm Illinois”.	Goal 4, Objective 2	Extreme Temperatures	IEMA-OHS. Supporting agencies: DCEO, IDPH	General Revenue Funds	IEMA-OHS provides information on consistent basis in coordination with IDPH.	Long Term
126-O	Continue to educate the public about safety issues related to natural hazards at electric and natural gas utilities.	Goal 4, Objective 2	Multi-Hazard	IEMA-OHS	General Revenue Funds	IEMA-OHS holds monthly meetings to discuss safety issues associated with gas and electric utilities.	Long Term
127-O	Provide information to any media reporting on past disasters and mitigation in the aftermath of a disaster. (in the event of a disaster)	Goal 4, Objective 2	Multi-Hazard	IEMA-OHS. Supporting agencies: IFSM, ISWS	General Revenue Funds	IEMA-OHS responds to media requests for information and promotes the success of past mitigation efforts through the IEMA-OHS Website and regular media releases.	Long Term
128-O	Work with IAFSM to conduct flood proofing workshops.	Goal 4, Objective 2	Flood	IEMA-OHS. Supporting agencies: IDNR/OWR, ISWS	CAP Funds	IAFSM and IEMA-OHS will continue to offer workshops throughout the state.	Long Term

Action Number – 0=Ongoing N=new	Action	Goal/ Objective Reference	Hazard	Lead and Supporting Agencies	Potential Funding Source(s)	Status	Term of Action
129-O	Utilizing the Earthquake Coordinator, conduct outreach and educational awareness on the potential impact of earthquakes on Illinois' businesses and residents.	Goal 4, Objective 2	Earthquake	IEMA-OHS. Supporting agencies: IFSM, ISWS	General Revenue Funds	IEMA-OHS will continue efforts through the annual training summit, regional conversations, and simulations to inform residents of earthquake impacts and preparedness.	Long Term
Goal 4, Objective 3 - Help create a workforce trained in hazard resistant construction techniques.							
130-O	Work with the Illinois State Board of Education (ISBE) to provide hazard resistant construction information and workshops to vocational schoolteachers.	Goal 4, Objective 3	Multi-Hazard	IEMA-OHS. Supporting agency: ISBE	General Revenue Funds	IEMA-OHS will provide information and materials related to hazard resident construction methods to ISBE to encourage vocational training. New efforts will include information on green infrastructure.	Long Term
131-O	Provide workshops for construction workers on hazard resistant construction. Work with construction unions and building associations to organize these workshops.	Goal 4, Objective 3	Multi-Hazard	IEMA-OHS. Supporting agency: ISBE	General Revenue Funds and HMGP 5% Funds	Continue and expand training efforts the state, including new building codes and green technology.	Long Term

Goal 4, Objective 4 - Maximize available post-disaster "windows of opportunity" to implement major mitigation outreach initiatives.							
Action Number – 0=Ongoing N=new	**Action**	**Goal/ Objective Reference**	**Hazard**	**Lead and Supporting Agencies**	**Potential Funding Source(s)**	**Status**	**Term of Action**
132-O	Develop and maintain post-disaster outreach procedures and assign staff to mitigation and/or recovery teams.	Goal 4, Objective 4	Multi-Hazard	IEMA-OHS	General Revenue Funds	IEMA-OHS' Recovery Division focuses on this initiative. New staffing will allow for more outreach.	Long Term
133-N	Coordinate with Illinois VOAD members, Illinois Extension, and local officials to encourage and enhance local preparedness and recovery efforts through the establishment of Community Organizations Active in Disasters (COAD) and Long-Term Recovery Committees (part of COADS in the long term).	Goal 4, Objective 4	Multi-Hazard	IEMA-OHS. Supporting agencies: Illinois State VOAD, University of Illinois Extension	General Revenue Funds	New action item	Long Term
134-N	Create extreme weather toolkits about preparing for and responding to emergencies in Illinois.	Goal 4, Objective 4	Multi-Hazard	IEMA-OHS	General Revenue Funds	New action item	Short Term

3.3 CAPABILITY ASSESSMENT

The Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS), in compliance with 44 CFR 201.4, has reviewed and outlines below the pre- and post-disaster policies, programs and capabilities of the State to mitigate hazards. This review includes an evaluation of relevant laws, regulations, policies, and programs related to hazard mitigation for current and future development.

3. 3.1 Laws and Regulations

The State of Illinois has enacted laws, regulations and acts impacting local governments that have an impact on mitigation efforts and projects. Most of these legislative actions have been enacted to provide legal authority and guidance for both state and local governments. The primary laws, regulations, programs, and policies that have an impact on mitigation programs in Illinois are listed below.

Illinois Constitution: Section 6 of Article XVII of the Illinois Constitution designates Illinois as a home-rule state. This amendment to the state constitution grants cities, municipalities, and counties the ability to pass laws to govern themselves as they see fit, if implemented laws obey the state and federal constitutions.

The Illinois Administrative Code is a codification of the rules of the administrative agencies of the state. These rules are reviewed by the Joint Committee on Administrative Rules (JCAR), a bipartisan legislative oversight committee created by the General Assembly in 1977. Pursuant to the Illinois Administrative Procedure Act, the committee is authorized to conduct systematic reviews of administrative rules promulgated by State agencies. JCAR conducts integrated review programs, including a review program for proposed, emergency and peremptory rulemaking, a review of new Public Acts, and a complaint review program.

JCAR is composed of 12 legislators who are appointed by the legislative leadership, with the membership apportioned equally between the two houses and the two political parties. It is co-chaired by two members representing each party and each legislative house. Support services for the committee are provided by the JCAR staff. Two purposes of JCAR are to ensure that the General Assembly is adequately informed of how laws are implemented through agency rulemaking and to facilitate public understanding of rules and regulations.

(20 ILCS 3305) Illinois Emergency Management Agency Act: This act outlines the responsibilities and actions performed by the State of Illinois during, before and after a disaster and provides legal authority and guidance to “local political subdivisions,” i.e., local governments, on emergency management issues. In chapter 127 paragraph 1060, the IEMA-OHS Act authorizes and guides local governments to establish “Emergency Service and Disaster Agencies (ESDA)” in their jurisdictions. Paragraph 1061 provides the legal authority for local governments regarding local disaster declarations. Mutual Aid requirements and guidelines are discussed in Chapter 127 paragraph 1063 for local governments.

(50 ILCS 752) Illinois Public Safety Agency Network Act: This act promotes intergovernmental cooperation between public safety agencies of local government, including Sheriff, Fire, and Police. It also promotes interoperability among all public safety disciplines.

(50 ILCS 805 Section 4) Land Resource Management Planning Act: It is the purpose of this Act to encourage municipalities and counties to protect the land, air, water, natural resources, and environment of the state and to encourage the use of such resources in a manner which is socially and economically desirable through the adoption of joint or compatible Local Land Resource Management Plans. Such plans may include goals and procedures to identify, document, publicize, and establish the best safe usage for land subject to natural disasters and hazards, including flooding. In addition, the act allows for the development and maintenance of data on existing social, economic, and physical conditions, including analysis of municipal needs, and demographic projections to provide current information for decisions and action. (Source: P.A. 84-865.)

(765 ILCS 77/) Residential Real Property Disclosure Act: This Act requires a seller to advise the potential buyer if they are aware of any basement flooding, if the property is in the floodplain, or if the seller has flood insurance.

(425 ILCS 25/9 Section 9) Fire Investigation Act: This Act enables the State Fire Marshal to make, or cause to be made, inspections of buildings, structures and premises to determine their conformity with the provisions in this Act and their safety to life and property from fire or other emergency requiring evacuation of the building (such as presence of explosive or flammable gasses, fume hazard, and power failure).

(50 ILCS 815 Section 2) Flood Damage Prevention Act: This act enables local governments to issue building permits in relation to infrastructure for runoff water. Any county or municipality may, by ordinance, adopt requirements that all applications for building permits contain a statement that such buildings and appurtenances connected therewith include facilities for the orderly runoff or retention of rain and melting snow. Such facilities may include, but not be limited to: retention ponds, retention tanks, pools located on and a part of the roof of buildings, permeable pavements and such other facilities as may be suitable. Such plans shall include a signed statement issued by a licensed civil engineer that the plans include facilities adequate to prevent harmful runoff. The governing body of the county or municipality shall determine rain and snowfalls taking into consideration such factors as the permeability and water absorbing quality of the soil and adequacy of existing water-ways. (Source: P. A. 78-400.)

(210 ILCS 120/) Illinois Mobile Home Tiedown Act (from Ch. 111 1/2, par. 4405): Section 5 of the Illinois Mobile Home Tiedown Act indicates that the owner of each mobile home installed in Illinois on or after January 1, 1980, or which is moved from one lot to another after that date, shall be responsible to insure that approved tiedown equipment is obtained and used to secure the mobile home to the surface upon which it is to rest when occupied. After January 1, 1990, the owner of each mobile home park shall make available to the owner of any mobile home moved within or into their mobile home park with a copy of the Mobile Homeowner's Tiedown Guide pamphlet prepared by the Department. This pamphlet shall be made available to the homeowner prior to the installation of the home. The Department shall be responsible for providing these pamphlets to each mobile home park owner. The installer of such equipment shall secure the mobile home in accordance with this Act and all rules and regulations promulgated under the authority of this Act. (Source: P.A. 86-595.)

(PA 098-0858) Urban Flood Awareness Act: This act, effective, 08/04/2014, called for the creation of a report regarding urban flooding in Illinois. It also defines "Urban Flooding" primarily as flooding not mapped by FEMA NFIP floodplain maps. The act outlines requests for information to be addressed in the report and specifies funding from the Capital Development Board and FEMA to fund the studies necessary for the report. (Source PA 098-0858)

3.3.2 State Policies and Programs

State Policy Regarding Development. In Illinois. much of the legal enforcement powers are decentralized and lie within the local jurisdictions. Illinois is a "home-rule" state and the power to regulate development is given to counties and municipalities in the Illinois Compiled Statutes. This results in lack of uniformity from one jurisdiction to the next. Local jurisdictions choose to adopt and enforce regulations such as building codes, floodplain management, stormwater management, and zoning codes. Generally, the State of Illinois has not adopted a statewide building code. The exception is for Illinois public schools, excluding Chicago Public Schools, where Illinois has adopted a statewide building code.

Development in the floodplain is regulated by communities in Illinois that chose to join the National Flood Insurance Program (NFIP), and under the state floodway regulations and permitting program. The Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR) coordinates the NFIP for the state, working with communities to adopt and enforce local floodplain regulations. As of May 2023, 89 counties and 807 cities and villages participate in the NFIP, having adopted local floodplain management ordinances and the FEMA floodplain maps and studies for their community. Twelve counties and about 88 cities or villages with mapped floodplains in their corporate boundaries do not participate in the NFIP. Typically, over the last five years, one to two communities join annually.

The IDNR/OWR has developed a model ordinance for floodplain management, which has been adopted by most communities in Illinois. The ordinance includes the minimum requirements an NFIP participating jurisdiction must adopt and enforce, as well as additional higher regulatory requirements. The optional, higher regulatory standards include a minimum one foot of freeboard above the base flood elevation and cumulative tracking of damage repairs and improvements to establish substantial damage and substantial improvement compliance. Some jurisdictions have chosen to exceed the requirements of the model ordinance and have adopted more restrictive ordinances. This is most common in the communities in northeastern Illinois. Additionally, the state defined floodway is more restrictive than the minimum NFIP, and the state floodway rules in northeastern Illinois restrict the uses of the floodway for new development.

In June 2019, FEMA released claims data for over two million claims records dating back to 1978, available through the Open FEMA website. Illinois ranked first for states with the fewest number of flood claims on new buildings (building constructed after a community has received their floodplain maps). The data reflects the impact of floodplain management regulations across the state.

Coastal Management Program. The Illinois Department of Natural Resources/Office of Coastal Management was officially approved as a program of NOAA in January 2012, as part of the Coastal Zone Management Act. The goals of the program are to preserve, protect, restore, and, where possible, enhance coastal resources in Illinois for this and succeeding generations. The program works to support and coordinate partnerships among local, state, and federal agencies and organizations for coastal planning and management and strengthen local stakeholder capacity to initiate and continue effective coastal management consistent with identified state standards and criteria.

The program works with federal, state, and local partners to identify coastal hazards, including erosion, water level changes, storm surges, flooding, and potential climate change issues with the goal of increasing long-term coastal resilience to mitigate those hazards. The Illinois Coastal Management Program can offer technical support, coordination, data and monitoring, and funding for projects that help mitigate coastal natural hazards.

Rivers, Lakes, and Streams Act, 615 ILCS 5 (Dam Safety Program). Pursuant to the Rivers, Lakes and Streams Act, the Illinois Department of Natural Resources, Division of Resource Management regulates the construction, operation, and maintenance of new dams and the modification, operation, and maintenance of existing dams. Dams are classified by the Division based on hazard potential into one of three hazard classifications. All dams in the two higher classifications are required to have a permit under Dam Safety rules promulgated by the Department. Dams in the lower hazard classification require a permit for construction or modification if they meet certain size criteria. Dams in the lower classification may qualify for authorization under General Permit 98-01 or General Permit 02-01.

The Capital Development Board Act establishes a model building code for all areas throughout the state that currently have no code. The bill provides minimum code(s) for commercial construction. The bill provides for a qualified inspection of construction and allows inspectors to be qualified by several venues other than certification by a national code organization. Local jurisdictions may charge fees as local governments do now for building permits, etc., and they may enter into agreements with other local governments for these services and with third party providers for inspection services. The Capital Development Board's Division of Building Codes and Regulations (formerly the Illinois Building Commission) acts as an advisory body assigned the responsibility to assist in streamlining building requirements in Illinois. The Division acts as an informational resource for building industry elements, the public, and various governmental units.

(815 ILCS 670/) Illinois Residential Building Code Act. This Act is to provide minimum requirements for safety and to safeguard property and the public welfare by regulating and controlling the design, construction, installation, and quality of materials of new residential construction as regulated by this Act.

3.3.3 State Agency Programs & Policies

The State of Illinois has enacted a variety of State agency policies and programs to assist in carrying out the mitigation actions pre- and post-disaster to achieve the State's mitigation goals. A variety of existing and emerging policies and programs were reviewed and evaluated as related to the mitigation program in Illinois. Members of the planning team have provided a capability assessment forms to indicate their area of expertise. These forms are included as **Appendix 3.3.**

Illinois' mitigation capabilities continue to increase, as the benefits of strong mitigation measures are seen, and new agencies are added to the mitigation planning efforts. Representatives from the following disciplines will be engaged to strengthen updates and provide additional capabilities in areas currently not represented on the planning committee: University System, Electrical Cooperatives, Illinois Floodplain and Stormwater Management, Metropolitan Water Reclamation Districts, and Hazard Research Institutes (Mid-America Earthquake Center). Mitigation is a shared responsibility by all levels of government. All members of the INHMPC have essential roles that help the State achieve its mitigation efforts and reduce risk and impact from the identified natural hazards. The identified capabilities have been reviewed and determined to remain effective capabilities in assisting the state's mitigation program. The previously outlined regulations and policies incorporated with the state agency specific programs provide the final aspect of integration of the state's mitigation planning process. Each of these elements; regulations, policies and programs, when combined, provide the state with strong hazard management capabilities pre- and post-disaster.

INHMPC members provided Capability Assessment forms related to the programs, plans, policies, regulations, funding, and practices that their agencies have as related to mitigation in Illinois. These forms prompt the agencies to provide a brief description of each element and provide the opportunity to explore mitigation efforts for the future. The following capability assessment forms have been reviewed and updated to ensure that the most current capabilities are listed.

Capital Development Board/Division of Building Codes and Regulations - CDB/DBCR has retained all of the capabilities listed in previous plans. They continue to update and revise the State's building code website available to all local agencies.. The recently passed legislation (SB2368) to adopt International Building Codes will be administered through the agency.

Central Management Services - CMS current capabilities have not changed since the last update of the INHMP. Initial steps and discussions have begun to allow CMS to develop an all-encompassing GIS database for state owned or occupied facilities. CMS has agreed to manage and operate such a database when developed.

Department of Insurance - IDOI capabilities remain consistent, providing strong partnerships in the mitigation field with public outreach and education.

Department of Natural Resources - IDNR continues to be an essential partner in mitigation efforts in Illinois. The agency's mitigation capabilities continue to be enhanced. Continued enforcement of the National Flood Insurance Program and local outreach regarding floodplain management continues to be an essential capability. IDNR updates the State's floodplain maps and studies, while completing watershed and flood risk studies to develop structural and non-structural measures to reduce flooding impacts.

Department of Public Health - IDPH capabilities remain consistent, providing an emphasis on public outreach and education for mitigation measures.

Department of Transportation - IDOT is a strong partner with mitigation efforts in Illinois, focusing on structural projects related to mitigation. IDOT provides a unique capability of outreach to local highway departments or public works to identify potential mitigation projects. IDOT added the capability of a bridge scouring program, to identify and monitor high risk bridges, noted for scouring potential.

The recent Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act, Public Law 117-58) authorized funding for the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program. The estimated five-year allocation from the program is $256,561,130 for Illinois, through the Department of Transportation. Some of the strategic priorities of the funding directly impact community resiliency, nature-based infrastructure, equity, and climate change/sustainability. (https://www.fhwa.dot.gov/environment/protect/formula/). While this funding is beginning to roll out in the summer of 2023, the potential to leverage PROTECT funded projects with other funding sources may enhance mitigation and resiliency efforts throughout Illinois.

State Board of Education - ISBE provides the unique opportunity to assist Illinois school districts and policymakers with mitigation efforts for the safety of children. ISBE continues to work with IEMA-OHS to establish mitigation opportunities for Code Plus construction and public educational opportunities for mitigation.

Illinois State Geological Survey - ISGS provides the technical expertise regarding earthquake hazards and estimated impacts for the State of Illinois, including HAZUS earthquake loss estimation.

Illinois State Water Survey - ISWS provides a variety of mitigation capabilities for Illinois. The State Climatologist provides technical expertise in climate conditions, such as winter storms, heat, and drought. ISWS provides technical expertise related to flooding research and information. ISWS is a Cooperating Technical Partner with FEMA and provides the capability of a direct link to the ever-expanding RiskMAP research conducted on specific watersheds in Illinois.

Department of Human Services - IDHS provides assistance programs following a disaster, potentially mitigating further impact on jurisdictions.

Department of Corrections - IDOC can provide technical guidance regarding mitigation measures directly related to correctional facilities.

Illinois Commerce Commission - ICC provides the capability of coordination and technical guidance regarding mitigation efforts for the State's critical infrastructure.

Illinois Environmental Protection Agency - IEPA provides the capability of safeguarding environmental quality, consistent with the social and economic needs of the State, to protect health, welfare, property and quality of life, through regulations and policies.

Department of Commerce and Economic Opportunity - DCEO increased involvement with mitigation activities in Illinois. DCE can help provide a global match using "IKE funds," which has allowed many jurisdictions to further their mitigation projects.

US Army Corp of Engineers – USACE partners with eligible non-Federal interests throughout the state to investigate water resources and related land problems and opportunities and, if warranted, develop projects that would otherwise be beyond the sole capability of the non-Federal interest.

3.3.4 FEMA Mitigation Program Implementation Capacity Assessment

IEMA-OHS will use the prioritization methodology outlined in section **3.2.1 Prioritization of Mitigation Action** of this plan. IMAG reviews the scores of the submitted projects against the funding available and makes recommendations which optimize the funds. As described, the calculation is an objective formula that considers the priorities established by IMAG. IMAG reviews the prioritized list and makes recommendations to the funder. This methodology will allow the review process and recommendations to be objective while providing the best use of mitigation dollars available.

Illinois Resources Used for Mitigation Program. The State of Illinois has historically provided funding for the Hazard Mitigation Staff within IEMA-OHS, as well as staff within the Illinois Department of Natural Resources (IDNR) Flood Hazard Mitigation Program. These staff work with both federal and local officials to maximize mitigation efforts throughout Illinois. To aid in this process, Illinois has used a small percentage of **General Revenue Funds (GRF)** as well as the **IDNR Flood Hazard Mitigation Program.**

The **GRE** Funds are generally limited to personnel and administrative costs associated with implementing mitigation programs, while the Flood Hazard Mitigation Program directly funds mitigation projects through matching dollars or direct grants. Funding for the Program comes from the sale of General Obligation Capital Bonds. Authority to sell the bonds is obtained through the legislative process on an annual basis. If funds are approved, they become part of the Governor's annual budget. The amount of funds varies from year to year, but the average expenditure is approximately $1 million a year. The program operates on a reimbursement basis and cannot furnish funds for a local jurisdiction's administrative costs or the purchase of personal property such as mobile homes.

The Illinois Department of Natural Resource's **Flood Hazard Mitigation Program** is administered through the Office of Water Resources Resource Management Division. The Program is most frequently used to provide matching funds for the HMGP or FMA funded acquisition projects, but it also fully funds its own mitigation projects. Funding for the Program comes from the sale of General Obligation Capital Bonds. Authority to sell the bonds is obtained through the legislative process on an annual basis. If funds are approved, they become part of the Governor's annual budget. The program operates on a reimbursement basis and cannot furnish funds for a local jurisdiction's administrative costs or the purchase of personal property such as mobile homes.

Federal Programs and Funding Used for Mitigation

FEMA Mitigation Programs Utilization. The State of Illinois works in partnership with the Federal Emergency Management Agency to provide funding for hazard mitigation in the State of Illinois. IEMA-OHS and IDNR promote the participation in these FEMA grant programs to maximize mitigation efforts throughout the State.

Hazard Mitigation Grant Program (HMGP). The HMGP has been the primary funding source for mitigation projects in Illinois. All areas within the State of Illinois are eligible for assistance under the Hazard Mitigation Grant Program. It is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Act. It provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Since 1989, there have been 1,485 major disaster declarations resulting in the availability of $13.8 billion HMGP funds. FEMA provides up to 75 percent of the funds for mitigation projects. The remaining 25 percent can come from a variety of sources. A cash payment from the state, local government or in some cases directly from the individual is the most direct option. Other sources may include donated resources, such as construction labor; Increased Cost of Compliance (ICC) funds from a flood insurance policy; or loans from other government agencies, such as the Small Business Administration. (Source: FEMA Fact Sheet 2017)

Hazard Mitigation Grant Program (HMGP) Post Fire. Illinois has added wildfire to the state mitigation plan for the first time. This addition is in recognition that while the historical risk of wildfire damage is relatively low, climate change has, and is projected to, continue to increase the variability of precipitation. This variability could lead to drought conditions that directly impact the risk of wildfire. This addition will allow Illinois to access the Hazard Mitigation Grant Program Post Fire Funds, should a wildfire occur, and will help communities access funding for mitigation projects that reduce the risk from wildfires.

Building Resilient Infrastructure and Communities (BRIC). The BRIC program aims to categorically shift the federal focus from reactive disaster spending toward research-supported, proactive investment in community resilience. Applicants must have a FEMA-approved hazard mitigation plan to be eligible for this funding. This program is relatively new, with the first grant cycle commencing in FY2020. BRIC projects demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design. The BRIC grant program will give Illinois communities the opportunity to access funding to address future risks involving wildfires, drought, earthquakes, extreme heat, and flooding. Addressing these risks helps make communities more resilient.

Flood Mitigation Assistance (FMA). The FMA program provides annual funding for the development of comprehensive flood mitigation plans and implementation of cost-effective mitigation measures on NFIP-insured properties. The former Repetitive Flood Claims and Severe Repetitive Loss programs have been rolled into the FMA program. Mitigation of repetitive loss and severe repetitive loss properties as defined by FEMA is the highest priority for the program.

There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to states and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to states as a Technical Assistance Grant. These funds may be used by the state to help administer the program, but the State of Illinois has always used these funds as part of the project grant.

Public Assistance Mitigation (PA). The Federal Emergency Management Agency (FEMA) Public Assistance grant program provides federal assistance to state and local governments and certain types of private nonprofit organizations following a presidential disaster declaration. Public Assistance provides grants to communities to quickly respond and recover from major disasters or emergencies. Through the program, FEMA provides supplemental federal disaster grant assistance for debris removal, life-saving emergency protective measures and the repair, replacement or restoration of disaster-damaged publicly owned facilities and the facilities of certain private nonprofit organizations. The Public Assistance program encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The federal share of assistance is not less than 75 percent of the eligible cost.

Community Disaster Resiliency Zones (CDRZs). Enacted as PL 117-255 in December of 2022 as an amendment to the Stafford Act, this new designation uses the National Risk Index to identify communities that are the most vulnerable to natural hazards. This designation will allow targeted support to help develop plans for building community resiliency to disasters caused by both natural hazards and climate change. Once designated, these Zones may be eligible for specialized federal support, such as reduced match requirement for BRIC funded projects.

Community Development Block Grant (CDBG) Disaster Recovery Program. The U.S. Department of Housing and Urban Development (HUD) provides flexible grants to help cities, counties, and states recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. In response to Presidentially declared disasters, Congress may appropriate additional funding for the Community Development Block Grant (CDBG) program as

Disaster Recovery grants to rebuild the affected areas and provide crucial seed money to start the recovery process.

The Illinois Department of Commerce and Economic Opportunity (DCEO), working closely with the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS), the Illinois Housing Development Agency (IHDA) and inviting input by communities, individuals, and other interested parties, has developed an action plan that outlines the eligible activities available to assist counties to address these mitigation and critical restoration needs.

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program (PROTECT). The recent Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act, Public Law 117-58) authorized funding for the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program. The estimated five-year allocation is expected to be $ 256,561,130 for Illinois, through the Department of Transportation. While this funding has numerous eligible activities, some of the strategic priorities directly impact community resiliency, nature-based infrastructure, equity, and climate change/sustainability. (https://www.fhwa.dot.gov/environment/protect/formula/). While this funding is beginning to roll out in the summer of 2023, the potential to leverage PROTECT funded projects with other funding sources may enhance mitigation and resiliency efforts throughout Illinois.

3.3.5 Challenges to Mitigation Capacity

The period from 2020 through 2022 saw unprecedented challenges to mitigation planning and projects due to the COVID-19 pandemic and the response and recovery efforts. By May of 2023, when the Emergency Order for COVID 19 expired, IEMA-OHS operations were reaching pre-pandemic levels, with plans to enhance capabilities with additional staff.

Many challenges exist in the acceptance of climate change and adopting nature-based solutions, both nationally and in Illinois. While major progress has been made in the education and funding for these type of projects, greater efforts will need to be made through new mitigation actions to encourage the adoption of practices to address climate change impacts with nature-based solutions being a top priority.

Another potential challenge that will be addressed through many of the new actions in the mitigation strategy is the ability to identify, address and assist vulnerable populations in mitigation. Often these populations are disengaged from public discourse through lack of access, mental, physical, language, or economic limitations. Overcoming this challenge will require partnerships, initiatives, and outreach to ensure mitigation and resiliency measures are equitable and inclusive to the greatest extent possible.

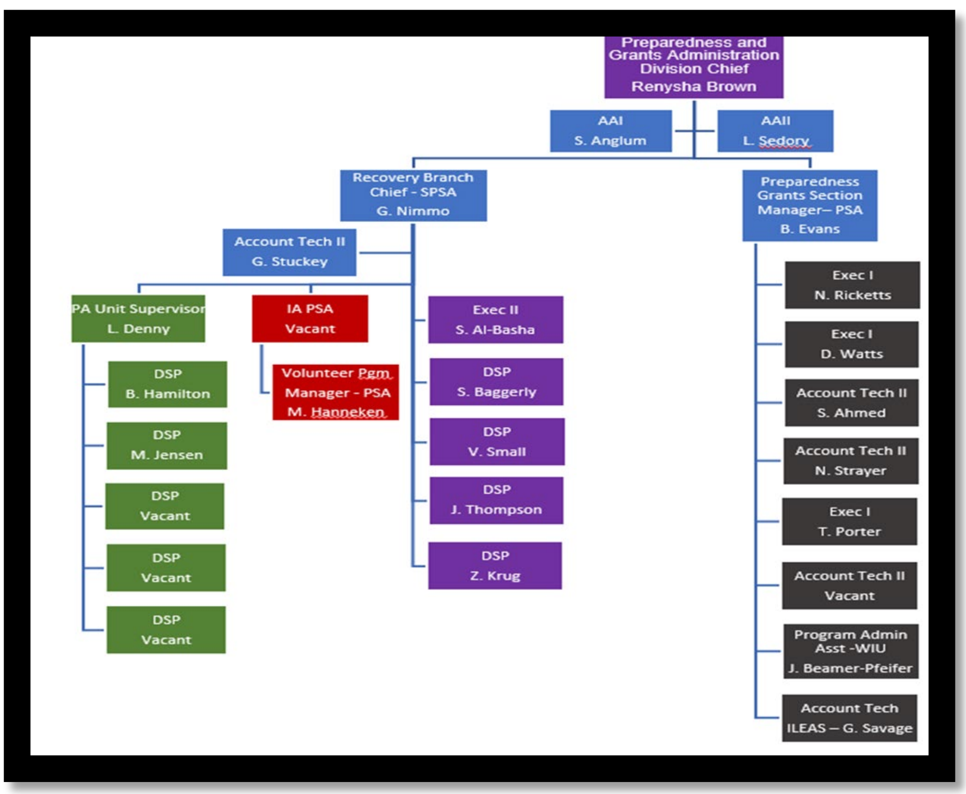
Illinois communities still lack standardized building codes, which presents challenges in securing funding for many mitigation programs, including BRIC. Recent legislative efforts have been successful in drafting a bill that requires jurisdictions to adopt the International Residential Code, and the International Existing Building Code. On May 10, 2023, the Illinois Legislature passed a bill (SB2368) to adopt all three codes, paving the way for Illinois access to BRIC Funds. Once signed into law, how the law will be implemented will have a direct impact on many aspects of mitigation, including a jurisdiction's ability to apply for BRIC funding in the future.

3.4 CAPABILITY ASSESSMENT

Organizational Capacity. The Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS) is responsible for the implementation of both pre- and post-disaster programs in accordance with 44 CFR 201.4 (c)(3)(ii). While many agencies, as noted in the previous section, have significant roles in implementation of mitigation strategies, IEMA-OHS is the primary and coordinating agency for mitigation actions funded by the Federal Emergency Management Agency (FEMA). This responsibility has been enhanced by several significant changes in the agency since the 2018 Illinois Natural Hazard plan was adopted.

In February 2023, Governor JB Pritzker issued an Executive Order to change the name of the agency from the Illinois Emergency Management Agency (IEMA) to the Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS). This name change recognizes the growing role of the agency in protecting Illinoisans from a wide range of disasters and events and will enable greater efficiency and strength in responding to disasters or emergencies that occur in Illinois.

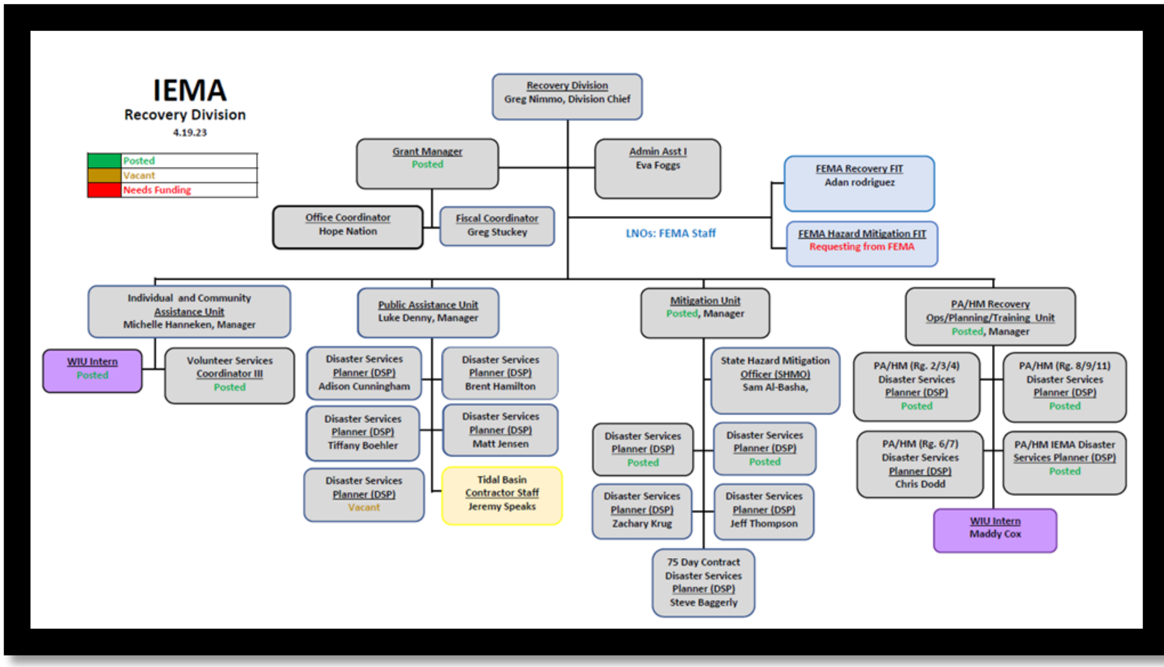
Figure 3.1 Pre 2022 Organizational Structure IEMA-OHS



This name change reflects the structural change implemented by the agency in 2022, moving the Mitigation Division under the Recovery Division. Following is the organizational chart prior to reorganization, as well as the new structure for the Recovery Division.

The former IEMA structure for mitigation was compartmentalized and had little formal overlap with either individual or public assistance recovery staff. While the division was successful in providing technical assistance, funding and monitoring mitigation activities across the state, the structure was isolated from the recovery division.

Figure 3.2 Current IEMA-OHS Recovery Division Structure



These charts show how the Mitigation Unit has moved under the recovery Division of IEMA-OHS, and as a result has become more integrated with the other components of recovery. This integration fosters better communication among units to ensure that recovery efforts are considered with potential mitigation in mind. For example, if an infrastructure repair under a Public Assistance work order could be modified to provide mitigation, even at a higher cost, these two Units may be able to leverage resources from other funding streams to develop a solution that includes mitigation. To ensure the reorganization is successful, several new planner positions have been added to the Recovery Division, enhancing the state's ability to assist in mitigation action implementation throughout the state.

The implementation of this reorganization illustrates the commitment of the state to not only assist with mitigation projects, but also build resiliency through recovery. According to Greg Nimmo, IEMA-OHS Recovery Division Chief, "In the aftermath of a disaster, recovery is not just a choice but an imperative. It is the embodiment of our resilience, determination, and compassion. As a disaster recovery chief, I firmly believe that recovery is not merely about rebuilding what was lost but about seizing the opportunity to create a stronger, more prepared future. It is a testament to our unity as we heal wounds, mend communities, and restore hope. In the face of adversity, recovery is not a luxury; it is a necessity, for it is in the act of recovery that we find the true measure of our humanity."

Technical Expertise. IEMA-OHS has a long and successful history in providing technical assistance, training, and funding to local jurisdictions for both mitigation planning and projects. **Appendix 3.4** provides a compilation of successful mitigation projects in Illinois since the inception of IEMA-OHS mitigation tracking. The following figure illustrates funding IEMA-OHS provided and managed since 2010.

Figure 3.3 Pre-Disaster Mitigation Grant Program (PDM) 2010 -2022

Federal Funds Managed by IEMA-OHS

Fiscal Year	Planning	Project
FY 2010 PDM	$54,750	$0
FY 2011 PDM	$0	$656,625
FY 2012 PDM	$0	$0
FY 2013 PDM	$0	$553,600
FY 2014 PDM	$175,655.37	$0
FY 2015 PDM	$359,166.79	$0
FY 2016 PDM	$698,087.79	$2,749,678.27
FY 2017 PDM	$388,771.91	$4,014,476.91
FY 2018 PDM	$0	$0
FY 2019 PDM	$0	$10,823,807.25
FY 2020 PDM	-	-
FY 2022 PDM		$16,830,863.00
Total	**$1,676,433.95**	**$18,798,187.43**

*PDM funds from FY2021 and subsequent years are delayed due to the COVID-19 Emergency Order and Response.

IEMA-OHS Mitigation Staff have provided technical assistance on both mitigation planning and mitigation projects, as well as tracking and reporting on the funded project to FEMA. Operations were disrupted due to the COVID-19 Global Pandemic, and no PDM sub applications were solicited for FY20-FY21.

As a new funding stream, BRIC funding in Illinois was just getting underway when the pandemic began, but many mitigation activities were suspended due to the COVID 19 Pandemic. Mitigation staff for IEMA-OHS were deployed to assist in the response, and Federal Funding opportunities were put on hold for the duration. With the Emergency Order expiring in May of 2023, operations are returning to normal, and the newly restructured Recovery Division will be incorporating successful practices with expanded efforts for communities to recover toward resiliency, while mitigating risks.

While a comprehensive list of mitigation success stories (Appendix 3.4) and a narrative of these projects is included in **Appendix 3.5,** the following selections illustrate the diversity and breadth of mitigation successes in Illinois.

Bull Creek Mitigation and Ravine Slope Stabilization, Lake County. Severe erosion was occurring in the Bull Creek Bluff/Ravine System near Marguerite Lane. A partnership between Lake County Stormwater Management Commission, the Village of Beach Park, and IDOT received 2017 PDM funding to mitigate the issue. By July of 2021, the completed project has allowed vegetation to emerge at the bottom of the ravine, completing the project. Funds were awarded in 2017 and the Project was completed in June of 2021.

Centerpoint Preserve Riparian Area Restoration (ADCR-7B) The Centerpoint Preserve Riparian Area Restoration Project stabilized Addison Creek between Wolf Road and Palmer Avenue in Northlake. The project alleviates public safety risks by protecting infrastructure from the danger of failure due to active streambank erosion. Work also included habitat restoration. Funds were awarded in May 2017 and the project was completed in June 2018. Construction Cost: $3,813,871.

State Threat Hazard Identification Risk Assessment (IEMA) Updated December 2021. The State of Illinois completed a FEMA approved Statewide Threat Hazard Identification Risk Assessment (THIRA) consistent with the CPG-201 and expanded on nationally accepted emergency management standards, which have long required using risk assessments, such as HIRAs, as the basis for planning across the mission areas. The State of Illinois HIRA and Consequence Analysis is a planning product of the Inter-Agency Strategic Planning Cell (ISPC). During the THIRA process, numerous plans and studies were reviewed to ensure consistency and accuracy of the information provided in the document. Some of the plans reviewed included the State Natural Hazard Mitigation Plan, State Natural Hazard Risk Assessment, State Technological Hazards Mitigation Plan, State Human Caused Hazards Mitigation Plan, State Emergency Operation Plan, State Recovery Plan, State Mass Fatalities Plan, National Climate Data Center documents, past incident response situation reports and public assistance documents. The continuous cycle of assessing the State's capabilities, plans, and programs while incorporating these results into future THIRAs will allow the State to mitigate the impact to potential identified risks, while providing the means to educate and update individuals, families, businesses, organizations, community leaders, and senior officials on the risks facing a community to provide an avenue for building required capabilities and creating a secure and resilient community. The 2021 update revised the Maintenance Process in the plan to ensure clarity. Responsibility is delineated for the maintenance of the plan.

Illinois Flood Plain Summary. The Illinois Department of Natural Resources Office of Water Resources created an Illinois Flood Plain Summary to highlight continuing floodplain efforts, including flood mitigation, for the State of Illinois. This document provides information for not only state agencies but the public regarding floodplain related mitigation efforts in Illinois and the success of its programs. Nearly 4.4 million acres, or 12%, of the entire land area of Illinois is mapped as floodplain. Illinois is ranked fifth in the nation for total number of participating communities in the National Flood Insurance Program.

Illinois has used educational, planning, and structural projects to mitigate risks. These projects include internal IEMA-OHS projects, partner state agencies and grant awards to local jurisdictions. By working with multiple types of partners as well as funding local jurisdictions to engage in mitigation efforts, a culture of mitigation is being fostered throughout the state, which will assist future efforts to build resiliency into Illinois communities.

SECTION 4

PROGRAM COORDINATION

4.1 LOCAL CAPABILITY ASSESSMENT

Illinois communities and jurisdictions vary in size from one of the largest metropolitan areas in the nation to incorporated jurisdictions of fewer than 100 residents. Clearly, the capabilities of these jurisdictions are different, and require differing levels of technical assistance from IEMA-OHS. Since the adoption of a FEMA Approved Local Hazard Mitigation Plan (LHMP) is a precondition for receipt of Hazard Mitigation Assistance grant project funds under the Disaster Mitigation Act of 2000 (DMA 2000), many jurisdictions contract with consultants or other planning entities to develop local hazard mitigation plans (LHMP). This contracting can enable small and large jurisdictions to expand their capacity for the technical expertise required for risk assessment and data required for the planning process.

As part of the planning process, jurisdictions are required to review their own capacity, staffing, existing plans, and other relevant information for implementing mitigation projects. The effectiveness of each jurisdiction to implement effective planning and mitigation measures is a combination of staffing, funding, and policies to engage in mitigation from natural hazards. When capacity is minimal, jurisdictions may need to seek outside assistance for both planning and project implementation. Larger jurisdictions may have internal capacity but engage organizations with the expertise needed to efficiently complete a project.

Appendices 3.4 and 3.5 illustrate the effectiveness of many jurisdictions in securing funding and implementing mitigation projects. These successful projects cross all types of mitigation efforts and range from small communities to the Chicago Metro Area, illustrating the effectiveness of both local jurisdictions and IEMA-OHS assistance in providing assistance.

While planning can be done on a single jurisdictional level, IEMA-OHS has encouraged multijurisdictional Natural Hazard Mitigation Plans at the county level throughout most of the state. This helps expand the planning process to small jurisdictions who may not have the expertise or funding to develop a stand-alone plan. With a county wide approach, funding can be available for most of the planning processes throughout the state.

Much of the data local jurisdictions will need for assessing the risk for local planning purposes is available in the risk assessment portion of the 2023 Illinois State Natural Hazard Mitigation Plan, Section Two: Risk Assessment. The final FEMA Approved plan will be available on the IEMA-OHS website. Local planning processes are encouraged to contact the United States Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), Illinois State Water Survey (ISWS), or other entities for additional information. Local Jurisdictions are advised to request repetitive loss data from FEMA at the onset of the planning process, to be included and addressed within the plan.

For many jurisdictions embarking on Mitigation Project implementation, hiring a contractor is a viable way to enhance capacity. This practice can enable smaller jurisdictions to compete for mitigation project funding at a level they may not have the local capacity to develop. By employing a contractor, engineering firm, or regional planning organization to apply for, implement, and manage a mitigation project, smaller jurisdictions can increase their capacity to implement projects.

Regardless of how the LHMP was developed, IEMA-OHS reviews the plan as part of their State Hazard Mitigation Plan (SHMP) process. FEMA has established mitigation planning requirements for local jurisdictions to meet, updated in 2022, among other things, to demonstrate that proposed mitigation actions are based on a sound planning process that accounts for the inherent risk and capabilities of the individual communities. Through this initial review, IEMA-OHS can work directly with the jurisdictions to ensure the final plan submitted to FEMA will meet the requirements for final approval. Because of the diversity of Illinois Jurisdictions, the plans throughout the state may differ in format and complexity, but all plans reflect the nature of the communities they cover. The review process is an educational process for the jurisdictions, helping the communities understand how to better assess and mitigate risks in their communities.

The Recovery Mitigation Division of IEMA-OHS will continue to administer the Local Hazard Mitigation Program for the state and will be increasing mitigation planning staff to provide more assistance to communities and jurisdictions in developing plans and projects that will help communities build resilience to disasters. The Illinois Legislature passed SB2368, in May of 2023, which ensures that newly built construction and substantially improved existing commercial buildings throughout Illinois are designed and built-in accordance with national standards for resilience to natural disasters such as snowstorms, high winds, tornadoes, earthquakes, and flooding. Guidance and details of these new requirements will be included in new trainings and technical assistance.

4.2 LOCAL MITIGATION PLANNING ASSISTANCE

Since the original 2004 FEMA-approved INHMP plan was developed, it has been a priority of both IEMA-OHS and FEMA to ensure that the residents of Illinois are covered by approved hazard mitigation plans. It was determined that the best method to coordinate a planning initiative within the state was to provide planning workshops and use state staff to provide technical assistance to individual jurisdictions to promote plan development. This initiative is pursued using a variety of methods.

The IIEMA-OHS hazard mitigation staff provides technical assistance to local jurisdictions upon request for plan development. Grants may be available to local units of government to assist with hazard mitigation planning.

4.2.1 Technical Assistance

Specialized planning workshops or meetings have been held with jurisdictions following declared disasters to provide guidance and promote the need for Local Hazard Mitigation Plans. These workshops allow jurisdictional questions to be addressed regarding mitigation planning and potential projects. IEMA-OHS mitigation staff meet with the local Emergency Management Coordinator to discuss the planning process as well as resolve any issues related to funding the plan development. This initiative has been and continues to be an effective approach to promote mitigation efforts.

In addition to planning workshops, there are a variety of resources available to jurisdictions. Webinars and guides are available to assist with applications and provide information about mitigation actions. IEMA-OHS mitigation staff also regularly attend and speak at conferences, workshops, and meetings. These events allow for the broad dissemination of information to a wide variety of groups, to heighten the awareness and interest in mitigation planning and projects.

Since April 2004, the agency website has a mitigation section which provides mitigation information, including the latest planning guides, maps, Illinois Hazard Rating Process, Local Risk Assessment tools, approved local plans, local mitigation projects, and hazard specific data for the county planners to use. The educational guides and approved plan resources on the IEMA-OHS website provide planning groups with all the materials they need to complete a plan.

The introductory section of this plan was created as stand-alone regional profiles that include demographic, economic, climate and geographic characteristics. These were created to assist local jurisdictions in analyzing local jurisdictional data against their region. These profiles also contain climate change predictions that could impact local planning and mitigation effort and can be cited as expected changes to weather patterns influenced by climate change. The demographics can also provide a basis for identifying vulnerable populations region and reviewing the geographic characteristics.

IEMA-OHS mitigation staff provide direct technical assistance to jurisdictions and multiple jurisdictions on all aspects of the mitigation application process through emails and project monitoring. This technical assistance begins at the initial inquiry from an interested applicant to after an award has been made.

In coordination with applicant, IEMA-OHS will:

1. Schedule a meeting to discuss a potential or existing project
2. Generate an agenda for the meeting
3. Discuss options and programs available to the applicant
4. Depending on the project, discuss requirements of individual programs
5. Share application forms with the applicant jurisdiction
6. Assist the jurisdiction in completing application forms
7. Review draft applications and finalize application materials
8. Submit final application materials
9. Continue Technical Assistance after the FEMA review
10. Provide assistance through the Request for Information (RFI) process

A full list of current technical assistance provided to local jurisdictions is in **Appendix 4.1**. Additional technical assistance and trainings may be developed as demand and requirements evolve. IEMA-OHS is committed to providing the best possible assistance to all levels of jurisdictions and organizations wishing to mitigate risks and build resiliency in Illinois.

4.3 LOCAL MITIGATION PLAN INTEGRATION

The State of Illinois has a range of local hazard mitigation plans (LHMP) and risk assessments, developed with independent contractors, planning commissions and in-house local jurisdictional staff. The state's LHMPs were created using different planning tools, strategies, and perspectives, resulting in different approaches to meeting the Local Multi-Hazard Mitigation Planning Guidance Requirements such as hazard risk assessment, jurisdictional specific mitigation strategies, and public involvement. Most of these planning efforts were successful and resulted in a FEMA approved hazard mitigation plan. Plans created or updated after the approval of the 2023 Illinois Natural Hazard Mitigation Plan will have access to the risk assessment data and mitigation action plan items included within the plan.

The four goals and corresponding objectives and action items are written in broad terms to enable local plans to create goals and actions that contribute to accomplish the overall goals of the state. In broad terms, local plans can tie directly to the 2023 goal as follows:

Goal 1. Protect Illinois residents from natural hazards. For local plans, this goal can encompass any projects that protects lives of residents. Tornado shelters, heating and cooling centers, and other public protection projects illustrate these types of projects.

Goal 2. Create, support, and expand systemic efforts to lessen the vulnerability of the State to natural hazards and risks associated with them. This goal would encompass any local projects that are designed to protect property. Buyouts, structural retrofits and the adoption of building codes that are disaster resilient could be potential projects for local jurisdictions.

Goal 3. Improve coordination, capacity, communications, and partnerships among jurisdictions and agencies to support mitigation efforts. Communications, coordination, training, and procedural projects are encompassed within this goal area. Local response coordination, COAD Development, and communications projects are examples of local projects in this goal area.

Goal 4. Increase public understanding, support, and education for hazard mitigation planning and projects. Outreach and education efforts, as well as programming fit within this goal area. Social media campaigns, awareness programs, storm spotter trainings are included for this goal at the local level.

IEMA-OHS Mitigation Staff will be responsible for reviewing, coordinating, and assessing consistency of the local mitigation plans to the State Mitigation Plan goals and objectives. An emphasis will be placed on ensuring LHMP can link local goals and objectives, as well identified mitigation projects to the 2023 INHMP. In May of 2018, a Mitigation Planner was added to the IEMA-OHS. IEMA-OHS plans to add planners in each of the IEMA-OHS Regions in 2023/24. With this expansion of staff, IEMA-OHS will not only be able to review local plans before the submission to FEMA but will provide technical assistance throughout the state as the plans are developed.

4.3.1 Local Hazard Mitigation Plan Development and Status

In 2004, when the original FEMA Approved INHMP was developed, four counties and 26 jurisdictions within those counties received FEMA approval for their mitigation plans. Kane County provided their own funds to supplement FMA funds to develop a plan that was the first in the nation to qualify under DMA2K act, FMA, and CRS. Twenty-four jurisdictions in Kane County participated in the planning process and are covered by the plan. The other three counties, Peoria, Tazewell, and Woodford developed a plan as part of their Project Impact project. Peoria and Pekin, the two largest cities in these counties, participated in the planning process and are covered by the plan.

In 2023, 68 of the 102 counties in Illinois have an approved mitigation plan. This accounts for 67% of the counties in Illinois. **Appendix 4.2** contains a comprehensive table containing all applicable local mitigation plan status information. With the completion of the 2022 funding cycle of mitigation plans, this percentage is expected to reach 100%. Figure 4.1 shows the map of Mitigation Plan status as of April 2023.

While dates will change each year, the following narrative provides a general timeline for ensuring local plans are updated in a timely fashion. To reach the goal of 100% of counties covered under a FEMA approved natural hazard mitigation plan, IEMA-OHS staff will:

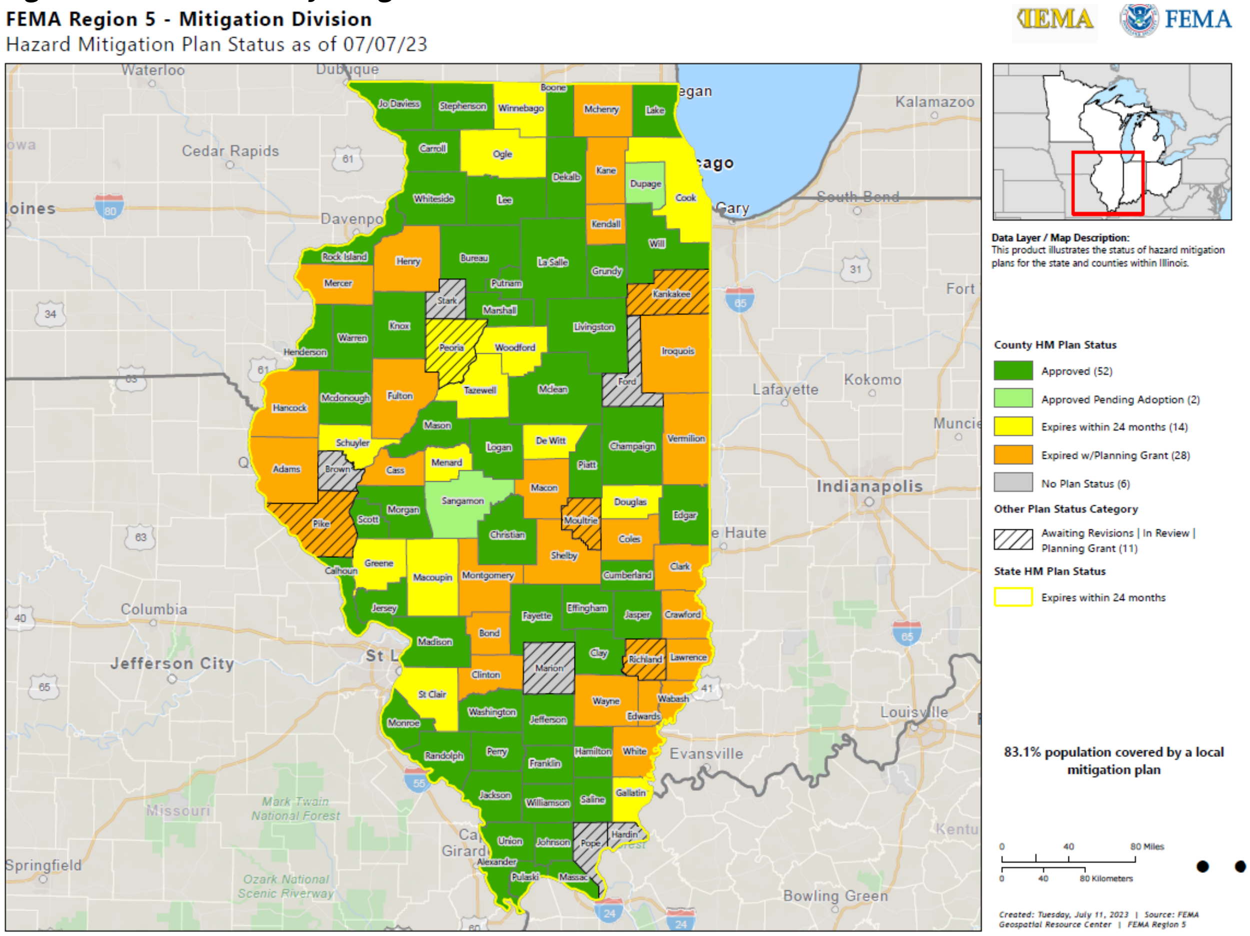
Notify Jurisdictions of pending expiration. IEMA-OHS Mitigation Staff maintain a database of all FEMA approved mitigation plans in the state, utilizing tacker features that identify how many months until the plan expires. When the plan reaches **24 months** until expiration, IEMA-PHS Mitigation Staff reach out to local county officials notifying them of expiration date and encouraging them to apply for funding to update the plan.

Encourage preapplications for available funding. IEMA-OHS Mitigation staff will notify eligible Jurisdictions of Notice of Intent (NOI) at **least three months prior to the Notice of Funding Opportunity (NOFO) release.** This allows time for the jurisdictions to determine who will be updating the plan, as well as the costs associated with updating the plan. A request for Letters of Intent from Applicant Jurisdictions, also goes out three months prior to the NOFO.

Provide technical assistance for planning grants and FEMA GO Portal Submission. During the NOFO Submission Period, IEMA-OHS will schedule and operate with open office hours at a minimum of two, three-hour time periods per week. These will be scheduled and promoted to all potential jurisdictions submitting planning grants. If necessary, assistance will be provided outside the scheduled help line times when jurisdictional representatives cannot make the assigned times.

Maintain communication with local planning jurisdictions to ensure timely submission. Regular communication will be maintained with jurisdictions developing plans to ensure progress is on track for timely completion. This tracking will include documenting progress from quarterly reports as well as regular communication with grantees.

Figure 4.1 Illinois County Mitigation Plan Status



For jurisdictions with limited planning capacity, IEMA-OHS staff will discuss options and lists of organizations that may contract to assist. As part of monitoring the local jurisdiction mitigation plans, priority for planning grants will be based upon expiration dates of current plans.

Once developed and submitted, IEMA-OHS Mitigation Staff will review the submission of Local Natural Hazard Mitigation Plans **within 30 days of receipt of the plan**. Once the plan has been reviewed, it will be returned to the local jurisdiction for corrections, clarifications, or additions, or forwarded to FEMA for final review pending adoption. FEMA will then have 60 days to review the plan and/or request corrections, revisions, or clarifications. During this process, IEMA-OHS mitigation staff will monitor the progress of the review to ensure that communication stays current.

Local Project Prioritization. IEMA-OHS has a priority of encouraging outreach to vulnerable populations, implementing nature-based solutions, and analyzing the effects of climate change on mitigation efforts. Focusing on these topics will help ensure that as much of the state's population as possible is covered by hazard mitigation plans. IEMA-OHS plans to hire planners to provide more local assistance for local mitigation planning.

According to FEMA, "nature-based solutions are sustainable planning, design, environmental management and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience."[1] They benefit both built infrastructure and the environment. They can be valuable tools used to mitigate the effects of natural disasters and climate change. Nature-based solutions can range in scale from small local installations to wide-spread landscapes. In Illinois, natured-based solutions can be valuable for preventing and mitigating the effects of floods. Examples of nature-based solutions include rain gardens, bioswales, permeable pavers, and wetland restoration.

IEMA-OHS plans to incentivize nature-based mitigation projects in floodplains and create demonstration sites on buyout lots. IEMA-OHS will implement training programs for installation and continuous maintenance of nature-based solutions. They will work with Illinois EPA to develop and distribute information on the benefits of nature-based mitigation in both environmental impacts and cost.

There is a priority placed on studying the effects of climate change on mitigation. One way to accomplish this is by incorporating climate resilient mitigation activities into IEMA-OHS's scoring system for pre-applications and potentially updating the local plan review tool to include criteria that focuses on assessing future conditions and projects that reduce vulnerability to these conditions.

The tool used for project prioritization described in Section 3, with the same prioritizations, is outlined below. The order of targeted outcomes of mitigation actions by importance to Illinois is:

1. mitigation actions executed by the project is listed in an approved mitigation plan or in a developing mitigation plan,
2. projects that mitigate against the loss of human life,
3. the project decreases the probability of future hazardous events to include reducing the negative impacts of climate change,
4. the project reduces repetitive loss properties,
5. the project reduces significant damage that leads to over 50% of property value loss,
6. the project uplifts underserved communities and protects socially vulnerable populations,
7. the project targets the most severe hazards,
8. the project uses or promotes nature-based solutions,
9. the project goals and its direct impact are (in order of importance):
    a. natural resource protection
    b. critical facility protection
    c. conducting structural projects
    d. retrofitting critical facilities
    e. providing leadership or planning/technical assistance for hazard mitigation planning
    f. projects regarding alert systems for hazard announcements, warning, and evacuations
    g. providing public education and awareness of personal mitigation strategies
    h. providing public education and awareness of hazard risk
10. the project maximizes benefit-cost analysis (BCA) calculated by FEMA standards, and
11. projects with the quickest completion of target goal.

As with the state project priorities, IEMA-OHS staff will use the priority calculator tool (Attachment 3.2) to develop the prioritized ranking of submitted projects. This list will be shared with the IMAG for final project ranking. This process will ensure optimization of funds, while providing an objective ranking of projects.

4.3.2 Challenges of Local Plan Development and Implementation

With the varying size and capacity of local jurisdictions in Illinois, it is difficult to determine all the potential challenges and difficulties in developing and implementing Local Hazard mitigation Plans, as well as projects. In rural areas, declining and aging populations are making it more difficult to engage communities in the planning process, often requiring concerted effort to even get jurisdictional representation. Those who are engaged are often volunteers wearing multiple hats. In larger communities, competing assignments may make it easier to put off mitigation until a disaster occurs.

Some of the more universal challenges include:

- There is a lack of public understanding of nature-based solutions that results in reluctancy and pushback. This lack of understanding also means that most of the public does not know how to implement these solutions, and there are not adequate, easily accessible training resources. It is important that there are resources available to maintain the function and aesthetics of nature-based solutions beyond installation.
- Large fluctuations in rain and river gauge readings make it more challenging to predict floods. Without updated data that can be used to understand trends, it is difficult to see the signs of an impending disaster-level event. This is likely partially due to climate change.
- Reaching vulnerable populations can be difficult for local jurisdictions lacking media and outreach services. Vulnerable populations describe individuals and groups that are temporarily or permanently at an increased risk during or following natural disasters. This classification may vary depending on the location, timing, and type of natural disaster in question.
- A lack of understanding on funding streams, match requirements, and technical assistance that can assist jurisdictions in developing project applications often combine with lack of jurisdictional capacity to reduce the number of projects attempted.

It often requires greater, more specialized effort to reach vulnerable populations with mitigation policies, programs, and capabilities than it does the general population. Vulnerable groups typically have greater difficulty receiving and understanding information, reacting to natural disasters, receiving aid following disasters, and ultimately recovering from disasters. The first challenge in providing support to vulnerable populations is to identify the populations and understand how their vulnerabilities may impact them before, during, or after a natural disaster. To help, messages with information and instructions must reach these populations. The recipient must be able to receive and understand the message, believe the source is trustworthy, and have the capacity to respond.

Initially receiving and understanding the message can be difficult because of language barriers, awareness of resources, digital skills, and the demise of local and centralized media sources. This means that many people will not see a message if it is not distributed on a wide range of platforms. Some populations view certain resources as untrustworthy and may be afraid to respond. Common sources of this distrust are fear of discrimination or deportation of undocumented individuals. Individuals with physical or mental disability may not be able to respond or react without additional assistance. Some individuals are limited by financial constraints. They may not be able to pay for the necessary disaster preparations or recovery needs to keep themselves safe.

Mitigation in mobile home parks is difficult due to residents not having ownership. Laws and funding around mobile home parks are often ambiguous. It is difficult to apply new mitigation standards to older sites, and often there is private ownership of sites that complicate implementing change.

The combination of increasing technical assistance, a greater understanding of disaster vulnerability, and more consistent messaging should reduce some of these barriers. Funding incentives for nature-based solutions, increasing recognition of changing weather patterns/changing climate, and direct technical assistance will help pave the way for local jurisdiction adaptation. The Regional Summaries in Section One of the 2023 Natural Hazard Mitigation Plan, as well as the historical weather data included in Section Two of the plan, provide data for use by local jurisdictions to assist in understanding the need to mitigate in smart, sustainable ways that are fundable by a variety of sources, limiting the burden on local jurisdictions.

APPENDICES

SECTION ONE

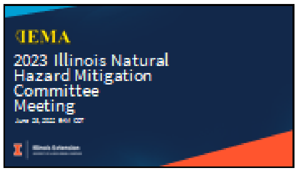
Appendix 1.1 Illinois Planning Process

Date	Participating agencies	Meeting description
06/23/2022	IEMA-OHS University of Illinois Extension Prairie Research Institute	The participants went over an overview of FEMA Mitigation vision, mitigation programs, and updates to state planning requirements. The planning process for the 2023 Illinois State Natural Hazard Mitigation plan and risk assessment was then explained. Finally, there was a conversation addressing the roles and responsibilities of committee members.
08/04/2022	IEMA-OHS University of Illinois Extension Prairie Research Institute	During the meeting, a comparison was made between the goals outlined in the 2018 plan and the proposed goals for 2023. This was followed by a discussion and voting process to determine which goals should be retained and which should be eliminated. Additionally, there was deliberation on how to convert goals into actionable steps. A review of the risk assessment conducted in 2018 took place as well. Finally, there was a conversation regarding the scheduling of focus groups and agency meetings.
09/15/2022	IEMA-OHS University of Illinois Extension	The meeting commenced with an examination of the economic and demographic features of the region. This was followed by a report on the advancements made in the risk assessment conducted by the Illinois State Water Survey. Subsequently, there was a discussion focused on the impacts of climate change in Illinois. The meeting concluded with an outline of the forthcoming activities, including the organization of focus groups, agency meetings, and the implementation of mitigation actions.
6/13/2023	IEMA-OHS University of Illinois Extension Prairie Research Institute	During the meeting, the final structure of the plan was deliberated upon, focusing on the modifications and additions that were incorporated. Following this, the risk assessment was addressed, elucidating the potential dangers and conducting a thorough analysis of the risks involved. Subsequently, the Extension team reviewed the mitigation strategy, encompassing its goals, objectives, and actions, while comparing it to the updates made since the 2018 plan. Additionally, the Extension team introduced a prioritization tool for the mitigation projects and provided a demonstration to exemplify the metrics used in prioritization. The meeting came to a close with a session for questions and comments regarding the most recent draft plan.

AGENDA
ILLINOIS NATURAL HAZARD MITIGATION PLANNING COMMITTEE
Meeting I – 9 AM, June 23, 2022

Meeting Facilitator: *Carrie McKillip, Illinois Extension*

	Topic	Speaker
9 AM	Welcome	Greg Nimmo, IEMA Chief Recovery Division
9:10	Committee Members Introduction	Greg
9:20	FEMA Overview	Lorena Reyes FEMA Region 5
9:30	IEMA Overview	Sam Al-Basha State Hazard Mitigation Officer
9:40	Rationale for Planning	Anne Silvis Program Leader and Assistant Dean Community and Economic Development University of Illinois Extension
9:48	Planning Process	University of Illinois Team *Carrie, Zach, Lisa (ISWS), Lisa M., Carrie, Anne, Russell, Carrie*
10:05	Roles and Responsibilities of Committee Members	University of Illinois Team
10:15	Set Next Meeting Dates (every 6 weeks) and Adjourn	Carrie McKillip


IEMA
2023 Illinois Natural Hazard Mitigation Committee Meeting
1


Welcome and Introductions
2


Overview Of Illinois Mitigation Program
IEMA Brief
Mitigation Program Highlights
Future Vision
3

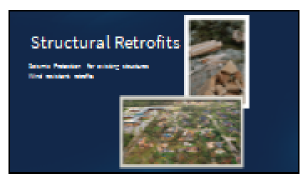

FEMA Overview Region 5
4


Rationale for Planning
Grant Requirements
Community Planning Benefits
Addressing Community Resilience
Anticipating Changing Weather Patterns
5


6

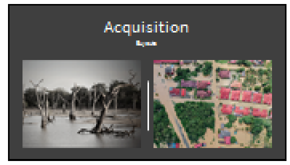

7


8

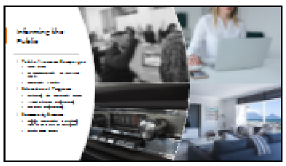

Structural Retrofits
9

10

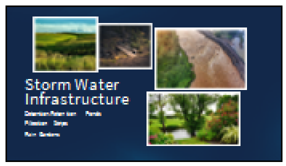
11



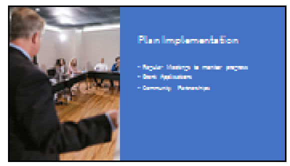
12



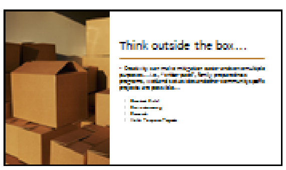
13



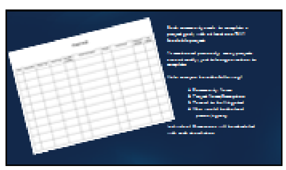
14

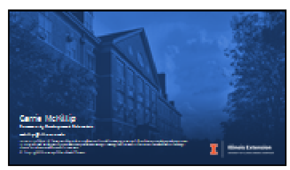


15



16


17



18

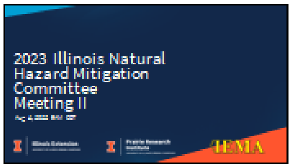
AGENDA
ILLINOIS NATURAL HAZARD MITIGATION PLANNING COMMITTEE
Meeting 2 – 9 AM, August 4, 2022

Meeting Facilitator: *Carrie McKillip, Illinois Extension*

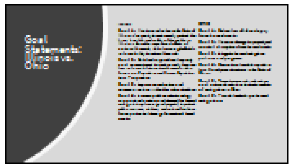
	Topic / Agency and Focus Group Scheduling/etc.	Speaker / Carrie McKillip, Illinois Extension
9 AM	Welcome	IEMA/Illinois Extension
9:05	Compare 2018 Goals/Suggested 2023 Goals/explanation and voting	Russell Medley, Illinois Extension
9:30	Structure of Goals to Actions	Russell Medley, Illinois Extension
9:45	Review of 2018 Risk Assessment	Sutapa Banerjee, ISWS
10:00	Focus Groups and Agency Meeting Schedules	Carrie McKillip, Illinois Extension
10:15	Next Meeting Dates and Adjourn	Carrie McKillip

Join Zoom Meeting
https://illinois.zoom.us/j/84222506747?pwd=WUI0WUpWR2hIMzY4a0lUREJiSUhKUT09

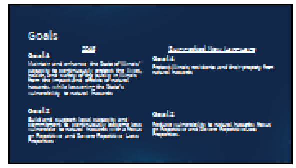
Meeting ID: 842 2250 6747
Password: 770603


2023 Illinois Natural Hazard Mitigation Committee Meeting II

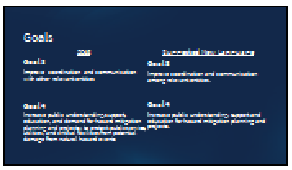
1


Goal Statements: Illinois vs. Ohio

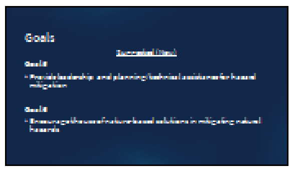
2


Goals

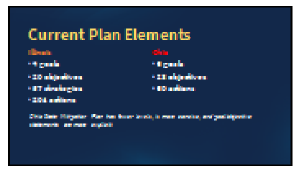
3


Goals

4


Goals
Provide leadership, and planning/technical assistance for hazard mitigation
Encourage the use of nature-based solutions in mitigating natural hazards

5


Current Plan Elements

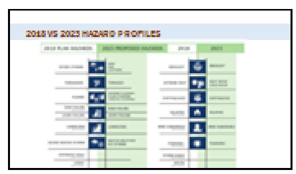
6


RISK ASSESSMENT OVERVIEW

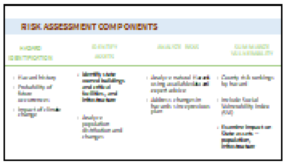
7


WHAT IS RISK ASSESSMENT ?
HAZARDS
COMMUNITY ASSETS
RISK

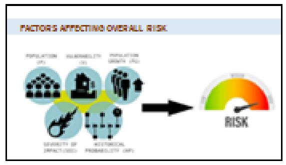
8


2018 VS 2023 HAZARD PROFILES

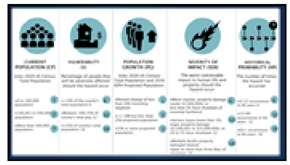
9



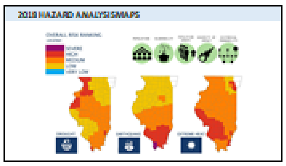
10



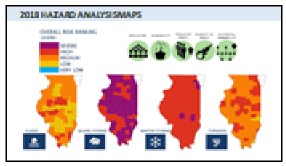
11



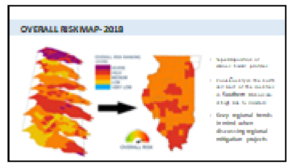
12



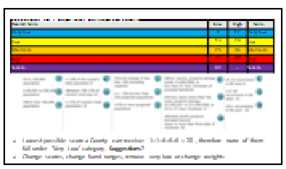
13



14

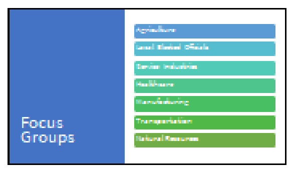


15

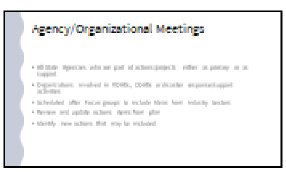


16

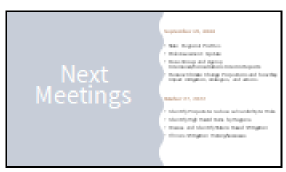
17



18



19



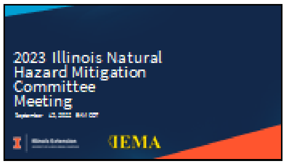
20

21

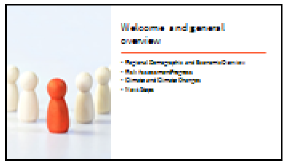
AGENDA
ILLINOIS NATURAL HAZARD MITIGATION PLANNING COMMITTEE
Meeting 3 – 9 AM, September 15, 2022

Meeting Facilitator: *Carrie McKillip, Illinois Extension*

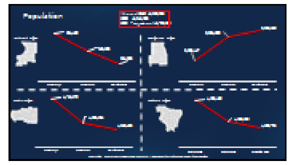
	Topic / Agency and Focus Group Scheduling/etc.	Speaker / Carrie McKillip, Illinois Extension
9 AM	Welcome	IEMA/Illinois Extension
9:05	Regional Profiles – Economic and Demographic	Zach Kennedy, Illinois Extension
9:25	Natural Hazards Risk Assessment	Lisa Graff, ISWS
9:40	Climate Change Impact in Illinois	Trent Ford, Illinois State Climatologist
10:05	Focus Group Progress	Carrie McKillip, Illinois Extension
10:10	Next Meeting (11/10/22) and Wrap Up	



1



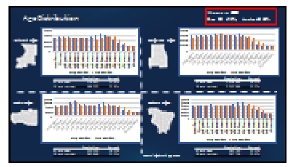
2



3

4

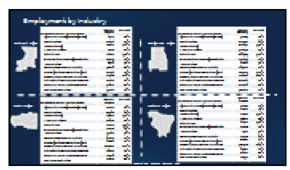
5



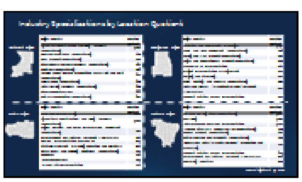
6

7

8

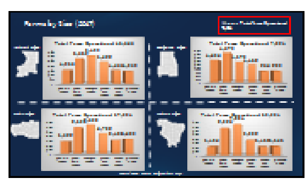


9



10

11

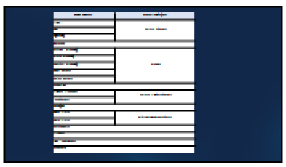


12

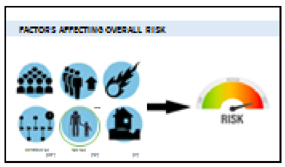
13

14

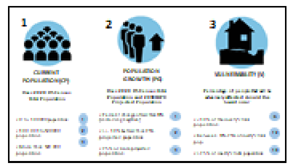
15



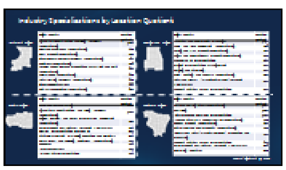
16



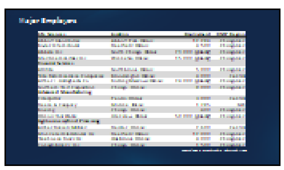
17



18

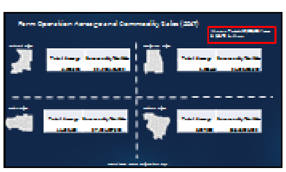


10



11

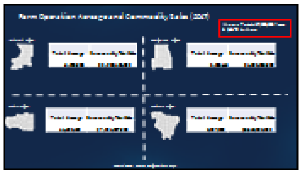
12



13

14

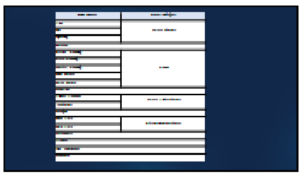
15



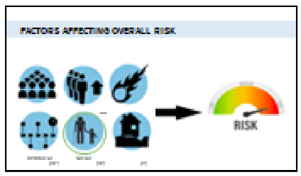
13

14

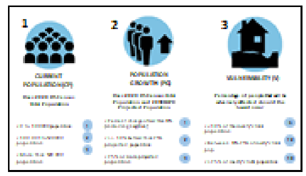
15



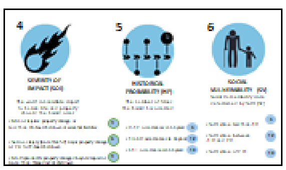
16



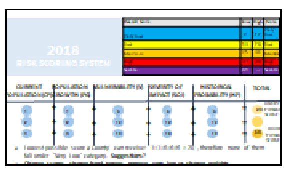
17



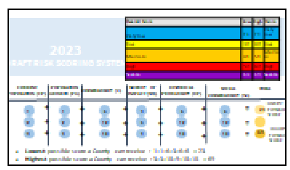
18



19

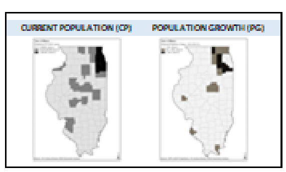


20

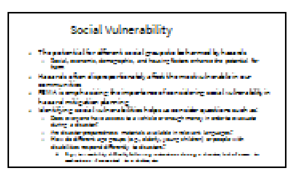


21

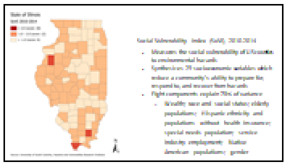
22



23

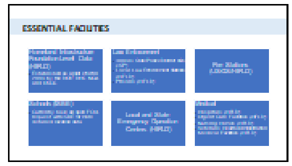


24

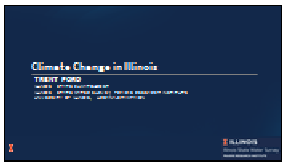


25

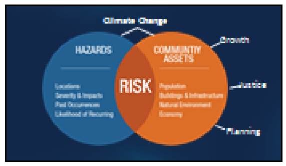
26



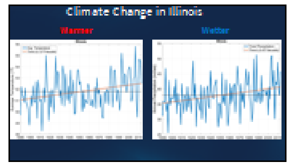
27



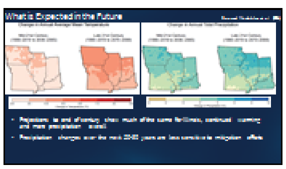
28



29

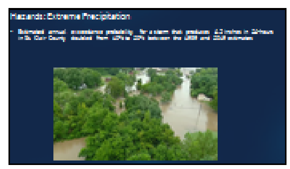


30

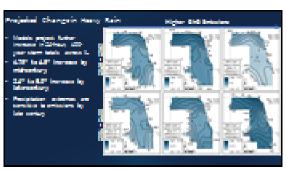


31

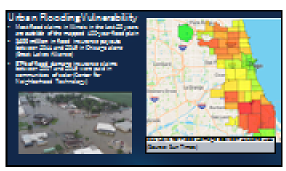
32



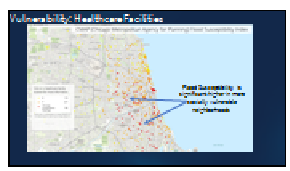
33



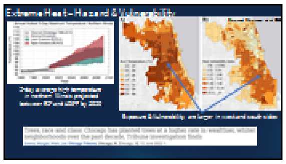
34



35

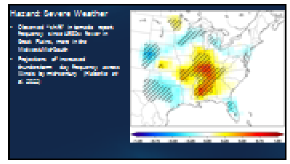


36

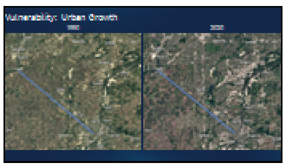


37

38

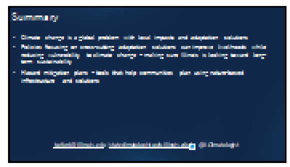


39

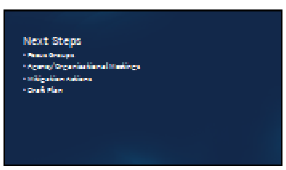


40

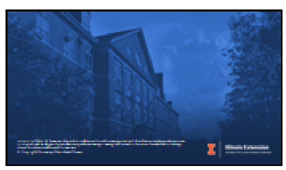
41



42



43



44

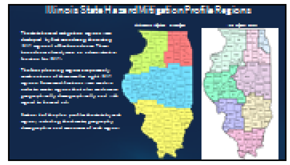
AGENDA
ILLINOIS NATURAL HAZARD MITIGATION PLANNING COMMITTEE
Meeting 4 – 1:30 PM, June 13, 2023

Meeting Facilitator: *Carrie McKillip, Illinois Extension*

	Topic	Speaker
1:30	Welcome	IEMA-OHS Mitigation
1:40	Overview of State Plan Process, Additions, and changes	Carrie McKillip
1:50	Risk Assessment Updates/Additions/Changes	Illinois State Water Survey
2:10	Mitigation Strategy, Goals Objectives and Action Updates	Russell Medley
2:30	Plan Prioritization Process/Tool	Mia Renna
2:45	Questions, Comments and location of Draft Plan for Review by June 23, 2023	All

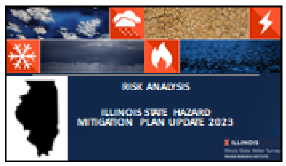
1

2



3

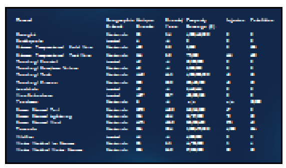
4

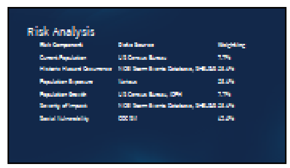


5

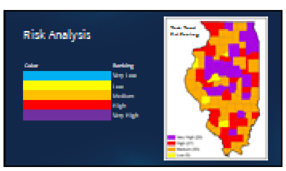
6

7


8



9



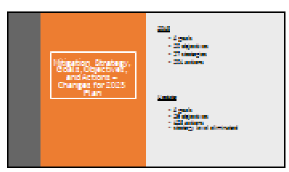
10

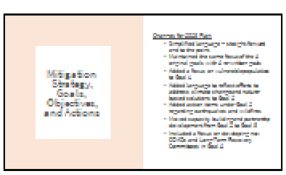
11

12


13

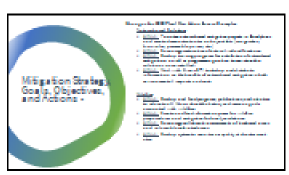

14


15



16

17


18


Mitigation Strategy
Goals, Objectives, and Actions -

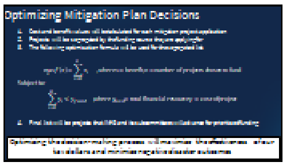
19


Mitigation Project Prioritization Methodology

20


Bottom Line: Not properly prioritizing mitigation projects leads to inefficient spending

21


Optimizing Mitigation Plan Decisions

25


LINK For Draft Plan

26

Appendix 1.2 Focus group summary

Focus group	Date	Challenges and needs	Recommendations
Agriculture	11/18/22	-Need to compute agriculture losses in FEMA damage.	- Improve awareness. - Measures to prevent physical damage -Mitigation action to suspend road and bridge weight limits when disaster imminent.
Natural resources	3/9/23	-Need to address climate change mitigation actions through tools like data projections and regulatory levers. -Challenges include managerial oversight, coordinating with other funding sources like CDBG, and outdated maps. - It’s important for different municipalities to plan for watershed level measures that go beyond the community level.	- Specific mitigation actions related to stormwater, fires, flash droughts, and heat waves.
Flood and stormwater management	12/2/22	-Primarily highlighted the regulatory and planning challenges in flood-prone and stormwater areas.	- They underscored the need to improve the mitigation strategies by improving inspections, service amenities, training, and concerted community support through the community organizations.
Emergency Managers	2/28/23	-Main concern was knowledge and participation of local officials.	-Encourage greater education for local officials.
Vulnerable population groups	3/2/23	- Identified specific disasters that put them at risk of severe impact. - The discussions highlighted that the disasters impeded operations.	- Their recommendations discussed funding and leadership expectations.

Agriculture focus group: Engaging with the agriculture stakeholders was important to understand the direct and indirect impact of severe weather conditions on the agriculture sector. They called attention to the need to compute agricultural losses in FEMA damage. Furthermore, they provided targeted recommendations of mitigation strategies by improving awareness and introducing measures to prevent physical damage.

Natural resources focus group: All stakeholders shared the immediate need to address climate change in mitigation actions through tools like data projections and regulatory levers. They discussed the challenges to disaster mitigation actions through the lens of managerial oversight, coordinating with other funding sources like CDBG, and outdated maps. As subject experts, they recommended mitigation actions related to stormwater, fires, flash droughts, and heat waves. Moreover, they stressed the importance of concerted efforts with different municipalities to plan for watershed level measures that go beyond the community level.

Flood and stormwater management mitigation focus group: The stakeholder perspectives from this focus group were critical to specifically identify the regulatory and planning challenges in flood-prone and stormwater areas. They underscored the need to improve the mitigation strategies by improving inspections, service amenities, training, and concerted community support through the community organizations.

Emergency managers focus group: All participating emergency managers were concerned about lack of understanding within their communities of the disaster response and recovery process. They expressed concern that procedures and regulations were not understood, which could lead to issues in disaster response and recovery efforts.

Vulnerable population focus group: Engaging with organizations among the vulnerable population groups helped identify the specific disasters that put them at risk of severe impact. The discussions highlighted how the disasters impeded operations. They outlined recommendations to mitigate the hazard impact which discussed funding and leadership expectations.

Appendix 1.3 Plan Integration

Plan integration

Plan	Agency	Description
Illinois Hazard Identification and Risk Assessment	Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS)	The HIRA plan defines and describes hazards by describing their probability, frequency, and severity to evaluate the potential losses or injuries. It provides information to identify and prioritize appropriate mitigation actions for the different planning areas.
OHS Program Management Plan	Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS)	The plan provides the strategic framework and operational guidelines for implementing homeland security programs. It aims to enhance preparedness, response, recovery, and mitigation efforts related to potential threats, hazards, and emergencies.
Illinois Emergency Operations Plan (IEOP)	Illinois Emergency Management Agency and Office of Homeland Security (IEMA-OHS)	The IEOP establishes the framework for Illinois state government to organize and oversee the handling of emergencies and disasters. It encompasses policies, procedures, and guidelines aimed at ensuring that actions taken to aid affected communities are carried out safely, efficiently, and promptly. The plan incorporates plans that support response efforts, recovery processes, and the uninterrupted functioning of government operations.
Illinois Recovery Plan		
Mitigation assistance resource guide for State of Illinois	Federal Emergency Management Agency (FEMA)	This guide offers a comprehensive overview of various mitigation programs, initiatives, and funding opportunities. It includes details about FEMA's Hazard Mitigation Assistance (HMA) grant programs that offer funding opportunities for eligible projects aimed at reducing risks and disaster impact. It also provides information on other federal agencies, state programs, and

		organizations that offer assistance, resources, and expertise in mitigation planning and implementation.
Continuity of Operations (COOP)plan	Federal Emergency Management Agency (FEMA)	COOP provides a framework to ensure that the essential functions and operations of government agencies perform during and after emergencies. It aims to minimize disruptions, maintain critical services, and preserve the government agencies' ability to function in the face of significant challenges. It provides a systemic approach to identify the essential function, establish procedures and protocols, and develop strategies to sustain operations.
Illinois State Water Plan	Illinois Department of Natural Resources – Office of Water Resources (IDNR-OWR)	The plan outlines strategies and recommendations for the sustainable management of water resources in Illinois. It assesses current water resource conditions, challenges, and future needs across various sectors including agriculture, industry, municipalities, and the environment.
State of Illinois Drought Preparedness and Response Plan	State Water Plan Task Force	Outlines the strategies and actions to address drought conditions and aims to enhance preparedness, coordination, and mitigation efforts. The plan provides an overview of drought characteristics, impacts, and indicators to monitor drought conditions. It establishes the drought response levels and triggers that help determine the appropriate actions and interventions based on the assessment of severity.
Digital Flood Insurance Rate Map (DFIRM)	Environmental Protection Agency (EPA)	This database map presents flood risk information and the accompanying data used in the creation of this risk data. It serves as the foundation for activities related to floodplain management, mitigation, and insurance within the National Flood Insurance Program (NFIP). The DFIRM (Digital Flood Insurance Rate Map) database presents the flood risk information in a digital format that is well-suited for electronic mapping applications.

SECTION TWO

Appendix 2.1 Risk Ranking Tables

Appendix 2.2 Loss Estimates Tables

Appendix 2.3 Illinois Dams

Appendix 2.4 Illinois Levees

Appendix 2.5 Flash and Riverine Flooding SVI Analysis

Appendix 2.1 Risk Ranking Tables

Drought

		Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)
Adams		6	2	1	3	4	3	19
Alexander		9	1	1	6	6	3	26
Bond		6	1	3	3	4	3	20
Boone		6	2	3	3	4	3	21
Brown		6	1	3	3	4	3	20
Bureau		6	2	1	9	4	3	25
Calhoun		6	1	3	3	2	3	18
Carroll		6	1	1	9	2	3	22
Cass		6	1	1	9	6	3	26
Champaign		6	2	3	9	6	3	29
Christian		6	2	1	9	2	3	23
Clark		6	1	1	9	2	3	22
Clay		6	1	1	9	6	3	26
Clinton		6	2	3	3	2	3	19
Coles		6	2	3	9	6	3	29
Cook		6	3	1	3	6	3	22
Crawford		6	1	1	9	4	3	24
Cumberland		6	1	1	9	2	3	22
De Witt		6	2	3	9	6	3	29
DeKalb		6	1	1	3	2	3	16
Douglas		6	1	1	9	6	3	26
DuPage		6	3	3	3	2	3	20
Edgar		6	1	1	9	4	3	24
Edwards		9	1	1	9	4	3	27
Effingham		6	2	1	9	2	3	23
Fayette		6	1	1	3	6	3	20
Ford		6	1	1	3	4	3	18
Franklin		9	2	1	6	6	3	27
Fulton		6	2	1	6	4	3	22
Gallatin		9	1	1	6	4	3	24
Greene		6	1	1	3	2	3	16
Grundy		6	2	3	3	2	3	19
Hamilton		9	1	1	6	4	3	24
Hancock		6	1	1	9	2	3	22
Hardin		9	1	1	6	4	3	24
Henderson		6	1	1	9	2	3	22
Henry		6	2	1	9	2	3	23
Iroquois		6	2	1	3	4	3	19
Jackson		9	2	3	6	6	3	29

		Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)
Jasper		6	1	1	9	4	3	24
Jefferson		6	2	1	6	6	3	24
Jersey		6	1	3	3	2	3	18
Jo Daviess		6	1	1	9	2	3	22
Johnson		9	1	1	6	4	3	24
Kane		6	3	3	3	6	3	24
Kankakee		6	2	3	3	6	3	23
Kendall		6	2	3	3	2	3	19
Knox		6	2	1	6	6	3	24
Lake		6	2	1	3	6	3	21
LaSalle		6	3	3	3	4	3	22
Lawrence		6	1	3	9	6	3	28
Lee		6	2	1	3	4	3	19
Livingston		6	2	1	3	4	3	19
Logan		6	2	1	9	2	3	23
Macon		6	2	1	9	6	3	27
Macoupin		6	2	1	3	2	3	17
Madison		6	3	1	3	4	3	20
Marion		6	2	1	3	6	3	21
Marshall		6	1	1	9	2	3	22
Mason		6	1	1	9	2	3	22
Massac		9	1	3	6	6	3	28
McDonough		6	2	3	9	4	3	27
McHenry		6	3	3	3	2	3	20
McLean		6	2	3	9	2	3	25
Menard		6	1	3	9	2	3	24
Mercer		6	1	1	9	2	3	22
Monroe		6	2	3	3	2	3	19
Montgomery		6	2	1	3	4	3	19
Morgan		6	2	1	9	6	3	27
Moultrie		6	1	1	9	4	3	24
Ogle		6	2	3	3	4	3	21
Peoria		6	2	1	9	6	3	27
Perry		9	1	1	6	6	3	26
Piatt		6	1	1	9	2	3	22
Pike		6	1	1	3	4	3	18
Pope		9	1	3	6	4	3	26
Pulaski		9	1	1	6	6	3	26
Putnam		6	1	1	9	2	3	22
Randolph		6	2	1	3	4	3	19
Richland		6	1	1	9	4	3	24
Rock Island		6	2	1	9	6	3	27
Saline		9	1	1	6	6	3	26

		Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)
Sangamon		6	2	3	9	4	3	27
Schuyler		6	1	3	6	4	3	23
Scott		6	1	1	9	2	3	22
Shelby		6	1	1	9	2	3	22
St. Clair		6	3	3	3	6	3	24
Stark		6	1	1	9	2	3	22
Stephenson		6	2	1	9	6	3	27
Tazewell		6	2	3	9	2	3	25
Union		9	1	1	6	6	3	26
Vermilion		6	2	1	9	6	3	27
Wabash		9	1	1	6	6	3	26
Warren		6	1	1	9	6	3	26
Washington		6	1	1	3	2	3	16
Wayne		6	1	1	6	6	3	23
White		9	1	1	6	4	3	24
Whiteside		6	2	1	9	4	3	25
Will		6	3	3	3	4	3	22
Williamson		9	2	3	6	4	3	27
Winnebago		6	3	3	3	6	3	24
Woodford		6	2	3	9	2	3	25

Earthquake

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	3	2	1	3	4	3	16	Very Low
Alexander	3	1	1	3	6	9	23	Medium
Bond	3	1	3	3	4	6	20	Low
Boone	3	2	3	3	4	3	18	Low
Brown	3	1	3	3	4	3	17	Very Low
Bureau	3	2	1	3	4	3	16	Very Low
Calhoun	3	1	3	3	2	3	15	Very Low
Carroll	3	1	1	3	2	3	13	Very Low
Cass	3	1	1	3	6	3	17	Very Low
Champaign	3	2	3	3	6	3	20	Low
Christian	3	2	1	3	2	6	17	Very Low
Clark	3	1	1	3	2	9	19	Low
Clay	3	1	1	3	6	6	20	Low
Clinton	3	2	3	3	2	6	19	Low
Coles	3	2	3	3	6	6	23	Medium
Cook	3	3	1	3	6	3	19	Low
Crawford	3	1	1	3	4	9	21	Low
Cumberland	3	1	1	3	2	6	16	Very Low
De Witt	3	1	1	3	2	3	13	Very Low
DeKalb	3	2	3	3	6	6	23	Medium
Douglas	3	1	1	3	6	6	20	Low
DuPage	3	3	3	3	2	3	17	Very Low
Edgar	3	1	1	3	4	9	21	Low
Edwards	3	1	1	3	4	9	21	Low
Effingham	3	2	1	3	2	6	17	Very Low
Fayette	3	1	1	3	6	6	20	Low
Ford	3	1	1	3	4	6	18	Low
Franklin	3	2	1	3	6	6	21	Low
Fulton	3	2	1	3	4	3	16	Very Low
Gallatin	3	1	1	3	4	9	21	Low
Greene	3	1	1	3	2	3	13	Very Low
Grundy	3	2	3	3	2	3	16	Very Low
Hamilton	3	1	1	3	4	9	21	Low
Hancock	3	1	1	3	2	3	13	Very Low
Hardin	3	1	1	3	4	9	21	Low
Henderson	3	1	1	3	2	3	13	Very Low
Henry	3	2	1	3	2	3	14	Very Low
Iroquois	3	2	1	3	4	3	16	Very Low
Jackson	3	2	3	3	6	6	23	Medium
Jasper	3	1	1	3	4	9	21	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	3	2	1	3	6	6	21	Low
Jersey	3	1	3	3	2	3	15	Very Low
Jo Daviess	3	1	1	3	2	3	13	Very Low
Johnson	3	1	1	3	4	9	21	Low
Kane	3	3	3	3	6	3	21	Low
Kankakee	3	2	3	3	6	3	20	Low
Kendall	3	2	3	3	2	3	16	Very Low
Knox	3	2	1	3	6	3	18	Low
Lake	3	3	3	3	6	3	21	Low
LaSalle	3	2	1	3	4	3	16	Low
Lawrence	6	1	3	3	6	9	28	Medium
Lee	3	2	1	3	4	3	16	Very Low
Livingston	3	2	1	3	4	6	19	Low
Logan	3	2	1	3	2	6	17	Very Low
Macon	3	2	1	3	6	6	21	Low
Macoupin	3	2	1	3	2	6	17	Very Low
Madison	3	3	1	3	4	6	20	Low
Marion	3	2	1	3	6	6	21	Low
Marshall	3	1	1	3	2	3	13	Very Low
Mason	3	1	1	3	2	3	13	Very Low
Massac	3	1	3	3	6	9	25	Medium
McDonough	3	2	3	3	4	3	18	Low
McHenry	3	3	3	3	2	3	17	Very Low
McLean	3	2	3	3	2	6	19	Low
Menard	3	1	3	3	2	6	18	Low
Mercer	3	1	1	3	2	3	13	Very Low
Monroe	3	2	3	3	2	6	19	Low
Montgomery	3	2	1	3	4	6	19	Low
Morgan	3	2	1	3	6	3	18	Low
Moultrie	3	1	1	3	4	3	15	Very Low
Ogle	3	2	3	3	4	3	18	Low
Peoria	3	2	1	3	6	3	18	Low
Perry	3	1	1	3	6	9	23	Medium
Piatt	3	1	1	3	2	3	13	Very Low
Pike	3	1	1	3	4	3	15	Very Low
Pope	3	1	3	3	4	9	23	Medium
Pulaski	3	1	1	3	6	9	23	Medium
Putnam	3	1	1	3	2	3	13	Very Low
Randolph	3	2	1	3	4	6	19	Low
Richland	6	1	1	3	4	9	24	Medium
Rock Island	3	2	1	3	6	3	18	Low
Saline	3	1	1	3	6	9	23	Medium
Sangamon	3	2	3	3	4	6	21	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	3	1	3	3	4	3	17	Very Low
Scott	3	1	1	3	2	3	13	Very Low
Shelby	3	1	1	3	2	6	16	Very Low
St. Clair	3	3	3	3	6	6	24	Medium
Stark	3	1	1	3	2	3	13	Very Low
Stephenson	3	2	1	3	6	3	18	Low
Tazewell	3	2	3	3	2	3	16	Very Low
Union	3	1	1	3	6	9	23	Medium
Vermilion	3	2	1	3	6	6	21	Low
Wabash	6	1	1	3	6	9	26	Medium
Warren	3	1	1	3	6	3	17	Very Low
Washington	3	1	1	3	2	6	16	Very Low
Wayne	3	1	1	3	6	9	23	Medium
White	6	1	1	3	4	9	24	Medium
Whiteside	3	2	1	3	4	3	16	Very Low
Will	3	3	3	3	4	3	19	Low
Williamson	3	2	3	3	4	9	24	Medium
Winnebago	3	3	3	3	6	3	21	Low
Woodford	3	2	3	3	2	3	16	Very Low

Extreme Temperatures: Cold Wave

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	9	25	Medium
Alexander	6	1	1	3	6	9	26	Medium
Bond	6	1	3	3	4	9	26	Medium
Boone	6	2	3	3	4	9	27	Medium
Brown	6	1	3	3	4	9	26	Medium
Bureau	6	2	1	3	4	9	25	Medium
Calhoun	6	1	3	3	2	9	24	Medium
Carroll	6	1	1	3	2	9	22	Low
Cass	6	1	1	3	6	9	26	Medium
Champaign	6	2	3	3	6	9	29	High
Christian	6	2	1	3	2	9	23	Medium
Clark	6	1	1	3	2	9	22	Low
Clay	6	1	1	3	6	9	26	Medium
Clinton	6	2	3	3	2	9	25	Medium
Coles	6	2	3	3	6	9	29	High
Cook	9	3	1	3	6	9	31	High
Crawford	6	1	1	3	4	9	24	Medium
Cumberland	6	1	1	3	2	9	22	Low
De Witt	6	2	3	3	6	9	29	Low
DeKalb	6	1	1	3	2	9	22	High
Douglas	6	1	1	3	6	9	26	Medium
DuPage	6	3	3	3	2	9	26	Medium
Edgar	6	1	1	3	4	9	24	Medium
Edwards	6	1	1	3	4	9	24	Medium
Effingham	6	2	1	3	2	9	23	Medium
Fayette	6	1	1	3	6	9	26	Medium
Ford	6	1	1	3	4	9	24	Medium
Franklin	6	2	1	3	6	9	27	Medium
Fulton	6	2	1	3	4	9	25	Medium
Gallatin	6	1	1	3	4	9	24	Medium
Greene	6	1	1	3	2	9	22	Low
Grundy	6	2	3	3	2	9	25	Medium
Hamilton	6	1	1	3	4	9	24	Medium
Hancock	6	1	1	3	2	9	22	Low
Hardin	6	1	1	3	4	9	24	Medium
Henderson	6	1	1	3	2	9	22	Low
Henry	6	2	1	3	2	9	23	Medium
Iroquois	6	2	1	3	4	9	25	Medium
Jackson	6	2	3	3	6	9	29	High
Jasper	6	1	1	3	4	9	24	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	6	2	1	3	6	9	27	Medium
Jersey	6	1	3	3	2	9	24	Medium
Jo Daviess	6	1	1	3	2	9	22	Low
Johnson	6	1	1	3	4	9	24	Medium
Kane	6	3	3	3	6	9	30	High
Kankakee	6	2	3	3	6	9	29	High
Kendall	6	2	3	3	2	9	25	Medium
Knox	6	2	1	3	6	9	27	Medium
Lake	6	2	1	3	6	9	27	Medium
LaSalle	6	3	3	3	4	9	28	Medium
Lawrence	6	1	3	3	6	9	28	Medium
Lee	6	2	1	3	4	9	25	Medium
Livingston	6	2	1	3	4	9	25	Medium
Logan	6	2	1	3	2	9	23	Medium
Macon	6	2	1	3	6	9	27	Medium
Macoupin	6	2	1	3	2	9	23	Medium
Madison	6	3	1	3	4	9	26	Medium
Marion	6	2	1	3	6	9	27	Medium
Marshall	6	1	1	3	2	9	22	Low
Mason	6	1	1	3	2	9	22	Low
Massac	6	1	3	3	6	9	28	Medium
McDonough	6	2	3	3	4	9	27	Medium
McHenry	6	3	3	3	2	9	26	Medium
McLean	6	2	3	3	2	9	25	Medium
Menard	6	1	3	3	2	9	24	Medium
Mercer	6	1	1	3	2	9	22	Low
Monroe	6	2	3	3	2	9	25	Medium
Montgomery	6	2	1	3	4	9	25	Medium
Morgan	6	2	1	3	6	9	27	Medium
Moultrie	6	1	1	3	4	9	24	Medium
Ogle	6	2	3	3	4	9	27	Medium
Peoria	6	2	1	3	6	9	27	Medium
Perry	6	1	1	3	6	9	26	Medium
Piatt	6	1	1	3	2	9	22	Low
Pike	6	1	1	3	4	9	24	Medium
Pope	6	1	3	3	4	9	26	Medium
Pulaski	6	1	1	3	6	9	26	Medium
Putnam	6	1	1	3	2	9	22	Low
Randolph	6	2	1	3	4	9	25	Medium
Richland	6	1	1	3	4	9	24	Medium
Rock Island	6	2	1	3	6	9	27	Medium
Saline	6	1	1	3	6	9	26	Medium
Sangamon	6	2	3	3	4	9	27	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	6	1	3	3	4	9	26	Medium
Scott	6	1	1	3	2	9	22	Low
Shelby	6	1	1	3	2	9	22	Low
St. Clair	6	3	3	3	6	9	30	High
Stark	6	1	1	3	2	9	22	Low
Stephenson	6	2	1	3	6	9	27	Medium
Tazewell	6	2	3	3	2	9	25	Medium
Union	6	1	1	3	6	9	26	Medium
Vermilion	6	2	1	3	6	9	27	Medium
Wabash	6	1	1	3	6	9	26	Medium
Warren	6	1	1	3	6	9	26	Medium
Washington	6	1	1	3	2	9	22	Low
Wayne	6	1	1	3	6	9	26	Medium
White	6	1	1	3	4	9	24	Medium
Whiteside	6	2	1	3	4	9	25	Medium
Will	9	3	3	3	4	9	31	High
Williamson	6	2	3	3	4	9	27	Medium
Winnebago	6	3	3	3	6	9	30	High
Woodford	6	2	3	3	2	9	25	Medium

Extreme Temperatures: Heat Wave

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	3	4	9	28	Medium
Alexander	9	1	1	3	6	9	29	High
Bond	9	1	3	3	4	9	29	High
Boone	6	2	3	3	4	9	27	Medium
Brown	9	1	3	3	4	9	29	High
Bureau	6	2	1	3	4	9	25	Medium
Calhoun	9	1	3	3	2	9	27	Medium
Carroll	6	1	1	3	2	9	22	Low
Cass	6	1	1	3	6	9	26	Medium
Champaign	6	2	3	3	6	9	29	High
Christian	6	2	1	3	2	9	23	Medium
Clark	6	1	1	3	2	9	22	Low
Clay	6	1	1	3	6	9	26	Medium
Clinton	9	2	3	3	2	9	28	Medium
Coles	6	2	3	3	6	9	29	High
Cook	9	3	1	9	6	9	37	Very High
Crawford	6	1	1	3	4	9	24	Medium
Cumberland	6	1	1	3	2	9	22	Low
De Witt	6	2	3	3	6	9	29	Low
DeKalb	6	1	1	3	2	9	22	High
Douglas	6	1	1	3	6	9	26	Medium
DuPage	6	3	3	3	2	9	26	Medium
Edgar	6	1	1	3	4	9	24	Medium
Edwards	9	1	1	3	4	9	27	Medium
Effingham	6	2	1	3	2	9	23	Medium
Fayette	9	1	1	3	6	9	29	High
Ford	6	1	1	3	4	9	24	Medium
Franklin	9	2	1	3	6	9	30	High
Fulton	6	2	1	3	4	9	25	Medium
Gallatin	9	1	1	3	4	9	27	Medium
Greene	9	1	1	3	2	9	25	Medium
Grundy	6	2	3	3	2	9	25	Medium
Hamilton	9	1	1	3	4	9	27	Medium
Hancock	6	1	1	3	2	9	22	Low
Hardin	9	1	1	3	4	9	27	Medium
Henderson	6	1	1	3	2	9	22	Low
Henry	6	2	1	3	2	9	23	Medium
Iroquois	6	2	1	3	4	9	25	Medium
Jackson	9	2	3	6	6	9	35	Very High
Jasper	6	1	1	3	4	9	24	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	9	2	1	3	6	9	30	High
Jersey	9	1	3	3	2	9	27	Medium
Jo Daviess	6	1	1	3	2	9	22	Low
Johnson	9	1	1	3	4	9	27	Medium
Kane	6	3	3	3	6	9	30	High
Kankakee	6	2	3	3	6	9	29	High
Kendall	6	2	3	3	2	9	25	Medium
Knox	6	2	1	3	6	9	27	Medium
Lake	6	2	1	3	6	9	27	Medium
LaSalle	6	3	3	3	4	9	28	Medium
Lawrence	6	1	3	3	6	9	28	Medium
Lee	6	2	1	3	4	9	25	Medium
Livingston	6	2	1	3	4	9	25	Medium
Logan	6	2	1	3	2	9	23	Medium
Macon	6	2	1	3	6	9	27	Medium
Macoupin	9	2	1	3	2	9	26	Medium
Madison	9	3	1	6	4	9	32	High
Marion	9	2	1	3	6	9	30	High
Marshall	6	1	1	3	2	9	22	Low
Mason	6	1	1	3	2	9	22	Low
Massac	9	1	3	3	6	9	31	High
McDonough	6	2	3	3	4	9	27	Medium
McHenry	6	3	3	3	2	9	26	Medium
McLean	6	2	3	3	2	9	25	Medium
Menard	6	1	3	3	2	9	24	Medium
Mercer	6	1	1	3	2	9	22	Low
Monroe	9	2	3	3	2	9	28	Medium
Montgomery	9	2	1	3	4	9	28	Medium
Morgan	6	2	1	3	6	9	27	Medium
Moultrie	6	1	1	3	4	9	24	Medium
Ogle	6	2	3	3	4	9	27	Medium
Peoria	6	2	1	3	6	9	27	Medium
Perry	9	1	1	3	6	9	29	High
Piatt	6	1	1	3	2	9	22	Low
Pike	9	1	1	3	4	9	27	Medium
Pope	9	1	3	3	4	9	29	High
Pulaski	9	1	1	3	6	9	29	High
Putnam	6	1	1	3	2	9	22	Low
Randolph	9	2	1	3	4	9	28	Medium
Richland	6	1	1	3	4	9	24	Medium
Rock Island	6	2	1	3	6	9	27	Medium
Saline	9	1	1	3	6	9	29	High
Sangamon	6	2	3	3	4	9	27	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	6	1	3	3	4	9	26	Medium
Scott	6	1	1	3	2	9	22	Low
Shelby	6	1	1	3	2	9	22	Low
St. Clair	9	3	3	6	6	9	36	Very High
Stark	6	1	1	3	2	9	22	Low
Stephenson	6	2	1	3	6	9	27	Medium
Tazewell	6	2	3	3	2	9	25	Medium
Union	9	1	1	6	6	9	32	High
Vermilion	6	2	1	3	6	9	27	Medium
Wabash	9	1	1	3	6	9	29	High
Warren	6	1	1	3	6	9	26	Medium
Washington	9	1	1	3	2	9	25	Medium
Wayne	9	1	1	6	6	9	32	High
White	9	1	1	3	4	9	27	Medium
Whiteside	6	2	1	3	4	9	25	Medium
Will	9	3	3	6	4	9	34	Very High
Williamson	9	2	3	3	4	9	33	Medium
Winnebago	6	3	3	3	6	9	30	High
Woodford	6	2	3	3	2	9	25	Medium

Flooding: Coastal

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Severity of Impact	Overall Risk (numeric)	Overall Risk
Cook	6	3	1	9	6	9	34	Very High
Lake	3	3	1	3	6	3	27	Medium

Flooding: Dam/Levee Failure

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	3	19	Low
Alexander	6	1	1	3	6	3	20	Low
Bond	3	1	3	3	4	3	17	Very Low
Boone	3	2	3	3	4	3	18	Low
Brown	3	1	3	3	4	3	17	Very Low
Bureau	3	2	1	3	4	3	16	Very Low
Calhoun	3	1	3	3	2	3	15	Very Low
Carroll	6	1	1	3	2	3	16	Very Low
Cass	3	1	1	3	6	3	17	Very Low
Champaign	3	2	3	3	6	3	20	Low
Christian	3	2	1	3	2	3	14	Very Low
Clark	3	1	1	3	2	3	13	Very Low
Clay	3	1	1	3	6	3	17	Very Low
Clinton	3	2	3	3	2	3	16	Very Low
Coles	3	2	3	3	6	6	23	Medium
Cook	3	3	1	3	6	3	19	Low
Crawford	6	1	1	3	4	3	18	Low
Cumberland	3	1	1	3	2	3	13	Very Low
De Witt	3	2	3	3	6	3	20	Very Low
DeKalb	3	1	1	3	2	6	16	Low
Douglas	3	1	1	3	6	3	17	Very Low
DuPage	3	3	3	3	2	3	17	Very Low
Edgar	3	1	1	3	4	3	15	Very Low
Edwards	3	1	1	3	4	3	15	Very Low
Effingham	3	2	1	3	2	3	14	Very Low
Fayette	3	1	1	3	6	3	17	Very Low
Ford	3	1	1	3	4	3	15	Very Low
Franklin	3	2	1	3	6	3	18	Low
Fulton	6	2	1	6	4	6	25	Medium
Gallatin	3	1	1	3	4	3	15	Very Low
Greene	3	1	1	3	2	3	13	Very Low
Grundy	3	2	3	3	2	3	16	Very Low
Hamilton	3	1	1	3	4	3	15	Very Low
Hancock	3	1	1	3	2	3	13	Very Low
Hardin	3	1	1	3	4	3	15	Very Low
Henderson	3	1	1	3	2	3	13	Very Low
Henry	3	2	1	3	2	3	14	Very Low
Iroquois	3	2	1	3	4	3	16	Very Low
Jackson	3	2	3	3	6	3	20	Low
Jasper	6	1	1	3	4	3	18	Low
Jefferson	3	2	1	3	6	3	18	Low

Jersey	3	1	3	3	2	3	15	Very Low
Jo Daviess	3	1	1	3	2	3	13	Very Low
Johnson	3	1	1	3	4	3	15	Very Low
Kane	3	3	3	3	6	6	24	Medium
Kankakee	3	2	3	3	6	3	20	Low
Kendall	3	2	3	3	2	3	16	Very Low
Knox	3	2	1	3	6	3	18	Low
Lake	3	2	1	3	6	3	18	Low
LaSalle	3	3	3	3	4	3	19	Low
Lawrence	6	1	3	3	6	3	22	Low
Lee	3	2	1	3	4	3	16	Very Low
Livingston	3	2	1	3	4	3	16	Very Low
Logan	3	2	1	3	2	3	14	Very Low
Macon	3	2	1	3	6	3	18	Low
Macoupin	3	2	1	3	2	9	20	Low
Madison	3	3	1	3	4	6	20	Low
Marion	3	2	1	3	6	3	18	Low
Marshall	3	1	1	3	2	3	13	Very Low
Mason	3	1	1	3	2	3	13	Very Low
Massac	3	1	3	3	6	3	19	Low
McDonough	3	2	3	3	4	3	18	Low
McHenry	3	3	3	3	2	3	17	Very Low
McLean	3	2	3	3	2	3	16	Very Low
Menard	3	1	3	3	2	3	15	Very Low
Mercer	6	1	1	3	2	3	16	Very Low
Monroe	3	2	3	3	2	3	16	Very Low
Montgomery	3	2	1	3	4	6	19	Low
Morgan	3	2	1	3	6	3	18	Low
Moultrie	3	1	1	3	4	3	15	Very Low
Ogle	3	2	3	3	4	3	18	Low
Peoria	3	2	1	3	6	6	21	Low
Perry	3	1	1	3	6	3	17	Very Low
Piatt	3	1	1	3	2	3	13	Very Low
Pike	3	1	1	3	4	3	15	Very Low
Pope	3	1	3	3	4	3	17	Very Low
Pulaski	3	1	1	3	6	3	17	Very Low
Putnam	3	1	1	3	2	3	13	Very Low
Randolph	3	2	1	3	4	3	16	Very Low
Richland	3	1	1	3	4	3	15	Very Low
Rock Island	3	2	1	3	6	3	18	Low
Saline	3	1	1	3	6	3	17	Very Low
Sangamon	3	2	3	3	4	3	18	Low
Schuyler	3	1	3	3	4	3	17	Very Low
Scott	6	1	1	3	2	3	16	Very Low
Shelby	3	1	1	3	2	3	13	Very Low

St. Clair	3	3	3	3	6	6	24	Medium
Stark	3	1	1	3	2	3	13	Very Low
Stephenson	3	2	1	3	6	3	18	Low
Tazewell	3	2	3	3	2	6	19	Low
Union	3	1	1	3	6	3	17	Very Low
Vermilion	3	2	1	3	6	3	18	Low
Wabash	3	1	1	3	6	3	17	Very Low
Warren	3	1	1	3	6	3	17	Very Low
Washington	3	1	1	3	2	3	13	Very Low
Wayne	3	1	1	3	6	3	17	Very Low
White	3	1	1	3	4	3	15	Very Low
Whiteside	3	2	1	3	4	3	16	Very Low
Will	3	3	3	3	4	6	22	Low
Williamson	3	2	3	3	4	3	18	Low
Winnebago	3	3	3	3	6	3	21	Low
Woodford	3	2	3	3	2	3	16	Very Low

Flooding: Flash

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	3	4	9	28	Medium
Alexander	6	1	1	3	6	9	26	Medium
Bond	6	1	3	3	4	9	26	Medium
Boone	6	2	3	3	4	9	27	Medium
Brown	6	1	3	3	4	9	26	Medium
Bureau	6	2	1	3	4	9	25	Medium
Calhoun	6	1	3	3	2	9	24	Medium
Carroll	9	1	1	9	2	9	31	High
Cass	9	1	1	6	6	9	32	High
Champaign	9	2	3	9	6	9	38	Very High
Christian	9	2	1	6	2	9	29	High
Clark	9	1	1	6	2	9	28	Medium
Clay	9	1	1	9	6	9	35	Very High
Clinton	6	2	3	3	2	9	25	Medium
Coles	9	2	3	6	6	9	35	Very High
Cook	9	3	1	9	6	9	37	Very High
Crawford	9	1	1	3	4	9	27	Medium
Cumberland	9	1	1	3	2	9	25	Medium
De Witt	6	2	3	6	6	9	32	Medium
DeKalb	9	1	1	6	2	9	28	High
Douglas	9	1	1	3	6	9	29	High
DuPage	9	3	3	9	2	9	35	Very High
Edgar	9	1	1	3	4	9	27	Medium
Edwards	6	1	1	3	4	9	24	Medium
Effingham	9	2	1	3	2	9	26	Medium
Fayette	6	1	1	3	6	9	26	Medium
Ford	6	1	1	9	4	9	30	High
Franklin	9	2	1	9	6	9	36	Very High
Fulton	9	2	1	9	4	9	34	Very High
Gallatin	9	1	1	3	4	9	27	Medium
Greene	6	1	1	3	2	9	22	Low
Grundy	6	2	3	9	2	9	31	High
Hamilton	9	1	1	3	4	9	27	Medium
Hancock	9	1	1	3	2	9	25	Medium
Hardin	6	1	1	3	4	9	24	Medium
Henderson	6	1	1	3	2	9	22	Low
Henry	9	2	1	9	2	9	32	High
Iroquois	9	2	1	3	4	9	28	Medium
Jackson	9	2	3	3	6	9	32	High
Jasper	9	1	1	3	4	9	27	Medium
Jefferson	9	2	1	3	6	9	30	High

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jersey	6	1	3	3	2	9	24	Medium
Jo Daviess	9	1	1	9	2	9	31	High
Johnson	6	1	1	3	4	9	24	Medium
Kane	9	3	3	9	6	9	39	Very High
Kankakee	9	2	3	3	6	9	32	High
Kendall	6	2	3	6	2	9	28	Medium
Knox	9	2	1	9	6	9	36	Very High
Lake	9	2	1	9	6	9	36	Very High
LaSalle	9	3	3	9	4	9	37	Very High
Lawrence	9	1	3	3	6	9	31	High
Lee	6	2	1	3	4	9	25	Medium
Livingston	6	2	1	3	4	9	25	Medium
Logan	9	2	1	3	2	9	26	Medium
Macon	9	2	1	9	6	9	36	Very High
Macoupin	9	2	1	3	2	9	26	Medium
Madison	9	3	1	3	4	9	29	High
Marion	9	2	1	3	6	9	30	High
Marshall	9	1	1	9	2	9	31	High
Mason	6	1	1	3	2	9	22	Low
Massac	6	1	3	3	6	9	28	Medium
McDonough	9	2	3	3	4	9	30	High
McHenry	6	3	3	3	2	9	26	Medium
McLean	9	2	3	9	2	9	34	Very High
Menard	9	1	3	3	2	9	27	Medium
Mercer	6	1	1	9	2	9	28	Medium
Monroe	6	2	3	3	2	9	25	Medium
Montgomery	6	2	1	3	4	9	25	Medium
Morgan	9	2	1	9	6	9	36	Very High
Moultrie	9	1	1	3	4	9	27	Medium
Ogle	6	2	3	3	4	9	27	Medium
Peoria	9	2	1	9	6	9	36	Very High
Perry	9	1	1	3	6	9	29	High
Piatt	6	1	1	6	2	9	25	Medium
Pike	6	1	1	3	4	9	24	Medium
Pope	6	1	3	3	4	9	26	Medium
Pulaski	6	1	1	3	6	9	26	Medium
Putnam	6	1	1	3	2	9	22	Low
Randolph	6	2	1	3	4	9	25	Medium
Richland	9	1	1	3	4	9	27	Medium
Rock Island	9	2	1	3	6	9	30	High
Saline	9	1	1	6	6	9	32	High
Sangamon	9	2	3	9	4	9	36	Very High
Schuyler	9	1	3	6	4	9	32	High

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Scott	9	1	1	3	2	9	25	Medium
Shelby	9	1	1	3	2	9	25	Medium
St. Clair	9	3	3	3	6	9	33	High
Stark	6	1	1	9	2	9	28	Medium
Stephenson	9	2	1	3	6	9	30	High
Tazewell	9	2	3	9	2	9	34	Very High
Union	9	1	1	3	6	9	29	High
Vermilion	9	2	1	3	6	9	30	High
Wabash	6	1	1	3	6	9	26	Medium
Warren	6	1	1	3	6	9	26	Medium
Washington	6	1	1	3	2	9	22	Low
Wayne	9	1	1	3	6	9	29	High
White	9	1	1	3	4	9	27	Medium
Whiteside	9	2	1	3	4	9	28	Medium
Will	9	3	3	9	4	9	37	Very High
Williamson	3	2	3	3	4	9	30	High
Winnebago	9	3	3	9	6	9	39	Very High
Woodford	9	2	3	9	2	9	34	Very High

Flooding: Riverine

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	9	25	Medium
Alexander	9	1	1	6	6	9	32	High
Bond	3	1	3	3	4	9	23	Medium
Boone	6	2	3	3	4	9	27	Medium
Brown	6	1	3	3	4	9	26	Medium
Bureau	6	2	1	3	4	9	25	Medium
Calhoun	6	1	3	3	2	9	24	Medium
Carroll	6	1	1	3	2	9	22	Low
Cass	6	1	1	3	6	9	26	Medium
Champaign	6	2	3	3	6	9	29	High
Christian	6	2	1	6	2	9	26	Medium
Clark	6	1	1	3	2	9	22	Low
Clay	6	1	1	3	6	9	26	Medium
Clinton	6	2	3	3	2	9	25	Medium
Coles	6	2	3	3	6	9	29	High
Cook	9	3	1	6	6	6	31	High
Crawford	6	1	1	3	4	9	24	Medium
Cumberland	6	1	1	3	2	9	22	Low
De Witt	6	1	1	3	2	3	16	Very Low
DeKalb	6	2	3	3	6	9	29	High
Douglas	6	1	1	6	6	9	29	High
DuPage	9	3	3	3	2	6	26	Medium
Edgar	6	1	1	3	4	9	24	Medium
Edwards	6	1	1	3	4	9	24	Medium
Effingham	6	2	1	3	2	9	23	Medium
Fayette	6	1	1	3	6	9	26	Medium
Ford	6	1	1	3	4	9	24	Medium
Franklin	9	2	1	6	6	9	33	High
Fulton	6	2	1	6	4	9	28	Medium
Gallatin	9	1	1	6	4	9	30	High
Greene	6	1	1	3	2	9	22	Low
Grundy	6	2	3	6	2	9	28	Medium
Hamilton	6	1	1	3	4	9	24	Medium
Hancock	9	1	1	3	2	9	25	Medium
Hardin	9	1	1	3	4	9	27	Medium
Henderson	9	1	1	3	2	9	25	Medium
Henry	9	2	1	3	2	9	26	Medium
Iroquois	6	2	1	6	4	9	28	Medium
Jackson	9	2	3	6	6	9	35	Very High
Jasper	6	1	1	3	4	9	24	Medium
Jefferson	6	2	1	3	6	9	27	Medium

Jersey	6	1	3	3	2	9	24	Medium
Jo Daviess	6	1	1	3	2	9	22	Low
Johnson	6	1	1	6	4	9	27	Medium
Kane	6	3	3	6	6	6	30	High
Kankakee	6	2	3	6	6	9	32	High
Kendall	6	2	3	3	2	9	25	Medium
Knox	6	2	1	3	6	9	27	Medium
Lake	6	3	3	6	4	9	31	High
LaSalle	6	2	1	3	6	9	27	Medium
Lawrence	6	1	3	6	6	9	31	High
Lee	6	2	1	3	4	9	25	Medium
Livingston	6	2	1	6	4	9	28	Medium
Logan	6	2	1	3	2	9	23	Medium
Macon	6	2	1	3	6	9	27	Medium
Macoupin	6	2	1	3	2	9	23	Medium
Madison	6	3	1	9	4	9	32	High
Marion	6	2	1	3	6	9	27	Medium
Marshall	6	1	1	9	2	9	28	Medium
Mason	6	1	1	6	2	9	25	Medium
Massac	9	1	3	6	6	9	34	Very High
McDonough	9	2	3	3	4	9	30	High
McHenry	6	3	3	6	2	9	29	High
McLean	6	2	3	3	2	9	25	Medium
Menard	6	1	3	3	2	9	24	Medium
Mercer	9	1	1	3	2	9	25	Medium
Monroe	6	2	3	3	2	9	25	Medium
Montgomery	3	2	1	3	4	9	22	Low
Morgan	6	2	1	3	6	9	27	Medium
Moultrie	6	1	1	3	4	9	24	Medium
Ogle	6	2	3	3	4	9	27	Medium
Peoria	6	2	1	9	6	9	33	High
Perry	6	1	1	3	6	9	26	Medium
Piatt	6	1	1	3	2	9	22	Low
Pike	6	1	1	3	4	9	24	Medium
Pope	9	1	3	3	4	9	29	High
Pulaski	9	1	1	6	6	9	32	High
Putnam	6	1	1	3	2	9	22	Low
Randolph	6	2	1	3	4	9	25	Medium
Richland	6	1	1	3	4	9	24	Medium
Rock Island	9	2	1	3	6	9	30	High
Saline	6	1	1	9	6	9	32	High
Sangamon	6	2	3	3	4	9	27	Medium
Schuyler	6	1	3	3	4	9	26	Medium
Scott	6	1	1	3	2	9	22	Low
Shelby	6	1	1	3	2	9	22	Low

St. Clair	6	3	3	9	6	9	36	Very High
Stark	6	1	1	3	2	9	22	Low
Stephenson	6	2	1	9	6	9	33	High
Tazewell	6	2	3	9	2	9	31	High
Union	9	1	1	6	6	9	32	High
Vermilion	6	2	1	6	6	9	30	High
Wabash	9	1	1	3	6	9	29	High
Warren	6	1	1	3	6	9	26	Medium
Washington	6	1	1	3	2	9	22	Low
Wayne	9	1	1	3	6	9	29	High
White	9	1	1	3	4	9	27	Medium
Whiteside	9	2	1	3	4	9	28	Medium
Will	6	3	3	3	4	9	28	Medium
Williamson	6	2	3	3	4	9	27	Medium
Winnebago	6	3	3	9	6	9	36	Very High
Woodford	6	2	3	9	2	9	31	High

Landslide

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	3	19	Low
Alexander	3	1	1	3	6	3	17	Very Low
Bond	3	1	3	3	4	3	17	Very Low
Boone	3	2	3	3	4	3	18	Low
Brown	3	1	3	3	4	3	17	Very Low
Bureau	3	2	1	3	4	3	16	Very Low
Calhoun	3	1	3	3	2	3	15	Very Low
Carroll	6	1	1	3	2	3	16	Very Low
Cass	3	1	1	3	6	3	17	Very Low
Champaign	3	2	3	3	6	3	20	Low
Christian	3	2	1	3	2	3	14	Very Low
Clark	3	1	1	3	2	3	13	Very Low
Clay	3	1	1	3	6	3	17	Very Low
Clinton	3	2	3	3	2	3	16	Very Low
Coles	3	2	3	3	6	3	20	Low
Cook	3	3	1	3	6	3	19	Low
Crawford	3	1	1	3	4	3	15	Very Low
Cumberland	3	1	1	3	2	3	13	Very Low
De Witt	3	2	3	3	6	3	20	Low
DeKalb	3	1	1	3	2	3	13	Very Low
Douglas	3	1	1	3	6	3	17	Very Low
DuPage	3	3	3	3	2	3	17	Very Low
Edgar	3	1	1	3	4	3	15	Very Low
Edwards	3	1	1	3	4	3	15	Very Low
Effingham	3	2	1	3	2	3	14	Very Low
Fayette	3	1	1	3	6	3	17	Very Low
Ford	3	1	1	3	4	3	15	Very Low
Franklin	3	2	1	3	6	3	18	Low
Fulton	3	2	1	3	4	3	16	Very Low
Gallatin	3	1	1	3	4	3	15	Very Low
Greene	3	1	1	3	2	3	13	Very Low
Grundy	3	2	3	3	2	3	16	Very Low
Hamilton	3	1	1	3	4	3	15	Very Low
Hancock	3	1	1	3	2	3	13	Very Low
Hardin	3	1	1	3	4	3	15	Very Low
Henderson	3	1	1	3	2	3	13	Very Low
Henry	3	2	1	3	2	3	14	Very Low
Iroquois	3	2	1	3	4	3	16	Very Low
Jackson	3	2	3	3	6	3	20	Low
Jasper	3	1	1	3	4	3	15	Very Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	3	2	1	3	6	3	18	Low
Jersey	6	1	3	3	2	3	18	Low
Jo Daviess	3	1	1	3	2	3	13	Very Low
Johnson	3	1	1	3	4	3	15	Very Low
Kane	3	3	3	3	6	3	21	Low
Kankakee	3	2	3	3	6	3	20	Low
Kendall	3	2	3	3	2	3	16	Very Low
Knox	3	2	1	3	6	3	18	Low
Lake	3	2	1	3	6	3	18	Low
LaSalle	3	3	3	3	4	3	19	Low
Lawrence	3	1	3	3	6	3	19	Low
Lee	3	2	1	3	4	3	16	Very Low
Livingston	3	2	1	3	4	3	16	Very Low
Logan	3	2	1	3	2	3	14	Very Low
Macon	3	2	1	3	6	3	18	Low
Macoupin	3	2	1	3	2	3	14	Very Low
Madison	6	3	1	3	4	3	20	Low
Marion	3	2	1	3	6	3	18	Low
Marshall	3	1	1	3	2	3	13	Very Low
Mason	3	1	1	3	2	3	13	Very Low
Massac	3	1	3	3	6	3	19	Low
McDonough	3	2	3	3	4	3	18	Low
McHenry	3	3	3	3	2	3	17	Very Low
McLean	3	2	3	3	2	3	16	Very Low
Menard	3	1	3	3	2	3	15	Very Low
Mercer	3	1	1	3	2	3	13	Very Low
Monroe	3	2	3	3	2	3	16	Very Low
Montgomery	3	2	1	3	4	3	16	Very Low
Morgan	3	2	1	3	6	3	18	Low
Moultrie	3	1	1	3	4	3	15	Very Low
Ogle	3	2	3	3	4	3	18	Low
Peoria	6	2	1	3	6	3	21	Low
Perry	3	1	1	3	6	3	17	Very Low
Piatt	3	1	1	3	2	3	13	Very Low
Pike	3	1	1	3	4	3	15	Very Low
Pope	3	1	3	3	4	3	17	Very Low
Pulaski	3	1	1	3	6	3	17	Very Low
Putnam	3	1	1	3	2	3	13	Very Low
Randolph	6	2	1	3	4	3	19	Low
Richland	3	1	1	3	4	3	15	Very Low
Rock Island	6	2	1	3	6	3	21	Low
Saline	3	1	1	3	6	3	17	Very Low
Sangamon	3	2	3	3	4	3	18	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	3	1	3	3	4	3	17	Very Low
Scott	3	1	1	3	2	3	13	Very Low
Shelby	3	1	1	3	2	3	13	Very Low
St. Clair	3	3	3	3	6	3	21	Low
Stark	3	1	1	3	2	3	13	Very Low
Stephenson	3	2	1	3	6	3	18	Low
Tazewell	3	2	3	3	2	3	16	Very Low
Union	3	1	1	3	6	3	17	Very Low
Vermilion	3	2	1	3	6	3	18	Low
Wabash	3	1	1	3	6	3	17	Very Low
Warren	3	1	1	3	6	3	17	Very Low
Washington	3	1	1	3	2	3	13	Very Low
Wayne	3	1	1	3	6	3	17	Very Low
White	3	1	1	3	4	3	15	Very Low
Whiteside	3	2	1	3	4	3	16	Very Low
Will	3	3	3	3	4	3	19	Low
Williamson	3	2	3	3	4	3	18	Low
Winnebago	3	3	3	3	6	3	21	Low
Woodford	3	2	3	3	2	3	16	Very Low

Mine Subsidence

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	1	2	1	3	4	3	16	Very Low
Alexander	1	1	1	3	6	3	17	Very Low
Bond	1	1	3	3	4	6	23	Medium
Boone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brown	1	1	3	3	4	3	17	Very Low
Bureau	1	2	1	3	4	9	25	Medium
Calhoun	1	1	3	3	2	3	15	Very Low
Carroll	1	1	1	3	2	3	13	Very Low
Cass	1	1	1	3	6	3	17	Very Low
Champaign	2	2	3	3	6	3	20	Low
Christian	1	2	1	3	2	9	23	Medium
Clark	1	1	1	3	2	3	13	Very Low
Clay	1	1	1	3	6	3	17	Very Low
Clinton	1	2	3	3	2	9	25	Medium
Coles	1	2	3	3	6	3	20	Low
Cook	3	3	1	3	6	3	19	Low
Crawford	1	1	1	3	4	3	15	Very Low
Cumberland	1	1	1	3	2	3	13	Very Low
De Witt	2	2	3	3	6	3	20	Low
DeKalb	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Douglas	1	1	1	3	6	3	20	Low
DuPage	3	3	3	3	2	3	17	Very Low
Edgar	1	1	1	3	4	3	15	Very Low
Edwards	1	1	1	3	4	3	15	Very Low
Effingham	1	2	1	3	2	3	14	Very Low
Fayette	1	1	1	3	6	3	17	Very Low
Ford	1	1	1	3	4	3	15	Very Low
Franklin	1	2	1	3	6	9	27	Medium
Fulton	1	2	1	3	4	9	25	Medium
Gallatin	1	1	1	3	4	6	21	Low
Greene	1	1	1	3	2	3	13	Very Low
Grundy	1	2	3	3	2	9	25	Medium
Hamilton	1	1	1	3	4	3	15	Very Low
Hancock	1	1	1	3	2	3	13	Very Low
Hardin	1	1	1	3	4	3	15	Very Low
Henderson	1	1	1	3	2	3	13	Very Low
Henry	1	2	1	3	2	6	17	Very Low
Iroquois	1	2	1	3	4	3	16	Very Low
Jackson	1	2	3	3	6	6	26	Medium
Jasper	1	1	1	3	4	3	15	Very Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	1	2	1	3	6	3	21	Low
Jersey	1	1	3	3	2	3	15	Very Low
Jo Daviess	1	1	1	3	2	3	13	Very Low
Johnson	1	1	1	3	4	3	15	Very Low
Kane	3	3	3	3	6	3	21	Low
Kankakee	2	2	3	3	6	3	20	Low
Kendall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Knox	1	2	1	3	6	3	21	Low
Lake	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High
LaSalle	3	3	3	3	6	9	30	N/A
Lawrence	1	1	3	3	6	3	19	Low
Lee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Livingston	1	2	1	3	4	3	16	Very Low
Logan	1	2	1	3	2	9	23	Medium
Macon	2	2	1	3	6	3	18	Low
Macoupin	1	2	1	3	2	9	23	Medium
Madison	2	3	1	3	4	9	26	Medium
Marion	1	2	1	3	6	6	24	Medium
Marshall	1	1	1	3	2	3	13	Very Low
Mason	1	1	1	3	2	6	19	Low
Massac	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
McDonough	1	2	3	3	4	3	21	Low
McHenry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
McLean	2	2	3	3	2	3	16	Very Low
Menard	1	1	3	3	2	9	24	Medium
Mercer	1	1	1	3	2	6	19	Low
Monroe	1	2	3	3	2	3	16	Very Low
Montgomery	1	2	1	3	4	9	25	Medium
Morgan	1	2	1	3	6	3	18	Low
Moultrie	1	1	1	3	4	3	15	Very Low
Ogle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peoria	2	2	1	3	6	6	24	Medium
Perry	1	1	1	3	6	9	26	Medium
Piatt	1	1	1	3	2	3	13	Very Low
Pike	1	1	1	3	4	3	15	Very Low
Pope	1	1	3	3	4	3	17	Very Low
Pulaski	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Putnam	1	1	1	3	2	9	22	Low
Randolph	1	2	1	3	4	6	22	Low
Richland	1	1	1	3	4	3	15	Very Low
Rock Island	2	2	1	3	6	3	21	Low
Saline	1	1	1	3	6	9	26	Medium
Sangamon	2	2	3	3	4	9	27	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	1	1	3	3	4	3	17	Very Low
Scott	1	1	1	3	2	3	13	Very Low
Shelby	1	1	1	3	2	3	13	Very Low
St. Clair	2	3	3	3	6	9	30	High
Stark	1	1	1	3	2	3	13	Very Low
Stephenson	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tazewell	2	2	3	3	2	6	22	Low
Union	1	1	1	3	6	3	17	Very Low
Vermilion	1	2	1	3	6	6	24	Medium
Wabash	1	1	1	3	6	3	17	Very Low
Warren	1	1	1	3	6	3	17	Very Low
Washington	1	1	1	3	2	6	19	Low
Wayne	1	1	1	3	6	3	17	Very Low
White	1	1	1	3	4	3	15	Very Low
Whiteside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Will	3	3	3	3	4	3	19	Low
Williamson	1	2	3	3	4	9	27	Medium
Winnebago	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Woodford	1	2	3	3	2	3	16	Very Low

Pandemic

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	3	19	Medium
Alexander	3	1	1	3	6	3	17	Medium
Bond	3	1	3	3	4	3	17	Medium
Boone	3	2	3	3	4	3	18	Medium
Brown	3	1	3	3	4	3	17	Medium
Bureau	3	2	1	3	4	3	16	Medium
Calhoun	3	1	3	3	2	3	15	Medium
Carroll	6	1	1	3	2	3	16	Low
Cass	3	1	1	3	6	3	17	Medium
Champaign	3	2	3	3	6	3	20	High
Christian	3	2	1	3	2	3	14	Medium
Clark	3	1	1	3	2	3	13	Low
Clay	3	1	1	3	6	3	17	Medium
Clinton	3	2	3	3	2	3	16	Medium
Coles	3	2	3	3	6	3	20	High
Cook	3	3	1	3	6	3	19	Medium
Crawford	3	1	1	3	4	3	15	Medium
Cumberland	3	1	1	3	2	3	13	Low
De Witt	3	2	3	3	6	3	20	Low
DeKalb	3	1	1	3	2	3	13	High
Douglas	3	1	1	3	6	3	17	Medium
DuPage	3	3	3	3	2	3	17	Medium
Edgar	3	1	1	3	4	3	15	Medium
Edwards	3	1	1	3	4	3	15	Medium
Effingham	3	2	1	3	2	3	14	Medium
Fayette	3	1	1	3	6	3	17	Medium
Ford	3	1	1	3	4	3	15	Medium
Franklin	3	2	1	3	6	3	18	Medium
Fulton	3	2	1	3	4	3	16	Medium
Gallatin	3	1	1	3	4	3	15	Medium
Greene	3	1	1	3	2	3	13	Low
Grundy	3	2	3	3	2	3	16	Medium
Hamilton	3	1	1	3	4	3	15	Medium
Hancock	3	1	1	3	2	3	13	Low
Hardin	3	1	1	3	4	3	15	Medium
Henderson	3	1	1	3	2	3	13	Low
Henry	3	2	1	3	2	3	14	Medium
Iroquois	3	2	1	3	4	3	16	Medium
Jackson	3	2	3	3	6	3	20	High
Jasper	3	1	1	3	4	3	15	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	3	2	1	3	6	3	18	Medium
Jersey	6	1	3	3	2	3	18	Medium
Jo Daviess	3	1	1	3	2	3	13	Low
Johnson	3	1	1	3	4	3	15	Medium
Kane	3	3	3	3	6	3	21	High
Kankakee	3	2	3	3	6	3	20	High
Kendall	3	2	3	3	2	3	16	Medium
Knox	3	2	1	3	6	3	18	Medium
Lake	3	2	1	3	6	3	18	High
LaSalle	3	3	3	3	4	3	19	Medium
Lawrence	3	1	3	3	6	3	19	Medium
Lee	3	2	1	3	4	3	16	Medium
Livingston	3	2	1	3	4	3	16	Medium
Logan	3	2	1	3	2	3	14	Medium
Macon	3	2	1	3	6	3	18	Medium
Macoupin	3	2	1	3	2	3	14	Medium
Madison	6	3	1	3	4	3	20	Medium
Marion	3	2	1	3	6	3	18	Medium
Marshall	3	1	1	3	2	3	13	Low
Mason	3	1	1	3	2	3	13	Low
Massac	3	1	3	3	6	3	19	Medium
McDonough	3	2	3	3	4	3	18	Medium
McHenry	3	3	3	3	2	3	17	Medium
McLean	3	2	3	3	2	3	16	Medium
Menard	3	1	3	3	2	3	15	Medium
Mercer	3	1	1	3	2	3	13	Low
Monroe	3	2	3	3	2	3	16	Medium
Montgomery	3	2	1	3	4	3	16	Medium
Morgan	3	2	1	3	6	3	18	Medium
Moultrie	3	1	1	3	4	3	15	Medium
Ogle	3	2	3	3	4	3	18	Medium
Peoria	6	2	1	3	6	3	21	Medium
Perry	3	1	1	3	6	3	17	Medium
Piatt	3	1	1	3	2	3	13	Low
Pike	3	1	1	3	4	3	15	Medium
Pope	3	1	3	3	4	3	17	Medium
Pulaski	3	1	1	3	6	3	17	Medium
Putnam	3	1	1	3	2	3	13	Low
Randolph	6	2	1	3	4	3	19	Medium
Richland	3	1	1	3	4	3	15	Medium
Rock Island	6	2	1	3	6	3	21	Medium
Saline	3	1	1	3	6	3	17	Medium
Sangamon	3	2	3	3	4	3	18	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	3	1	3	3	4	3	17	Medium
Scott	3	1	1	3	2	3	13	Low
Shelby	3	1	1	3	2	3	13	Low
St. Clair	3	3	3	3	6	3	21	High
Stark	3	1	1	3	2	3	13	Low
Stephenson	3	2	1	3	6	3	18	Medium
Tazewell	3	2	3	3	2	3	16	Medium
Union	3	1	1	3	6	3	17	Medium
Vermilion	3	2	1	3	6	3	18	Medium
Wabash	3	1	1	3	6	3	17	Medium
Warren	3	1	1	3	6	3	17	Medium
Washington	3	1	1	3	2	3	13	Low
Wayne	3	1	1	3	6	3	17	Medium
White	3	1	1	3	4	3	15	Medium
Whiteside	3	2	1	3	4	3	16	Medium
Will	3	3	3	3	4	3	19	Medium
Williamson	3	2	3	3	4	3	18	Medium
Winnebago	3	3	3	3	6	3	21	High
Woodford	3	2	3	3	2	3	16	Medium

Severe Storms: Hail

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	3	4	9	28	Medium
Alexander	9	1	1	3	6	9	29	High
Bond	9	1	3	3	4	9	29	High
Boone	9	2	3	3	4	9	30	High
Brown	9	1	3	3	4	9	29	High
Bureau	9	2	1	6	4	9	31	High
Calhoun	9	1	3	3	2	9	27	Medium
Carroll	9	1	1	3	2	9	25	Medium
Cass	9	1	1	3	6	9	29	High
Champaign	9	2	3	6	6	9	35	Very High
Christian	9	2	1	3	2	9	26	Medium
Clark	9	1	1	3	2	9	25	Medium
Clay	9	1	1	3	6	9	29	High
Clinton	9	2	3	3	2	9	28	Medium
Coles	9	2	3	3	6	9	32	High
Cook	9	3	1	9	6	9	37	Very High
Crawford	9	1	1	3	4	9	27	Medium
Cumberland	9	1	1	3	2	9	25	Medium
De Witt	9	2	3	3	6	9	32	Medium
DeKalb	9	1	1	3	2	9	25	High
Douglas	9	1	1	9	6	9	35	Very High
DuPage	9	3	3	3	2	9	29	High
Edgar	9	1	1	3	4	9	27	Medium
Edwards	9	1	1	3	4	9	27	Medium
Effingham	9	2	1	3	2	9	26	Medium
Fayette	9	1	1	6	6	9	32	High
Ford	9	1	1	3	4	9	27	Medium
Franklin	9	2	1	3	6	9	30	High
Fulton	9	2	1	6	4	9	31	High
Gallatin	9	1	1	3	4	9	27	Medium
Greene	9	1	1	3	2	9	25	Medium
Grundy	9	2	3	3	2	9	28	Medium
Hamilton	9	1	1	3	4	9	27	Medium
Hancock	9	1	1	3	2	9	25	Medium
Hardin	6	1	1	3	4	9	24	Medium
Henderson	9	1	1	9	2	9	31	High
Henry	9	2	1	3	2	9	26	Medium
Iroquois	9	2	1	3	4	9	28	Medium
Jackson	9	2	3	3	6	9	32	High
Jasper	9	1	1	3	4	9	27	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	9	2	1	3	6	9	30	High
Jersey	9	1	3	3	2	9	27	Medium
Jo Daviess	9	1	1	3	2	9	25	Medium
Johnson	9	1	1	9	4	9	33	High
Kane	9	3	3	3	6	9	33	High
Kankakee	9	2	3	6	6	9	35	Very High
Kendall	9	2	3	3	2	9	28	Medium
Knox	9	2	1	3	6	9	30	High
Lake	9	2	1	3	6	9	30	Very High
LaSalle	9	3	3	6	4	9	34	High
Lawrence	9	1	3	3	6	9	31	High
Lee	9	2	1	3	4	9	28	Medium
Livingston	9	2	1	3	4	9	28	Medium
Logan	9	2	1	9	2	9	32	High
Macon	9	2	1	3	6	9	30	High
Macoupin	9	2	1	6	2	9	29	High
Madison	9	3	1	3	4	9	29	High
Marion	9	2	1	3	6	9	30	High
Marshall	9	1	1	3	2	9	25	Medium
Mason	9	1	1	3	2	9	25	Medium
Massac	9	1	3	3	6	9	31	High
McDonough	9	2	3	3	4	9	30	High
McHenry	9	3	3	3	2	9	29	High
McLean	9	2	3	3	2	9	28	Medium
Menard	9	1	3	3	2	9	27	Medium
Mercer	9	1	1	3	2	9	25	Medium
Monroe	9	2	3	3	2	9	28	Medium
Montgomery	9	2	1	3	4	9	28	Medium
Morgan	9	2	1	3	6	9	30	High
Moultrie	9	1	1	9	4	9	33	High
Ogle	9	2	3	3	4	9	30	High
Peoria	9	2	1	6	6	9	33	High
Perry	9	1	1	3	6	9	29	High
Piatt	9	1	1	3	2	9	25	Medium
Pike	9	1	1	3	4	9	27	Medium
Pope	9	1	3	3	4	9	29	High
Pulaski	9	1	1	3	6	9	29	High
Putnam	9	1	1	3	2	9	25	Medium
Randolph	9	2	1	3	4	9	28	Medium
Richland	9	1	1	3	4	9	27	Medium
Rock Island	9	2	1	3	6	9	30	High
Saline	9	1	1	3	6	9	29	High
Sangamon	9	2	3	9	4	9	36	Very High

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	9	1	3	3	4	9	29	High
Scott	9	1	1	3	2	9	25	Medium
Shelby	9	1	1	3	2	9	25	Medium
St. Clair	9	3	3	3	6	9	33	High
Stark	9	1	1	3	2	9	25	Medium
Stephenson	9	2	1	3	6	9	30	High
Tazewell	9	2	3	3	2	9	28	Medium
Union	9	1	1	6	6	9	32	High
Vermilion	9	2	1	6	6	9	33	High
Wabash	9	1	1	3	6	9	29	High
Warren	9	1	1	6	6	9	32	High
Washington	9	1	1	3	2	9	25	Medium
Wayne	9	1	1	3	6	9	29	High
White	9	1	1	3	4	9	27	Medium
Whiteside	9	2	1	3	4	9	28	Medium
Will	9	3	3	3	4	9	31	High
Williamson	9	2	3	6	4	9	33	High
Winnebago	9	3	3	3	6	9	33	High
Woodford	9	2	3	3	2	9	28	Medium

Severe Storms: Lightning

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	3	19	Low
Alexander	6	1	1	3	6	3	20	Low
Bond	6	1	3	3	4	3	20	Low
Boone	6	2	3	3	4	3	21	Low
Brown	3	1	3	3	4	3	17	Very Low
Bureau	6	2	1	3	4	3	19	Low
Calhoun	3	1	3	3	2	3	15	Very Low
Carroll	6	1	1	3	2	3	16	Very Low
Cass	3	1	1	3	6	3	17	Very Low
Champaign	6	2	3	3	6	3	23	Medium
Christian	6	2	1	3	2	3	17	Very Low
Clark	6	1	1	3	2	3	16	Very Low
Clay	6	1	1	3	6	3	20	Low
Clinton	6	2	3	3	2	3	19	Low
Coles	6	2	3	3	6	3	23	Medium
Cook	9	3	1	6	6	3	28	Medium
Crawford	6	1	1	3	4	3	18	Low
Cumberland	3	1	1	3	2	3	13	Very Low
De Witt	6	2	3	3	6	3	23	Very Low
DeKalb	6	1	1	3	2	3	16	Medium
Douglas	6	1	1	3	6	3	20	Low
DuPage	6	3	3	3	2	3	20	Low
Edgar	3	1	1	3	4	3	15	Very Low
Edwards	6	1	1	3	4	3	18	Low
Effingham	3	2	1	3	2	3	14	Very Low
Fayette	3	1	1	3	6	3	17	Very Low
Ford	6	1	1	3	4	3	18	Low
Franklin	6	2	1	3	6	3	21	Low
Fulton	3	2	1	3	4	3	16	Very Low
Gallatin	6	1	1	3	4	3	18	Low
Greene	3	1	1	3	2	3	13	Very Low
Grundy	6	2	3	3	2	3	19	Low
Hamilton	3	1	1	3	4	3	15	Very Low
Hancock	6	1	1	3	2	3	16	Very Low
Hardin	6	1	1	3	4	3	18	Low
Henderson	3	1	1	3	2	3	13	Very Low
Henry	6	2	1	3	2	3	17	Very Low
Iroquois	6	2	1	3	4	3	19	Low
Jackson	6	2	3	3	6	3	23	Medium
Jasper	3	1	1	3	4	3	15	Very Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	6	2	1	3	6	3	21	Low
Jersey	6	1	3	3	2	3	18	Low
Jo Daviess	6	1	1	3	2	3	16	Very Low
Johnson	3	1	1	3	4	3	15	Very Low
Kane	6	3	3	3	6	3	24	Medium
Kankakee	6	2	3	3	6	3	23	Medium
Kendall	6	2	3	3	2	3	19	Low
Knox	6	2	1	3	6	3	21	Low
Lake	9	2	1	3	6	3	24	Low
LaSalle	6	3	3	3	4	3	22	Medium
Lawrence	3	1	3	3	6	3	19	Low
Lee	6	2	1	3	4	3	19	Low
Livingston	6	2	1	3	4	3	19	Low
Logan	6	2	1	3	2	3	17	Very Low
Macon	6	2	1	3	6	3	21	Low
Macoupin	6	2	1	3	2	3	17	Very Low
Madison	6	3	1	3	4	3	20	Low
Marion	3	2	1	3	6	3	18	Low
Marshall	6	1	1	3	2	3	16	Very Low
Mason	6	1	1	3	2	3	16	Very Low
Massac	6	1	3	3	6	3	22	Low
McDonough	6	2	3	3	4	3	21	Low
McHenry	9	3	3	3	2	3	23	Medium
McLean	6	2	3	3	2	3	19	Low
Menard	6	1	3	3	2	3	18	Low
Mercer	6	1	1	3	2	3	16	Very Low
Monroe	3	2	3	3	2	3	16	Very Low
Montgomery	6	2	1	3	4	3	19	Low
Morgan	3	2	1	3	6	3	18	Low
Moultrie	3	1	1	3	4	3	15	Very Low
Ogle	6	2	3	3	4	3	21	Low
Peoria	6	2	1	3	6	3	21	Low
Perry	6	1	1	3	6	3	20	Low
Piatt	6	1	1	3	2	3	16	Very Low
Pike	6	1	1	3	4	3	18	Low
Pope	3	1	3	3	4	3	17	Very Low
Pulaski	3	1	1	3	6	3	17	Very Low
Putnam	3	1	1	3	2	3	13	Very Low
Randolph	6	2	1	3	4	3	19	Low
Richland	6	1	1	3	4	3	18	Low
Rock Island	6	2	1	3	6	3	21	Low
Saline	3	1	1	3	6	3	17	Very Low
Sangamon	6	2	3	6	4	3	24	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	6	1	3	3	4	3	20	Low
Scott	3	1	1	3	2	3	13	Very Low
Shelby	6	1	1	3	2	3	16	Very Low
St. Clair	6	3	3	3	6	3	24	Medium
Stark	3	1	1	3	2	3	13	Very Low
Stephenson	6	2	1	3	6	3	21	Low
Tazewell	6	2	3	3	2	3	19	Low
Union	6	1	1	3	6	3	20	Low
Vermilion	6	2	1	3	6	3	21	Low
Wabash	6	1	1	3	6	3	20	Low
Warren	6	1	1	3	6	3	20	Low
Washington	6	1	1	3	2	3	16	Very Low
Wayne	6	1	1	3	6	3	20	Low
White	6	1	1	3	4	3	18	Low
Whiteside	6	2	1	3	4	3	19	Low
Will	9	3	3	3	4	3	25	Medium
Williamson	6	2	3	3	4	3	21	Medium
Winnebago	6	3	3	3	6	3	24	Medium
Woodford	6	2	3	3	2	3	19	Low

Severe Storms: Wind

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	3	4	9	28	Medium
Alexander	9	1	1	6	6	9	32	High
Bond	9	1	3	3	4	9	29	High
Boone	9	2	3	3	4	9	30	High
Brown	9	1	3	3	4	9	29	High
Bureau	9	2	1	3	4	9	28	Medium
Calhoun	9	1	3	3	2	9	27	Medium
Carroll	9	1	1	3	2	9	25	Medium
Cass	9	1	1	6	6	9	32	High
Champaign	9	2	3	6	6	9	35	Very High
Christian	9	2	1	3	2	9	26	Medium
Clark	9	1	1	3	2	9	25	Medium
Clay	9	1	1	3	6	9	29	High
Clinton	9	2	3	3	2	9	28	Medium
Coles	9	2	3	3	6	9	32	High
Cook	9	3	1	6	6	9	34	Very High
Crawford	9	1	1	3	4	9	27	Medium
Cumberland	9	1	1	3	2	9	25	Medium
De Witt	9	2	3	3	6	9	32	Medium
DeKalb	9	1	1	6	2	9	28	High
Douglas	9	1	1	3	6	9	29	High
DuPage	9	3	3	6	2	9	32	High
Edgar	9	1	1	3	4	9	27	Medium
Edwards	9	1	1	3	4	9	27	Medium
Effingham	9	2	1	3	2	9	26	Medium
Fayette	9	1	1	3	6	9	29	High
Ford	9	1	1	3	4	9	27	Medium
Franklin	9	2	1	9	6	9	36	Very High
Fulton	9	2	1	3	4	9	28	Medium
Gallatin	9	1	1	6	4	9	30	High
Greene	9	1	1	3	2	9	25	Medium
Grundy	9	2	3	6	2	9	31	High
Hamilton	9	1	1	3	4	9	27	Medium
Hancock	9	1	1	6	2	9	28	Medium
Hardin	9	1	1	6	4	9	30	High
Henderson	9	1	1	3	2	9	25	Medium
Henry	9	2	1	9	2	9	32	High
Iroquois	9	2	1	3	4	9	28	Medium
Jackson	9	2	3	9	6	9	38	Very High
Jasper	9	1	1	3	4	9	27	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	9	2	1	9	6	9	36	Very High
Jersey	9	1	3	3	2	9	27	Medium
Jo Daviess	9	1	1	3	2	9	25	Medium
Johnson	9	1	1	3	4	9	27	Medium
Kane	9	3	3	3	6	9	33	High
Kankakee	9	2	3	3	6	9	32	High
Kendall	9	2	3	3	2	9	28	Medium
Knox	9	2	1	3	6	9	30	High
Lake	9	2	1	6	6	9	33	High
LaSalle	9	3	3	3	4	9	31	High
Lawrence	9	1	3	3	6	9	31	High
Lee	9	2	1	3	4	9	28	Medium
Livingston	9	2	1	3	4	9	28	Medium
Logan	9	2	1	6	2	9	29	High
Macon	9	2	1	6	6	9	33	High
Macoupin	9	2	1	3	2	9	26	Medium
Madison	9	3	1	3	4	9	29	High
Marion	9	2	1	3	6	9	30	High
Marshall	9	1	1	3	2	9	25	Medium
Mason	9	1	1	3	2	9	25	Medium
Massac	9	1	3	9	6	9	37	Very High
McDonough	9	2	3	3	4	9	30	High
McHenry	9	3	3	3	2	9	29	High
McLean	9	2	3	6	2	9	31	High
Menard	9	1	3	3	2	9	27	Medium
Mercer	9	1	1	9	2	9	31	High
Monroe	9	2	3	3	2	9	28	Medium
Montgomery	9	2	1	3	4	9	28	Medium
Morgan	9	2	1	3	6	9	30	High
Moultrie	9	1	1	3	4	9	27	Medium
Ogle	9	2	3	3	4	9	30	High
Peoria	9	2	1	6	6	9	33	High
Perry	9	1	1	6	6	9	32	High
Piatt	9	1	1	3	2	9	25	Medium
Pike	9	1	1	3	4	9	27	Medium
Pope	9	1	3	6	4	9	32	High
Pulaski	9	1	1	6	6	9	32	High
Putnam	9	1	1	6	2	9	28	Medium
Randolph	9	2	1	3	4	9	28	Medium
Richland	9	1	1	3	4	9	27	Medium
Rock Island	9	2	1	3	6	9	30	High
Saline	9	1	1	6	6	9	32	High
Sangamon	9	2	3	6	4	9	33	High

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	9	1	3	3	4	9	29	High
Scott	9	1	1	3	2	9	25	Medium
Shelby	9	1	1	6	2	9	28	Medium
St. Clair	9	3	3	6	6	9	36	Very High
Stark	9	1	1	3	2	9	25	Medium
Stephenson	9	2	1	6	6	9	33	High
Tazewell	9	2	3	6	2	9	31	High
Union	9	1	1	3	6	9	29	High
Vermilion	9	2	1	9	6	9	36	Very High
Wabash	9	1	1	3	6	9	29	High
Warren	9	1	1	3	6	9	29	High
Washington	9	1	1	3	2	9	25	Medium
Wayne	9	1	1	3	6	9	29	High
White	9	1	1	3	4	9	27	Medium
Whiteside	9	2	1	3	4	9	28	Medium
Will	9	3	3	3	4	9	31	High
Williamson	9	2	3	9	4	9	36	Very High
Winnebago	9	3	3	6	6	9	36	Very High
Woodford	9	2	3	3	2	9	28	Medium

Tornado

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	6	4	6	28	Medium
Alexander	6	1	1	3	6	6	23	Medium
Bond	9	1	3	6	4	6	29	High
Boone	6	2	3	9	4	6	30	High
Brown	6	1	3	6	4	3	23	Medium
Bureau	9	2	1	6	4	6	28	Medium
Calhoun	6	1	3	3	2	6	21	Low
Carroll	6	1	1	6	2	6	22	Low
Cass	6	1	1	6	6	6	26	Medium
Champaign	9	2	3	9	6	9	38	Very High
Christian	9	2	1	9	2	9	32	High
Clark	6	1	1	3	2	3	16	Very Low
Clay	6	1	1	6	6	6	26	Medium
Clinton	9	2	3	9	2	6	31	High
Coles	9	2	3	9	6	6	35	Very High
Cook	9	3	1	9	6	9	37	Very High
Crawford	6	1	1	3	4	6	21	Low
Cumberland	6	1	1	3	2	3	16	Very Low
De Witt	9	2	3	9	6	6	35	Medium
DeKalb	9	1	1	9	2	6	28	Very High
Douglas	9	1	1	6	6	6	29	High
DuPage	9	3	3	6	2	6	29	High
Edgar	9	1	1	6	4	6	27	Medium
Edwards	6	1	1	6	4	3	21	Low
Effingham	9	2	1	3	2	6	23	Medium
Fayette	9	1	1	6	6	6	29	High
Ford	9	1	1	6	4	6	27	Medium
Franklin	6	2	1	6	6	6	27	Medium
Fulton	9	2	1	9	4	9	34	Very High
Gallatin	6	1	1	6	4	3	21	Low
Greene	6	1	1	6	2	6	22	Low
Grundy	9	2	3	9	2	6	31	High
Hamilton	6	1	1	6	4	3	21	Low
Hancock	9	1	1	9	2	6	28	Medium
Hardin	6	1	1	3	4	3	18	Low
Henderson	6	1	1	6	2	3	19	Low
Henry	9	2	1	9	2	9	32	High
Iroquois	9	2	1	6	4	9	31	High
Jackson	9	2	3	9	6	6	35	Very High
Jasper	6	1	1	3	4	3	18	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jefferson	9	2	1	6	6	6	30	High
Jersey	6	1	3	6	2	6	24	Medium
Jo Daviess	6	1	1	3	2	3	16	Very Low
Johnson	6	1	1	6	4	6	24	Medium
Kane	9	3	3	6	6	6	33	High
Kankakee	9	2	3	9	6	9	38	Very High
Kendall	6	2	3	6	2	6	25	Medium
Knox	9	2	1	6	6	6	30	High
Lake	6	2	1	9	6	9	33	Very High
LaSalle	9	3	3	9	4	6	34	High
Lawrence	6	1	3	6	6	3	25	Medium
Lee	9	2	1	3	4	6	25	Medium
Livingston	9	2	1	6	4	9	31	High
Logan	9	2	1	9	2	9	32	High
Macon	9	2	1	9	6	9	36	Very High
Macoupin	9	2	1	3	2	6	23	Medium
Madison	9	3	1	9	4	9	35	Very High
Marion	9	2	1	9	6	6	33	High
Marshall	6	1	1	6	2	3	19	Low
Mason	9	1	1	6	2	6	25	Medium
Massac	6	1	3	9	6	6	31	High
McDonough	9	2	3	3	4	6	27	Medium
McHenry	9	3	3	9	2	6	32	High
McLean	9	2	3	6	2	9	31	High
Menard	6	1	3	9	2	3	24	Medium
Mercer	9	1	1	6	2	6	25	Medium
Monroe	9	2	3	3	2	6	25	Medium
Montgomery	9	2	1	3	4	9	28	Medium
Morgan	9	2	1	6	6	6	30	High
Moultrie	6	1	1	3	4	3	18	Low
Ogle	9	2	3	9	4	6	33	High
Peoria	9	2	1	9	6	6	33	High
Perry	6	1	1	6	6	6	26	Medium
Piatt	9	1	1	6	2	6	25	Medium
Pike	9	1	1	6	4	6	27	Medium
Pope	6	1	3	6	4	3	23	Medium
Pulaski	6	1	1	6	6	3	23	Medium
Putnam	6	1	1	9	2	3	22	Low
Randolph	9	2	1	6	4	9	31	High
Richland	6	1	1	6	4	6	24	Medium
Rock Island	9	2	1	6	6	6	30	High
Saline	6	1	1	6	6	3	23	Medium
Sangamon	9	2	3	9	4	9	36	Very High

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Schuyler	9	1	3	6	4	6	29	High
Scott	6	1	1	3	2	3	16	Very Low
Shelby	9	1	1	6	2	6	25	Medium
St. Clair	9	3	3	6	6	9	36	Very High
Stark	6	1	1	6	2	3	19	Low
Stephenson	6	2	1	6	6	6	27	Medium
Tazewell	9	2	3	9	2	9	34	Very High
Union	9	1	1	6	6	6	29	High
Vermilion	9	2	1	9	6	9	36	Very High
Wabash	6	1	1	9	6	6	29	High
Warren	9	1	1	6	6	6	29	High
Washington	9	1	1	3	2	6	22	Low
Wayne	9	1	1	6	6	6	29	High
White	9	1	1	6	4	6	27	Medium
Whiteside	9	2	1	6	4	6	28	Medium
Will	9	3	3	9	4	9	37	Very High
Williamson	6	2	3	9	4	6	30	High
Winnebago	6	3	3	6	6	6	30	High
Woodford	9	2	3	9	2	9	34	Very High

Wildfire

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	3	2	1	3	4	3	16	Very Low
Alexander	3	1	1	3	6	3	17	Very Low
Bond	3	1	3	3	4	3	17	Very Low
Boone	3	2	3	3	4	3	18	Low
Brown	3	1	3	3	4	3	17	Very Low
Bureau	3	2	1	3	4	3	16	Very Low
Calhoun	3	1	3	3	2	3	15	Very Low
Carroll	3	1	1	3	2	3	13	Very Low
Cass	3	1	1	3	6	3	17	Very Low
Champaign	3	2	3	3	6	3	20	Low
Christian	3	2	1	3	2	3	14	Very Low
Clark	3	1	1	3	2	3	13	Very Low
Clay	3	1	1	3	6	3	17	Very Low
Clinton	3	2	3	3	2	3	16	Very Low
Coles	3	2	3	3	6	3	20	Low
Cook	6	3	1	6	6	3	25	Medium
Crawford	3	1	1	3	4	3	15	Very Low
Cumberland	3	1	1	3	2	3	13	Very Low
De Witt	3	1	1	3	2	3	13	Very Low
DeKalb	3	2	3	3	6	3	20	Low
Douglas	3	1	1	3	6	3	17	Very Low
DuPage	6	3	3	3	2	3	20	Low
Edgar	3	1	1	3	4	3	15	Very Low
Edwards	3	1	1	3	4	3	15	Very Low
Effingham	3	2	1	3	2	3	14	Very Low
Fayette	3	1	1	3	6	3	17	Very Low
Ford	3	1	1	3	4	3	15	Very Low
Franklin	6	2	1	3	6	3	21	Low
Fulton	3	2	1	3	4	3	16	Very Low
Gallatin	6	1	1	3	4	3	18	Low
Greene	3	1	1	3	2	3	13	Very Low
Grundy	6	2	3	3	2	3	19	Low
Hamilton	3	1	1	3	4	3	15	Very Low
Hancock	3	1	1	3	2	3	13	Very Low
Hardin	6	1	1	3	4	3	18	Low
Henderson	3	1	1	3	2	3	13	Very Low
Henry	6	2	1	3	2	3	17	Very Low
Iroquois	6	2	1	3	4	3	19	Low
Jackson	6	2	3	3	6	3	23	Medium
Jasper	3	1	1	3	4	3	15	Very Low
Jefferson	3	2	1	3	6	3	18	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jersey	3	1	3	3	2	3	15	Very Low
Jo Daviess	3	1	1	3	2	3	13	Very Low
Johnson	3	1	1	3	4	3	15	Very Low
Kane	3	3	3	3	6	3	21	Low
Kankakee	3	2	3	3	6	3	20	Low
Kendall	3	2	3	3	2	3	16	Very Low
Knox	3	2	1	3	6	3	18	Low
Lake	3	3	3	3	4	3	19	Low
LaSalle	6	2	1	3	6	3	21	Low
Lawrence	3	1	3	3	6	3	19	Low
Lee	3	2	1	3	4	3	16	Very Low
Livingston	3	2	1	3	4	3	16	Very Low
Logan	3	2	1	3	2	3	14	Very Low
Macon	3	2	1	3	6	3	18	Low
Macoupin	3	2	1	3	2	3	14	Very Low
Madison	3	3	1	3	4	3	17	Very Low
Marion	3	2	1	3	6	3	18	Low
Marshall	3	1	1	3	2	3	13	Very Low
Mason	3	1	1	3	2	3	13	Very Low
Massac	3	1	3	3	6	3	19	Low
McDonough	3	2	3	3	4	3	18	Low
McHenry	3	3	3	3	2	3	17	Very Low
McLean	3	2	3	3	2	3	16	Very Low
Menard	3	1	3	3	2	3	15	Very Low
Mercer	3	1	1	3	2	3	13	Very Low
Monroe	3	2	3	3	2	3	16	Very Low
Montgomery	3	2	1	3	4	3	16	Very Low
Morgan	3	2	1	3	6	3	18	Low
Moultrie	3	1	1	3	4	3	15	Very Low
Ogle	3	2	3	3	4	3	18	Low
Peoria	3	2	1	3	6	3	18	Low
Perry	3	1	1	3	6	3	17	Very Low
Piatt	3	1	1	3	2	3	13	Very Low
Pike	3	1	1	3	4	3	15	Very Low
Pope	3	1	3	3	4	3	17	Very Low
Pulaski	3	1	1	3	6	3	17	Very Low
Putnam	3	1	1	3	2	3	13	Very Low
Randolph	3	2	1	3	4	3	16	Very Low
Richland	3	1	1	3	4	3	15	Very Low
Rock Island	3	2	1	3	6	3	18	Low
Saline	6	1	1	3	6	3	20	Low
Sangamon	6	2	3	6	4	3	24	Medium
Schuyler	3	1	3	3	4	3	17	Very Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Scott	3	1	1	3	2	3	13	Very Low
Shelby	3	1	1	3	2	3	13	Very Low
St. Clair	3	3	3	3	6	3	21	Low
Stark	3	1	1	3	2	3	13	Very Low
Stephenson	3	2	1	3	6	3	18	Low
Tazewell	3	2	3	3	2	3	16	Very Low
Union	3	1	1	3	6	3	17	Very Low
Vermilion	3	2	1	3	6	3	18	Low
Wabash	3	1	1	3	6	3	17	Very Low
Warren	3	1	1	3	6	3	17	Very Low
Washington	3	1	1	3	2	3	13	Very Low
Wayne	6	1	1	3	6	3	20	Low
White	3	1	1	3	4	3	15	Very Low
Whiteside	3	2	1	3	4	3	16	Very Low
Will	6	3	3	3	4	3	22	Low
Williamson	3	2	3	3	4	3	18	Low
Winnebago	3	3	3	3	6	3	21	Low
Woodford	3	2	3	3	2	3	16	Very Low

Winter Weather: Ice Storms

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	6	2	1	3	4	9	25	Medium
Alexander	6	1	1	3	6	3	20	Low
Bond	6	1	3	3	4	3	20	Low
Boone	6	2	3	3	4	3	21	Low
Brown	6	1	3	3	4	9	26	Medium
Bureau	6	2	1	3	4	6	22	Low
Calhoun	6	1	3	3	2	6	21	Low
Carroll	6	1	1	3	2	3	16	Very Low
Cass	6	1	1	3	6	9	26	Medium
Champaign	6	2	3	3	6	9	29	High
Christian	6	2	1	3	2	6	20	Low
Clark	6	1	1	3	2	6	19	Low
Clay	6	1	1	3	6	3	20	Low
Clinton	6	2	3	3	2	3	19	Low
Coles	6	2	3	3	6	6	26	Medium
Cook	6	3	1	3	6	6	25	Medium
Crawford	6	1	1	3	4	3	18	Low
Cumberland	6	1	1	3	2	6	19	Low
De Witt	6	2	3	3	6	9	29	Low
DeKalb	6	1	1	3	2	6	19	High
Douglas	3	1	1	3	6	6	20	Low
DuPage	6	3	3	3	2	6	23	Medium
Edgar	6	1	1	3	4	6	21	Low
Edwards	6	1	1	3	4	3	18	Low
Effingham	6	2	1	3	2	3	17	Very Low
Fayette	6	1	1	3	6	3	20	Low
Ford	6	1	1	3	4	9	24	Medium
Franklin	6	2	1	3	6	3	21	Low
Fulton	6	2	1	3	4	6	22	Low
Gallatin	6	1	1	3	4	3	18	Low
Greene	6	1	1	3	2	6	19	Low
Grundy	6	2	3	3	2	6	22	Low
Hamilton	6	1	1	3	4	3	18	Low
Hancock	6	1	1	3	2	6	19	Low
Hardin	6	1	1	3	4	3	18	Low
Henderson	6	1	1	3	2	6	19	Low
Henry	6	2	1	3	2	6	20	Low
Iroquois	6	2	1	3	4	9	25	Medium
Jackson	6	2	3	3	6	3	23	Medium
Jasper	6	1	1	3	4	3	18	Low
Jefferson	6	2	1	3	6	3	21	Low

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Jersey	6	1	3	3	2	6	21	Low
Jo Daviess	6	1	1	3	2	3	16	Very Low
Johnson	6	1	1	3	4	3	18	Low
Kane	6	3	3	3	6	6	27	Medium
Kankakee	6	2	3	3	6	6	26	Medium
Kendall	6	2	3	3	2	6	22	Low
Knox	6	2	1	3	6	6	24	Medium
Lake	6	2	1	3	6	3	21	Medium
LaSalle	6	3	3	3	4	6	25	Low
Lawrence	6	1	3	3	6	9	28	Medium
Lee	6	2	1	3	4	6	22	Low
Livingston	6	2	1	3	4	6	22	Low
Logan	6	2	1	3	2	9	23	Medium
Macon	6	2	1	3	6	9	27	Medium
Macoupin	6	2	1	3	2	6	20	Low
Madison	6	3	1	3	4	3	20	Low
Marion	6	2	1	3	6	3	21	Low
Marshall	6	1	1	3	2	6	19	Low
Mason	6	1	1	3	2	9	22	Low
Massac	6	1	3	3	6	3	22	Low
McDonough	6	2	3	3	4	6	24	Medium
McHenry	6	3	3	3	2	3	20	Low
McLean	6	2	3	3	2	9	25	Medium
Menard	6	1	3	3	2	9	24	Medium
Mercer	6	1	1	3	2	6	19	Low
Monroe	6	2	3	3	2	3	19	Low
Montgomery	6	2	1	3	4	6	22	Low
Morgan	6	2	1	3	6	9	27	Medium
Moultrie	6	1	1	3	4	6	21	Low
Ogle	6	2	3	3	4	3	21	Low
Peoria	6	2	1	6	6	6	27	Medium
Perry	6	1	1	3	6	3	20	Low
Piatt	6	1	1	3	2	9	22	Low
Pike	6	1	1	3	4	9	24	Medium
Pope	6	1	3	3	4	3	20	Low
Pulaski	6	1	1	3	6	3	20	Low
Putnam	6	1	1	3	2	6	19	Low
Randolph	6	2	1	3	4	3	19	Low
Richland	6	1	1	3	4	3	18	Low
Rock Island	6	2	1	3	6	6	24	Medium
Saline	6	1	1	3	6	3	20	Low
Sangamon	6	2	3	3	4	9	27	Medium
Schuyler	6	1	3	3	4	9	26	Medium

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Scott	6	1	1	3	2	9	22	Low
Shelby	6	1	1	3	2	6	19	Low
St. Clair	6	3	3	3	6	3	24	Medium
Stark	6	1	1	3	2	6	19	Low
Stephenson	6	2	1	3	6	3	21	Low
Tazewell	6	2	3	6	2	9	28	Medium
Union	6	1	1	3	6	3	20	Low
Vermilion	6	2	1	3	6	9	27	Medium
Wabash	6	1	1	3	6	3	20	Low
Warren	6	1	1	3	6	6	23	Medium
Washington	6	1	1	3	2	3	16	Very Low
Wayne	6	1	1	3	6	3	20	Low
White	6	1	1	3	4	3	18	Low
Whiteside	6	2	1	3	4	3	19	Low
Will	6	3	3	3	4	6	25	Medium
Williamson	6	2	3	3	4	3	21	Low
Winnebago	6	3	3	3	6	3	24	Medium
Woodford	6	2	3	3	2	6	22	Low

Winter Weather: Winter Storms

	Historical Probability	Population	Population Change	Severity of Impact	Social Vulnerability	Potential Exposure	Overall Risk (numeric)	Overall Risk
Adams	9	2	1	3	4	9	28	Medium
Alexander	9	1	1	9	6	9	35	Very High
Bond	9	1	3	3	4	9	29	High
Boone	9	2	3	3	4	9	30	High
Brown	9	1	3	3	4	9	29	High
Bureau	9	2	1	3	4	9	28	Medium
Calhoun	9	1	3	3	2	9	27	Medium
Carroll	9	1	1	3	2	9	25	Medium
Cass	9	1	1	3	6	9	29	High
Champaign	9	2	3	3	6	9	32	High
Christian	9	2	1	6	2	9	29	High
Clark	9	1	1	3	2	9	25	Medium
Clay	9	1	1	3	6	9	29	High
Clinton	9	2	3	3	2	9	28	Medium
Coles	9	2	3	3	6	9	32	High
Cook	9	3	1	3	6	9	31	High
Crawford	9	1	1	3	4	9	27	Medium
Cumberland	9	1	1	3	2	9	25	Medium
De Witt	9	2	3	3	6	9	32	Medium
DeKalb	9	1	1	3	2	9	25	High
Douglas	9	1	1	3	6	9	29	High
DuPage	9	3	3	3	2	9	29	High
Edgar	9	1	1	3	4	9	27	Medium
Edwards	9	1	1	3	4	9	27	Medium
Effingham	9	2	1	3	2	9	26	Medium
Fayette	9	1	1	3	6	9	29	High
Ford	9	1	1	3	4	9	27	Medium
Franklin	9	2	1	3	6	9	30	High
Fulton	9	2	1	3	4	9	28	Medium
Gallatin	9	1	1	3	4	9	27	Medium
Greene	9	1	1	3	2	9	25	Medium
Grundy	9	2	3	3	2	9	28	Medium
Hamilton	9	1	1	3	4	9	27	Medium
Hancock	9	1	1	3	2	9	25	Medium
Hardin	9	1	1	9	4	9	33	High
Henderson	9	1	1	3	2	9	25	Medium
Henry	9	2	1	3	2	9	26	Medium
Iroquois	9	2	1	3	4	9	28	Medium
Jackson	9	2	3	3	6	9	32	High
Jasper	9	1	1	3	4	9	27	Medium
Jefferson	9	2	1	3	6	9	30	High
Jersey	9	1	3	3	2	9	27	Medium

Jo Daviess	9	1	1	3	2	9	25	Medium
Johnson	9	1	1	3	4	9	27	Medium
Kane	9	3	3	3	6	9	33	High
Kankakee	9	2	3	3	6	9	32	High
Kendall	9	2	3	3	2	9	28	Medium
Knox	9	2	1	3	6	9	30	High
Lake	9	2	1	3	6	9	30	High
LaSalle	9	3	3	3	4	9	31	High
Lawrence	9	1	3	3	6	9	31	High
Lee	9	2	1	3	4	9	28	Medium
Livingston	9	2	1	3	4	9	28	Medium
Logan	9	2	1	3	2	9	26	Medium
Macon	9	2	1	6	6	9	33	High
Macoupin	9	2	1	6	2	9	29	High
Madison	9	3	1	6	4	9	32	High
Marion	9	2	1	3	6	9	30	High
Marshall	9	1	1	3	2	9	25	Medium
Mason	9	1	1	3	2	9	25	Medium
Massac	9	1	3	9	6	9	37	Very High
McDonough	9	2	3	3	4	9	30	High
McHenry	9	3	3	3	2	9	29	High
McLean	9	2	3	3	2	9	28	Medium
Menard	9	1	3	3	2	9	27	Medium
Mercer	9	1	1	3	2	9	25	Medium
Monroe	9	2	3	3	2	9	28	Medium
Montgomery	9	2	1	3	4	9	28	Medium
Morgan	9	2	1	3	6	9	30	High
Moultrie	9	1	1	3	4	9	27	Medium
Ogle	9	2	3	3	4	9	30	High
Peoria	9	2	1	3	6	9	30	High
Perry	9	1	1	3	6	9	29	High
Piatt	9	1	1	3	2	9	25	Medium
Pike	9	1	1	3	4	9	27	Medium
Pope	9	1	3	9	4	9	35	Very High
Pulaski	9	1	1	9	6	9	35	Very High
Putnam	9	1	1	3	2	9	25	Medium
Randolph	9	2	1	3	4	9	28	Medium
Richland	6	1	1	3	4	9	24	Medium
Rock Island	9	2	1	3	6	9	30	High
Saline	9	1	1	3	6	9	29	High
Sangamon	9	2	3	6	4	9	33	High
Schuyler	9	1	3	3	4	9	29	High
Scott	9	1	1	3	2	9	25	Medium
Shelby	9	1	1	3	2	9	25	Medium
St. Clair	9	3	3	3	6	9	33	High

Stark	9	1	1	3	2	9	25	Medium
Stephenson	9	2	1	3	6	9	30	High
Tazewell	9	2	3	3	2	9	28	Medium
Union	9	1	1	3	6	9	29	High
Vermilion	9	2	1	3	6	9	30	High
Wabash	9	1	1	3	6	9	29	High
Warren	9	1	1	3	6	9	29	High
Washington	9	1	1	3	2	9	25	Medium
Wayne	9	1	1	3	6	9	29	High
White	9	1	1	3	4	9	27	Medium
Whiteside	9	2	1	3	4	9	28	Medium
Will	9	3	3	3	4	9	31	High
Williamson	9	2	3	3	4	9	30	High
Winnebago	9	3	3	3	6	9	33	High
Woodford	9	2	3	3	2	9	28	Medium

Appendix 2.2 Loss Estimates Tables

Flooding: Coastal

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	973,077	685	107,977
Lake	277,436,751,396	173,469,689	16,779,538,720	973,077	1,519	42,408

Flooding: Dam/Levee Failure

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	19,231	161	2,883
Alexander	2,324,745,142	65,731,116	73,331,020	1,923	54	61
Bond	7,080,966,106	2,697,834	699,862,815	11,325	4	1,119
Boone	20,610,453,437	1,729,260	961,292,555	11,325	1	528
Brown	1,026,923,521	62,111,260	71,460,145	11,325	685	788
Bureau	27,309,231,457	9,480,287	746,673,550	11,325	4	310
Calhoun	1,007,110,265	1,335,673	149,352,515	11,325	15	1,679
Carroll	8,880,516,152	98,615,261	227,821,825	9,615	107	247
Cass	2,282,554,727	10,442,921	196,067,810	11,325	52	973
Champaign	69,455,734,544	111,157,807	13,935,665,850	11,325	18	2,272
Christian	15,128,722,731	31,677,846	745,556,930	11,325	24	558
Clark	7,427,346,181	4,816,805	284,111,700	11,325	7	433
Clay	7,180,614,254	4,365,241	288,471,140	11,325	7	455
Clinton	14,930,842,239	58,449,154	935,220,955	11,325	44	709
Coles	21,561,001,462	27,230,352	2,630,255,515	11,325	14	1,382
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	11,325	8	1,257
Crawford	10,326,783,754	31,909,827	499,047,505	11,325	35	547
Cumberland	4,135,853,852	3,100,436	209,284,230	11,325	8	573
De Witt	45,544,847,420	6,312,959	300,529,170	11,325	2	75
DeKalb	6,614,537,379	11,142,833	5,678,831,940	11,325	19	9,723
Douglas	8,391,184,190	3,540,344	335,877,210	11,325	5	453
DuPage	389,914,067,607	32,123,936	29,778,405,580	11,325	1	865
Edgar	10,535,959,193	33,164,719	435,015,440	11,325	36	468
Edwards	2,997,954,570	1,372,437	160,718,920	11,325	5	607
Effingham	16,337,897,113	32,306,327	999,746,525	11,325	22	693
Fayette	9,609,876,813	79,527,680	552,647,650	11,325	94	651
Ford	7,362,089,082	2,448,895	354,999,040	11,325	4	546
Franklin	14,708,710,736	21,715,420	639,210,325	11,325	17	492
Fulton	21,627,784,053	94,587,843	808,388,005	57,692	252	2,156
Gallatin	2,680,581,745	8,360,981	91,730,970	11,325	35	388
Greene	2,136,284,467	8,046,480	825,351,945	11,325	43	4,375
Grundy	25,545,715,472	9,038,968	1,167,168,015	11,325	4	517
Hamilton	7,504,608,023	3,687,110	142,708,750	11,325	6	215
Hancock	2,811,283,625	4,323,331	512,708,090	11,325	17	2,065
Hardin	1,403,020,533	7,048,790	197,679,900	11,325	57	1,596
Henderson	1,388,399,193	2,112,307	164,286,700	11,325	17	1,340
Henry	18,393,777,508	70,229,513	891,710,220	11,325	43	549

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	11,325	8	531
Jackson	21,717,281,167	55,748,766	3,397,545,420	11,325	29	1,772
Jasper	5,776,300,297	5,608,871	192,204,990	11,325	11	377
Jefferson	22,728,278,316	77,435,939	980,508,085	11,325	39	489
Jersey	3,913,559,707	37,810,715	521,334,385	11,325	109	1,509
Jo Daviess	14,642,498,042	9,383,230	490,837,920	11,325	7	380
Johnson	5,306,891,676	156,295,660	154,940,340	11,325	334	331
Kane	190,595,164,545	445,288,135	14,507,605,835	11,325	26	862
Kankakee	46,510,361,693	231,019,368	3,639,486,390	11,325	56	886
Kendall	51,922,881,930	7,940,423	2,268,041,095	11,325	2	495
Knox	8,682,959,633	83,528,172	1,572,886,775	11,325	109	2,051
Lake	277,436,751,396	173,469,689	16,779,538,720	11,325	7	685
LaSalle	56,312,786,680	87,917,169	2,454,172,775	11,325	18	494
Lawrence	5,781,862,919	78,545,550	325,470,830	11,325	154	637
Lee	16,837,809,988	183,713,484	803,062,120	11,325	124	540
Livingston	17,365,083,034	213,450,967	640,551,100	11,325	139	418
Logan	13,525,747,806	222,500,872	883,926,710	11,325	186	740
Macon	5,269,475,348	67,525,196	2,717,707,115	11,325	145	5,841
Macoupin	131,248,978,819	3,075,441	956,708,295	11,325	0	83
Madison	60,024,967,667	98,719,322	8,777,786,070	11,325	19	1,656
Marion	38,273,903,052	71,651,993	867,235,865	11,325	21	257
Marshall	30,502,696,918	3,134,729	254,902,845	11,325	1	95
Mason	96,125,108,425	18,101,902	417,129,945	11,325	2	49
Massac	20,156,751,058	10,410,141	301,863,945	11,325	6	170
McDonough	7,797,106,442	5,453,183	2,094,223,645	11,325	8	3,042
McHenry	7,099,611,423	15,842,964	6,438,995,900	11,325	25	10,271
McLean	6,057,573,290	31,970,937	7,238,900,865	11,325	60	13,533
Menard	6,913,247,833	15,417,093	239,915,600	11,325	25	393
Mercer	2,278,841,361	2,596,594	321,857,075	9,615	11	1,358
Monroe	11,814,674,680	2,784,027	392,841,985	11,325	3	377
Montgomery	15,766,017,379	66,015,065	715,733,430	11,325	47	514
Morgan	11,556,698,614	205,109,422	1,050,401,675	11,325	201	1,029
Moultrie	5,146,425,771	11,631,435	229,974,750	11,325	26	506
Ogle	35,906,388,482	12,489,965	704,234,645	11,325	4	222
Peoria	68,810,034,387	122,585,953	7,421,488,780	11,325	20	1,221
Perry	12,197,849,905	139,420,940	597,839,000	11,325	129	555
Piatt	7,041,542,130	2,851,774	362,129,900	11,325	5	582
Pike	2,491,690,327	17,194,862	329,601,305	11,325	78	1,498

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	11,325	0	622
Pulaski	1,722,012,867	2,013,718	220,479,960	11,325	13	1,450
Putnam	5,404,694,703	-	173,263,380	11,325	0	363
Randolph	18,795,175,020	204,779,365	992,430,300	11,325	123	598
Richland	8,919,434,152	1,209,331	559,484,775	11,325	2	710
Rock Island	24,643,791,488	88,643,201	4,190,238,085	11,325	41	1,926
Saline	93,922,287,934	30,647,705	698,735,140	11,325	4	84
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	11,325	1,311	9,123
Schuyler	97,110,880,038	30,753,595	275,554,400	11,325	4	32
Scott	1,202,653,022	2,070,286	81,608,980	3,846	7	261
Shelby	697,934,733	8,097,121	436,184,445	11,325	131	7,078
St. Clair	9,725,242,493	60,380,535	6,786,307,035	11,325	70	7,902
Stark	2,976,765,741	4,055,602	94,403,370	11,325	15	359
Stephenson	31,575,944,058	8,838,050	1,097,722,910	11,325	3	394
Tazewell	50,503,046,005	22,400,828	2,740,211,985	11,325	5	614
Union	5,129,949,747	134,554,836	319,248,570	11,325	297	705
Vermilion	26,155,696,285	86,275,175	2,486,742,965	11,325	37	1,077
Wabash	4,343,090,772	968,164	409,468,125	11,325	3	1,068
Warren	2,832,620,327	14,441,286	495,798,025	11,325	58	1,982
Washington	8,655,530,775	3,909,523	444,840,135	11,325	5	582
Wayne	6,193,158,457	3,913,696	445,172,825	11,325	7	814
White	8,137,979,844	101,840,800	290,102,080	11,325	142	404
Whiteside	20,839,846,893	26,685,945	978,521,800	11,325	15	532
Will	319,653,127,130	412,002,055	17,153,704,855	11,325	15	608
Williamson	25,174,231,977	17,863,502	2,082,366,125	11,325	8	937
Winnebago	109,243,536,300	74,634,408	7,939,342,630	11,325	8	823
Woodford	16,744,356,526	7,132,313	779,615,635	11,325	5	527

Flooding: Flash

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	385	3	58
Alexander	2,324,745,142	65,731,116	73,331,020	28,346	801	894
Bond	7,080,966,106	2,697,834	699,862,815	115	0	11
Boone	20,610,453,437	1,729,260	961,292,555	9,077	1	423
Brown	1,026,923,521	62,111,260	71,460,145	962	58	67
Bureau	27,309,231,457	9,480,287	746,673,550	14,808	5	405
Calhoun	1,007,110,265	1,335,673	149,352,515	521,832	692	77,387
Carroll	8,880,516,152	98,615,261	227,821,825	443,250	4,922	11,371
Cass	2,282,554,727	10,442,921	196,067,810	83,846	384	7,202
Champaign	69,455,734,544	111,157,807	13,935,665,850	1,829,423	2,928	367,057
Christian	15,128,722,731	31,677,846	745,556,930	169,231	354	8,340
Clark	7,427,346,181	4,816,805	284,111,700	76,923	50	2,942
Clay	7,180,614,254	4,365,241	288,471,140	348,846	212	14,014
Clinton	14,930,842,239	58,449,154	935,220,955	19,269	75	1,207
Coles	21,561,001,462	27,230,352	2,630,255,515	192,308	243	23,460
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	19,173,462	13,504	2,127,569
Crawford	10,326,783,754	31,909,827	499,047,505	77,500	239	3,745
Cumberland	4,135,853,852	3,100,436	209,284,230	13,077	10	662
De Witt	45,544,847,420	6,312,959	300,529,170	186,538	26	1,231
DeKalb	6,614,537,379	11,142,833	5,678,831,940	192,308	324	165,103
Douglas	8,391,184,190	3,540,344	335,877,210	521,832	220	20,888
DuPage	389,914,067,607	32,123,936	29,778,405,580	1,093,115	90	83,483
Edgar	10,535,959,193	33,164,719	435,015,440	28,269	89	1,167
Edwards	2,997,954,570	1,372,437	160,718,920	6,808	3	365
Effingham	16,337,897,113	32,306,327	999,746,525	7,885	16	482
Fayette	9,609,876,813	79,527,680	552,647,650	38	0	2
Ford	7,362,089,082	2,448,895	354,999,040	500,000	166	24,110
Franklin	14,708,710,736	21,715,420	639,210,325	434,808	642	18,896
Fulton	21,627,784,053	94,587,843	808,388,005	493,654	2,159	18,451
Gallatin	2,680,581,745	8,360,981	91,730,970	10,269	32	351
Greene	2,136,284,467	8,046,480	825,351,945	521,832	1,966	201,609
Grundy	25,545,715,472	9,038,968	1,167,168,015	830,385	294	37,940
Hamilton	7,504,608,023	3,687,110	142,708,750	8,192	4	156
Hancock	2,811,283,625	4,323,331	512,708,090	22,500	35	4,103
Hardin	1,403,020,533	7,048,790	197,679,900	2,308	12	325
Henderson	1,388,399,193	2,112,307	164,286,700	19,231	29	2,276
Henry	18,393,777,508	70,229,513	891,710,220	610,673	2,332	29,605

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	79,808	54	3,745
Jackson	21,717,281,167	55,748,766	3,397,545,420	31,500	81	4,928
Jasper	5,776,300,297	5,608,871	192,204,990	7,308	7	243
Jefferson	22,728,278,316	77,435,939	980,508,085	17,692	60	763
Jersey	3,913,559,707	37,810,715	521,334,385	1,769	17	236
Jo Daviess	14,642,498,042	9,383,230	490,837,920	591,654	379	19,833
Johnson	5,306,891,676	156,295,660	154,940,340	4,615	136	135
Kane	190,595,164,545	445,288,135	14,507,605,835	825,000	1,927	62,797
Kankakee	46,510,361,693	231,019,368	3,639,486,390	9,615	48	752
Kendall	51,922,881,930	7,940,423	2,268,041,095	134,615	21	5,880
Knox	8,682,959,633	83,528,172	1,572,886,775	1,561,538	15,022	282,867
Lake	277,436,751,396	173,469,689	16,779,538,720	3,147,000	1,968	190,332
LaSalle	56,312,786,680	87,917,169	2,454,172,775	702,308	1,096	30,607
Lawrence	5,781,862,919	78,545,550	325,470,830	10,077	137	567
Lee	16,837,809,988	183,713,484	803,062,120	462	5	22
Livingston	17,365,083,034	213,450,967	640,551,100	385	5	14
Logan	13,525,747,806	222,500,872	883,926,710	58,654	965	3,833
Macon	5,269,475,348	67,525,196	2,717,707,115	772,115	9,894	398,215
Macoupin	131,248,978,819	3,075,441	956,708,295	192	0	1
Madison	60,024,967,667	98,719,322	8,777,786,070	38	0	6
Marion	38,273,903,052	71,651,993	867,235,865	1,038	2	24
Marshall	30,502,696,918	3,134,729	254,902,845	391,346	40	3,270
Mason	96,125,108,425	18,101,902	417,129,945	521,832	98	2,264
Massac	20,156,751,058	10,410,141	301,863,945	3,731	2	56
McDonough	7,797,106,442	5,453,183	2,094,223,645	15,038	11	4,039
McHenry	7,099,611,423	15,842,964	6,438,995,900	21,154	47	19,185
McLean	6,057,573,290	31,970,937	7,238,900,865	482,115	2,545	576,136
Menard	6,913,247,833	15,417,093	239,915,600	43,269	96	1,502
Mercer	2,278,841,361	2,596,594	321,857,075	579,154	660	81,798
Monroe	11,814,674,680	2,784,027	392,841,985	38	0	1
Montgomery	15,766,017,379	66,015,065	715,733,430	38	0	2
Morgan	11,556,698,614	205,109,422	1,050,401,675	5,783,077	102,639	525,631
Moultrie	5,146,425,771	11,631,435	229,974,750	8,385	19	375
Ogle	35,906,388,482	12,489,965	704,234,645	23,769	8	466
Peoria	68,810,034,387	122,585,953	7,421,488,780	5,000,000	8,908	539,274
Perry	12,197,849,905	139,420,940	597,839,000	15,577	178	763
Piatt	7,041,542,130	2,851,774	362,129,900	58,077	24	2,987
Pike	2,491,690,327	17,194,862	329,601,305	769	5	102

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	2,423	0	133
Pulaski	1,722,012,867	2,013,718	220,479,960	4,808	6	616
Putnam	5,404,694,703	-	173,263,380	2,308	0	74
Randolph	18,795,175,020	204,779,365	992,430,300	521,832	5,686	27,554
Richland	8,919,434,152	1,209,331	559,484,775	1,769	0	111
Rock Island	24,643,791,488	88,643,201	4,190,238,085	51,000	183	8,672
Saline	93,922,287,934	30,647,705	698,735,140	128,962	42	959
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	1,051,923	121,791	847,413
Schuyler	97,110,880,038	30,753,595	275,554,400	104,615	33	297
Scott	1,202,653,022	2,070,286	81,608,980	12,500	22	848
Shelby	697,934,733	8,097,121	436,184,445	7,308	85	4,567
St. Clair	9,725,242,493	60,380,535	6,786,307,035	808	5	564
Stark	2,976,765,741	4,055,602	94,403,370	538,462	734	17,076
Stephenson	31,575,944,058	8,838,050	1,097,722,910	79,423	22	2,761
Tazewell	50,503,046,005	22,400,828	2,740,211,985	1,216,923	540	66,028
Union	5,129,949,747	134,554,836	319,248,570	24,731	649	1,539
Vermilion	26,155,696,285	86,275,175	2,486,742,965	521,832	1,721	49,613
Wabash	4,343,090,772	968,164	409,468,125	2,885	1	272
Warren	2,832,620,327	14,441,286	495,798,025	38,654	197	6,766
Washington	8,655,530,775	3,909,523	444,840,135	521,832	236	26,819
Wayne	6,193,158,457	3,913,696	445,172,825	7,885	5	567
White	8,137,979,844	101,840,800	290,102,080	50,308	630	1,793
Whiteside	20,839,846,893	26,685,945	978,521,800	48,077	62	2,257
Will	319,653,127,130	412,002,055	17,153,704,855	776,000	1,000	41,643
Williamson	25,174,231,977	17,863,502	2,082,366,125	68,692	49	5,682
Winnebago	109,243,536,300	74,634,408	7,939,342,630	882,000	603	64,100
Woodford	16,744,356,526	7,132,313	779,615,635	813,654	347	37,884

Flooding: Riverine

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	4,154	35	623
Alexander	2,324,745,142	65,731,116	73,331,020	619,231	17,508	19,533
Bond	7,080,966,106	2,697,834	699,862,815	101,194	39	10,002
Boone	20,610,453,437	1,729,260	961,292,555	101,194	8	4,720
Brown	1,026,923,521	62,111,260	71,460,145	346	21	24
Bureau	27,309,231,457	9,480,287	746,673,550	101,194	35	2,767
Calhoun	1,007,110,265	1,335,673	149,352,515	385	1	57
Carroll	8,880,516,152	98,615,261	227,821,825	9,615	107	247
Cass	2,282,554,727	10,442,921	196,067,810	101,194	463	8,692
Champaign	69,455,734,544	111,157,807	13,935,665,850	38,462	62	7,717
Christian	15,128,722,731	31,677,846	745,556,930	107,692	225	5,307
Clark	7,427,346,181	4,816,805	284,111,700	101,194	66	3,871
Clay	7,180,614,254	4,365,241	288,471,140	101,194	62	4,065
Clinton	14,930,842,239	58,449,154	935,220,955	101,194	396	6,338
Coles	21,561,001,462	27,230,352	2,630,255,515	9,615	12	1,173
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	196,154	138	21,766
Crawford	10,326,783,754	31,909,827	499,047,505	101,194	313	4,890
Cumberland	4,135,853,852	3,100,436	209,284,230	101,194	76	5,121
De Witt	45,544,847,420	6,312,959	300,529,170	38,462	5	254
DeKalb	6,614,537,379	11,142,833	5,678,831,940	1,923	3	1,651
Douglas	8,391,184,190	3,540,344	335,877,210	84,615	36	3,387
DuPage	389,914,067,607	32,123,936	29,778,405,580	101,194	8	7,728
Edgar	10,535,959,193	33,164,719	435,015,440	101,194	319	4,178
Edwards	2,997,954,570	1,372,437	160,718,920	1,731	1	93
Effingham	16,337,897,113	32,306,327	999,746,525	11,538	23	706
Fayette	9,609,876,813	79,527,680	552,647,650	962	8	55
Ford	7,362,089,082	2,448,895	354,999,040	101,194	34	4,880
Franklin	14,708,710,736	21,715,420	639,210,325	82,769	122	3,597
Fulton	21,627,784,053	94,587,843	808,388,005	253,846	1,110	9,488
Gallatin	2,680,581,745	8,360,981	91,730,970	106,385	332	3,641
Greene	2,136,284,467	8,046,480	825,351,945	308	1	119
Grundy	25,545,715,472	9,038,968	1,167,168,015	198,077	70	9,050
Hamilton	7,504,608,023	3,687,110	142,708,750	1,154	1	22
Hancock	2,811,283,625	4,323,331	512,708,090	105,769	163	19,290
Hardin	1,403,020,533	7,048,790	197,679,900	16,115	81	2,271
Henderson	1,388,399,193	2,112,307	164,286,700	62,510	95	7,397
Henry	18,393,777,508	70,229,513	891,710,220	28,526	109	1,383

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	57,692	39	2,707
Jackson	21,717,281,167	55,748,766	3,397,545,420	160,885	413	25,169
Jasper	5,776,300,297	5,608,871	192,204,990	2,308	2	77
Jefferson	22,728,278,316	77,435,939	980,508,085	5,692	19	246
Jersey	3,913,559,707	37,810,715	521,334,385	538	5	72
Jo Daviess	14,642,498,042	9,383,230	490,837,920	48,269	31	1,618
Johnson	5,306,891,676	156,295,660	154,940,340	67,308	1,982	1,965
Kane	190,595,164,545	445,288,135	14,507,605,835	192,308	449	14,638
Kankakee	46,510,361,693	231,019,368	3,639,486,390	61,538	306	4,815
Kendall	51,922,881,930	7,940,423	2,268,041,095	101,194	15	4,420
Knox	8,682,959,633	83,528,172	1,572,886,775	101,194	973	18,331
Lake	277,436,751,396	173,469,689	16,779,538,720	231,346	145	13,992
LaSalle	56,312,786,680	87,917,169	2,454,172,775	23,077	36	1,006
Lawrence	5,781,862,919	78,545,550	325,470,830	57,692	784	3,248
Lee	16,837,809,988	183,713,484	803,062,120	101,194	1,104	4,826
Livingston	17,365,083,034	213,450,967	640,551,100	86,538	1,064	3,192
Logan	13,525,747,806	222,500,872	883,926,710	101,194	1,665	6,613
Macon	5,269,475,348	67,525,196	2,717,707,115	15,385	197	7,935
Macoupin	131,248,978,819	3,075,441	956,708,295	101,194	2	738
Madison	60,024,967,667	98,719,322	8,777,786,070	955,846	1,572	139,779
Marion	38,273,903,052	71,651,993	867,235,865	101,194	189	2,293
Marshall	30,502,696,918	3,134,729	254,902,845	211,538	22	1,768
Mason	96,125,108,425	18,101,902	417,129,945	192,308	36	835
Massac	20,156,751,058	10,410,141	301,863,945	122,538	63	1,835
McDonough	7,797,106,442	5,453,183	2,094,223,645	50,962	36	13,688
McHenry	7,099,611,423	15,842,964	6,438,995,900	178,846	399	162,205
McLean	6,057,573,290	31,970,937	7,238,900,865	101,194	534	120,928
Menard	6,913,247,833	15,417,093	239,915,600	101,194	226	3,512
Mercer	2,278,841,361	2,596,594	321,857,075	60,577	69	8,556
Monroe	11,814,674,680	2,784,027	392,841,985	101,194	24	3,365
Montgomery	15,766,017,379	66,015,065	715,733,430	101,194	424	4,594
Morgan	11,556,698,614	205,109,422	1,050,401,675	101,194	1,796	9,198
Moultrie	5,146,425,771	11,631,435	229,974,750	19,231	43	859
Ogle	35,906,388,482	12,489,965	704,234,645	101,194	35	1,985
Peoria	68,810,034,387	122,585,953	7,421,488,780	1,076,923	1,919	116,151
Perry	12,197,849,905	139,420,940	597,839,000	10,769	123	528
Piatt	7,041,542,130	2,851,774	362,129,900	101,194	41	5,204
Pike	2,491,690,327	17,194,862	329,601,305	500	3	66

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	23,615	0	1,297
Pulaski	1,722,012,867	2,013,718	220,479,960	217,308	254	27,823
Putnam	5,404,694,703	-	173,263,380	101,194	0	3,244
Randolph	18,795,175,020	204,779,365	992,430,300	423	5	22
Richland	8,919,434,152	1,209,331	559,484,775	101,194	14	6,348
Rock Island	24,643,791,488	88,643,201	4,190,238,085	111,833	402	19,015
Saline	93,922,287,934	30,647,705	698,735,140	650,885	212	4,842
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	101,194	11,716	81,520
Schuyler	97,110,880,038	30,753,595	275,554,400	3,846	1	11
Scott	1,202,653,022	2,070,286	81,608,980	101,194	174	6,867
Shelby	697,934,733	8,097,121	436,184,445	38,462	446	24,037
St. Clair	9,725,242,493	60,380,535	6,786,307,035	311,615	1,935	217,446
Stark	2,976,765,741	4,055,602	94,403,370	101,194	138	3,209
Stephenson	31,575,944,058	8,838,050	1,097,722,910	288,654	81	10,035
Tazewell	50,503,046,005	22,400,828	2,740,211,985	834,615	370	45,285
Union	5,129,949,747	134,554,836	319,248,570	124,962	3,278	7,777
Vermilion	26,155,696,285	86,275,175	2,486,742,965	115,385	381	10,970
Wabash	4,343,090,772	968,164	409,468,125	95,077	21	8,964
Warren	2,832,620,327	14,441,286	495,798,025	101,194	516	17,712
Washington	8,655,530,775	3,909,523	444,840,135	101,194	46	5,201
Wayne	6,193,158,457	3,913,696	445,172,825	8,231	5	592
White	8,137,979,844	101,840,800	290,102,080	95,615	1,197	3,408
Whiteside	20,839,846,893	26,685,945	978,521,800	99,218	127	4,659
Will	319,653,127,130	412,002,055	17,153,704,855	101,194	130	5,430
Williamson	25,174,231,977	17,863,502	2,082,366,125	5,577	4	461
Winnebago	109,243,536,300	74,634,408	7,939,342,630	307,692	210	22,362
Woodford	16,744,356,526	7,132,313	779,615,635	915,385	390	42,620

Landslide

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	255	2	38
Alexander	2,324,745,142	65,731,116	73,331,020	12,959	366	409
Bond	7,080,966,106	2,697,834	699,862,815	12,959	5	1,281
Boone	20,610,453,437	1,729,260	961,292,555	12,959	1	604
Brown	1,026,923,521	62,111,260	71,460,145	12,959	784	902
Bureau	27,309,231,457	9,480,287	746,673,550	12,959	4	354
Calhoun	1,007,110,265	1,335,673	149,352,515	12,959	17	1,922
Carroll	8,880,516,152	98,615,261	227,821,825	3,301	37	85
Cass	2,282,554,727	10,442,921	196,067,810	12,959	59	1,113
Champaign	69,455,734,544	111,157,807	13,935,665,850	12,959	21	2,600
Christian	15,128,722,731	31,677,846	745,556,930	12,959	27	639
Clark	7,427,346,181	4,816,805	284,111,700	12,959	8	496
Clay	7,180,614,254	4,365,241	288,471,140	12,959	8	521
Clinton	14,930,842,239	58,449,154	935,220,955	12,959	51	812
Coles	21,561,001,462	27,230,352	2,630,255,515	12,959	16	1,581
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	12,959	9	1,438
Crawford	10,326,783,754	31,909,827	499,047,505	12,959	40	626
Cumberland	4,135,853,852	3,100,436	209,284,230	12,959	10	656
De Witt	45,544,847,420	6,312,959	300,529,170	12,959	2	86
DeKalb	6,614,537,379	11,142,833	5,678,831,940	12,959	22	11,126
Douglas	8,391,184,190	3,540,344	335,877,210	12,959	5	519
DuPage	389,914,067,607	32,123,936	29,778,405,580	12,959	1	990
Edgar	10,535,959,193	33,164,719	435,015,440	12,959	41	535
Edwards	2,997,954,570	1,372,437	160,718,920	12,959	6	695
Effingham	16,337,897,113	32,306,327	999,746,525	12,959	26	793
Fayette	9,609,876,813	79,527,680	552,647,650	12,959	107	745
Ford	7,362,089,082	2,448,895	354,999,040	12,959	4	625
Franklin	14,708,710,736	21,715,420	639,210,325	12,959	19	563
Fulton	21,627,784,053	94,587,843	808,388,005	12,959	57	484
Gallatin	2,680,581,745	8,360,981	91,730,970	12,959	40	443
Greene	2,136,284,467	8,046,480	825,351,945	12,959	49	5,007
Grundy	25,545,715,472	9,038,968	1,167,168,015	12,959	5	592
Hamilton	7,504,608,023	3,687,110	142,708,750	12,959	6	246
Hancock	2,811,283,625	4,323,331	512,708,090	12,959	20	2,363
Hardin	1,403,020,533	7,048,790	197,679,900	12,959	65	1,826
Henderson	1,388,399,193	2,112,307	164,286,700	12,959	20	1,533
Henry	18,393,777,508	70,229,513	891,710,220	12,959	49	628

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	12,959	9	608
Jackson	21,717,281,167	55,748,766	3,397,545,420	12,959	33	2,027
Jasper	5,776,300,297	5,608,871	192,204,990	12,959	13	431
Jefferson	22,728,278,316	77,435,939	980,508,085	12,959	44	559
Jersey	3,913,559,707	37,810,715	521,334,385	94	1	12
Jo Daviess	14,642,498,042	9,383,230	490,837,920	12,959	8	434
Johnson	5,306,891,676	156,295,660	154,940,340	12,959	382	378
Kane	190,595,164,545	445,288,135	14,507,605,835	12,959	30	986
Kankakee	46,510,361,693	231,019,368	3,639,486,390	12,959	64	1,014
Kendall	51,922,881,930	7,940,423	2,268,041,095	12,959	2	566
Knox	8,682,959,633	83,528,172	1,572,886,775	12,959	125	2,347
Lake	277,436,751,396	173,469,689	16,779,538,720	12,959	8	784
LaSalle	56,312,786,680	87,917,169	2,454,172,775	12,959	20	565
Lawrence	5,781,862,919	78,545,550	325,470,830	12,959	176	729
Lee	16,837,809,988	183,713,484	803,062,120	12,959	141	618
Livingston	17,365,083,034	213,450,967	640,551,100	12,959	159	478
Logan	13,525,747,806	222,500,872	883,926,710	12,959	213	847
Macon	5,269,475,348	67,525,196	2,717,707,115	12,959	166	6,683
Macoupin	131,248,978,819	3,075,441	956,708,295	12,959	0	94
Madison	60,024,967,667	98,719,322	8,777,786,070	4	0	1
Marion	38,273,903,052	71,651,993	867,235,865	12,959	24	294
Marshall	30,502,696,918	3,134,729	254,902,845	12,959	1	108
Mason	96,125,108,425	18,101,902	417,129,945	12,959	2	56
Massac	20,156,751,058	10,410,141	301,863,945	12,959	7	194
McDonough	7,797,106,442	5,453,183	2,094,223,645	12,959	9	3,481
McHenry	7,099,611,423	15,842,964	6,438,995,900	12,959	29	11,753
McLean	6,057,573,290	31,970,937	7,238,900,865	12,959	68	15,486
Menard	6,913,247,833	15,417,093	239,915,600	12,959	29	450
Mercer	2,278,841,361	2,596,594	321,857,075	12,959	15	1,830
Monroe	11,814,674,680	2,784,027	392,841,985	12,959	3	431
Montgomery	15,766,017,379	66,015,065	715,733,430	12,959	54	588
Morgan	11,556,698,614	205,109,422	1,050,401,675	12,959	230	1,178
Moultrie	5,146,425,771	11,631,435	229,974,750	12,959	29	579
Ogle	35,906,388,482	12,489,965	704,234,645	12,959	5	254
Peoria	68,810,034,387	122,585,953	7,421,488,780	84,856	151	9,152
Perry	12,197,849,905	139,420,940	597,839,000	12,959	148	635
Piatt	7,041,542,130	2,851,774	362,129,900	12,959	5	666
Pike	2,491,690,327	17,194,862	329,601,305	12,959	89	1,714

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	12,959	0	712
Pulaski	1,722,012,867	2,013,718	220,479,960	12,959	15	1,659
Putnam	5,404,694,703	-	173,263,380	12,959	0	415
Randolph	18,795,175,020	204,779,365	992,430,300	12,959	141	684
Richland	8,919,434,152	1,209,331	559,484,775	12,959	2	813
Rock Island	24,643,791,488	88,643,201	4,190,238,085	2,201	8	374
Saline	93,922,287,934	30,647,705	698,735,140	12,959	4	96
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	12,959	1,500	10,439
Schuyler	97,110,880,038	30,753,595	275,554,400	12,959	4	37
Scott	1,202,653,022	2,070,286	81,608,980	12,959	22	879
Shelby	697,934,733	8,097,121	436,184,445	12,959	150	8,099
St. Clair	9,725,242,493	60,380,535	6,786,307,035	12,959	80	9,043
Stark	2,976,765,741	4,055,602	94,403,370	12,959	18	411
Stephenson	31,575,944,058	8,838,050	1,097,722,910	12,959	4	451
Tazewell	50,503,046,005	22,400,828	2,740,211,985	12,959	6	703
Union	5,129,949,747	134,554,836	319,248,570	12,959	340	806
Vermilion	26,155,696,285	86,275,175	2,486,742,965	12,959	43	1,232
Wabash	4,343,090,772	968,164	409,468,125	12,959	3	1,222
Warren	2,832,620,327	14,441,286	495,798,025	12,959	66	2,268
Washington	8,655,530,775	3,909,523	444,840,135	12,959	6	666
Wayne	6,193,158,457	3,913,696	445,172,825	12,959	8	931
White	8,137,979,844	101,840,800	290,102,080	12,959	162	462
Whiteside	20,839,846,893	26,685,945	978,521,800	12,959	17	608
Will	319,653,127,130	412,002,055	17,153,704,855	12,959	17	695
Williamson	25,174,231,977	17,863,502	2,082,366,125	12,959	9	1,072
Winnebago	109,243,536,300	74,634,408	7,939,342,630	12,959	9	942
Woodford	16,744,356,526	7,132,313	779,615,635	12,959	6	603

Severe Storms: Hail

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	346	1,069	52
Alexander	2,324,745,142	65,731,116	73,331,020	82,772	1,733	2,611
Bond	7,080,966,106	2,697,834	699,862,815	1,942	80	192
Boone	20,610,453,437	1,729,260	961,292,555	9,615	9	448
Brown	1,026,923,521	62,111,260	71,460,145	3,865	6,618	269
Bureau	27,309,231,457	9,480,287	746,673,550	86,212	69	2,357
Calhoun	1,007,110,265	1,335,673	149,352,515	82,772	22	12,275
Carroll	8,880,516,152	98,615,261	227,821,825	1,288	1,122	33
Cass	2,282,554,727	10,442,921	196,067,810	4,231	398	363
Champaign	69,455,734,544	111,157,807	13,935,665,850	224,000	6,393	44,944
Christian	15,128,722,731	31,677,846	745,556,930	82,772	10,077	4,079
Clark	7,427,346,181	4,816,805	284,111,700	82,772	10	3,166
Clay	7,180,614,254	4,365,241	288,471,140	235	78	9
Clinton	14,930,842,239	58,449,154	935,220,955	82,772	4,641	5,185
Coles	21,561,001,462	27,230,352	2,630,255,515	82,772	968	10,097
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	724,577	3,206	80,402
Crawford	10,326,783,754	31,909,827	499,047,505	42	191	2
Cumberland	4,135,853,852	3,100,436	209,284,230	7,692	10	389
De Witt	45,544,847,420	6,312,959	300,529,170	82,772	79	546
DeKalb	6,614,537,379	11,142,833	5,678,831,940	82,772	541	71,063
Douglas	8,391,184,190	3,540,344	335,877,210	3,846,154	131	153,952
DuPage	389,914,067,607	32,123,936	29,778,405,580	1,154	39	88
Edgar	10,535,959,193	33,164,719	435,015,440	2,500	80	103
Edwards	2,997,954,570	1,372,437	160,718,920	19,231	100	1,031
Effingham	16,337,897,113	32,306,327	999,746,525	82,772	159	5,065
Fayette	9,609,876,813	79,527,680	552,647,650	59,615	1,192	3,428
Ford	7,362,089,082	2,448,895	354,999,040	9,808	82	473
Franklin	14,708,710,736	21,715,420	639,210,325	6,423	412	279
Fulton	21,627,784,053	94,587,843	808,388,005	77,462	6,691	2,895
Gallatin	2,680,581,745	8,360,981	91,730,970	77	159	3
Greene	2,136,284,467	8,046,480	825,351,945	40,385	490	15,603
Grundy	25,545,715,472	9,038,968	1,167,168,015	23,269	843	1,063
Hamilton	7,504,608,023	3,687,110	142,708,750	32,692	172	622
Hancock	2,811,283,625	4,323,331	512,708,090	14,019	1,453	2,557
Hardin	1,403,020,533	7,048,790	197,679,900	1,731	5	244
Henderson	1,388,399,193	2,112,307	164,286,700	396,577	489	46,926
Henry	18,393,777,508	70,229,513	891,710,220	32,846	3,626	1,592

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	11,731	240	550
Jackson	21,717,281,167	55,748,766	3,397,545,420	50,981	1,071	7,976
Jasper	5,776,300,297	5,608,871	192,204,990	82,772	33	2,754
Jefferson	22,728,278,316	77,435,939	980,508,085	2,500	1,708	108
Jersey	3,913,559,707	37,810,715	521,334,385	82,772	2,073	11,026
Jo Daviess	14,642,498,042	9,383,230	490,837,920	10,423	13	349
Johnson	5,306,891,676	156,295,660	154,940,340	275,000	4,457	8,029
Kane	190,595,164,545	445,288,135	14,507,605,835	2,115	335	161
Kankakee	46,510,361,693	231,019,368	3,639,486,390	77,115	6,543	6,034
Kendall	51,922,881,930	7,940,423	2,268,041,095	3,846	32	168
Knox	8,682,959,633	83,528,172	1,572,886,775	82,772	2,673	14,994
Lake	277,436,751,396	173,469,689	16,779,538,720	38,462	228	2,326
LaSalle	56,312,786,680	87,917,169	2,454,172,775	192	943	8
Lawrence	5,781,862,919	78,545,550	325,470,830	82,772	1,792	4,659
Lee	16,837,809,988	183,713,484	803,062,120	82,772	1,256	3,948
Livingston	17,365,083,034	213,450,967	640,551,100	82,772	4,855	3,053
Logan	13,525,747,806	222,500,872	883,926,710	492,308	25,648	32,173
Macon	5,269,475,348	67,525,196	2,717,707,115	82,772	11,299	42,689
Macoupin	131,248,978,819	3,075,441	956,708,295	223,077	1	1,626
Madison	60,024,967,667	98,719,322	8,777,786,070	7,692	4,446	1,125
Marion	38,273,903,052	71,651,993	867,235,865	23,077	550	523
Marshall	30,502,696,918	3,134,729	254,902,845	82,772	13	692
Mason	96,125,108,425	18,101,902	417,129,945	82,772	47	359
Massac	20,156,751,058	10,410,141	301,863,945	462	343	7
McDonough	7,797,106,442	5,453,183	2,094,223,645	3,327	52	894
McHenry	7,099,611,423	15,842,964	6,438,995,900	5,192	2,817	4,709
McLean	6,057,573,290	31,970,937	7,238,900,865	192	4,126	230
Menard	6,913,247,833	15,417,093	239,915,600	82,772	1,070	2,872
Mercer	2,278,841,361	2,596,594	321,857,075	107,692	232	15,210
Monroe	11,814,674,680	2,784,027	392,841,985	404	18	13
Montgomery	15,766,017,379	66,015,065	715,733,430	82,772	316	3,758
Morgan	11,556,698,614	205,109,422	1,050,401,675	82,772	3,949	7,523
Moultrie	5,146,425,771	11,631,435	229,974,750	269,231	88	12,031
Ogle	35,906,388,482	12,489,965	704,234,645	1,154	182	23
Peoria	68,810,034,387	122,585,953	7,421,488,780	118,077	6,342	12,735
Perry	12,197,849,905	139,420,940	597,839,000	3,500	1,781	172
Piatt	7,041,542,130	2,851,774	362,129,900	9,808	111	504
Pike	2,491,690,327	17,194,862	329,601,305	1,346	864	178

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	115	0	6
Pulaski	1,722,012,867	2,013,718	220,479,960	82,772	180	10,598
Putnam	5,404,694,703	-	173,263,380	2,769	0	89
Randolph	18,795,175,020	204,779,365	992,430,300	269	4,103	14
Richland	8,919,434,152	1,209,331	559,484,775	82,772	30	5,192
Rock Island	24,643,791,488	88,643,201	4,190,238,085	21,615	1,572	3,675
Saline	93,922,287,934	30,647,705	698,735,140	5,000	88	37
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	350,000	114,162	281,955
Schuyler	97,110,880,038	30,753,595	275,554,400	29,346	41	83
Scott	1,202,653,022	2,070,286	81,608,980	5,577	55	378
Shelby	697,934,733	8,097,121	436,184,445	30,969	3,505	19,355
St. Clair	9,725,242,493	60,380,535	6,786,307,035	250	2,788	174
Stark	2,976,765,741	4,055,602	94,403,370	82,772	139	2,625
Stephenson	31,575,944,058	8,838,050	1,097,722,910	6,654	32	231
Tazewell	50,503,046,005	22,400,828	2,740,211,985	82,772	16,779	4,491
Union	5,129,949,747	134,554,836	319,248,570	1,923	6,196	120
Vermilion	26,155,696,285	86,275,175	2,486,742,965	325,038	5,930	30,903
Wabash	4,343,090,772	968,164	409,468,125	19,346	285	1,824
Warren	2,832,620,327	14,441,286	495,798,025	96,519	485	16,894
Washington	8,655,530,775	3,909,523	444,840,135	7,692	18	395
Wayne	6,193,158,457	3,913,696	445,172,825	31,192	266	2,242
White	8,137,979,844	101,840,800	290,102,080	28,885	4,148	1,030
Whiteside	20,839,846,893	26,685,945	978,521,800	3,808	277	179
Will	319,653,127,130	412,002,055	17,153,704,855	3,154	17,368	169
Williamson	25,174,231,977	17,863,502	2,082,366,125	90,385	7,599	7,476
Winnebago	109,243,536,300	74,634,408	7,939,342,630	82,772	143	6,016
Woodford	16,744,356,526	7,132,313	779,615,635	15,385	450	716

Severe Storms: Lightning

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	1,154	10	173
Alexander	2,324,745,142	65,731,116	73,331,020	385	11	12
Bond	7,080,966,106	2,697,834	699,862,815	1,731	1	171
Boone	20,610,453,437	1,729,260	961,292,555	192	0	9
Brown	1,026,923,521	62,111,260	71,460,145	12,213	739	850
Bureau	27,309,231,457	9,480,287	746,673,550	3,308	1	90
Calhoun	1,007,110,265	1,335,673	149,352,515	12,213	16	1,811
Carroll	8,880,516,152	98,615,261	227,821,825	3,462	38	89
Cass	2,282,554,727	10,442,921	196,067,810	12,213	56	1,049
Champaign	69,455,734,544	111,157,807	13,935,665,850	24,173	39	4,850
Christian	15,128,722,731	31,677,846	745,556,930	1,346	3	66
Clark	7,427,346,181	4,816,805	284,111,700	769	0	29
Clay	7,180,614,254	4,365,241	288,471,140	6,154	4	247
Clinton	14,930,842,239	58,449,154	935,220,955	385	2	24
Coles	21,561,001,462	27,230,352	2,630,255,515	4,038	5	493
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	251,423	177	27,899
Crawford	10,326,783,754	31,909,827	499,047,505	3,846	12	186
Cumberland	4,135,853,852	3,100,436	209,284,230	12,213	9	618
De Witt	45,544,847,420	6,312,959	300,529,170	769	0	5
DeKalb	6,614,537,379	11,142,833	5,678,831,940	1,154	2	991
Douglas	8,391,184,190	3,540,344	335,877,210	1,923	1	77
DuPage	389,914,067,607	32,123,936	29,778,405,580	64,096	5	4,895
Edgar	10,535,959,193	33,164,719	435,015,440	12,213	38	504
Edwards	2,997,954,570	1,372,437	160,718,920	3,462	2	186
Effingham	16,337,897,113	32,306,327	999,746,525	12,213	24	747
Fayette	9,609,876,813	79,527,680	552,647,650	12,213	101	702
Ford	7,362,089,082	2,448,895	354,999,040	12,213	4	589
Franklin	14,708,710,736	21,715,420	639,210,325	1,115	2	48
Fulton	21,627,784,053	94,587,843	808,388,005	12,213	53	456
Gallatin	2,680,581,745	8,360,981	91,730,970	4,615	14	158
Greene	2,136,284,467	8,046,480	825,351,945	12,213	46	4,718
Grundy	25,545,715,472	9,038,968	1,167,168,015	11,077	4	506
Hamilton	7,504,608,023	3,687,110	142,708,750	12,213	6	232
Hancock	2,811,283,625	4,323,331	512,708,090	577	1	105
Hardin	1,403,020,533	7,048,790	197,679,900	0	0	0
Henderson	1,388,399,193	2,112,307	164,286,700	12,213	19	1,445
Henry	18,393,777,508	70,229,513	891,710,220	3,269	12	158

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	3,846	3	180
Jackson	21,717,281,167	55,748,766	3,397,545,420	385	1	60
Jasper	5,776,300,297	5,608,871	192,204,990	12,213	12	406
Jefferson	22,728,278,316	77,435,939	980,508,085	1,154	4	50
Jersey	3,913,559,707	37,810,715	521,334,385	5,769	56	769
Jo Daviess	14,642,498,042	9,383,230	490,837,920	558	0	19
Johnson	5,306,891,676	156,295,660	154,940,340	12,213	360	357
Kane	190,595,164,545	445,288,135	14,507,605,835	30,769	72	2,342
Kankakee	46,510,361,693	231,019,368	3,639,486,390	22,923	114	1,794
Kendall	51,922,881,930	7,940,423	2,268,041,095	308	0	13
Knox	8,682,959,633	83,528,172	1,572,886,775	115	1	21
Lake	277,436,751,396	173,469,689	16,779,538,720	6,077	4	368
LaSalle	56,312,786,680	87,917,169	2,454,172,775	71,538	112	3,118
Lawrence	5,781,862,919	78,545,550	325,470,830	12,213	166	687
Lee	16,837,809,988	183,713,484	803,062,120	192	2	9
Livingston	17,365,083,034	213,450,967	640,551,100	58	1	2
Logan	13,525,747,806	222,500,872	883,926,710	12,077	199	789
Macon	5,269,475,348	67,525,196	2,717,707,115	2,923	37	1,508
Macoupin	131,248,978,819	3,075,441	956,708,295	3,846	0	28
Madison	60,024,967,667	98,719,322	8,777,786,070	12,213	20	1,786
Marion	38,273,903,052	71,651,993	867,235,865	12,213	23	277
Marshall	30,502,696,918	3,134,729	254,902,845	15,000	2	125
Mason	96,125,108,425	18,101,902	417,129,945	5,962	1	26
Massac	20,156,751,058	10,410,141	301,863,945	3,077	2	46
McDonough	7,797,106,442	5,453,183	2,094,223,645	135	0	36
McHenry	7,099,611,423	15,842,964	6,438,995,900	38,923	87	35,301
McLean	6,057,573,290	31,970,937	7,238,900,865	15,192	80	18,155
Menard	6,913,247,833	15,417,093	239,915,600	1,923	4	67
Mercer	2,278,841,361	2,596,594	321,857,075	1,731	2	244
Monroe	11,814,674,680	2,784,027	392,841,985	12,213	3	406
Montgomery	15,766,017,379	66,015,065	715,733,430	3,077	13	140
Morgan	11,556,698,614	205,109,422	1,050,401,675	12,213	217	1,110
Moultrie	5,146,425,771	11,631,435	229,974,750	12,213	28	546
Ogle	35,906,388,482	12,489,965	704,234,645	1,346	0	26
Peoria	68,810,034,387	122,585,953	7,421,488,780	12,962	23	1,398
Perry	12,197,849,905	139,420,940	597,839,000	3,846	44	189
Piatt	7,041,542,130	2,851,774	362,129,900	2,308	1	119
Pike	2,491,690,327	17,194,862	329,601,305	38,462	265	5,088

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	12,213	0	671
Pulaski	1,722,012,867	2,013,718	220,479,960	12,213	14	1,564
Putnam	5,404,694,703	-	173,263,380	12,213	0	392
Randolph	18,795,175,020	204,779,365	992,430,300	12,213	133	645
Richland	8,919,434,152	1,209,331	559,484,775	2,385	0	150
Rock Island	24,643,791,488	88,643,201	4,190,238,085	2,462	9	419
Saline	93,922,287,934	30,647,705	698,735,140	12,213	4	91
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	79,615	9,218	64,137
Schuyler	97,110,880,038	30,753,595	275,554,400	12,213	4	35
Scott	1,202,653,022	2,070,286	81,608,980	12,213	21	829
Shelby	697,934,733	8,097,121	436,184,445	3,962	46	2,476
St. Clair	9,725,242,493	60,380,535	6,786,307,035	1,923	12	1,342
Stark	2,976,765,741	4,055,602	94,403,370	12,213	17	387
Stephenson	31,575,944,058	8,838,050	1,097,722,910	2,500	1	87
Tazewell	50,503,046,005	22,400,828	2,740,211,985	1,923	1	104
Union	5,129,949,747	134,554,836	319,248,570	808	21	50
Vermilion	26,155,696,285	86,275,175	2,486,742,965	154	1	15
Wabash	4,343,090,772	968,164	409,468,125	2,308	1	218
Warren	2,832,620,327	14,441,286	495,798,025	962	5	168
Washington	8,655,530,775	3,909,523	444,840,135	38,462	17	1,977
Wayne	6,193,158,457	3,913,696	445,172,825	1,923	1	138
White	8,137,979,844	101,840,800	290,102,080	6,115	77	218
Whiteside	20,839,846,893	26,685,945	978,521,800	8,462	11	397
Will	319,653,127,130	412,002,055	17,153,704,855	58,500	75	3,139
Williamson	25,174,231,977	17,863,502	2,082,366,125	5,000	4	414
Winnebago	109,243,536,300	74,634,408	7,939,342,630	20,808	14	1,512
Woodford	16,744,356,526	7,132,313	779,615,635	13,404	6	624

Severe Storms: Wind

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	5,463	46	819
Alexander	2,324,745,142	65,731,116	73,331,020	228,269	6,454	7,200
Bond	7,080,966,106	2,697,834	699,862,815	2,950	1	292
Boone	20,610,453,437	1,729,260	961,292,555	23,846	2	1,112
Brown	1,026,923,521	62,111,260	71,460,145	11,788	713	820
Bureau	27,309,231,457	9,480,287	746,673,550	94,808	33	2,592
Calhoun	1,007,110,265	1,335,673	149,352,515	1,273	2	189
Carroll	8,880,516,152	98,615,261	227,821,825	140,950	1,565	3,616
Cass	2,282,554,727	10,442,921	196,067,810	165,723	758	14,235
Champaign	69,455,734,544	111,157,807	13,935,665,850	297,154	476	59,621
Christian	15,128,722,731	31,677,846	745,556,930	56,885	119	2,803
Clark	7,427,346,181	4,816,805	284,111,700	31,646	21	1,211
Clay	7,180,614,254	4,365,241	288,471,140	97,846	59	3,931
Clinton	14,930,842,239	58,449,154	935,220,955	12,523	49	784
Coles	21,561,001,462	27,230,352	2,630,255,515	101,288	128	12,356
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	718,831	506	79,765
Crawford	10,326,783,754	31,909,827	499,047,505	92,538	286	4,472
Cumberland	4,135,853,852	3,100,436	209,284,230	22,469	17	1,137
De Witt	45,544,847,420	6,312,959	300,529,170	84,558	12	558
DeKalb	6,614,537,379	11,142,833	5,678,831,940	54,423	92	46,724
Douglas	8,391,184,190	3,540,344	335,877,210	63,846	27	2,556
DuPage	389,914,067,607	32,123,936	29,778,405,580	232,481	19	17,755
Edgar	10,535,959,193	33,164,719	435,015,440	62,058	195	2,562
Edwards	2,997,954,570	1,372,437	160,718,920	88,462	40	4,742
Effingham	16,337,897,113	32,306,327	999,746,525	68,100	135	4,167
Fayette	9,609,876,813	79,527,680	552,647,650	2,769	23	159
Ford	7,362,089,082	2,448,895	354,999,040	39,481	13	1,904
Franklin	14,708,710,736	21,715,420	639,210,325	376,923	556	16,380
Fulton	21,627,784,053	94,587,843	808,388,005	111,888	489	4,182
Gallatin	2,680,581,745	8,360,981	91,730,970	168,481	526	5,766
Greene	2,136,284,467	8,046,480	825,351,945	846	3	327
Grundy	25,545,715,472	9,038,968	1,167,168,015	216,019	76	9,870
Hamilton	7,504,608,023	3,687,110	142,708,750	25,540	13	486
Hancock	2,811,283,625	4,323,331	512,708,090	191,663	295	34,955
Hardin	1,403,020,533	7,048,790	197,679,900	98,038	493	13,813
Henderson	1,388,399,193	2,112,307	164,286,700	21,308	32	2,521
Henry	18,393,777,508	70,229,513	891,710,220	2,001,715	7,643	97,041

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	66,577	45	3,124
Jackson	21,717,281,167	55,748,766	3,397,545,420	4,055,115	10,410	634,400
Jasper	5,776,300,297	5,608,871	192,204,990	87,288	85	2,905
Jefferson	22,728,278,316	77,435,939	980,508,085	563,746	1,921	24,320
Jersey	3,913,559,707	37,810,715	521,334,385	346	3	46
Jo Daviess	14,642,498,042	9,383,230	490,837,920	68,046	44	2,281
Johnson	5,306,891,676	156,295,660	154,940,340	85,038	2,505	2,483
Kane	190,595,164,545	445,288,135	14,507,605,835	56,904	133	4,331
Kankakee	46,510,361,693	231,019,368	3,639,486,390	86,481	430	6,767
Kendall	51,922,881,930	7,940,423	2,268,041,095	16,673	3	728
Knox	8,682,959,633	83,528,172	1,572,886,775	163,098	1,569	29,545
Lake	277,436,751,396	173,469,689	16,779,538,720	37,385	23	2,261
LaSalle	56,312,786,680	87,917,169	2,454,172,775	238,212	372	10,382
Lawrence	5,781,862,919	78,545,550	325,470,830	65,308	887	3,676
Lee	16,837,809,988	183,713,484	803,062,120	13,173	144	628
Livingston	17,365,083,034	213,450,967	640,551,100	10,327	127	381
Logan	13,525,747,806	222,500,872	883,926,710	296,173	4,872	19,355
Macon	5,269,475,348	67,525,196	2,717,707,115	184,500	2,364	95,155
Macoupin	131,248,978,819	3,075,441	956,708,295	5,981	0	44
Madison	60,024,967,667	98,719,322	8,777,786,070	84,154	138	12,306
Marion	38,273,903,052	71,651,993	867,235,865	22,777	43	516
Marshall	30,502,696,918	3,134,729	254,902,845	88,519	9	740
Mason	96,125,108,425	18,101,902	417,129,945	59,079	11	256
Massac	20,156,751,058	10,410,141	301,863,945	297,406	154	4,454
McDonough	7,797,106,442	5,453,183	2,094,223,645	36,656	26	9,845
McHenry	7,099,611,423	15,842,964	6,438,995,900	30,288	68	27,470
McLean	6,057,573,290	31,970,937	7,238,900,865	357,962	1,889	427,770
Menard	6,913,247,833	15,417,093	239,915,600	37,885	84	1,315
Mercer	2,278,841,361	2,596,594	321,857,075	409,946	467	57,900
Monroe	11,814,674,680	2,784,027	392,841,985	45,138	11	1,501
Montgomery	15,766,017,379	66,015,065	715,733,430	1,400	6	64
Morgan	11,556,698,614	205,109,422	1,050,401,675	88,635	1,573	8,056
Moultrie	5,146,425,771	11,631,435	229,974,750	79,777	180	3,565
Ogle	35,906,388,482	12,489,965	704,234,645	42,423	15	832
Peoria	68,810,034,387	122,585,953	7,421,488,780	214,219	382	23,105
Perry	12,197,849,905	139,420,940	597,839,000	144,162	1,648	7,066
Piatt	7,041,542,130	2,851,774	362,129,900	96,077	39	4,941
Pike	2,491,690,327	17,194,862	329,601,305	3,546	24	469

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	105,692	0	5,803
Pulaski	1,722,012,867	2,013,718	220,479,960	142,962	167	18,304
Putnam	5,404,694,703	-	173,263,380	182,578	0	5,853
Randolph	18,795,175,020	204,779,365	992,430,300	7,050	77	372
Richland	8,919,434,152	1,209,331	559,484,775	38,808	5	2,434
Rock Island	24,643,791,488	88,643,201	4,190,238,085	63,969	230	10,877
Saline	93,922,287,934	30,647,705	698,735,140	315,596	103	2,348
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	319,019	36,936	256,997
Schuyler	97,110,880,038	30,753,595	275,554,400	71,033	22	202
Scott	1,202,653,022	2,070,286	81,608,980	16,485	28	1,119
Shelby	697,934,733	8,097,121	436,184,445	381,877	4,430	238,660
St. Clair	9,725,242,493	60,380,535	6,786,307,035	44,246	275	30,875
Stark	2,976,765,741	4,055,602	94,403,370	18,923	26	600
Stephenson	31,575,944,058	8,838,050	1,097,722,910	306,163	86	10,644
Tazewell	50,503,046,005	22,400,828	2,740,211,985	212,933	94	11,553
Union	5,129,949,747	134,554,836	319,248,570	112,615	2,954	7,008
Vermilion	26,155,696,285	86,275,175	2,486,742,965	687,123	2,266	65,328
Wabash	4,343,090,772	968,164	409,468,125	41,481	9	3,911
Warren	2,832,620,327	14,441,286	495,798,025	41,125	210	7,198
Washington	8,655,530,775	3,909,523	444,840,135	21,673	10	1,114
Wayne	6,193,158,457	3,913,696	445,172,825	119,423	75	8,584
White	8,137,979,844	101,840,800	290,102,080	127,365	1,594	4,540
Whiteside	20,839,846,893	26,685,945	978,521,800	43,675	56	2,051
Will	319,653,127,130	412,002,055	17,153,704,855	146,923	189	7,884
Williamson	25,174,231,977	17,863,502	2,082,366,125	6,806,788	4,830	563,045
Winnebago	109,243,536,300	74,634,408	7,939,342,630	220,673	151	16,038
Woodford	16,744,356,526	7,132,313	779,615,635	72,969	31	3,397

Tornado

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	127,788	1,069	19,160
Alexander	2,324,745,142	65,731,116	73,331,020	61,300	1,733	1,934
Bond	7,080,966,106	2,697,834	699,862,815	210,000	80	20,756
Boone	20,610,453,437	1,729,260	961,292,555	103,750	9	4,839
Brown	1,026,923,521	62,111,260	71,460,145	109,423	6,618	7,614
Bureau	27,309,231,457	9,480,287	746,673,550	198,519	69	5,428
Calhoun	1,007,110,265	1,335,673	149,352,515	16,347	22	2,424
Carroll	8,880,516,152	98,615,261	227,821,825	101,067	1,122	2,593
Cass	2,282,554,727	10,442,921	196,067,810	86,923	398	7,467
Champaign	69,455,734,544	111,157,807	13,935,665,850	3,994,501	6,393	801,461
Christian	15,128,722,731	31,677,846	745,556,930	4,812,798	10,077	237,179
Clark	7,427,346,181	4,816,805	284,111,700	15,578	10	596
Clay	7,180,614,254	4,365,241	288,471,140	127,885	78	5,138
Clinton	14,930,842,239	58,449,154	935,220,955	1,185,577	4,641	74,261
Coles	21,561,001,462	27,230,352	2,630,255,515	766,788	968	93,542
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	4,551,452	3,206	505,048
Crawford	10,326,783,754	31,909,827	499,047,505	61,731	191	2,983
Cumberland	4,135,853,852	3,100,436	209,284,230	12,788	10	647
De Witt	45,544,847,420	6,312,959	300,529,170	573,077	79	3,781
DeKalb	6,614,537,379	11,142,833	5,678,831,940	321,154	541	275,723
Douglas	8,391,184,190	3,540,344	335,877,210	310,596	131	12,432
DuPage	389,914,067,607	32,123,936	29,778,405,580	479,327	39	36,607
Edgar	10,535,959,193	33,164,719	435,015,440	25,483	80	1,052
Edwards	2,997,954,570	1,372,437	160,718,920	218,577	100	11,718
Effingham	16,337,897,113	32,306,327	999,746,525	80,291	159	4,913
Fayette	9,609,876,813	79,527,680	552,647,650	144,048	1,192	8,284
Ford	7,362,089,082	2,448,895	354,999,040	245,365	82	11,831
Franklin	14,708,710,736	21,715,420	639,210,325	278,731	412	12,113
Fulton	21,627,784,053	94,587,843	808,388,005	1,529,962	6,691	57,186
Gallatin	2,680,581,745	8,360,981	91,730,970	50,867	159	1,741
Greene	2,136,284,467	8,046,480	825,351,945	130,104	490	50,266
Grundy	25,545,715,472	9,038,968	1,167,168,015	2,382,058	843	108,835
Hamilton	7,504,608,023	3,687,110	142,708,750	351,038	172	6,675
Hancock	2,811,283,625	4,323,331	512,708,090	944,713	1,453	172,292
Hardin	1,403,020,533	7,048,790	197,679,900	963	5	136
Henderson	1,388,399,193	2,112,307	164,286,700	321,734	489	38,070
Henry	18,393,777,508	70,229,513	891,710,220	949,617	3,626	46,036

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	353,106	240	16,570
Jackson	21,717,281,167	55,748,766	3,397,545,420	417,250	1,071	65,276
Jasper	5,776,300,297	5,608,871	192,204,990	34,327	33	1,142
Jefferson	22,728,278,316	77,435,939	980,508,085	501,231	1,708	21,623
Jersey	3,913,559,707	37,810,715	521,334,385	214,519	2,073	28,577
Jo Daviess	14,642,498,042	9,383,230	490,837,920	20,202	13	677
Johnson	5,306,891,676	156,295,660	154,940,340	151,346	4,457	4,419
Kane	190,595,164,545	445,288,135	14,507,605,835	143,365	335	10,913
Kankakee	46,510,361,693	231,019,368	3,639,486,390	1,317,375	6,543	103,086
Kendall	51,922,881,930	7,940,423	2,268,041,095	206,731	32	9,030
Knox	8,682,959,633	83,528,172	1,572,886,775	277,885	2,673	50,338
Lake	277,436,751,396	173,469,689	16,779,538,720	365,107	228	22,082
LaSalle	56,312,786,680	87,917,169	2,454,172,775	603,942	943	26,320
Lawrence	5,781,862,919	78,545,550	325,470,830	131,923	1,792	7,426
Lee	16,837,809,988	183,713,484	803,062,120	115,115	1,256	5,490
Livingston	17,365,083,034	213,450,967	640,551,100	394,990	4,855	14,570
Logan	13,525,747,806	222,500,872	883,926,710	1,559,106	25,648	101,890
Macon	5,269,475,348	67,525,196	2,717,707,115	881,740	11,299	454,753
Macoupin	131,248,978,819	3,075,441	956,708,295	43,375	1	316
Madison	60,024,967,667	98,719,322	8,777,786,070	2,703,462	4,446	395,342
Marion	38,273,903,052	71,651,993	867,235,865	293,655	550	6,654
Marshall	30,502,696,918	3,134,729	254,902,845	127,596	13	1,066
Mason	96,125,108,425	18,101,902	417,129,945	247,702	47	1,075
Massac	20,156,751,058	10,410,141	301,863,945	665,000	343	9,959
McDonough	7,797,106,442	5,453,183	2,094,223,645	74,154	52	19,917
McHenry	7,099,611,423	15,842,964	6,438,995,900	1,262,500	2,817	1,145,025
McLean	6,057,573,290	31,970,937	7,238,900,865	781,726	4,126	934,175
Menard	6,913,247,833	15,417,093	239,915,600	479,808	1,070	16,651
Mercer	2,278,841,361	2,596,594	321,857,075	203,654	232	28,763
Monroe	11,814,674,680	2,784,027	392,841,985	75,001	18	2,494
Montgomery	15,766,017,379	66,015,065	715,733,430	75,412	316	3,423
Morgan	11,556,698,614	205,109,422	1,050,401,675	222,519	3,949	20,225
Moultrie	5,146,425,771	11,631,435	229,974,750	38,846	88	1,736
Ogle	35,906,388,482	12,489,965	704,234,645	522,115	182	10,240
Peoria	68,810,034,387	122,585,953	7,421,488,780	3,560,000	6,342	383,963
Perry	12,197,849,905	139,420,940	597,839,000	155,827	1,781	7,637
Piatt	7,041,542,130	2,851,774	362,129,900	273,365	111	14,059
Pike	2,491,690,327	17,194,862	329,601,305	125,193	864	16,561

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	190,019	0	10,433
Pulaski	1,722,012,867	2,013,718	220,479,960	153,885	180	19,703
Putnam	5,404,694,703	-	173,263,380	357,788	0	11,470
Randolph	18,795,175,020	204,779,365	992,430,300	376,615	4,103	19,886
Richland	8,919,434,152	1,209,331	559,484,775	218,269	30	13,691
Rock Island	24,643,791,488	88,643,201	4,190,238,085	436,904	1,572	74,288
Saline	93,922,287,934	30,647,705	698,735,140	270,972	88	2,016
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	986,029	114,162	794,329
Schuyler	97,110,880,038	30,753,595	275,554,400	129,213	41	367
Scott	1,202,653,022	2,070,286	81,608,980	31,731	55	2,153
Shelby	697,934,733	8,097,121	436,184,445	302,125	3,505	188,817
St. Clair	9,725,242,493	60,380,535	6,786,307,035	449,108	2,788	313,389
Stark	2,976,765,741	4,055,602	94,403,370	102,019	139	3,235
Stephenson	31,575,944,058	8,838,050	1,097,722,910	113,692	32	3,952
Tazewell	50,503,046,005	22,400,828	2,740,211,985	37,828,942	16,779	2,052,536
Union	5,129,949,747	134,554,836	319,248,570	236,212	6,196	14,700
Vermilion	26,155,696,285	86,275,175	2,486,742,965	1,797,915	5,930	170,936
Wabash	4,343,090,772	968,164	409,468,125	1,278,231	285	120,512
Warren	2,832,620,327	14,441,286	495,798,025	95,229	485	16,668
Washington	8,655,530,775	3,909,523	444,840,135	40,385	18	2,076
Wayne	6,193,158,457	3,913,696	445,172,825	420,346	266	30,215
White	8,137,979,844	101,840,800	290,102,080	331,442	4,148	11,815
Whiteside	20,839,846,893	26,685,945	978,521,800	216,635	277	10,172
Will	319,653,127,130	412,002,055	17,153,704,855	13,474,887	17,368	723,110
Williamson	25,174,231,977	17,863,502	2,082,366,125	10,708,577	7,599	885,794
Winnebago	109,243,536,300	74,634,408	7,939,342,630	209,231	143	15,206
Woodford	16,744,356,526	7,132,313	779,615,635	1,055,933	450	49,164

Wildfire

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	11,786	99	1,767
Alexander	2,324,745,142	65,731,116	73,331,020	11,786	333	372
Bond	7,080,966,106	2,697,834	699,862,815	11,786	4	1,165
Boone	20,610,453,437	1,729,260	961,292,555	11,786	1	550
Brown	1,026,923,521	62,111,260	71,460,145	11,786	713	820
Bureau	27,309,231,457	9,480,287	746,673,550	11,786	4	322
Calhoun	1,007,110,265	1,335,673	149,352,515	11,786	16	1,748
Carroll	8,880,516,152	98,615,261	227,821,825	11,786	131	302
Cass	2,282,554,727	10,442,921	196,067,810	11,786	54	1,012
Champaign	69,455,734,544	111,157,807	13,935,665,850	11,786	19	2,365
Christian	15,128,722,731	31,677,846	745,556,930	11,786	25	581
Clark	7,427,346,181	4,816,805	284,111,700	11,786	8	451
Clay	7,180,614,254	4,365,241	288,471,140	11,786	7	473
Clinton	14,930,842,239	58,449,154	935,220,955	11,786	46	738
Coles	21,561,001,462	27,230,352	2,630,255,515	11,786	15	1,438
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	76,923	54	8,536
Crawford	10,326,783,754	31,909,827	499,047,505	11,786	36	570
Cumberland	4,135,853,852	3,100,436	209,284,230	11,786	9	596
De Witt	45,544,847,420	6,312,959	300,529,170	11,786	2	78
DeKalb	6,614,537,379	11,142,833	5,678,831,940	11,786	20	10,118
Douglas	8,391,184,190	3,540,344	335,877,210	11,786	5	472
DuPage	389,914,067,607	32,123,936	29,778,405,580	11,786	1	900
Edgar	10,535,959,193	33,164,719	435,015,440	11,786	37	487
Edwards	2,997,954,570	1,372,437	160,718,920	11,786	5	632
Effingham	16,337,897,113	32,306,327	999,746,525	11,786	23	721
Fayette	9,609,876,813	79,527,680	552,647,650	11,786	98	678
Ford	7,362,089,082	2,448,895	354,999,040	11,786	4	568
Franklin	14,708,710,736	21,715,420	639,210,325	11,786	17	512
Fulton	21,627,784,053	94,587,843	808,388,005	11,786	52	441
Gallatin	2,680,581,745	8,360,981	91,730,970	385	1	13
Greene	2,136,284,467	8,046,480	825,351,945	11,786	44	4,553
Grundy	25,545,715,472	9,038,968	1,167,168,015	11,786	4	538
Hamilton	7,504,608,023	3,687,110	142,708,750	11,786	6	224
Hancock	2,811,283,625	4,323,331	512,708,090	11,786	18	2,149
Hardin	1,403,020,533	7,048,790	197,679,900	11,786	59	1,661
Henderson	1,388,399,193	2,112,307	164,286,700	11,786	18	1,395
Henry	18,393,777,508	70,229,513	891,710,220	11,786	45	571

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	11,786	8	553
Jackson	21,717,281,167	55,748,766	3,397,545,420	2,885	7	451
Jasper	5,776,300,297	5,608,871	192,204,990	11,786	11	392
Jefferson	22,728,278,316	77,435,939	980,508,085	11,786	40	508
Jersey	3,913,559,707	37,810,715	521,334,385	11,786	114	1,570
Jo Daviess	14,642,498,042	9,383,230	490,837,920	11,786	8	395
Johnson	5,306,891,676	156,295,660	154,940,340	11,786	347	344
Kane	190,595,164,545	445,288,135	14,507,605,835	11,786	28	897
Kankakee	46,510,361,693	231,019,368	3,639,486,390	11,786	59	922
Kendall	51,922,881,930	7,940,423	2,268,041,095	11,786	2	515
Knox	8,682,959,633	83,528,172	1,572,886,775	11,786	113	2,135
Lake	277,436,751,396	173,469,689	16,779,538,720	11,786	7	713
LaSalle	56,312,786,680	87,917,169	2,454,172,775	1,923	3	84
Lawrence	5,781,862,919	78,545,550	325,470,830	11,786	160	663
Lee	16,837,809,988	183,713,484	803,062,120	11,786	129	562
Livingston	17,365,083,034	213,450,967	640,551,100	11,786	145	435
Logan	13,525,747,806	222,500,872	883,926,710	11,786	194	770
Macon	5,269,475,348	67,525,196	2,717,707,115	11,786	151	6,078
Macoupin	131,248,978,819	3,075,441	956,708,295	11,786	0	86
Madison	60,024,967,667	98,719,322	8,777,786,070	11,786	19	1,723
Marion	38,273,903,052	71,651,993	867,235,865	11,786	22	267
Marshall	30,502,696,918	3,134,729	254,902,845	11,786	1	98
Mason	96,125,108,425	18,101,902	417,129,945	11,786	2	51
Massac	20,156,751,058	10,410,141	301,863,945	11,786	6	177
McDonough	7,797,106,442	5,453,183	2,094,223,645	11,786	8	3,166
McHenry	7,099,611,423	15,842,964	6,438,995,900	11,786	26	10,689
McLean	6,057,573,290	31,970,937	7,238,900,865	11,786	62	14,084
Menard	6,913,247,833	15,417,093	239,915,600	11,786	26	409
Mercer	2,278,841,361	2,596,594	321,857,075	11,786	13	1,665
Monroe	11,814,674,680	2,784,027	392,841,985	11,786	3	392
Montgomery	15,766,017,379	66,015,065	715,733,430	11,786	49	535
Morgan	11,556,698,614	205,109,422	1,050,401,675	11,786	209	1,071
Moultrie	5,146,425,771	11,631,435	229,974,750	11,786	27	527
Ogle	35,906,388,482	12,489,965	704,234,645	11,786	4	231
Peoria	68,810,034,387	122,585,953	7,421,488,780	11,786	21	1,271
Perry	12,197,849,905	139,420,940	597,839,000	11,786	135	578
Piatt	7,041,542,130	2,851,774	362,129,900	11,786	5	606
Pike	2,491,690,327	17,194,862	329,601,305	11,786	81	1,559

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	11,786	0	647
Pulaski	1,722,012,867	2,013,718	220,479,960	11,786	14	1,509
Putnam	5,404,694,703	-	173,263,380	11,786	0	378
Randolph	18,795,175,020	204,779,365	992,430,300	11,786	128	622
Richland	8,919,434,152	1,209,331	559,484,775	11,786	2	739
Rock Island	24,643,791,488	88,643,201	4,190,238,085	11,786	42	2,004
Saline	93,922,287,934	30,647,705	698,735,140	192	0	1
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	80,769	9,351	65,066
Schuyler	97,110,880,038	30,753,595	275,554,400	11,786	4	33
Scott	1,202,653,022	2,070,286	81,608,980	11,786	20	800
Shelby	697,934,733	8,097,121	436,184,445	11,786	137	7,366
St. Clair	9,725,242,493	60,380,535	6,786,307,035	11,786	73	8,224
Stark	2,976,765,741	4,055,602	94,403,370	11,786	16	374
Stephenson	31,575,944,058	8,838,050	1,097,722,910	11,786	3	410
Tazewell	50,503,046,005	22,400,828	2,740,211,985	11,786	5	639
Union	5,129,949,747	134,554,836	319,248,570	11,786	309	733
Vermilion	26,155,696,285	86,275,175	2,486,742,965	11,786	39	1,121
Wabash	4,343,090,772	968,164	409,468,125	11,786	3	1,111
Warren	2,832,620,327	14,441,286	495,798,025	11,786	60	2,063
Washington	8,655,530,775	3,909,523	444,840,135	11,786	5	606
Wayne	6,193,158,457	3,913,696	445,172,825	11,786	7	847
White	8,137,979,844	101,840,800	290,102,080	11,786	147	420
Whiteside	20,839,846,893	26,685,945	978,521,800	11,786	15	553
Will	319,653,127,130	412,002,055	17,153,704,855	1,923	2	103
Williamson	25,174,231,977	17,863,502	2,082,366,125	11,786	8	975
Winnebago	109,243,536,300	74,634,408	7,939,342,630	11,786	8	857
Woodford	16,744,356,526	7,132,313	779,615,635	11,786	5	549

Winter Weather: Ice Storms

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	4,456	37	668
Alexander	2,324,745,142	65,731,116	73,331,020	4,456	126	141
Bond	7,080,966,106	2,697,834	699,862,815	4,456	2	440
Boone	20,610,453,437	1,729,260	961,292,555	4,456	0	208
Brown	1,026,923,521	62,111,260	71,460,145	4,456	270	310
Bureau	27,309,231,457	9,480,287	746,673,550	462	0	13
Calhoun	1,007,110,265	1,335,673	149,352,515	4,456	6	661
Carroll	8,880,516,152	98,615,261	227,821,825	4,456	49	114
Cass	2,282,554,727	10,442,921	196,067,810	1,923	9	165
Champaign	69,455,734,544	111,157,807	13,935,665,850	4,456	7	894
Christian	15,128,722,731	31,677,846	745,556,930	4,456	9	220
Clark	7,427,346,181	4,816,805	284,111,700	4,456	3	170
Clay	7,180,614,254	4,365,241	288,471,140	30,769	19	1,236
Clinton	14,930,842,239	58,449,154	935,220,955	4,456	17	279
Coles	21,561,001,462	27,230,352	2,630,255,515	4,456	6	544
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	4,456	3	494
Crawford	10,326,783,754	31,909,827	499,047,505	23,077	71	1,115
Cumberland	4,135,853,852	3,100,436	209,284,230	4,456	3	225
De Witt	45,544,847,420	6,312,959	300,529,170	192	0	1
DeKalb	6,614,537,379	11,142,833	5,678,831,940	4,456	8	3,826
Douglas	8,391,184,190	3,540,344	335,877,210	4,456	2	178
DuPage	389,914,067,607	32,123,936	29,778,405,580	4,456	0	340
Edgar	10,535,959,193	33,164,719	435,015,440	4,456	14	184
Edwards	2,997,954,570	1,372,437	160,718,920	4,456	2	239
Effingham	16,337,897,113	32,306,327	999,746,525	4,456	9	273
Fayette	9,609,876,813	79,527,680	552,647,650	4,456	37	256
Ford	7,362,089,082	2,448,895	354,999,040	4,456	1	215
Franklin	14,708,710,736	21,715,420	639,210,325	1,923	3	84
Fulton	21,627,784,053	94,587,843	808,388,005	3,846	17	144
Gallatin	2,680,581,745	8,360,981	91,730,970	962	3	33
Greene	2,136,284,467	8,046,480	825,351,945	4,456	17	1,722
Grundy	25,545,715,472	9,038,968	1,167,168,015	4,456	2	204
Hamilton	7,504,608,023	3,687,110	142,708,750	4,456	2	85
Hancock	2,811,283,625	4,323,331	512,708,090	577	1	105
Hardin	1,403,020,533	7,048,790	197,679,900	4,456	22	628
Henderson	1,388,399,193	2,112,307	164,286,700	385	1	46
Henry	18,393,777,508	70,229,513	891,710,220	654	2	32

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	4,456	3	209
Jackson	21,717,281,167	55,748,766	3,397,545,420	4,808	12	752
Jasper	5,776,300,297	5,608,871	192,204,990	23,077	22	768
Jefferson	22,728,278,316	77,435,939	980,508,085	4,456	15	192
Jersey	3,913,559,707	37,810,715	521,334,385	4,456	43	594
Jo Daviess	14,642,498,042	9,383,230	490,837,920	4,456	3	149
Johnson	5,306,891,676	156,295,660	154,940,340	4,456	131	130
Kane	190,595,164,545	445,288,135	14,507,605,835	4,456	10	339
Kankakee	46,510,361,693	231,019,368	3,639,486,390	4,456	22	349
Kendall	51,922,881,930	7,940,423	2,268,041,095	4,456	1	195
Knox	8,682,959,633	83,528,172	1,572,886,775	20,192	194	3,658
Lake	277,436,751,396	173,469,689	16,779,538,720	77	0	5
LaSalle	56,312,786,680	87,917,169	2,454,172,775	38	0	2
Lawrence	5,781,862,919	78,545,550	325,470,830	1,154	16	65
Lee	16,837,809,988	183,713,484	803,062,120	4,456	49	213
Livingston	17,365,083,034	213,450,967	640,551,100	4,456	55	164
Logan	13,525,747,806	222,500,872	883,926,710	4,456	73	291
Macon	5,269,475,348	67,525,196	2,717,707,115	4,456	57	2,298
Macoupin	131,248,978,819	3,075,441	956,708,295	4,456	0	32
Madison	60,024,967,667	98,719,322	8,777,786,070	4,456	7	652
Marion	38,273,903,052	71,651,993	867,235,865	4,456	8	101
Marshall	30,502,696,918	3,134,729	254,902,845	18,462	2	154
Mason	96,125,108,425	18,101,902	417,129,945	4,456	1	19
Massac	20,156,751,058	10,410,141	301,863,945	4,456	2	67
McDonough	7,797,106,442	5,453,183	2,094,223,645	577	0	155
McHenry	7,099,611,423	15,842,964	6,438,995,900	4,456	10	4,042
McLean	6,057,573,290	31,970,937	7,238,900,865	49,038	259	58,602
Menard	6,913,247,833	15,417,093	239,915,600	1,154	3	40
Mercer	2,278,841,361	2,596,594	321,857,075	37,500	43	5,296
Monroe	11,814,674,680	2,784,027	392,841,985	4,456	1	148
Montgomery	15,766,017,379	66,015,065	715,733,430	4,456	19	202
Morgan	11,556,698,614	205,109,422	1,050,401,675	15,769	280	1,433
Moultrie	5,146,425,771	11,631,435	229,974,750	4,456	10	199
Ogle	35,906,388,482	12,489,965	704,234,645	4,456	2	87
Peoria	68,810,034,387	122,585,953	7,421,488,780	84,615	151	9,126
Perry	12,197,849,905	139,420,940	597,839,000	4,456	51	218
Piatt	7,041,542,130	2,851,774	362,129,900	4,456	2	229
Pike	2,491,690,327	17,194,862	329,601,305	4,456	31	589

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	4,456	0	245
Pulaski	1,722,012,867	2,013,718	220,479,960	4,456	5	571
Putnam	5,404,694,703	-	173,263,380	2,308	0	74
Randolph	18,795,175,020	204,779,365	992,430,300	4,456	49	235
Richland	8,919,434,152	1,209,331	559,484,775	11,538	2	724
Rock Island	24,643,791,488	88,643,201	4,190,238,085	4,456	16	758
Saline	93,922,287,934	30,647,705	698,735,140	962	0	7
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	4,456	516	3,590
Schuyler	97,110,880,038	30,753,595	275,554,400	4,456	1	13
Scott	1,202,653,022	2,070,286	81,608,980	3,846	7	261
Shelby	697,934,733	8,097,121	436,184,445	4,456	52	2,785
St. Clair	9,725,242,493	60,380,535	6,786,307,035	4,456	28	3,110
Stark	2,976,765,741	4,055,602	94,403,370	12,692	17	403
Stephenson	31,575,944,058	8,838,050	1,097,722,910	4,456	1	155
Tazewell	50,503,046,005	22,400,828	2,740,211,985	55,769	25	3,026
Union	5,129,949,747	134,554,836	319,248,570	4,456	117	277
Vermilion	26,155,696,285	86,275,175	2,486,742,965	4,456	15	424
Wabash	4,343,090,772	968,164	409,468,125	4,456	1	420
Warren	2,832,620,327	14,441,286	495,798,025	385	2	67
Washington	8,655,530,775	3,909,523	444,840,135	4,456	2	229
Wayne	6,193,158,457	3,913,696	445,172,825	4,456	3	320
White	8,137,979,844	101,840,800	290,102,080	4,456	56	159
Whiteside	20,839,846,893	26,685,945	978,521,800	4,456	6	209
Will	319,653,127,130	412,002,055	17,153,704,855	4,456	6	239
Williamson	25,174,231,977	17,863,502	2,082,366,125	4,808	3	398
Winnebago	109,243,536,300	74,634,408	7,939,342,630	4,456	3	324
Woodford	16,744,356,526	7,132,313	779,615,635	36,538	16	1,701

Winter Weather: Winter Storms

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Adams	13,244,848,373	110,753,916	1,985,865,165	33,177	277	4,974
Alexander	2,324,745,142	65,731,116	73,331,020	425,000	12,017	13,406
Bond	7,080,966,106	2,697,834	699,862,815	33,177	13	3,279
Boone	20,610,453,437	1,729,260	961,292,555	33,177	3	1,547
Brown	1,026,923,521	62,111,260	71,460,145	33,177	2,007	2,309
Bureau	27,309,231,457	9,480,287	746,673,550	385	0	11
Calhoun	1,007,110,265	1,335,673	149,352,515	33,177	44	4,920
Carroll	8,880,516,152	98,615,261	227,821,825	231	3	6
Cass	2,282,554,727	10,442,921	196,067,810	3,846	18	330
Champaign	69,455,734,544	111,157,807	13,935,665,850	1,923	3	386
Christian	15,128,722,731	31,677,846	745,556,930	67,692	142	3,336
Clark	7,427,346,181	4,816,805	284,111,700	26,923	17	1,030
Clay	7,180,614,254	4,365,241	288,471,140	33,177	20	1,333
Clinton	14,930,842,239	58,449,154	935,220,955	33,177	130	2,078
Coles	21,561,001,462	27,230,352	2,630,255,515	23,077	29	2,815
Cook	1,527,980,265,918	1,076,152,830	169,551,164,040	26,923	19	2,987
Crawford	10,326,783,754	31,909,827	499,047,505	33,177	103	1,603
Cumberland	4,135,853,852	3,100,436	209,284,230	38,462	29	1,946
De Witt	45,544,847,420	6,312,959	300,529,170	33,177	5	219
DeKalb	6,614,537,379	11,142,833	5,678,831,940	17,308	29	14,859
Douglas	8,391,184,190	3,540,344	335,877,210	13,462	6	539
DuPage	389,914,067,607	32,123,936	29,778,405,580	12,500	1	955
Edgar	10,535,959,193	33,164,719	435,015,440	32,692	103	1,350
Edwards	2,997,954,570	1,372,437	160,718,920	1,923	1	103
Effingham	16,337,897,113	32,306,327	999,746,525	34,615	68	2,118
Fayette	9,609,876,813	79,527,680	552,647,650	33,177	275	1,908
Ford	7,362,089,082	2,448,895	354,999,040	33,177	11	1,600
Franklin	14,708,710,736	21,715,420	639,210,325	11,538	17	501
Fulton	21,627,784,053	94,587,843	808,388,005	7,692	34	288
Gallatin	2,680,581,745	8,360,981	91,730,970	24,231	76	829
Greene	2,136,284,467	8,046,480	825,351,945	33,177	125	12,818
Grundy	25,545,715,472	9,038,968	1,167,168,015	15,385	5	703
Hamilton	7,504,608,023	3,687,110	142,708,750	3,846	2	73
Hancock	2,811,283,625	4,323,331	512,708,090	308	0	56
Hardin	1,403,020,533	7,048,790	197,679,900	346,538	1,741	48,826
Henderson	1,388,399,193	2,112,307	164,286,700	212	0	25
Henry	18,393,777,508	70,229,513	891,710,220	423	2	21

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Iroquois	14,981,798,861	10,193,397	703,053,560	33,177	23	1,557
Jackson	21,717,281,167	55,748,766	3,397,545,420	40,385	104	6,318
Jasper	5,776,300,297	5,608,871	192,204,990	33,177	32	1,104
Jefferson	22,728,278,316	77,435,939	980,508,085	3,231	11	139
Jersey	3,913,559,707	37,810,715	521,334,385	33,177	321	4,420
Jo Daviess	14,642,498,042	9,383,230	490,837,920	692	0	23
Johnson	5,306,891,676	156,295,660	154,940,340	44,231	1,303	1,291
Kane	190,595,164,545	445,288,135	14,507,605,835	9,615	22	732
Kankakee	46,510,361,693	231,019,368	3,639,486,390	33,177	165	2,596
Kendall	51,922,881,930	7,940,423	2,268,041,095	33,177	5	1,449
Knox	8,682,959,633	83,528,172	1,572,886,775	11,538	111	2,090
Lake	277,436,751,396	173,469,689	16,779,538,720	33,177	21	2,007
LaSalle	56,312,786,680	87,917,169	2,454,172,775	33,177	52	1,446
Lawrence	5,781,862,919	78,545,550	325,470,830	38	1	2
Lee	16,837,809,988	183,713,484	803,062,120	33,177	362	1,582
Livingston	17,365,083,034	213,450,967	640,551,100	33,177	408	1,224
Logan	13,525,747,806	222,500,872	883,926,710	25,000	411	1,634
Macon	5,269,475,348	67,525,196	2,717,707,115	61,538	789	31,738
Macoupin	131,248,978,819	3,075,441	956,708,295	76,923	2	561
Madison	60,024,967,667	98,719,322	8,777,786,070	65,385	108	9,562
Marion	38,273,903,052	71,651,993	867,235,865	33,177	62	752
Marshall	30,502,696,918	3,134,729	254,902,845	2,885	0	24
Mason	96,125,108,425	18,101,902	417,129,945	3,077	1	13
Massac	20,156,751,058	10,410,141	301,863,945	500,000	258	7,488
McDonough	7,797,106,442	5,453,183	2,094,223,645	269	0	72
McHenry	7,099,611,423	15,842,964	6,438,995,900	33,177	74	30,090
McLean	6,057,573,290	31,970,937	7,238,900,865	34,615	183	41,366
Menard	6,913,247,833	15,417,093	239,915,600	3,462	8	120
Mercer	2,278,841,361	2,596,594	321,857,075	115	0	16
Monroe	11,814,674,680	2,784,027	392,841,985	28,846	7	959
Montgomery	15,766,017,379	66,015,065	715,733,430	33,177	139	1,506
Morgan	11,556,698,614	205,109,422	1,050,401,675	8,462	150	769
Moultrie	5,146,425,771	11,631,435	229,974,750	7,692	17	344
Ogle	35,906,388,482	12,489,965	704,234,645	33,177	12	651
Peoria	68,810,034,387	122,585,953	7,421,488,780	28,846	51	3,111
Perry	12,197,849,905	139,420,940	597,839,000	5,577	64	273
Piatt	7,041,542,130	2,851,774	362,129,900	15,769	6	811
Pike	2,491,690,327	17,194,862	329,601,305	33,177	229	4,389

	Total Facility Exposure ($)	State Facility Exposure ($)	Essential Facility Exposure ($)	Damages per Year ($/year)	Estimated Annual State Facility Future Exposure ($)	Estimated Annual Essential Facility Future Exposure ($)
Pope	2,447,287,062	-	134,370,370	403,846	0	22,174
Pulaski	1,722,012,867	2,013,718	220,479,960	424,615	497	54,366
Putnam	5,404,694,703	-	173,263,380	33,177	0	1,064
Randolph	18,795,175,020	204,779,365	992,430,300	33,177	361	1,752
Richland	8,919,434,152	1,209,331	559,484,775	33,177	4	2,081
Rock Island	24,643,791,488	88,643,201	4,190,238,085	231	1	39
Saline	93,922,287,934	30,647,705	698,735,140	28,846	9	215
Sangamon	8,973,086,539	1,038,901,880	7,228,577,920	167,308	19,371	134,780
Schuyler	97,110,880,038	30,753,595	275,554,400	1,923	1	5
Scott	1,202,653,022	2,070,286	81,608,980	808	1	55
Shelby	697,934,733	8,097,121	436,184,445	46,154	535	28,845
St. Clair	9,725,242,493	60,380,535	6,786,307,035	33,177	206	23,151
Stark	2,976,765,741	4,055,602	94,403,370	3,077	4	98
Stephenson	31,575,944,058	8,838,050	1,097,722,910	808	0	28
Tazewell	50,503,046,005	22,400,828	2,740,211,985	17,692	8	960
Union	5,129,949,747	134,554,836	319,248,570	51,538	1,352	3,207
Vermilion	26,155,696,285	86,275,175	2,486,742,965	385	1	37
Wabash	4,343,090,772	968,164	409,468,125	1,923	0	181
Warren	2,832,620,327	14,441,286	495,798,025	308	2	54
Washington	8,655,530,775	3,909,523	444,840,135	33,177	15	1,705
Wayne	6,193,158,457	3,913,696	445,172,825	19,231	12	1,382
White	8,137,979,844	101,840,800	290,102,080	4,231	53	151
Whiteside	20,839,846,893	26,685,945	978,521,800	423	1	20
Will	319,653,127,130	412,002,055	17,153,704,855	28,846	37	1,548
Williamson	25,174,231,977	17,863,502	2,082,366,125	39,615	28	3,277
Winnebago	109,243,536,300	74,634,408	7,939,342,630	33,177	23	2,411
Woodford	16,744,356,526	7,132,313	779,615,635	26,923	11	1,254

Appendix 2.3 Illinois Dams

County	Dam Name	Hazard Potential Classification
Adams	Clayton Reservoir Dam	Low
Adams	Siloam Springs Lake Dam	Low
Adams	Moorman Park Dam	Low
Adams	Hadley Creek WS Str 1-7	Low
Adams	Marian Lake Dam	High
Adams	Camp Saukenauk Lake Dam	Low
Adams	Hadley Creek 2 Lake Dam	Low
Adams	Triangle Lake Dam	Low
Adams	Scheuermann Lake Dam	Low
Adams	Columbus Dry Gulch Club Lake Dam	Low
Adams	Harrell Lake North Dam	Low
Adams	De Wees Lake Dam	Low
Adams	Eilers Lake Dam	Low
Adams	Lakeshore Hills Lake Dam	Low
Adams	Jug Lake Dam	Low
Adams	Sill Lake Dam	Low
Adams	Sims Pond Dam	Low
Adams	Harrell Lake South Dam	Low
Adams	Fieldstone Subdivision Twin Dams-South Dam	Low
Adams	Fieldstone Subdivision Twin Dams-North Dam	Low
Adams	Lucinda Lake Dam	Significant
Adams	Treasure Lake Dam	High
Adams	Doyle Lake Dam	High
Adams	Hadley Creek WS Str 9-1	Low
Adams	East Lake Centre Dam	High
Alexander	Horseshoe Lake Dam	Low
Alexander	Central Alexander County Sewage Treatment Pond Dam	Low
Alexander	Dann Kraatz Dam	High
Ballard	Olmsted Locks and Dam	Significant
Bond	Alexander Pond Dam	Significant
Bond	Greenville New City Dam	Significant
Bond	Bond Christian Camp Lake Dam	Significant
Bond	Tomahawk Lake Dam	Low
Bond	Greenville Old City Lake Dam	Low
Bond	Rinco Instrument Corporation Lake Dam	Low
Bond	Potthast Lake Dam	High
Bond	Greenville Rod and Gun Club Lake Dam	Low
Bond	Stone Pond Dam	Low
Bond	Armstrong Pond Dam	Low
Bond	Gnawbone Campground Dam	Low
Bond	Hillcrest Farms Pond 1	Low
Bond	Wagner Lake Dam	Low
Boone	Belvidere Dam	Low
Boone	Candlewick Lake Dam	High
Brown	Lake Mt. Sterling Dam	Low
Brown	Orr Pond Dam	Low
Brown	Alsup Farm Pond Dam	Low
Brown	Hambaugh-Martin 6 Dam	Low
Brown	Dixon Pond Dam	Low

County	Dam Name	Hazard Potential Classification
Brown	Hambaugh-Martin 5 Dam	Low
Brown	Kleinlein Farm Pond Dam	Low
Brown	Hambaugh-Martin 3 Dam	Low
Brown	Hambaugh-Martin 2 Dam	Significant
Brown	Hambaugh- Martin WS Str 4	Low
Brown	Hambaugh- Martin WS Str 8	Low
Brown	Hambaugh- Martin WS Str 7	Low
Brown	East Lake Estates 2 Dam	Low
Brown	Hambaugh-Martin 1 Dam	Low
Brown	Ill. Laborers and Contractors Dam	Low
Brown	LaGrange Lock and Dam	Significant
Bureau	Spring Valley Wwtp Lagoon Dam	Significant
Bureau	Bolton Lakes Dam	Low
Bureau	Beaver Glenn Lake Dam	High
Bureau	Clover Leaf Ranch Lake Dam	Low
Bureau	Krause Pond Dam	Low
Bureau	Maupin Lake Dam	Low
Bureau	Tiskilwa Strucure 2 Dam	High
Bureau	Lake Arispie Dam	Significant
Bureau	Tiskilwa Structure 5 Dam	High
Bureau	Harmon Pond Dam	Significant
Bureau	Tiskilwa Structure 4 Dam	High
Bureau	Newton-Hager Lake Dam	Low
Bureau	Tiskilwa Structure 1 Dam	High
Bureau	Clearwater Pond Dam	High
Carroll	Upper Spring Lake Dam	Low
Carroll	Lake Carroll Sedimentation Pond 3 Dam	Low
Carroll	Timber Lake Dam	Significant
Carroll	Lake Carroll Sedimentation Disposal Dam 5	Low
Carroll	Lake Carroll Sedimentation Pond 2 Dam	Low
Carroll	Leroy Hinkle Dam	High
Cass	Prairie Lake Dam	High
Cass	Gridley Dam	Low
Cass	Virginia Lake Dam	Significant
Cass	Finger Lake Dam	Low
Cass	Longs Lake Dam	Low
Cass	Drake Lake Dam	High
Champaign	Homer Lake Dam	Low
Champaign	Sangamon Valley Pwd Pcf Dam	Significant
Champaign	Lake of The Woods Dam	Significant
Champaign	Spring Lake Dam	Low
Champaign	Greenwood Lake Dam	Significant
Champaign	Trautman Lake Dam	High
Champaign	Conway Farm Subdivision Lake Dam	Significant
Christian	Rlf/Pawnee Mine/Slurry Impoundment 2 Dam	High
Christian	Rlf/Pawnee Mine/Slurry Impoundment 3 Dam	Low
Christian	Kincaid Station Slag Pond	Significant
Christian	Kincaid City Lake Dam	Significant
Christian	Ostermeir Pond Dam	Low
Christian	Timber Acres Lake Dam	Low

County	Dam Name	Hazard Potential Classification
Christian	Bertinettis Lake Dam	Significant
Christian	Lusters Lake Dam	Low
Christian	Sacome Pond Dam	Low
Christian	Lake Taylorville Dam	High
Christian	Paragon Lake Dam	Low
Christian	Sangchris Lake Dam	High
Christian	Lake Taylorville Locust Creek Detention Basin Dam	Low
Christian	Lake Taylorville South Fork Sediment Basin Dam	Low
Christian	Rlf/Pawnee Mine/Slurry Impoundment 1 Dam	High
Clark	Marshall Golf Course Lake Dam	Significant
Clark	Lincoln Trail State Park Lake Dam	High
Clark	Mill Creek Structure 9 Dam	Low
Clark	Mill Creek Structure 6 Dam	Low
Clark	Craig Lake Dam	Low
Clark	Martin Tarbel Lake Dam	Low
Clark	Lashbrook Pond Dam	Low
Clark	Mill Creek Structure 7 Dam	Low
Clark	Newmans Lake Dam	Low
Clark	Sweet Farms Lake Dam	Low
Clark	Martinsville Pond Dam	Significant
Clark	Bass Lake Dam	Low
Clark	Sherwood Forest Lake Dam	Significant
Clark	Snake Trail Campground Lake Dam	Significant
Clark	Mill Creek Structure 3 Dam	Significant
Clark	Mill Creek Strcture 2 Dam	Low
Clark	Round Grove Sportsman Lake Dam	Low
Clark	Mill Creek Structure 8 Dam	Low
Clark	Mill Creek WS Str 4	Low
Clark	Mill Creek Structure 1 Dam	Significant
Clay	Charley Brown Park Lake Dam	Significant
Clay	Greendale Lake Dam	Significant
Clay	Patterson Lake Dam	Significant
Clay	Gaskin Lake Dam	Low
Clay	Trago Lake Dam	Low
Clay	Clay City Side Channel Reservoir Dam	Low
Clinton	Exxonmobil Coal Usa/Mine 2/Recirculation Lake Dam	Low
Clinton	Exxonmobil Coal Usa/Mine 2/Freshwater Lake Dam	Low
Clinton	Exxonmobil Coal Usa/Mine 2/Refuse Disposal Area 2	High
Clinton	Exxonmobil Coal Usa/Mine 2/Refuse Disposal Area 1	High
Clinton	Breese Perched Reservoir Dam	Low
Clinton	Diebert-Hortsman Lake Dam	Low
Clinton	Cb & Q Railroad Reservoir Dam	Low
Clinton	Rocky Ford Pond Dam	Low
Clinton	Sportsman Lake Dam	Low
Clinton	Lake Joy Dam	Low
Clinton	Albers Lake Dam	Significant
Clinton	Sunset Hills Lake Dam	Low
Clinton	Greenville Livestock Holding Pond 1 Dam	Low
Clinton	Carlyle Dam - Saddle Dam 3	Significant
Clinton	Carlyle Dam - Saddle Dam 2	Significant

County	Dam Name	Hazard Potential Classification
Clinton	Carlyle Dam - Keyesport Levee	High
Clinton	Carlyle Dam	High
Coles	Paradise Lake Dam	High
Coles	Oakland Lake Dam	Significant
Coles	Riverview Dam	Significant
Coles	Curtis Brothers Pond Dam	Low
Coles	Lake Charleston Dam	Significant
Coles	Glenwood Lake Dam	Low
Coles	Hayes Pond Dam	Low
Coles	Crabill Pond Dam	Low
Coles	Temples Pond Dam	Low
Coles	Lake Windermere Dam	Low
Coles	Fox Ridge Lake Dam	Low
Coles	Miller Lake Dam	Low
Coles	South Side Detention Basin Berm 2 Dam	Low
Coles	South Side Detention Basin Berm 3 Dam	Low
Coles	South Side Detention Basin Berm 1 Dam	High
Cook	Saganashkee Slough 7 Dam	Low
Cook	Main Street Triangle Dam	Significant
Cook	Papoose Lake Dam	Significant
Cook	Bullfrog Lake Dam	Significant
Cook	Tampier Lake Dam	Significant
Cook	White Pine Ditch Dam	Significant
Cook	Saganashkee Slough 2 Dam	Low
Cook	Colette Highlands Dam	Low
Cook	Streamwood Golf Course Dam	Low
Cook	Wetfoot Lake Dam	Low
Cook	Mayfair Reservoir Dam	High
Cook	Lake George Dam	High
Cook	Maple Lake Dam	Significant
Cook	South Lake of The Coves Dam	Low
Cook	Lake of The Coves Dam	Low
Cook	Sauk Trail Lake Dam	Low
Cook	Skokie Lagoons Dredge Disposal Dam	Low
Cook	Saganashkee Slough 6 Dam	Significant
Cook	Techny Reservoir Dam	Significant
Cook	Woodfield Lakes Dam	Low
Cook	Orland Park Basin Dam	Low
Cook	Lower Elmhurst Dam	High
Cook	Upper Salt Creek Structure 2 Dam	High
Cook	Busse Woods Reservoir South Dam	High
Cook	Arboretum of South Barrington Dam	Low
Cook	Upper Salt Creek Structure 3 Dam	High
Cook	Upper Salt Creek Structure 4 Dam	High
Cook	Keene Lake Dam	Low
Cook	Willow Higgins Reservoir Dam	Significant
Cook	Midlothian Creek Dam	High
Cook	Chicago Botanical Gardens South Inlet Dam	Low
Cook	Labuy Lake Dam	Low
Cook	Grasslands Basin Dam	High

County	Dam Name	Hazard Potential Classification
Cook	Saganashkee Slough 1 Dam	Significant
Cook	Touhy Avenue Reservoir Dam	Significant
Cook	Anets Woods West Basin Dam	Significant
Cook	Galvins Lake Dam	Significant
Cook	Richton Crossing Dam	High
Cook	Holy Family Villa Lake Dam	Low
Cook	Cornell Avenue Dam	High
Cook	Brentwood Townehome Dam	High
Cook	Thorton Quarry Gap Dam	High
Cook	Thomas J. O'Brien Lock and Controlling Works	High
Cook	Chicago River and Harbor Controlling Works	High
Crawford	Hutsonville Fly Ash Pond D Dam	Significant
Crawford	Hutsonville Fly Ash Pond Dam	Low
Crawford	West Lake Dam	Significant
Crawford	Brooks Lake Dam	Low
Crawford	Campbell Lake Dam	Low
Crawford	Burcham Pond Dam	Low
Crawford	Allen Lake Dam	High
Crawford	Athey Lake Dam	Low
Crawford	Ridgeway Lake Dam	Low
Crawford	Newlin Lake Dam	Low
Crawford	York Pond Dam	Significant
Cumberland	Montrose City Lake Dam	Low
Cumberland	Ettlebrick Lake Dam	Significant
Cumberland	Diepholz Pond Dam	High
Cumberland	Lake Louise Dam	Low
De Witt	Weldon Springs State Park Lake Dam	Significant
De Witt	Clinton Power Station/Dredge Disposal Pond Dam	Low
De Witt	Little Galilee Lake Dam	Low
De Witt	Vance Lake Dam	Low
De Witt	Clinton Power Station/Clinton Lake Dam	High
De Witt	Perring Pond Dam 1	Low
De Witt	Solomon Lake INC.Dam 1	Undetermined
DeKalb	Shabbona Lake Dam	Low
DeKalb	Cortland Water Reclamation Facility Cell 3 Dam	High
DeKalb	Cortland Water Reclamation Facility Cell 4 Dam	High
DeKalb	Buck Lake Dam	Low
DeKalb	Bethany Road Detention Pond Dam	High
DeKalb	Cortland Water Reclamation Facility Cell 2 Dam	Low
DeKalb	Cortland Water Reclamation Facility Cell 1 Dam	Low
DeKalb	Faivre Pond Dam 4	Undetermined
Douglas	Walnut Point State Park Lake Dam	Low
Douglas	National Petroleum Chemical Plant Lake Dam	Significant
Douglas	Patterson Springs Lake Dam	Low
Douglas	Alpena/Murdock/Slurry Pond 5 Dam	Significant
DuPage	Churchill Woods Dam	Low
DuPage	Old Plank Park Basin Dam	Low
DuPage	Dupage Airport Lower Dam	Low
DuPage	Fullerton Industrial Park Dam	Low
DuPage	Reservoir 54 Dam	Low

County	Dam Name	Hazard Potential Classification
DuPage	Dupage Airport Upper Dam	Low
DuPage	Gw60 Dam	Low
DuPage	Kress Creek Regional Flood Control Dam	Low
DuPage	Hobson Road Dam	Significant
DuPage	Spring Brook Gabion Dam	Low
DuPage	Bush Hill Dam	Low
DuPage	Fullersburg Dam	Low
DuPage	Lake Law Dam	Significant
DuPage	Meacham Grove Main Dam	High
DuPage	Medina Country Club Meacham Creek Dam	Low
DuPage	Westwood Creek Dam	Low
DuPage	Fawell Dam	High
DuPage	Armstrong Park Flood Control Reservoir Dam	High
DuPage	Meridian Campus Liberty Road Dam	Low
DuPage	Meridian Campus Meridian Parkway Dam	Low
DuPage	Baker Hill Detention Basin Dam	High
DuPage	Lake Kadijah Dam	Significant
DuPage	Skylane Drive Dam	Low
DuPage	Van Der Molen Dam	Low
DuPage	Corner Stone Lakes Dam	Low
DuPage	Meridian Campus Lake 7 Dam	Low
DuPage	Country Commons Park Basin Dam	High
DuPage	Stark Farm Dam	Low
DuPage	Rice Lake Dam	High
DuPage	Lake Ellyn Dam	Significant
Edgar	Third Lake Dam	Significant
Edgar	Shullock Lake Dam	Low
Edgar	Lake Waunetta Dam	Low
Edgar	See Lake Dam	Low
Edgar	Tessman Farm Pond Dam	Low
Edgar	Eads Lake Dam	Significant
Edwards	West Salem New Reservoir Dam	Significant
Edwards	Albion Moose Lake Dam	Low
Edwards	Stumpy Hill Farm Dam	Low
Edwards	Harrison Lake Dam	Low
Edwards	Krajec Lake Dam	Low
Edwards	Wanboro Lake Dam	Significant
Effingham	Altamont Reservoir Dam	Significant
Effingham	Lake Sara Dam	Significant
Effingham	Little Wabash River Dam	Low
Effingham	Central Illinois Public Service Company Lake Dam	Significant
Effingham	Shoemakers Pond Dam	Low
Effingham	Old Altamont Reservoir Dam	Low
Effingham	Roberts Lake Dam	Low
Effingham	Lake Walter Scott Dam	Low
Effingham	Lake Pauline Dam	Significant
Effingham	June Lake Dam	Significant
Fayette	Ramsey Lake Dam	Low
Fayette	Lake Nellie Dam	Significant
Fayette	Vandalia Municipal Reservoir Dam	High

County	Dam Name	Hazard Potential Classification
Fayette	Hardiman Pond Dam	Low
Fayette	Stanbery Lake Dam	Low
Fayette	St. Elmo Old City Reservoir Dam	Significant
Fayette	Reece Pond Dam	Low
Fayette	Bails Timberline Lake Dam	Low
Fayette	Vandalia Wastewater Treatment Lagoon	Low
Fayette	England Reservoir Dam	Low
Fayette	St. Peter Sportsman Lake Dam	Low
Fayette	Illinois Department of Conservation Pond Dam	Low
Fayette	Feller Lake Dam	Low
Ford	Laue Lake Dam	Low
Ford	Lee Lake Dam	Low
Franklin	Sesser Reservoir Dam	Low
Franklin	Zeigler City Lake Dam	Significant
Franklin	Christopher New Reservoir Dam	Low
Franklin	Christopher Old Reservoir Dam	Significant
Franklin	Lake Hamilton Dam	Significant
Franklin	Lake Benton Dam	Significant
Franklin	West Frankfort New City Lake Dam	High
Franklin	West Frankfort Old City Lake Dam	Significant
Franklin	Buckner Reservoir Dam	Low
Franklin	Ill Coal Recovery/Old Ed Mine 21/Slurry Cell 4 Dam	Low
Franklin	Illinois Coal Recovery/Mine 21/Reservoir Dam	Significant
Franklin	Valier Lake Dam	High
Franklin	Old Ben/Mine 24/Sediment and Slurry Dam	Low
Franklin	Freeman United/ /Lake Dam	Low
Franklin	Illinois Coal Recovery/Old Ed/Slurry Cell 6 Dam	Low
Franklin	Lake Moses Dam	Significant
Franklin	Cambon Lake Dam	Significant
Franklin	Liberty Land/John Ross Plant/Sediment Pond Dams	Low
Franklin	Mirror Lake Dam	Low
Franklin	Beaver Lake Dam	Low
Franklin	Liberty Land/Mine 24/North Pond Dam	Low
Franklin	Liberty Land/Mine 26/Slurry Cell 4 Dam	Low
Franklin	Si Energy/Mine 25/Slurry Cell 2 Dam	High
Franklin	Liberty Land/Mine 24/Freshwater Lake Dam	Low
Franklin	Sugar Camp/Mine 1/Fresh Water Pond Dam	Low
Franklin	Liberty Land/Mine 26/Slurry Cell 3 Dam	Significant
Franklin	Ill Coal Recovery/Old Ed Mine 21/Slurry Cell 3 Dam	Low
Franklin	Ill Coal Recovery/Old Ed Mine 21/Slurry Cell 2 Dam	Low
Franklin	Liberty Land/Mine 24/Slurry Cell 2 Dam	Low
Franklin	Sugar Camp/Mine 1/Fresh Water Lake Dam	Low
Franklin	Sugar Camp/Mine 1/North Refuse Disposal Facility Dam	High
Franklin	Sugar Camp/Mine 1/Coal Refuse Disposal 1 Dam	High
Franklin	Rend Dam	High
Fulton	Acid Lake Dam	Low
Fulton	MWRD Edsall Lake Dam	Low
Fulton	MWRD Upper Acid Lake Dam	Low
Fulton	Evelen Lake Dam	Low
Fulton	Little Sister Lake Dam	Low

County	Dam Name	Hazard Potential Classification
Fulton	MWRD Lower Wood Lake Dam	Low
Fulton	MWRD Road Fill Lake Dam	Low
Fulton	Lake Avon Country Club Reservoir Dam	Low
Fulton	Lake Kevin Dam	Low
Fulton	MWRD Picinic Lake Dam	Low
Fulton	MWRD Upper Wood Lake Dam	Low
Fulton	MWRD Kay Lake Dam	Low
Fulton	MWRD Eagle Lake Dam	Low
Fulton	Canton City Lake Dam	High
Fulton	Fisk Pond Dam	Significant
Fulton	MWRD Land Fill Lake Dam	Low
Fulton	Atkins Pond Dam	Low
Fulton	Rice Lake Sfwa/Voorhees Unit Water Control Dam	Low
Fulton	Duck Creek Bottom Ash Pond Dam	Significant
Fulton	Duck Creek Recycle Pond Dam	Low
Fulton	Wee-Ma-Tuk-Lake-South Dam	Low
Fulton	Traer Lake Dam	Low
Fulton	Truax Lake Dam	Low
Fulton	Ipava Settling Basin Dam	Low
Fulton	Tompkins Pond Dam	Significant
Fulton	Heller Lake Dam	Low
Fulton	Keystone Anglers Club Lake Dam	Low
Fulton	Lake Roberts Dam	Low
Fulton	Pratt Pond Dam	Low
Fulton	Wolf Pond Dam	Low
Fulton	Long Lake Dam	Low
Fulton	Sullivan Lake Dam	Low
Fulton	Vanwinkle Lake Dam	High
Fulton	Methodist Conf. Dam	Low
Fulton	Cbs Gun Club Lake Dam	Low
Fulton	Sweeneys Pond Dam	Low
Fulton	Lake Chautauqua Lower Dam	Low
Fulton	Lake Wildwood Haven Dam	Low
Fulton	Woods Lake Dam	Low
Fulton	Freshwater Lake Dam	Low
Fulton	Lake Marie Dam	Low
Fulton	Rice Lake Sfwa/Goose Lake Water Control Dam	Low
Fulton	Darst Pond Dam	Low
Fulton	Lemons Pond Dam	Low
Fulton	Bernadotte Dam	Low
Fulton	Wee Ma Tuk Lake Dam	Significant
Fulton	Grieves Dam	Significant
Fulton	Timber Pond Dam	Low
Fulton	Duck Creek Ash Pond 1 Dam	Significant
Fulton	Norris Slurry Impoundment	High
Fulton	Duck Creek Gypsum Stack Dam	Low
Fulton	Hagen Slurry Impoundment Dams	Low
Fulton	Maas Dam	Low
Fulton	Carthage Lake 1 Dam	Significant
Fulton	Duck Creek Station Dams	High

County	Dam Name	Hazard Potential Classification
Fulton	Duck Creek Ash Pond 2 Dam	Low
Fulton	MWRD Sludge Pond 1-3a Dam	Significant
Gallatin	Omaha City Reservoir Dam	Low
Gallatin	Omaha Township Civic Center Dam	Significant
Gallatin	Pounds Hollow	Significant
Gallatin	Schneider Pond Dam	Low
Gallatin	Grindstaff Hollow Club Lake Dam	Low
Gallatin	Peabody/Pond Dam	Significant
Gallatin	Peabody/Eagle 2/Lake Dam	Significant
Gallatin	Peabody/Fresh Water Lake Dam	Significant
Gallatin	Peabody/Eagle 2/Slurry Pond 3 Dam	Low
Gallatin	Peabody/Eagle1/Fresh Water Lake Dam	Low
Greene	Roodhouse Lake Dam	Low
Greene	White Hall Reservoir Dam	Significant
Greene	Woodbine Country Club Lake Dam	Low
Greene	Waste Management Dam	Low
Greene	Shady Eighty Acres Lake Dam	Low
Greene	Bests Pond Dam	Low
Greene	Coles Lake Dam	Low
Greene	Fitzjarrell Lake Dam	Low
Greene	Greenfield City Dam	Significant
Greene	Pregler Pond Dam	Undetermined
Greene	Long Pond Dam	Undetermined
Greene	Koster Pond Dam	Undetermined
Greene	Kenneth Berry Pond Dam	Undetermined
Greene	Fraley Pond	Undetermined
Greene	Cummins Pond Dam	Undetermined
Greene	Edward Schirz Pond Dam	Undetermined
Greene	Walter Pence Pond Dam	Undetermined
Greene	Burkhart Pond Dam 1	Low
Greene	F. Meyer Pond Dam	Undetermined
Greene	Giberson Pond Dam	Undetermined
Grundy	Hickory Lake Dam	Low
Grundy	Beaver Lake Dam	Significant
Grundy	Collins Station Cooling Lake Dam	Significant
Grundy	International Center South Dam	Significant
Grundy	Dresden Cooling Lake Dam	High
Grundy	Dresden Island Lock and Dam	Significant
Hamilton	Tisons Pond Dam 1	Low
Hamilton	Mcleansboro Lake Dam	High
Hamilton	Dolan Lake Dam	High
Hamilton	Goin Lake Dam	Significant
Hamilton	Bullock Lake Dam	Low
Hamilton	Centerville Mens Club Lake Dam	Low
Hamilton	Lake Helen Dam	Low
Hamilton	Arentsen Pond 2 Dam	Low
Hamilton	Arentsen Pond Dam	High
Hamilton	Track Loop Pond Dam	Low
Hamilton	Main Lake Dam	Low
Hamilton	White Oak/White Oak 1/Coal Refuse 2 Dam	High

County	Dam Name	Hazard Potential Classification
Hamilton	White Oak/White Oak 1/Coal Refuse 1 Dam	Low
Hancock	Laharpe Reservoir Dam	Significant
Hancock	Little Rocky Run Lake Dam	Significant
Hancock	Jennifer Creek Reservoir Dam	Low
Hancock	Rocky Run Lake Dam	Significant
Hancock	Thomas Lake Dam	Low
Hancock	Horton Lake Dam	High
Hancock	Musick Pond Dam	Low
Hancock	Lake Linda Dam	Low
Hancock	Augusta Lake Dam	Low
Hancock	Limkemann Pond Dam	Low
Hancock	Carthage Lake 2 Dam	Low
Hancock	Hiland Lake Dam	Low
Hardin	Techumseh	Low
Hardin	Humm Lake Dam	Low
Hardin	Caraness Lake Dam	Significant
Hardin	Whoopie Cat	Significant
Hardin	Hastie Mining//Tailings Pond 2-3 Dam	Low
Hardin	Hastie Mining//Pond 1-Clarification Pond Dam	Low
Henderson	Norris Lake Dam	Significant
Henderson	Young-Gibson Lake Dam	Low
Henderson	Carner Lake Dam	Low
Henderson	Kissinger Lake Dam	Low
Henderson	NRCS Pond 22 Dam	Low
Henderson	Dowell Lake Dam	Low
Henderson	Old Tom Creek WS Str 24	Low
Henderson	Old Tom Creek WS Str 29	Significant
Henderson	Old Tom Creek WS Str 25	Low
Henry	Johnson Sauk Trail Lake Dam	Low
Henry	Edwards Lake Dam	Significant
Henry	Nystrom Lake Dam	Low
Henry	Valley View Club Lake Dam	Low
Henry	Crescent Lake Dam	Significant
Henry	Lynnwood Lake Dam	Low
Henry	Oakwood Country Club Lake Dam	Significant
Henry	Swint Lake Dam	Significant
Henry	Rustic Acres Lake Dam	Significant
Henry	Thompson Pond Dam	Low
Henry	Riverstone Group Dam	High
Iroquois	Newell Dam	Low
Iroquois	Lake Iroquois	Low
Iroquois	Widner Lake Dam	Low
Iroquois	Kellart Lake Dam	Low
Jackson	Little Lake Dam	Low
Jackson	Carbondale Park District Golf Course Dam	Low
Jackson	Little Cedar	Low
Jackson	Cedar Lake Dam	High
Jackson	Elkville Country Club Reservoir Dam	Low
Jackson	Campus Lake Dam	Significant
Jackson	Kinkaid Lake Dam	High

County	Dam Name	Hazard Potential Classification
Jackson	New Thompson Lake Dam	Low
Jackson	Lake Henry Dam	Low
Jackson	Grand Tower Station Ash Pond	Significant
Jackson	Carbon Lake Dam	Significant
Jackson	Lake Murphysboro Dam	Significant
Jackson	Borgsmiller Lake Dam	Significant
Jackson	Carbondale Reservoir Dam	High
Jackson	Aquaculture Lake Dam	Low
Jackson	Deer Lake Dam	High
Jackson	Chautauqua Lake Dam	High
Jackson	Kaibab Partners Dam	Low
Jackson	Spring Arbor Lake Dam	High
Jackson	Lake Indian Hills Dam	Low
Jackson	Consol/Burning Star 5/Slurry Impoundment	Low
Jackson	Knight Hawk Coal/Creek Paum Mine/Pond 2 Dam	Low
Jackson	Stone Creek Golf Club Lake Dam	High
Jasper	Sam Parr Lake Dam	Significant
Jasper	Newton Station Ash Pond	Significant
Jasper	Lake Sandpoint Dam	Low
Jasper	Newton Power Station Supplemental Cooling Pond Dam	Low
Jasper	Lake Jasper Dam	Low
Jasper	Newton Power Station Lake Dam	Significant
Jasper	Eaton Lake Dam 1	Low
Jasper	Dhom Lake Dam 1	Low
Jefferson	Lewis Industrial Park Detention Dam	Low
Jefferson	Miller Lake Dam	High
Jefferson	L & N Reservoir	High
Jefferson	Lake Jaycee Dam	Significant
Jefferson	Raw Water Reservoir Dam	Significant
Jefferson	Freeman/ /East Lake Dam	Significant
Jefferson	Lagg Lake 2	Low
Jefferson	Freeman United/ /2 Portal Lake	Low
Jefferson	O'Daniel Lodge Lake 2 Dam	Low
Jefferson	Superior Lake Dam	Low
Jefferson	O'Daniel Lodge Lake Dam	Low
Jefferson	"E" Pond Treatment	Low
Jefferson	Hawthorne Hills Lake Dam	Significant
Jefferson	Tedrick Lake Dam	Low
Jefferson	Consol/Rend Lake/Sed Pond 008 Dam	Low
Jefferson	Martin Family Dam	Low
Jefferson	Waltonville Manufacturing Lake Dam	Low
Jefferson	Springfield Coal/Orient 3/Clar Pond Saddle Dam	Low
Jefferson	Lake Normandy Dam	Low
Jefferson	Springfield Coal/Orient 6 /South Slurry Cell Dam	Significant
Jefferson	Springfield Coal/Orient 3/Fine Refuse Impoundment	Low
Jefferson	Illinois Central Reservoir Dam	Significant
Jefferson	Consol/Rend Lake Mine/Slurry Cell 2 Dam	High
Jefferson	Bushong Pond Dam 1	Low
Jefferson	Donoho Pond Dam 1	Low
Jefferson	Lagg Lake 1 Dam	Low

County	Dam Name	Hazard Potential Classification
Jefferson	Consol/Rend Lake Mine/Sediment Pond 009 Dam	Low
Jefferson	Consol/Rend Lake Mine/Slurry Impoundment 1	High
Jersey	Holland Pond Dam	Undetermined
Jersey	Bartlett Pond Dam 1	Undetermined
Jersey	Kiel Pond Dam	Undetermined
Jersey	Bartlett Pond Dam 2	Undetermined
Jersey	Ingram Pond Dam	Undetermined
Jersey	Lake Piasa Dam	Low
Jersey	Feyerbrand Pond Dam	Low
Jersey	Nugent-Schpanski 6 Lake Dam	Low
Jersey	Crystal Lake Dam	Low
Jersey	Hooper Lake Dam	Low
Jersey	Carlson Lake Dam	Low
Jersey	Rowden Lake Dam	Low
Jersey	Lake of Dreams Dam	Low
Jersey	Craig Lake Dam	Low
Jersey	Jones Pond Dam	Low
Jersey	Gotter Pond Dam	Low
Jersey	Smith Lake Dam	Low
Jersey	Nugent-Schpanski 4 Lake Dam	Low
Jersey	Lake Richard Dam	Low
Jersey	Heild Pond Dam	Low
Jersey	Spring Valley Estates Lake Dam	Low
Jersey	Airstrip Reservoir Dam	High
Jersey	West Lake Country Club Lake Dam	Low
Jersey	Jack Smith Pond Dam	Undetermined
Jersey	Nugent-Shapanski 3	Undetermined
Jersey	Pelikan-Surgeon-Shapanski	Undetermined
Jersey	Olin Pond Dam	Undetermined
Jersey	Nugent-Shapanski 2	Undetermined
Jersey	John Surgeon Pond Dam	Undetermined
Jersey	Thunderbird Lake Dam	Undetermined
Jersey	Nugent-Shapanski 1	Undetermined
Jo Daviess	Fitzgerald Lake Dam East	Low
Jo Daviess	Eagle Ridge West Pond Dam	Low
Jo Daviess	Eagle Ridge East Pond Dam	Low
Jo Daviess	Fitzgerald Lake Dam West	Low
Jo Daviess	Apple Canyon Lake Dam	High
Jo Daviess	Smallpox Creek Dam	High
Jo Daviess	Lake Galena Sed Pond 1 Dam	Low
Johnson	Vienna Correctional Center Lake Dam	Low
Johnson	Little Cache Structure 8 Dam	Significant
Johnson	Ferne Clyffe Lake Dam	Low
Johnson	Structure No. 12	Significant
Johnson	Lake Como Dam	Significant
Johnson	Fetter Lake Dam	Low
Johnson	Little Cache Structure 10 Dam	Low
Johnson	Simpson Lake Dam	Low
Johnson	Vienna Reservoir Dam	Low
Johnson	Little Cache Creek No. 1	Significant

County	Dam Name	Hazard Potential Classification
Johnson	Bay Creek Structure 4 Dam	Low
Johnson	Lake Thunderhawk Dam	Low
Johnson	Tall Tree Lake Dam	Low
Johnson	Lake Echon Dam	Low
Johnson	Cedar Lake Dam	Low
Johnson	Little Cache Structure 5 Dam	Low
Johnson	Vienna Correctional Center W. Lake	Low
Johnson	Autumn Rose Lake Dam	Significant
Kane	Lower Batavia Dam	Significant
Kane	Mill Creek Water Reclamation District Dam	High
Kane	Kimball Street Dam	Significant
Kane	Fermilab Main Injector Dam	Low
Kane	Aurora - West Dam	Low
Kane	Batavia Dam	Significant
Kane	Geneva Dam	Low
Kane	Sleepy Hollow Road Dam	Low
Kane	North Aurora Dam	Significant
Kane	Montgomery Dam	Significant
Kane	Carpentersville Dam	Low
Kane	Orchard Lake Galena Boulevard Dam	Low
Kane	Fox Mill Storage Lagoon 2 Dam	Low
Kane	Marsh A Dam	Low
Kane	Campton Lake Dam	Low
Kane	Cambridge Lakes Dam	Low
Kane	Mooseheart Lake Dam	Significant
Kane	North Lake Dam	Low
Kane	North Aurora Towne Centre Basin B Dam	Low
Kane	North Aurora Towne Centre Basin D Dam	Low
Kane	Island Lake Dam	Low
Kane	Duck Valley Dam	Low
Kane	Lake Prestbury Dam	High
Kane	St. Charles Dam	Significant
Kane	North Aurora Towne Centre Basin C Dam	Low
Kane	Lyle Avenue Dam	Low
Kane	Hatchery Lake Dam	Low
Kane	Tara Lake Dam	Significant
Kane	Premium Outlets Boulevard Dam	Low
Kane	Spring Valley Lake Dam	Low
Kane	Pine Lake Dam	High
Kane	West Lake Dam	High
Kane	Patriot Parkway Dam	High
Kane	Fox Mill Lagoon 1 Dam	Low
Kane	Renee Drive Detention Dam	High
Kane	Settlers Ridge Pond 1 Dam	Low
Kane	Lake In The Hills Dam 1	High
Kankakee	North Branch Soldier Creek Reservoir Dam	High
Kankakee	Kankakee	Low
Kendall	Churchill Club Subdivision Basin D Dam	Low
Kendall	Minooka Ridge Business Center Temp Detention Dam	Low
Kendall	Yorkville Dam	Significant

County	Dam Name	Hazard Potential Classification
Kendall	Milhurst Lake Dam	Low
Kendall	Grande Park Subdivision Detention As-7 Dam	Low
Kendall	Churchill Club Dam Basin B Dam	Low
Kendall	Prescott Mill Dam	Significant
Knox	Lake Bracken Dam	Significant
Knox	Lake Storey Dam	High
Knox	Shebb Oaks Lake Dam	Low
Knox	Happy Hollow Lake 2 Dam	Significant
Knox	Roundhouse Lake Dam	Significant
Knox	Lake Windsor Dam	Low
Knox	Salem Township Road 343 Dam	Low
Knox	Taylor Lake Dam	Low
Knox	Happy Hollow Lake Dam	Significant
Knox	Daum Lake Dam	Low
Knox	Bruington Lake Dam	Low
Knox	Calhoun Lake Dam	Significant
Knox	Lake Mcmaster Dam	High
Knox	Old Five Lake Dam	Low
Knox	Dennis Russell Dam	Low
Knox	Knox County Conservation Club Lake Dam	Low
Knox	Manson Heights Dams	Low
Knox	Buchanan Lake Dam	Low
Knox	Spoon Lake Dam	High
Knox	Lake Rice Dam	High
Knox	Threw Lake Dam	Low
Knox	Deushane Slurry Impoundment 3 Dam	Low
Knox	Deushane Slurry Impoundment 2 Dam	Low
Knox	Deushane Slurry Impoundment 1 Dam	Low
Lake	Grandwood Lake Dam	High
Lake	Waukegan Station West Ash Pond	Significant
Lake	Waukegan Station East Ash Pond Dam	Significant
Lake	Pond 2a Dam	Low
Lake	Buffalo Creek Dam	High
Lake	Hawthorn Parkway Dam	High
Lake	Tullamore Dam	High
Lake	Coopers Farm Sediment Storage Dam	High
Lake	Lake Charles Dam	High
Lake	Forest Lake Dam	High
Lake	Lakeland Estates Dam	Low
Lake	Lancaster Court Dam	High
Lake	Lake Amy Dam	Low
Lake	Tower Lake Dam	Low
Lake	Sylvan Lake Dam	Significant
Lake	White Lake Dam	Low
Lake	Lake Linden Dam	Low
Lake	Rasmussen Lake Dam	Low
Lake	Barclay Station Detention Dam	Low
Lake	Slocum Lake Dam	Low
Lake	Countryside Lake Dam	High
Lake	Round Lake Dam	Significant

County	Dam Name	Hazard Potential Classification
Lake	Gray Hawk Center Dam	Significant
Lake	St. Marys Lake Dam	High
Lake	Timber Lake Dam	Low
Lake	Countryside Landfill Dam	Low
Lake	Loch Lomond Dam	Significant
Lake	Hawthorn Woods Country Club Wwtp Dam	Low
LaSalle	Alleman Lake Dam	Low
LaSalle	Dayton Estates Dam	High
LaSalle	Northeast Recreation Area Dam	High
LaSalle	Dayton	Low
LaSalle	Lake Kakusha Dam	High
LaSalle	Mendota Agri-Products Storage Lagoon 5 Dam	Low
LaSalle	Northern White Sands Dam	High
LaSalle	Lasalle Co. Nuclear Station Cooling Lake Dam	High
LaSalle	Holiday Lake Dam	High
LaSalle	Bazzoni Lake Dam	Low
LaSalle	Sabic Basins Dam	Significant
LaSalle	Saddlewood Estates Dam	Low
LaSalle	Marseilles Power Canal Dam	Low
LaSalle	Lake Mendota Dam	High
LaSalle	Deer Park Lake Dam	Significant
LaSalle	Unimin Tailings Pond O Dam	Low
LaSalle	Marseilles Lock and Dam	Significant
LaSalle	Starved Rock Lock and Dam	Significant
Lawrence	Red Hills Lake Dam	Significant
Lawrence	Lawrenceville Sewage Basin Dam	Low
Lee	Dixon	Low
Lee	Bass Lake Dam	Low
Lee	Woodhaven Lake Dam	Low
Lee	Stroyan Lake Dam	Low
Lee	East Branch Fargo Creek Dam	High
Lee	Sherman Dam	Significant
Lee	Mississippi River Lock and Dam 19	Significant
Livingston	Streator Vermilion River Dam	Significant
Livingston	Wolf Creek Golf Course Dam	Low
Livingston	Lentman Lake Dam	Low
Livingston	Gower Pond Dam 1	Low
Livingston	Kempton Farm Dam	Low
Livingston	Smithland Locks and Dam	Significant
Logan	Hickory Lake Dam	Low
Logan	International Coal/Viper/Freshwater Impoundment	Low
Logan	International Coal/Viper/Slurry Impoundment	High
Logan	International Coal/Viper/North Slurry Impoundment Dam	High
Macon	Monroe Street Dam	Low
Macon	Faries Park Dredge Disposal Dam	High
Macon	Lake Decatur Dam	High
Macon	A. E. Staley Cooling Lake Dam	Significant
Macon	Valley View Dam	Low
Macoupin	Old Gillespie Lake Dam	Low
Macoupin	Lake Carlinville Dam	Low

County	Dam Name	Hazard Potential Classification
Macoupin	Bunker Hill Old Lake Dam	Low
Macoupin	Beaver Lake Dam	Low
Macoupin	Old Mt. Olive City Lake Dam	Significant
Macoupin	Mt. Olive City Lake Dam	Low
Macoupin	Staunton Old Mine Refuse Dam	Low
Macoupin	Staunton Reservoir Dam	Low
Macoupin	Palmyra-Modesto City Lake Dam	Significant
Macoupin	Carlinville Lake Ii Dam	Significant
Macoupin	Otter Lake Dam	Significant
Macoupin	Clevenger Pond Dam 1	Low
Macoupin	Shad Lake Dam	Low
Macoupin	New Gillespie Lake Dam	Significant
Macoupin	Upper Columbia Quarry Lake Dam	Low
Macoupin	Brighton Lake Dam	High
Macoupin	Deer Run Lake Dam	Low
Macoupin	Bunker Hill Reservoir 2 Dam	Low
Macoupin	Clarified Water Pond	Significant
Macoupin	Mike Mckee Pond Dam	Low
Macoupin	Miller Pond Dam 2	Low
Macoupin	Lake Ka-Ho 2 Dam	Significant
Macoupin	Evergreen Lake Dam	Low
Macoupin	Virden Recreation Club Lake Dam	Low
Macoupin	Lake Edward Dam	Low
Macoupin	Springfield Coal/Crown 2/Coarse Refuse Dam	Low
Macoupin	Lanny Jokers Dam	Low
Macoupin	French Lake Dam	Low
Macoupin	Gillespie Country Club Lake Dam	Low
Macoupin	Jones Lake Dam	Significant
Macoupin	Superior 4 Dam	Low
Macoupin	Denbys Pond Dam	Low
Macoupin	Tall Timbers Lake West Dam	Low
Macoupin	Harold Redfern Pond Dam	Low
Macoupin	Lake Catatoga Dam	Low
Macoupin	Owens Lake Dam	High
Macoupin	Lake Williamson Dam	Low
Macoupin	Tall Timbers Lake East Dam	Low
Macoupin	Osage Lake Dam	Significant
Macoupin	Fresh Water Lake	Significant
Macoupin	Gahr Pond Dam 2	Low
Macoupin	Staunton Country Club Lake Dam	Low
Macoupin	Pratt Bros.Pond Dam	Low
Macoupin	Otter Lake Low Flow Dam	Low
Macoupin	Clarified Pond Impound. Structure	Low
Macoupin	Lower Columbia Quarry Dam	Low
Macoupin	Whitfield Lake Dam	Low
Macoupin	Zarges Pond Dam	Low
Macoupin	Standard City Lake Dam	Low
Macoupin	Bellm Pond 2 Dam	Low
Macoupin	Briarwood Lake Dam	Low
Macoupin	Austiff Pond Dam	Low

County	Dam Name	Hazard Potential Classification
Macoupin	Bellm Pond Dam	Low
Macoupin	Whites Pond Dam	Low
Macoupin	Camp Bunn Lake Dam	Low
Macoupin	Barths Lake Dam	Low
Macoupin	Rinaker Lake Dam	Low
Macoupin	Suhling Pond Dam	Low
Macoupin	Meisenheimer Pond Dam 2	Low
Macoupin	Woodland Lake Dam	Significant
Macoupin	Shaw Lake Dam	High
Macoupin	Macoupin Energy Recirculation Pond Dam	High
Macoupin	Girard Sunset Lake Dam	Low
Macoupin	Springfield Coal/Crown 2/Coarse Refuse Exterior	Low
Macoupin	Courtoise Lane Dam	Low
Macoupin	Fine Refuse Pond	Low
Macoupin	Gahr Pond Dam 3	Low
Macoupin	Macoupin Energy Smith Reservoir Dam	High
Macoupin	Shipman Reservoir Dam	Significant
Macoupin	Mitch King Dam	Low
Macoupin	Settling Pond	Low
Macoupin	Forest Lake Club Lake Dam	Low
Macoupin	Lake Ka-Ho 1 Dam	Low
Macoupin	Miller Pond Dam 1	Low
Macoupin	Frank Pond Dam 1	Low
Macoupin	Wenzel Pond Dam 1	Low
Macoupin	Harry Mullens Pond Dam 1	Low
Macoupin	Gaffney Pond Dam 1	Low
Macoupin	Bernard Conrady Pond Dam 1	Low
Macoupin	Gahr Pond Dam 1	Low
Macoupin	Hartsook Pond Dam 1	Low
Macoupin	Whitfield Pond Dam 2	Undetermined
Macoupin	Meshach Lake Dam	Low
Macoupin	Mcadams Pond Dam 1	Low
Macoupin	Meisenheimer Pond Dam 1	Low
Macoupin	Overby Pond Dam 1	Low
Macoupin	Adams-Tocks Pond Dam 1	Low
Macoupin	Whitfield Pond Dam 3	Undetermined
Macoupin	Craig Pond Dam 1	Low
Macoupin	Nixon Pond Dam 1	Low
Macoupin	Jacoby Pond Dam 1	Undetermined
Macoupin	Pitts Pond Dam 1	Undetermined
Macoupin	Springfield Coal/Crown 3/Fine Refuse Ext 2 Dam	High
Macoupin	Kahl Bros. Pond Dam 1	Undetermined
Macoupin	Macoupin Energy/Refuse Disposal Area 5	High
Macoupin	Enke Pond Dam 1	Undetermined
Macoupin	Macoupin Energy Refuse Disposal Area 6	High
Madison	River Bluffs Girl Scout Council Dam	Low
Madison	Venice Station Old Ash Pond	Significant
Madison	Highland Old City Reservoir Dam	Low
Madison	Silver Lake Dam	Significant
Madison	Glendale Gardens Detention Pond Dam	High

County	Dam Name	Hazard Potential Classification
Madison	Gordon F. Moore Park Dam	Significant
Madison	Tower Lake Dam	Significant
Madison	Alton Twin Lakes-South Lake Dam	Significant
Madison	Schon Park Dam	Low
Madison	Towne East Lake Dam	Low
Madison	Magin Lake Dam	Low
Madison	Twin Lakes Drive Dam	Significant
Madison	Yates Lake Dam	Low
Madison	Wilkinson Pond Dam	Low
Madison	Hawthorne Hills Dam	High
Madison	Drost Park Lake Dam	Significant
Madison	Paradise Lake Dam	High
Madison	Lakewood Subdivision Lake 3 Dam	Significant
Madison	Vesper Lake Dam	Low
Madison	Twin Lakes Dam	Low
Madison	Timber Lake Dam	Significant
Madison	Godfrey Pond Dam	High
Madison	Joyces Lake Dam	Low
Madison	Micks Lake Dam	Low
Madison	Klaus Lake Dam	Significant
Madison	Twin Lakes Lane South Lake Dam	Low
Madison	Marine Lake Dam	Significant
Madison	Shale Lake Dam	Low
Madison	Oakland Hills Dam	High
Madison	Staunton Coal Company Reservoir Dam	Low
Madison	Lakewood Subdivision Lake 2 Dam	Low
Madison	Downing Pond Dam	Low
Madison	Gvillo Pond Dam	Low
Madison	Atkinson Pond Dam	Significant
Madison	Lake Meadow Dam	Low
Madison	Weiss Lake Dam	Significant
Madison	Big Four Reservoir Dam	Low
Madison	Pin Oak Drive Pond Dam	High
Madison	Pine Lake Dam	Significant
Madison	Rayburn Lake Dam	Significant
Madison	Keeven Lake Dam	Low
Madison	Lake Heights Dam	Significant
Madison	Alton-Wood River Sportsmens Reservoir Dam	High
Madison	Rogenski Lake Dam	Significant
Madison	Lake Hillcrest Dam	Significant
Madison	Gateway Medical Lake Dam	High
Madison	Warren Levis Dam	Significant
Madison	Dunlap Lake Dam	High
Madison	Kensington Parque Dam	Significant
Madison	Highland Sportsman Club Lake Dam	Low
Madison	Dynegy /Wood River West Ash Disposal Pond Dam	Low
Madison	Boettcher Lake Dam	Low
Madison	Stonebridge Crossing Dam	Significant
Madison	Arrow Wood Lake Dam	High
Madison	Dynegy/ Wood River East Ash Disposal Pond Dam	High

County	Dam Name	Hazard Potential Classification
Madison	Holiday Shores Lake Dam	Significant
Madison	Roemelin Pond Dam 1	Low
Madison	Willaredt Lake Dam 1	Low
Madison	Ginger Lake Dam	Significant
Madison	Lakewood Subdivision Lake 1 Dam	Low
Madison	Castle Ridge Lake Dam	High
Madison	Wiemers Pond Dam 1	Undetermined
Madison	Wick Pond Dam 1	Undetermined
Marion	Marlow Pond Dam	Low
Marion	Stephen A. Forbes State Park Lake Dam	Significant
Marion	Kinmundy Lake Dam	Low
Marion	Lake Centralia Dam	Significant
Marion	Neffs Lake Dam	Low
Marion	Old Reservoir Dam	Low
Marion	Lester Lake Dam	Low
Marion	Raccoon Lake Dam	High
Marion	Hecks Lake Dam	Significant
Marion	Conservation Club 100 Lake Dam	Significant
Marion	Frosty Acres Lake Dam	Low
Marion	Salem Reservoir Dam	High
Marion	Cartter Pond Dam	Low
Marion	Sportsman Lake Dam	Low
Marion	Rose Lake Dam	Low
Marion	Kings Lake Dam	Low
Marion	Rochester-Goodell Reservoir Dam	Low
Marion	Lakewood Lake Dam	Significant
Marion	Kinmundy New Lake Dam	High
Marion	Greenview Country Club Pond 1 Dam	Low
Marshall	Newton Lake Dam	Low
Marshall	Barnes Lake Dam	Significant
Marshall	Lake Tanglewood Dam	High
Marshall	Wildwood Lake Dam	High
Mason	Barkhausen Refuge Dam	Low
Mason	Dynegy/Havana Sta/South Ash Pond Dam	Significant
Mason	Quiver Creek Weir Dam	Low
Mason	Crane Lake Water Control Dam	Low
Mason	Chain Lake Water Control Dam	Low
Mason	Lake Chautauqua Upper Dam	Low
Mason	Dynegy/Havana Sta/East Ash Pond System	High
Mason	Dynegy/Havana Sta/East Ash Pond Dam	High
Mason	Dynegy/Havana Station/Cell 1, Polishing P	High
Massac	Joppa Station East Ash Pond	Significant
Massac	Mermet Dam	Low
Massac	Mann Lake Dam	Low
Massac	Hohman Lake Dam	Low
Massac	Kruger Pond Dam 1	High
McDonough	Vermont City Reservoir Dam	Significant
McDonough	Randolph Pond Dam 1	Undetermined
McDonough	Argyle Lake Dam	Significant
McDonough	Spring Lake Dam	Significant

County	Dam Name	Hazard Potential Classification
McDonough	Springfield Coal/Industry/Pond 2 Dam	Low
McDonough	Rickmeyer Big Lake Dam	Low
McDonough	Irish Lake Dam	Low
McDonough	Casson Pond Dam	Low
McDonough	Blandinsville City Reservoir Dam	High
McDonough	Springfield Coal/Industry/3s	Low
McDonough	Springfield Coal/Industry/Pond 4 Dam	Low
McDonough	Froghair Lake Dam	Low
McDonough	Springfield Coal/Industry/Pond 21 Dam	Low
McDonough	Cricketwood Green Lake Dam	Low
McDonough	Blandinsville Storage 2 Dam	Low
McDonough	Springfield Coal/Industry/Pond 18 Dam	Low
McDonough	Springfield Coal/Industry/Pond 20 Dam	Low
McDonough	Rickmeyer Small Lake Dam	Low
McDonough	Springfield Coal/Industry/Pond 22 Dam	Low
McDonough	Mcclure East Pond Dam	Significant
McDonough	Patrick Lake Dam	Low
McDonough	Gold Hills Dam	Low
McDonough	Springfield Coal/Industry/Pond 33 Dam	Low
McDonough	Deer Ridge Dam	Low
McDonough	Springfield Coal/Industry/Pond 31 Dam	Low
McDonough	Lewis Dam	Low
McDonough	Parks Pond Dam 1	Low
McDonough	Springfield Coal/Industry/Incline Pond 12 Dams	Low
McDonough	Freeman United/Industry/Pond 1 Dam	Low
McHenry	Brookdale Dam	Significant
McHenry	Black Tern Marsh Dam	Low
McHenry	Lake In The Hills 3 Dam	Low
McHenry	Yellow Head Marsh Dam	Low
McHenry	Island Lake Dam	Low
McHenry	Lake In The Hills 2 Dam	Significant
McHenry	Woodscreek Detention Dam	Low
McHenry	Stratton Lock and Dam	Significant
McHenry	Algonquin Dam	Significant
McHenry	High Hill Farms Dam	High
McHenry	Eddy Lake Dam	Low
McHenry	Silver Lake Dam	Low
McHenry	South Lake Dam	Low
McHenry	Wold Lake Dam	Low
McHenry	Thunderbird Lake 2 Dam	Low
McHenry	Kingsley Lake Dam	Low
McHenry	Kazimer Lake Dam	Significant
McHenry	Wonder Lake Dam	High
McHenry	Thunderbird Lake 1 Dam	Low
McHenry	Wonder Lake Sediment Dewatering Facility Dam	High
McLean	Eagle Creek Dam	Low
McLean	Comlara Park Pond Dam	Low
McLean	Fort Jesse Detention Pond Dam	High
McLean	Eagle Creek East Dam	Low
McLean	Miller Park Lake Dam	High

County	Dam Name	Hazard Potential Classification
McLean	Moraine View Dam	High
McLean	Spin Lake Dam	Low
McLean	Cross Lake Dam	Low
McLean	Sears Lake Dam	Low
McLean	The Grove Dam	Low
McLean	Lake Bloomington Dam	Significant
McLean	Sunset Lake Dam	Low
McLean	Brian Lake Dam	Significant
McLean	North Pointe Lake Dam	High
McLean	Sherwood Lake Subdivision Dam	Low
McLean	Northbridge Subdivision Lake Dam	Low
Menard	Mcmann Lake Dam	Low
Menard	Country Lake Dam	Low
Menard	Browns Lake Dam	Low
Menard	Lake Petersburg Dam	High
Mercer	Matherville Lagoons Dam	Significant
Mercer	Dellitt Lake Dam	Low
Mercer	Weinmister Pond Dam	Low
Mercer	Fools Lake Dam	Low
Mercer	Irwin Lake Dam	Low
Mercer	Mccaw Pond Dam	Low
Mercer	Lake Nelson Dam	Low
Mercer	Morrison Lake Dam	Significant
Mercer	Lake Matherville Dam	Low
Mercer	Swearington Lake Dam	Low
Mercer	Renee Lake Dam	Low
Mercer	Fyre Lake Dam	Significant
Mercer	Karl Lake Dam	Significant
Monroe	Waterloo Reservoir 2 Dam	Significant
Monroe	Village of Valmeyer Dam	Low
Monroe	Columbia Sportsman Club Lake Dam	Significant
Monroe	Willow Lake Estates Dam	Low
Monroe	Waterloo Sportsman Club Lake 2 Dam	Low
Monroe	Lake Emmett Dam	Low
Monroe	Fisher Lake Dam	Low
Monroe	Lake Ronnie Dam	Low
Monroe	Waterloo New Reservoir Dam	Significant
Monroe	Lake of The Woods 2 Dam	High
Monroe	Lake Loudel Dam	Low
Monroe	Lake Mildred Dam	Low
Monroe	West Lake Estates Dam	Significant
Monroe	Keeven Lake Dam	Significant
Monroe	Hill Lake Dam	High
Monroe	Columbia Lakes South Lake Dam	High
Monroe	Westview Acres Lake Dam	Significant
Monroe	Mund Lake Dam	Significant
Monroe	Waterloo Sportsman Club Lake 1 Dam	Significant
Monroe	Stonegate Lake Dam	High
Monroe	Lake of The Woods 1 Dam	Low
Monroe	Ylsa Lake Dam	Significant

County	Dam Name	Hazard Potential Classification
Monroe	Waterloo Reservoir 1 Dam	Significant
Montgomery	Ruppert Pond Dam	Significant
Montgomery	Walton Park Lake Dam	Low
Montgomery	Coffeen Lake Dam	Significant
Montgomery	Coffeen East Fork Shoal Creek Gate Dam	Low
Montgomery	Coffeen Gmf Recycle Pond Dam	Low
Montgomery	Lake Glenn Shoals Dam	Significant
Montgomery	Litchfield City Lake Dam	High
Montgomery	Coffeen Station Ash Pond 2 Dam	Significant
Montgomery	Lake Lou Yaeger Dam	High
Montgomery	Six Pond Dam 1	Low
Montgomery	American Zinc Smelter Company Large Lake Dam	Low
Montgomery	Shoal Creek Structure 5 Dam	High
Montgomery	Lake Hillsboro Dam	Significant
Montgomery	Sampsons Lake Dam	Low
Montgomery	Nokomis Sportsmans Club Lake Dam	Significant
Montgomery	Shoal Creek Structure 14 Dam	Low
Montgomery	Heyen Lake Dam	Low
Montgomery	Panama Lake Dam	Low
Montgomery	Kilton Pond Dam 2	Low
Montgomery	Coffeen Southwest Detention Pond Dam	Low
Montgomery	Heenren Pond Dam	Low
Montgomery	Kilton Lake Dam	Low
Montgomery	Shoal Creek Structure 2 Dam	Significant
Montgomery	Fillmore Lake Dam	Low
Montgomery	Mathews Pond Dam 2	Low
Montgomery	Crown Mine Pond Dam	Significant
Montgomery	Coffeen Gmf Gypsum Stack Dam	High
Montgomery	Rocky Ford Sportsman Club South Lake Dam	Significant
Montgomery	Coffeen Station Ash Pond 1 Dam	Significant
Montgomery	Springfield Coal/Crown 3/North Refuse Dam	High
Montgomery	Rocky Ford Sportsman Club North Lake Dam	Significant
Montgomery	Hillboro Energy/Deer Run/Crd 2 Dam	High
Montgomery	Coffeen Power Sta. Supplemental Cooling Lake Dam	Significant
Montgomery	Springfield Coal/Crown3/Fine Refuse Pond Extension	Low
Montgomery	Justison Pond Dam 1	Low
Montgomery	Matthews Pond 1	Low
Montgomery	Bell Pond Dam 1	Low
Montgomery	Ekiss Pond Dam 1	Low
Montgomery	Mcwilliams Pond Dam 1	Low
Montgomery	Matway Pond Dam 1	Low
Montgomery	Six Pond Dam 1	Low
Montgomery	Vancil Pond Dam 1	Low
Montgomery	Hughes Pond Dam 1	Low
Montgomery	Moran Pond Dam 1	Low
Montgomery	Rohrer Pond Dam 1	Low
Montgomery	Johnson Pond Dam 1	Low
Montgomery	Traylor Pond Dam 1	Low
Montgomery	Coffeen Station Coal Yard Pond Dam	Significant
Montgomery	Springfield Coal/Crown3/North Refuse Extension Dam	High

County	Dam Name	Hazard Potential Classification
Montgomery	Hillsboro Energy/Deer Run/Crd 1 Dam	High
Morgan	Murrayville Woodson Lake Dam	Significant
Morgan	Waverly City Lake Dam	Low
Morgan	Mauvaise Terre Lake Dam	High
Morgan	Lake Mauvaise Terre Dredge Basin Dam	Low
Morgan	Lake Jacksonville Dam	Significant
Morgan	Rowe Lake Dam	Significant
Morgan	Jurgens Brothers Lake Dam	Low
Morgan	Nickel's Pond Dam	Low
Morgan	Rawlings Pond Dam	Low
Morgan	Ware Brothers Pond Dam	Low
Morgan	Swagmeyer Pond Dam	Low
Morgan	Roegge Pond Dam	Low
Morgan	Retzer Pond Dam	Low
Morgan	Becker Pond Dam	Low
Morgan	Franklin Waverly Outing Club Lake Dam	Low
Morgan	Defrates-Shaeffer Lake Dam	Low
Morgan	Valevue Lake Dam	Significant
Morgan	Applebee Pond Dam	Low
Morgan	Smith Pond Dam	Low
Morgan	Hadden Pond Dam	Low
Morgan	Carrigan Pond Dam	Low
Morgan	Hess Pond Dam	Low
Morgan	Panhandle Eastern Waverly Lake Dam	Low
Morgan	Freitag Lake Dam	Low
Morgan	Concord Reservoir Dam	Low
Morgan	Gravel Springs Dam	Low
Morgan	Gross Farms Dam	Low
Moultrie	Wood Lake Dam	Low
Moultrie	Daily Pond Dam	Low
Moultrie	Emil Pond Dam	Low
Moultrie	Elim Lake Dam	Low
Moultrie	Elm Springs Park Lake 4 Dam	Low
Moultrie	Shelbyville Dam - Wood Dam	Low
Ogle	Oregon Dam	High
Ogle	Walnut Pond Dam	Low
Ogle	Traina Pond Dam	Low
Ogle	Tailing Pond 127 Dam	High
Ogle	Lost Nation Country Club Lake Dam	Low
Ogle	Pickle Pond Dam	Low
Ogle	Hidden Valley Lake Dam	Significant
Ogle	Mccann Lake Dam	Low
Ogle	Union Pacific Global Iii Dam	Low
Peoria	E. D. Edwards Station Ash Pond	High
Peoria	Heuerman Pond Dam	Significant
Peoria	Caboose Lake Dam	Low
Peoria	Huntington Pointe Dam	Low
Peoria	Taylor Lake Dam	Low
Peoria	Charter Oak North Lake Dam	Significant
Peoria	Cowen Pond Dam	Low

County	Dam Name	Hazard Potential Classification
Peoria	Small Timber Lake Dam	Low
Peoria	Lake Holiday Dam	Low
Peoria	Cobblestone Lake Dam	Low
Peoria	Arrowhead Country Club Lake Dam	Low
Peoria	Lakeland Lake Dam	Low
Peoria	Lake Lynnhurst Dam	Low
Peoria	Radnor Rod and Gun Club Lake Dam	Low
Peoria	Santa Fe Lake Dam	Significant
Peoria	Lake Shore Drive Pond Dam	Low
Peoria	Big Timber Lake Dam	Low
Peoria	Thirteen Club Dam	Significant
Peoria	Grahams Lake Dam	Low
Peoria	Smith Lake Dam	Significant
Peoria	Underwood Pond Dam	Low
Peoria	Lake of The Woods Dam	Significant
Peoria	Staab Pond Dam	Low
Peoria	Glenview Farms Lake Dam	Low
Peoria	Roy Demanes Pond Dam	Low
Peoria	Griffin South Pond Dam	Low
Peoria	Midland/Elm Mine/Fresh Water Lake Dam	Low
Peoria	South Warner Pond Dam	Low
Peoria	Mulvaney Pond Dam	Low
Peoria	Leisure Oak Lake 2 Dam	Low
Peoria	Elmore Stock Farm Pond Dam	Low
Peoria	Charter Oak South Lake Dam	Low
Peoria	Peoria City-County Landfill 2 Dam	Low
Peoria	Don Johnson Pond Dam	Low
Peoria	Chippewa Estates Dam	Low
Peoria	Hollis Park Dam	High
Peoria	Lake Long Bow Dam	High
Peoria	Walnut Point Dam	Low
Peoria	Franciscan Prairie Pointe Dam	High
Peoria	Lake Camelot Dam	High
Peoria	Weaver Ridge Lake Dam	Low
Peoria	Lake Lancelot Dam	High
Peoria	Darwish Dam	Low
Peoria	Hidden Point Dam	High
Peoria	Rose Estates Dam	Low
Peoria	Hillcrest Dairy Wastwater Lagoon Dam	Low
Peoria	Deep Lake Dam	Low
Peoria	Leisure Oak Lake 1 Dam	Low
Peoria	Midland/Elm Mine/ Slurry Lake 1 Dam	Low
Perry	Lake Duquoin Dam	Significant
Perry	Pinckneyville Reservoir Dam	Significant
Perry	Red Hawk Dam	Low
Perry	Millers Campground Lake Dam	Significant
Perry	Foerich Pond Dam	Low
Perry	New Cherry Lake Dam	Significant
Perry	Knight Hawk/Prairie Eagle/Slurry 012c Dam	Significant
Perry	Knight Hawk/Prairie Eagle/North Refuse Area Dam	Significant

County	Dam Name	Hazard Potential Classification
Perry	Prairie Coal/Lost Prairie Mine/Sediment Pond 1	Low
Perry	Prairie Coal/Lost Prairie Mine/Slurry Pond 1	Low
Perry	Knight Hawk Coal/Praire Eagle Mine/010b Slurry Dam	Significant
Piatt	Four H Memorial Lake Dam	Low
Pike	Pittsfield Dredge Disposal Pond Dam	Low
Pike	Pine Lake Dam	High
Pike	Pittsfield Lake 2 Dam	Low
Pike	Fennell Farm Pond Dam	Low
Pike	Pittsfield Sediment Trap Dam	Low
Pike	Columbia Farm Pond Dam	Low
Pike	Floyd Wombles Pond Dam	Low
Pike	New Pittsfield Lake 1 Dam	Low
Pike	Rising Spring Orchard Lake Dam	Low
Pike	Fennell Pond Dam	Undetermined
Pike	Hadley Creek WS Str 29-6	Low
Pope	Bay Creek #8	Significant
Pope	One Horse Gap	Significant
Pope	Bay Creek Structure 5 Dam	Significant
Pope	Lake Glendale	Significant
Pope	Barger Lake Dam	Low
Pulaski	Ulrich Lake Dam	Low
Pulaski	Cervantes Lake Dam	Low
Pulaski	Cache River Containment Basin Dam	Low
Pulaski	Kays Lake Dam	Low
Putnam	Hennepin Station West Ash Pond Dam	Significant
Putnam	Putnam County Conservation District Dam	Significant
Putnam	Hennepin Station East Ash Pond	Low
Putnam	Fish 'N' Fun Lake Dam	Low
Putnam	Hennepin Ash Pond 2 Dam	Significant
Putnam	Lake Thunderbird Dam	High
Putnam	Condit Dam 1	Low
Randolph	Coulterville City Reservoir Dam	Low
Randolph	Sparta Old City Reservoir Dam	Significant
Randolph	Sparta New City Reservoir Dam	Significant
Randolph	Randolph County Lake Dam	Significant
Randolph	Baldwin Station Fly Ash Pond	Significant
Randolph	Baldwin Station Bottom Ash Pond	Significant
Randolph	Crescent Club Lake Dam	Low
Randolph	Lake Coulterville Dam	Low
Randolph	Baldwin Plant Cooling Lake Dam	High
Randolph	Birchlers Lake Dam	Low
Randolph	Site B Dredge Disposal Pond Dam	Low
Randolph	Taphorn Pond Dam	Low
Randolph	Shaufler Pond Dam	Low
Randolph	Zeigler Coal Company Lake	Low
Randolph	Langford Pond Dam	Low
Randolph	Simpson Pond Dam	Low
Randolph	Lake Camp A Lot Dam	Significant
Randolph	Fort Charters Sportsmans Club Lake Dam	Low
Randolph	Coulterville Coal/Gateway Mine/Slurry Cell 2 Dam	Significant

County	Dam Name	Hazard Potential Classification
Randolph	Peabody Coulterville/Gateway/Slurry Cell 5 Dam	Low
Randolph	Coulterville Coal/Gateway Mine/Slurry Cell 3 Dam	High
Randolph	Behnken Lake Dam	Low
Randolph	Coulterville Coal/Gateway Mine/Slurry Cell 1 Dam	Low
Randolph	Coulterville Coal/Gateway Mine/Slurry Cell 4 Dam	Low
Randolph	Schaffner Lake 1 Dam	Low
Randolph	Jerry F. Costello Lock and Dam	Significant
Richland	Bunn Pond Dam 1	Low
Richland	East Fork Lake Dam	High
Richland	M. D. Borah Lake Dam	High
Richland	Vernor Lake Dam	Significant
Richland	Jordan Lake Dam	Significant
Richland	Coens Pond Dam	Low
Richland	Hahn Lake Dam	Low
Richland	Millers Lake Dam	Low
Richland	Nix Lake Dam	Low
Richland	Webber Lake Dam	Low
Rock Island	Steel	Low
Rock Island	Lake George Dam	High
Rock Island	Sears	Low
Rock Island	Donnelly Pond Dam	Low
Rock Island	Mclaughlin Pond Dam	Low
Rock Island	Valley Friends Lake Dam	Low
Rock Island	Stanrick Dam	Low
Rock Island	Turkey Hollow Reservoir Dam	Low
Rock Island	Meyer's Dam 1	Low
Rock Island	Arsenal Power	Low
Rock Island	Moline Power	Low
Rock Island	Tom Steele Dam	High
Saline	Sipc/Southern Delta/Freshwater Impoundment Dam	Low
Saline	Sipc/Southern Delta/Slurry Impoundment Dam	Low
Saline	New Harrisburg Reservoir Dam	Significant
Saline	Glen O. Jones Lake Dam	Significant
Saline	Eldorado Reservoir Dam	Significant
Saline	Harrisburg Reservoir Dam	Low
Saline	American Coal/Galatia/Sed Pond 2 Dam	Low
Saline	Western Fuels Assoc/Brushy Cr/Freshwater Lake Dam	Low
Saline	Western Fuels/Brushy Creek/Slurry Cell 4 Dam	Low
Saline	Fresh Water Lake	Significant
Saline	Harrisburg-Sahara Retention Impoundment Dam	Significant
Saline	Clarifiers	Low
Saline	Western Fuels Assoc/Brushy Cr/East Slurry Dam	Low
Saline	Underground Mine Water Management Storage Impound.	Low
Saline	American Coal/Galatia/Chloride Water Pond Dam	Low
Saline	Potters Pond Dam	Low
Saline	Western Fuels/Brushy Cr/Main Slurry Dam	Low
Saline	American Coal/Galatia/Slurry Pond Dam	Low
Saline	Slurry Impoundment	Significant
Saline	Refuse Disposal Area	Significant
Saline	Western Fuels Assoc/Brushy Cr/West Slurry Dam	Significant

County	Dam Name	Hazard Potential Classification
Saline	American Coal/Galatia/Bunkhouse Rdf Dam	High
Saline	Western Fuels/Brushy Creek/Slurry Cell 5	Low
Saline	Arclar/Willow Lake/Refuse Area 2 Dam	High
Sangamon	Springfield Lakeside Ash Disposal Pond Dam	Low
Sangamon	Temporary Sangamon River Dam	Low
Sangamon	Rising Moon Road Detention Area Dam	Low
Sangamon	Weingardt Pond Dam	Low
Sangamon	Williamsville Lake Dam 1	Low
Sangamon	Buffalo Drive Dam	Significant
Sangamon	Crystal Lake Dam	Low
Sangamon	Cilca Lake Dam	Low
Sangamon	Hickory Hills Lake Dam	Low
Sangamon	Spaulding Dam	High
Sangamon	Braun Pond Dam	Significant
Sangamon	Woodlake Estates Dam	High
Sangamon	Schmidgall Dam 1	Low
Sangamon	Hunter Pond Dam 1	Low
Sangamon	Brandon Kimbro Dam	High
Sangamon	Denby Dam 1	Low
Sangamon	Benson Pond Dam 1	Low
Sangamon	Theilen Pond Dam 1	Undetermined
Schuyler	Carlson Lake Water Control Dam	Low
Schuyler	Coal and Crane Creek Structure 2	Low
Schuyler	Coal and Crane Creek Structure 6	Low
Schuyler	Briney Lake 2 Dam	Significant
Schuyler	Mccormick Pond Dam	Low
Schuyler	Croxton Lake Dam	Low
Schuyler	Coal and Crane Creek Structure 12	High
Schuyler	Gill Lake Dam	Significant
Schuyler	Coal and Crane Creek Structure 9	Low
Schuyler	Springfield Coal/Industry/Pond 9 Dam	Low
Schuyler	Coal and Crane Creek Structure 8	High
Schuyler	Coal & Crane Creek Structure 11	Low
Schuyler	Coal and Crane Creek Structure 7	Low
Schuyler	Waddell Dam	Low
Schuyler	Peabody Lake	Low
Schuyler	Coal and Crane Creek Structure 15	Low
Schuyler	Coal and Crane Creek Structure 13	Low
Schuyler	Lake Irene Dam	Low
Schuyler	Coal & Crane Creek Structure 5	High
Schuyler	Camp Immanuel Lake Dam	Low
Schuyler	Springfield Coal/Industry/Pond 27 Dam	Low
Schuyler	Springfield Coal/Industry/Pond 29 Dam	Low
Schuyler	Whitley Dam	Low
Schuyler	Coal and Crane Creek Structure 1	Low
Schuyler	Billingsley Pond Dam 3	Undetermined
Schuyler	Springfield Coal/Industry/Pond 26 Dam	Low
Schuyler	Coal and Crane WS Str 14	Low
Schuyler	Deer Run Dam	Low
Schuyler	Springfield Coal/Industry/Pond 30 Dam	Low

County	Dam Name	Hazard Potential Classification
Schuyler	Briney Lake 1 Dam	High
Scott	Freesen Lake Dam	Low
Scott	Plum Creek Golf Course Lake Dam	Low
Scott	Alsey Lake Dam	Significant
Shelby	Pana Lake Dam	Significant
Shelby	Boy Scout Lake Dam	Low
Shelby	Langley Pond Dam	Low
Shelby	Lake Mattoon Dam	Significant
Shelby	Oak Terrrace Golf Course Lake Dam	Low
Shelby	Beyers Lake Dam	Low
Shelby	Shelbyville Dam	High
St. Charles	Melvin Price Locks and Dam	Significant
St. Clair	Venice Station New Ash Pond	Significant
St. Clair	Kaskaskia Island Wildlife Area Lake Dam	Low
St. Clair	Marissa Reservoir Dam	Significant
St. Clair	Horner Park Dam	Low
St. Clair	Twin Lake Dam	Significant
St. Clair	Mcgraw Lake Dam	Low
St. Clair	New West Fork Club Lake Dam	Low
St. Clair	Marissa Recreation Association North Lake Dam	Significant
St. Clair	Peabody/Randolph Plant/Slurry Pond Dam	Low
St. Clair	Roachtown Lake Dam	Low
St. Clair	Clovertowne Lake Dam	Low
St. Clair	Weslake Dam	Significant
St. Clair	Russel Funk Dam	High
St. Clair	Baldwin Plant Cooling Lake Dikes	High
St. Clair	Mueth Lake Dam	Low
St. Clair	Millstadt Sportsman Club Lake Dam	Low
St. Clair	Spring Lake Road Dam	Significant
St. Clair	Gebhardt Lake Dam	High
St. Clair	Justamir Association Lake Dam	Low
St. Clair	Marissa Wwtp Basin Dam	Significant
St. Clair	Freedom Farm Lake Dam	Low
St. Clair	Biebell Lake Dam	Low
St. Clair	Arenas Dam	Significant
St. Clair	Eckert Lake Dam	High
St. Clair	Marissa Recreation Association South Lake Dam	Significant
St. Clair	Turkey Hill Lake Dam	Low
St. Clair	Far Oaks Lake Dam	Significant
St. Clair	Beil Lake 2 Dam	Low
St. Clair	Teagle Lake Dam	Low
St. Clair	Peabody/River King/Lake Dam	Low
St. Clair	Smithton Sportsmans Club Lake Dam	Low
St. Clair	Memorial East Campus Lake Dam	Low
St. Clair	Heitmans Pond 2 Dam	High
St. Clair	Ravenwood Lake Dam	Significant
St. Clair	Lake Christine Dam	High
St. Clair	Schwebel Brothers Dam	Low
St. Clair	Stonewolf Golf Course Lake Dam	High
St. Clair	Inez Lake Dam	Significant

County	Dam Name	Hazard Potential Classification
St. Clair	Lake Stolberg Dam	High
St. Clair	Chenot Lake Dam	High
St. Clair	Davis Lake Dam	High
St. Clair	Heartland Oaks 2 Dam	Low
St. Clair	Lawrence Lake Dam	High
St. Clair	Timber Lake Dam	Significant
St. Clair	Lake Lorraine Dam	High
St. Clair	Crystal Lake Dam	Significant
St. Clair	Heitmans Pond Dam	Significant
St. Clair	Silver Bay LLC Lake Dam	Low
St. Clair	Fairwood Lake Dam	High
St. Clair	Wildwood Lake Estates Dam	Significant
St. Clair	Arrowwood Lake Dam	Low
St. Clair	Willow Wood Lake Dam	Low
St. Clair	Heartland Oaks 1 Dam	Low
St. Clair	Ravenel Lake Dam	High
St. Clair	Woodfield Lake Estates Dam	High
St. Clair	St. Clair County Retention Pond 1 Dam	High
St. Clair	Stonehenge Lake Dam	Significant
St. Clair	Beil Lake 1 South Dam	Low
St. Clair	Scott Air Force Base Pond Dam	Low
St. Clair	Beil Lake 1 East Dam	Low
Stark	Kepler Lake Dam	Low
Stark	Allendale Conservation Club Lake Dam	Low
Stark	Marsh Lake Dam	Low
Stark	Armstrong Pond Dam 2	Low
Stephenson	Lake Le-Aqua-Na Dam	Significant
Stephenson	Pearl City Lagoon Dam	Significant
Stephenson	Willow Lake Dam	High
Stephenson	Highland Community College Lake Dam	High
Tazewell	School Street Detention Basin Dam	Significant
Tazewell	Mitchell Lake Dam	Low
Tazewell	Shepherd Pond Dam	Low
Tazewell	Kennel Lake Dam	Low
Tazewell	Boyles Lake Dam	Low
Tazewell	Bessler Lake Dam	Low
Tazewell	Camino Venado Lake Dam	Significant
Tazewell	Home Lake Dam	Low
Tazewell	Pine Lakes Country Club North Pond Dam	Low
Tazewell	Wilmor Sportsman Club East Lake Dam	Low
Tazewell	West Lake Dam	Low
Tazewell	Birkey Lake Dam	Low
Tazewell	Wahelo Pond Dam	Low
Tazewell	Le Baube Lake Dam	Low
Tazewell	Powerton Station Former Ash Basin	Significant
Tazewell	Wildwood Lake Dam	Low
Tazewell	Venado Pequeno Lake Dam	Significant
Tazewell	Pine Lakes Country Club South Pond Dam	Low
Tazewell	Wilmor Sportsman Club West Lake Dam	Low
Tazewell	Lake of The Whispering Oaks Dam	Low

County	Dam Name	Hazard Potential Classification
Tazewell	Sutton Pond Dam	Low
Tazewell	Oakwood Drive Dam	Significant
Tazewell	Northern Oaks Lake Dam	Low
Tazewell	Oak Lake Estates Dam	Low
Tazewell	Sunset Hills Lake 2 Dam	High
Tazewell	Lutticken Lake Dam	Low
Tazewell	Venado Grande Lake Dam	Significant
Tazewell	Lutticken South Pond Dam	Low
Tazewell	Gabbert Pond Dam	High
Tazewell	Heritage Lake Dam	Significant
Tazewell	Dennis Lake Dam	Low
Tazewell	Spring Lake Wetland Unit 2	Low
Tazewell	Libbys Lagoon 4 Dam	Low
Tazewell	Spring Lake Wetland Unit 3	Low
Tazewell	Powerton Cooling Lake Dam	Significant
Tazewell	Libbys Lagoon 2 Dam	Low
Tazewell	Grand Oaks Lake Dam	Significant
Tazewell	Dan Brown Dam	Low
Tazewell	Spring Lake Wetland Unit 1	Low
Tazewell	Sunset Hills Lake 1 Dam	High
Tazewell	Farmdale Dam	High
Tazewell	Fondulac Dam	High
Tazewell	Peoria Lock and Dam	Significant
Union	Choate Lake Dam	High
Union	Alto Pass Reservoir Dam	High
Union	Hinz Pond Dam	Low
Union	Dennys Pond Dam	Low
Union	Dongola Lake Dam	High
Union	Flamms Lake Dam	Low
Union	Myers Ranch Farms Pond Dam	Significant
Union	Rockman Pond Dam 1	Low
Vermilion	Georgetown Dam	Significant
Vermilion	Windfall Lake Dam	Low
Vermilion	Puzey Lake Dam	Low
Vermilion	Timberlake Farms Lake Dam	Low
Vermilion	Illinois Power Company Lake Dam	Low
Vermilion	Lake Mingo Dam	Significant
Vermilion	Peabody Midwest/Vermilion Grove/Freshwater Lake Da	Low
Vermilion	Lake Vermilion Dam	High
Vermilion	Dynegy/Vermilion Station/Fly Ash Disposal Pond Dam	Low
Wabash	Beall Woods Lake Dam	Low
Wabash	Sugar Creek Lake Dam	Significant
Wabash	Wabash Valley Club Conservation Lake Dam	Low
Wabash	Mesa Lake Dam	Significant
Wabash	Fish Lake Dam	Low
Warren	Citizens Lake Dam	Low
Warren	Merle Whiteside Pond Dam	Low
Warren	South Mack Glass Pond Dam	Low
Warren	Paul Lake Dam	Low
Warren	R. Johnson Pond Dam	Low

County	Dam Name	Hazard Potential Classification
Warren	Lake Warren Dam	Low
Warren	George Gaskill Jr. Pond Dam	Low
Warren	Roney Lake Dam	Low
Warren	Youngs Lake Dam	Low
Warren	Younquist Lake Dam	Low
Warren	Little Swan Lake Dam	Low
Warren	Lowell Gardner Pond Dam	Low
Warren	H. Wilkins Irrigation Dam	Low
Washington	Wildlife Lake Dam	Significant
Washington	Washington County Lake Dam	Low
Washington	Hickory Lake Dam	Low
Washington	Huegelys Lake Dam	Low
Washington	Williams Lake Dam	Low
Washington	Piney Wood Lake Dam	Low
Washington	Flying M Ranch Lake Dam	Low
Washington	Nashville City Reservoir Dam	High
Washington	Illinois Central Railroad Reservoir Dam	Significant
Washington	Habbes Lake Dam	Low
Washington	Prairie State Energy Raw Water Dam	High
Washington	Nashville City Reservoir 2 Dam	Low
Washington	Schneider Pond Dam 1	Undetermined
Wayne	Sam Dale Lake Dam	Significant
Wayne	Fairfield Side Channel Reservoir Dam	Low
Wayne	Fairfield Side Channel Reservoir New Dam	Low
Wayne	Cox Lake Dam	Significant
Wayne	Sunset Lake Dam	Low
Wayne	Briar Patch Club Dam	Low
Wayne	Allen Pond Dam	Low
Wayne	Milner Lake Dam	Low
Wayne	Farmland Industries Lake Dam	Low
Wayne	Wayne City Perched Reservoir Dam	Low
Wayne	Johnson Lake Dam	Low
White	Norris City Reservoir Dam	High
White	Sandy Run Lake Dam	Significant
White	Pollards Pond Dam	Low
White	Griffith Farm Lake Dam	Significant
White	Pont-Ca Lake Dam	Significant
White	Absher Lake Dam	High
White	Cantrell Lake Dam	Significant
Whiteside	Morrison Rockwood Siltation Pond Dam	Low
Whiteside	Upper Sterling	Low
Whiteside	Lake Carlton Dam	High
Whiteside	Morrison Wwtp Excess Flow Storage Pond Dam	Significant
Whiteside	French Pond Dam	Significant
Whiteside	Leo Johnson Lake Dam	Low
Will	Wilmington Dam	Low
Will	Kemery Lake Dam	High
Will	Pilcher Park Dam	Significant
Will	Gun Club Lake Dam	Low
Will	Doyle Lake Dam	Low

County	Dam Name	Hazard Potential Classification
Will	Frankfort Flow Equalization Pond Dam	Significant
Will	Joliet West Side Wastewater Treatment Plant Dam	Low
Will	Monee Reservoir Dam	Significant
Will	Sauk Trail Dam	High
Will	Drumm Farm Weir Dam	Low
Will	Joliet Junior College Lake Dam	Significant
Will	Channahon Dam	Low
Will	Lily Cache Business Dam	Low
Will	Crossings Bike Path Dam	Low
Will	Wynstone Boulevard Dam	Low
Will	Maple Brook Estates Dam	Low
Will	Deer Lake Dam	Significant
Will	Remington Lakes Dam	Low
Will	Milne Creek Weir Dam	Low
Will	Pinnacle Pond 5 Dam	Low
Will	Lakeview Estates Unit 2 Pond 02 Dam	Low
Will	Charlevoix Drive Dam	Low
Will	Braidwood Station Cooling Pond Dam	High
Will	Millenium Parkway Dam	Low
Will	Glenn Circle East Dam	Low
Will	Glenn Circle West Dam	Low
Will	Prairie Grass Boulevard Dam	Significant
Will	Century Trace Lake Dam	Low
Will	Brookwood Trace Dam	Low
Will	Spaniel Lake Dam	High
Will	Deer Run Pond K Dam	Low
Will	248th Avenue Dam	Low
Will	Sky Harbor Detention Area A Dam	High
Will	Cedar Glen Unit 2 Dam	Low
Will	Pinnacle Pond 1 Dam	Low
Will	Lakeview Estates Unit 3 Pond 1 Dam	Low
Will	Brandon Road Lock and Dam	High
Will	Lockport Lock and Controlling Works	High
Williamson	Dam A-41	Low
Williamson	Southern Il Power South Fly Ash Pond Dam	Low
Williamson	Marion Reservoir Dam	Significant
Williamson	Johnston City Sewage Lagoon Dam	Significant
Williamson	Crab Orchard Dam	High
Williamson	Johnston City Lake Dam	Significant
Williamson	Lake of Egypt Dam	High
Williamson	A16 Pond Dam	Low
Williamson	Pleasant Valley Lake Dam	Low
Williamson	Zeigler Coal Lake 5 Dam	Significant
Williamson	Martel Lake Dam	Low
Williamson	Knights of Pythias Lake Dam	Low
Williamson	Southern Il Power Fly Ash Disp Pond B-3 Dam	Low
Williamson	Springfield Coal/Orient 4/Aux Slurry Pond	Low
Williamson	Marion Country Club Lake Dam	Low
Williamson	Bleyar Lake Dam	Low
Williamson	Belford Lake Dam	Low

County	Dam Name	Hazard Potential Classification
Williamson	Durst Lake Dam	Low
Williamson	Marion Prison Lake Dam	Significant
Williamson	Madison Lake Dam	Low
Williamson	Herrin Reservoir 2 Dam	Significant
Williamson	Little Grassy Dam	High
Williamson	Teal Lake Dam	Low
Williamson	Arrowhead Lake Dam	Significant
Williamson	Springfield Coal/Orient 4/East Slurry Imp	High
Williamson	Freeman United/ /Fresh Water Lake Dam	Significant
Williamson	Williamson Energy/Pond Creek Mine/Refuse Disposal Facility	High
Williamson	Herrin Reservoir 1 Dam	Significant
Williamson	Visitor Center Dam	Low
Williamson	Devil`S Kitchen Dam	High
Winnebago	Rockton	Low
Winnebago	Page Park Dam	High
Winnebago	Olson Lake Dam	Low
Winnebago	Elliot Golf Course Dam	Significant
Winnebago	Cherry Valley Lower Dam	Low
Winnebago	Levings Lake Dam	High
Winnebago	Pierce Lake Dam	High
Winnebago	Lakewood Hills Lake Dam	Significant
Winnebago	Pebble Creek Dam	High
Winnebago	Alpine Dam	High
Winnebago	Harrison Park West Detention Dam	Significant
Winnebago	Fordam Station Dam	Low
Winnebago	Rock River Water Reclamation District Excess Flow Basin Dam	High
Winnebago	Harrison Park East Detention Pond Dam	Significant
Winnebago	Spring Lake Dam	Significant
Winnebago	Lake Summerset Dam	High
Winnebago	Coolidge Creek Dam	Low
Winnebago	Kiowa Crossing Dam	Significant
Woodford	Forest Lemon Dam	Low
Woodford	Evergreen Lake Dam	High
Woodford	White Oak Lake Dam	Low
Woodford	Barwell Lake Dam	Low
Woodford	Schlipf Lake Dam	Low
Woodford	Eureka Lake Dam	Significant
Woodford	Rich Lake Dam	Low
Woodford	Izaak Walton Lake Dam	Low
Woodford	Stark Pond Dam	Low
Woodford	Lake Santa Fe Dam	Low

Appendix 2.4 Illinois Levees

County	Levee Name	FEMA Accreditation Status
Adams	Indian Grave DD - Lower	Non-Accredited Levee System
Adams	Indian Grave DD - Upper	Non-Accredited Levee System
Adams	South Quincy D&LD	Accredited Levee System
Adams, Hancock	Hunt-Lima D&LD	Non-Accredited Levee System
Adams, Pike	Sny Island LDD - Reach 1	Provisionally Accredited Levee (PAL) System
Alexander	Cache River Levee System	Provisionally Accredited Levee (PAL) System
Alexander	City of Cairo Segment 2	Provisionally Accredited Levee (PAL) System
Alexander	Len Small Levee System	Non-Accredited Levee System
Alexander, Pulaski	Mississippi and Ohio Rivers Levee System at Cairo & Vicinity	Provisionally Accredited Levee (PAL) System
Alexander, Union	Big Five Levee System	Non-Accredited Levee System
Bond, Clinton	Lake Carlyle - Keyesport Levee	Non-Accredited Levee System
Brown	Big Prairie Drainage & Levee District	Non-Accredited Levee System
Brown	Little Creek Drainage District System	Non-Accredited Levee System
Brown, Pike	McGee Creek Drainage & Levee District System	Accredited Levee System
Brown, Schuyler	Morrell Levee	Non-Accredited Levee System
Bureau	Bureau County, IL 1	Non-Accredited Levee System
Bureau	Bureau County, IL 2	Non-Accredited Levee System
Bureau	Bureau County, IL 3	Non-Accredited Levee System
Bureau	Bureau County, IL 4	Non-Accredited Levee System
Bureau	Bureau Levee 2	Non-Accredited Levee System
Bureau	Hollerich Levee	Non-Accredited Levee System
Bureau	Tiskilwa Levee 1	Provisionally Accredited Levee (PAL) System
Bureau	Tiskilwa Levee 2	Provisionally Accredited Levee (PAL) System
Calhoun	Sny Island-Reach 4 -Mississippi River 1	Non-Accredited Levee System
Calhoun, Pike	Bay Creek Levee LB	Non-Accredited Levee System
Calhoun, Pike	Bay Creek Levee RB	Non-Accredited Levee System
Calhoun, Pike	Sny Island LDD - Reach 3	Provisionally Accredited Levee (PAL) System
Calhoun, Pike	Sny Island LDD - Reach 4	Provisionally Accredited Levee (PAL) System
Carroll	Carroll Unincorporated Levee 1	Non-Accredited Levee System
Carroll	Carroll Unincorporated Levee 2	Non-Accredited Levee System
Carroll	Carroll Unincorporated Levee 4	Non-Accredited Levee System
Cass	Beardstown	Non-Accredited Levee System
Cass	Bell and Mertz Levee - Chandlerville, IL	Non-Accredited Levee System
Cass	Cass County Levee 1	Non-Accredited Levee System
Cass	Cass County Levee 2	Non-Accredited Levee System
Cass	Chandlerville, IL	Non-Accredited Levee System
Cass	Clear Creek 2	Non-Accredited Levee System
Cass	Clear Creek Segment 1	Non-Accredited Levee System
Cass	Clear Creek Segment 10	Non-Accredited Levee System
Cass	Clear Creek Segment 11	Non-Accredited Levee System
Cass	Clear Creek Segment 5	Non-Accredited Levee System
Cass	Clear Creek Segment 7	Non-Accredited Levee System
Cass	Clear Creek Segment 8	Non-Accredited Levee System
Cass	Clear Creek Segment 9	Non-Accredited Levee System
Cass	Clear Creek Sys 1	Non-Accredited Levee System
Cass	Clear Creek Sys 2	Non-Accredited Levee System
Cass	Clear Creek Sys 3 - Segment 2	Non-Accredited Levee System
Cass	Clear Lake & Hager Slough Special DDs	Non-Accredited Levee System
Cass	Indian Creek Levee District No. 2	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Cass	Job's Creek Sys 1 - Segment 1	Non-Accredited Levee System
Cass	Job's Creek Sys 2 - Segment 1	Non-Accredited Levee System
Cass	Lost Creek Sys 2 - Segment 2	Non-Accredited Levee System
Cass	Lost Creek Sys 3 - Segment 3	Non-Accredited Levee System
Cass	S. Sangamon D&L Dist Sys 10 Levee	Non-Accredited Levee System
Cass	S. Sangamon D&L Dist Sys 6 Levee	Non-Accredited Levee System
Cass	Schnake-Bowers-Meyer Leve	Non-Accredited Levee System
Cass	Sid Simpson FCP	Accredited Levee System
Cass	South Sangamon D&LD - West	Non-Accredited Levee System
Cass, Mason	Old River D&LD	Non-Accredited Levee System
Cass, Mason	South Sangamon D&LD - East	Non-Accredited Levee System
Cass, Mason, Menard	Farmers L&DD and Herget D&LD	Non-Accredited Levee System
Cass, Menard	Tar Creek Levee 1	Non-Accredited Levee System
Cass, Menard	Tar Creek Levee 2	Non-Accredited Levee System
Cass, Morgan	Meredosia Lake, Willow Creek N, New Pankeys Pond, Mud Creek, Indian Creek	Non-Accredited Levee System
Christian	Hopper Levee	Non-Accredited Levee System
Christian	Tomlin-Swope Levee	Non-Accredited Levee System
Christian, Sangamon	Blair-Allspach Levee	Non-Accredited Levee System
Christian, Sangamon	Clark-Albright-Goodrich-Reeter Levee	Non-Accredited Levee System
Christian, Sangamon	Scholes-Goodrich-Osborne Levee	Non-Accredited Levee System
Clark, Crawford, Sullivan	Island Levee System	Non-Accredited Levee System
Clinton	Germantown Levee System	Non-Accredited Levee System
Clinton	Hanover 1	Non-Accredited Levee System
Clinton	Hanover 2	Non-Accredited Levee System
Clinton	Hanover 3	Non-Accredited Levee System
Clinton	Hanover Levee System	Non-Accredited Levee System
Clinton	Heimann Levee System	Non-Accredited Levee System
Clinton	Santa Fe Levee System	Non-Accredited Levee System
Cook	Cook County Levee 1	Non-Accredited Levee System
Cook	Elmwood Park Flood Mitigation Project	Accredited Levee System
Cook	Forest View	Accredited Levee System
Cook	Lansing	Non-Accredited Levee System
Cook	Levee 37	Non-Accredited Levee System
Cook	Levee 50	Non-Accredited Levee System
Cook	Village of Westchester Unnamed Levee	Non-Accredited Levee System
Cook, Lake	Calumet City	Non-Accredited Levee System
Cook, Lake	Hammond Forest Ave	Accredited Levee System
Crawford	Crawford, IL Levee 1	Non-Accredited Levee System
Crawford	Crawford, IL Levee 10	Non-Accredited Levee System
Crawford	Crawford, IL Levee 12	Non-Accredited Levee System
Crawford	Crawford, IL Levee 13	Non-Accredited Levee System
Crawford	Crawford, IL Levee 17	Non-Accredited Levee System
Crawford	Crawford, IL Levee 18	Non-Accredited Levee System
Crawford	Crawford, IL Levee 19	Non-Accredited Levee System
Crawford	Crawford, IL Levee 2	Non-Accredited Levee System
Crawford	Crawford, IL Levee 20	Non-Accredited Levee System
Crawford	Crawford, IL Levee 21	Non-Accredited Levee System
Crawford	Crawford, IL Levee 22	Non-Accredited Levee System
Crawford	Crawford, IL Levee 23	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Crawford	Crawford, IL Levee 24	Non-Accredited Levee System
Crawford	Crawford, IL Levee 3	Non-Accredited Levee System
Crawford	Crawford, IL Levee 4	Non-Accredited Levee System
Crawford	Crawford, IL Levee 5	Non-Accredited Levee System
Crawford	Crawford, IL Levee 6	Non-Accredited Levee System
Crawford	Crawford, IL Levee 7	Non-Accredited Levee System
Crawford	Crawford, IL Levee 8	Non-Accredited Levee System
Crawford	Crawford, IL Levee 9	Non-Accredited Levee System
Crawford, Jasper	Crawford, IL Levee 16	Non-Accredited Levee System
DeKalb	Dekalb, IL - East	Non-Accredited Levee System
DeKalb	Dekalb, IL - West	Non-Accredited Levee System
DuPage	Bower School Berm Levee	Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 1	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 10	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 2	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 3	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 4	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 5	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 6	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 7	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 8	Non-Accredited Levee System
DuPage	East Branch DuPage River (EBEB) 9	Non-Accredited Levee System
DuPage	Elmhurst Levee	Accredited Levee System
DuPage	Elmhurst Levee 2	Accredited Levee System
Edwards, Wabash	Wabash Unincorporated Levee 4	Non-Accredited Levee System
Fayette	Dively Drainage & Levee District System	Non-Accredited Levee System
Fayette	Fish Lake Levee & Drainage District	Non-Accredited Levee System
Fayette	Grassy Lake Drainage District	Non-Accredited Levee System
Fayette	Grassy Lake Drainage District	Non-Accredited Levee System
Fayette	Grassy Lake Drainage District 17	Non-Accredited Levee System
Fayette	Grassy Lake Drainage District 22	Non-Accredited Levee System
Fayette	Hermit Point 1	Non-Accredited Levee System
Fayette	Hickory 1	Non-Accredited Levee System
Fayette	Hurricane Creek 1	Non-Accredited Levee System
Fayette	Hurricane Creek 2	Non-Accredited Levee System
Fayette	Hurricane Creek 3	Non-Accredited Levee System
Fayette	Kaskaskia 1	Non-Accredited Levee System
Fayette	Kaskaskia 2	Non-Accredited Levee System
Fayette	Kaskaskia 3	Non-Accredited Levee System
Fayette	Kaskaskia 4	Non-Accredited Levee System
Fayette	Kaskaskia 5	Non-Accredited Levee System
Fayette	Kaskaskia 6	Non-Accredited Levee System
Fayette	Pecan Island Drainage & Levee District	Non-Accredited Levee System
Fayette	Vandalia 1	Non-Accredited Levee System
Fayette	Vandalia 2	Non-Accredited Levee System
Fayette	Vandalia 3	Non-Accredited Levee System
Fayette	Vandalia 4	Non-Accredited Levee System
Fayette	Vandalia 5	Non-Accredited Levee System
Fayette	Vandalia 6	Non-Accredited Levee System
Fayette	Vandalia 7	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Fayette	Vandalia Levee System	Non-Accredited Levee System
Fayette	Wild Cat Drainage District	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 16	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 17	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 28	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 29	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 32	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 37	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 38	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 39	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 40	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 42	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 46	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 47	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 5	Non-Accredited Levee System
Fayette	Wild Cat Drainage District 8	Non-Accredited Levee System
Fulton	Ames Levee	Non-Accredited Levee System
Fulton	Barrett E. Levee	Non-Accredited Levee System
Fulton	Barrett-Swain Levee	Non-Accredited Levee System
Fulton	Baughman Levee	Non-Accredited Levee System
Fulton	Blout-Lundry Levee 2	Non-Accredited Levee System
Fulton	Bohannon Levee	Non-Accredited Levee System
Fulton	Bond Levee - London Mills, IL	Non-Accredited Levee System
Fulton	Burrows, G. Levee	Non-Accredited Levee System
Fulton	Burrows, O. Levee	Non-Accredited Levee System
Fulton	Butler Levee	Non-Accredited Levee System
Fulton	Clark-Beatty Levee	Non-Accredited Levee System
Fulton	Clary Levee	Non-Accredited Levee System
Fulton	Creek, C.-Deushane Levee	Non-Accredited Levee System
Fulton	Cullinan-Zempel-Evans levee	Non-Accredited Levee System
Fulton	Cullinane Levee No. 1	Non-Accredited Levee System
Fulton	Cullinane, J. No.2 Levee	Non-Accredited Levee System
Fulton	Dickson Levee	Non-Accredited Levee System
Fulton	Dickson V. M. Levee	Non-Accredited Levee System
Fulton	East Liverpool D&LD	Non-Accredited Levee System
Fulton	Effland D&LD	Non-Accredited Levee System
Fulton	Elisville Levee North	Non-Accredited Levee System
Fulton	Elisville Levee South	Non-Accredited Levee System
Fulton	ERMELING3-STRODE-ERMELING2 LEVEE 2	Non-Accredited Levee System
Fulton	Fulton County Levee 10	Non-Accredited Levee System
Fulton	Fulton County Levee 11	Non-Accredited Levee System
Fulton	Fulton County Levees 5/6 - London Mills, IL	Non-Accredited Levee System
Fulton	Globe D&LD	Non-Accredited Levee System
Fulton	Heffron Levee	Non-Accredited Levee System
Fulton	Ingersol Levee	Non-Accredited Levee System
Fulton	Jasper-Sill Levee	Non-Accredited Levee System
Fulton	Lacey, Langellier, West Matanzas, and Kerton Valley D&LDs	Non-Accredited Levee System
Fulton	Liverpool D&LD and Liverpool, IL	Non-Accredited Levee System
Fulton	Lockard, O. Levee	Non-Accredited Levee System
Fulton	Lockard, O.&C. Levee	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Fulton	LONDON MILLS - PARKER LEVEE Branch	Non-Accredited Levee System
Fulton	London Mills Ring Levee	Non-Accredited Levee System
Fulton	Lower Pleasant Valley D&LD	Non-Accredited Levee System
Fulton	Lundry Levee	Non-Accredited Levee System
Fulton	Miller Levee	Non-Accredited Levee System
Fulton	Morey Levee	Non-Accredited Levee System
Fulton	Nichols Levee	Non-Accredited Levee System
Fulton	Parkinson-Littlejohn- Riley-Deushane-Burrows Levee	Non-Accredited Levee System
Fulton	Proctor - Eskridge Levee	Non-Accredited Levee System
Fulton	Rose L. Levee	Non-Accredited Levee System
Fulton	Schulte Levee	Non-Accredited Levee System
Fulton	Seahorn D&LD	Non-Accredited Levee System
Fulton	Shawver Levee No. 3	Non-Accredited Levee System
Fulton	Southwood Levee	Non-Accredited Levee System
Fulton	Spoon River Project No. 1 D&LD	Non-Accredited Levee System
Fulton	Spoon River Project No.1 Trib RB	Non-Accredited Levee System
Fulton	Spoon River Project No.1 Trib_LB	Non-Accredited Levee System
Fulton	Spoon River Ranch and Roddis D&LD	Non-Accredited Levee System
Fulton	Standard-Henderson Levee	Non-Accredited Levee System
Fulton	Stevenson Levee	Non-Accredited Levee System
Fulton	Thompson D&LD	Non-Accredited Levee System
Fulton	Turner, R. Levee	Non-Accredited Levee System
Fulton	Whitney-Campbell-Clanin Levee	Non-Accredited Levee System
Fulton	Zempel Levee	Non-Accredited Levee System
Fulton	Zempel Mutual DD	Non-Accredited Levee System
Fulton, Peoria	Banner Marsh State Fish and Wildlife Area	Accredited Levee System
Gallatin	Shawneetown Local Flood Protection Project 9	Non-Accredited Levee System
Greene	Bluffdale Farm Levee System	Non-Accredited Levee System
Greene	ELDRED D&L DIST Levee_Macoupin Creek Trib LB	Non-Accredited Levee System
Greene	ELDRED D. & L. DIST. Levee_Hurricane Creek S. Trib	Non-Accredited Levee System
Greene	Farrow Private Levee_Hurricane Creek South Trib 1	Non-Accredited Levee System
Greene	Greene County Private Levee LB	Non-Accredited Levee System
Greene	Greene County Private Levee RB	Non-Accredited Levee System
Greene	Greene Levee 1	Non-Accredited Levee System
Greene	Greene Levee 2	Non-Accredited Levee System
Greene	Hartwell Drainage & Levee District System	Non-Accredited Levee System
Greene	Keach Drainage & Levee District System	Non-Accredited Levee System
Greene	Robely Private Levee	Non-Accredited Levee System
Greene	Schafer Levee	Non-Accredited Levee System
Greene, Jersey	Eldred and Spankey Levee System	Non-Accredited Levee System
Greene, Jersey	Nutwood Drainage & Levee District System	Non-Accredited Levee System
Greene, Scott	Hillview Drainage & Levee District	Non-Accredited Levee System
Grundy	Grundy Unincorporated Area Levee 1	Non-Accredited Levee System
Grundy	Grundy Unincorporated Area Levee 2	Non-Accredited Levee System
Grundy	Grundy Unincorporated Area Levee 3	Non-Accredited Levee System
Grundy	Grundy Unincorporated Area Levee 4	Non-Accredited Levee System
Hancock	Brooks Levee No. 1	Non-Accredited Levee System
Hancock	Brooks Levee No. 2	Non-Accredited Levee System
Hancock	Elbus Levee	Non-Accredited Levee System
Hancock	Hunt-Lima D&LD - Jenifer Creek Diversion Dam	N/A

County	Levee Name	FEMA Accreditation Status
Hancock	Hunt-Lima D&LD - Rocky Run Dam and Little Rocky Run Dam	N/A
Hancock	Miller-Elbus Levee	Non-Accredited Levee System
Hancock	Swain Levee	Non-Accredited Levee System
Hancock	Van Horn Levee*	Non-Accredited Levee System
Hardin	Rosiclare Levee System	Provisionally Accredited Levee (PAL) System
Henderson	Ellison Creek Diversion Ditch_LB	Non-Accredited Levee System
Henderson	Henderson County DD No. 1 and No. 2	Non-Accredited Levee System
Henderson	Henderson County DD No. 2 - Ellison Diversion Ditch Left Bank	Non-Accredited Levee System
Henderson	Henderson County Drainage District No. 3 - Mid	Non-Accredited Levee System
Henderson	Henderson County Levee 1	Non-Accredited Levee System
Henderson	Robert Gray Levee	Non-Accredited Levee System
Henry	North Edwards and Mud Creek Levee 1	Non-Accredited Levee System
Henry	North Edwards and Mud Creek Levee 2	Non-Accredited Levee System
Henry	North Edwards Special Levee 1	Non-Accredited Levee System
Henry	North Edwards Special Levee 2	Non-Accredited Levee System
Henry	North Edwards Special Levee 3	Non-Accredited Levee System
Henry	North Edwards Special Levee 4	Non-Accredited Levee System
Henry	North Edwards Special Levee 5	Non-Accredited Levee System
Henry	North Edwards Special Levee 6	Non-Accredited Levee System
Henry	North Edwards Special Levee 7	Non-Accredited Levee System
Henry, Whiteside	Penny Slough D&LD	Non-Accredited Levee System
Jackson, Perry	Grand Tower / Degognia Levee System	Non-Accredited Levee System
Jasper	Sainte Marie Levee System	Non-Accredited Levee System
Jo Daviess	East Dubuque, IL	Accredited Levee System
Jo Daviess	Galena, IL - Left Bank	Non-Accredited Levee System
Jo Daviess	Galena, IL - Right Bank	Accredited Levee System
Johnson, Massac, Pope	Reevesville Levee System	Non-Accredited Levee System
Johnson, Pulaski	Cache River Levee System	Non-Accredited Levee System
Lake	North Libertyville Estates	Non-Accredited Levee System
LaSalle	Ottawa Township High School Levee, Il	Non-Accredited Levee System
LaSalle	Ottawa WWTP	Non-Accredited Levee System
LaSalle	Streator, IL	Non-Accredited Levee System
Lawrence	England Pond Levee System	Non-Accredited Levee System
Lawrence	Russell-Allison-Ambraw Levee System	Non-Accredited Levee System
Lewis, Marion, Rock Island	East Moline, IL	Provisionally Accredited Levee (PAL) System
Logan	Ahrens Levee	Non-Accredited Levee System
Logan	Baker Levee	Non-Accredited Levee System
Logan	Beaver O. Levee (White No. 1)	Non-Accredited Levee System
Logan	Beaver, Alma No. 2 Levee (White No. 3)	Non-Accredited Levee System
Logan	Hartnell, A. or Boward-White No.5 Levee 1	Non-Accredited Levee System
Logan	Hartnell, A. or Boward-White No.5 Levee 2	Non-Accredited Levee System
Logan	Michaelis Levee	Non-Accredited Levee System
Logan	Schmidt Levee	Non-Accredited Levee System
Logan, Mason	Donovan Upper	Non-Accredited Levee System
Macon	Sanitary District of Decatur Levee	Non-Accredited Levee System
Macon, Sangamon	Waddell-Ulrich Levee	Non-Accredited Levee System
Madison	Chouteau Island / Chain of Rocks West Levee System	Non-Accredited Levee System
Madison	Private Levee on Cahokia Creek	Non-Accredited Levee System
Madison	Village of Bethalto Levee	Non-Accredited Levee System
Madison	Wood River D&LD East and West System	Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Madison	Wood River D&LD Lower System	Accredited Levee System
Madison	Wood River D&LD Upper System	Accredited Levee System
Madison, St. Clair	MESD / Chain of Rocks East Levee System	Accredited Levee System
Mason	Bennis Levee	Non-Accredited Levee System
Mason	Canada Levee	Non-Accredited Levee System
Mason	Dearborn Levee	Non-Accredited Levee System
Mason	Donovan Lower	Non-Accredited Levee System
Mason	Hull Levee	Non-Accredited Levee System
Mason	Lucas Levee	Non-Accredited Levee System
Mason	Lussenhop Levee	Non-Accredited Levee System
Mason	Lynchburg Drainage & Levee District	Non-Accredited Levee System
Mason	Mason and Menard D&LD	Non-Accredited Levee System
Mason	Quiver/Chatauqua Lake Levee	Non-Accredited Levee System
Mason	Sanert Levee	Non-Accredited Levee System
Mason	Silver Moon Lake Levee_Section 1	Non-Accredited Levee System
Mason	Swiger-Whitney-Ainsworth-Woods Levee	Non-Accredited Levee System
Massac	Brookport Levee System	Non-Accredited Levee System
McDonough	Measley-Thompson Levee	Non-Accredited Levee System
McDonough	Van Brooker Levee No. 1	Non-Accredited Levee System
McDonough	Van Brooker Levee No. 2	Non-Accredited Levee System
Menard	Deverman-Bradley-Amerkamp-Onken-Behrens Levee	Non-Accredited Levee System
Menard	Doyle-Pottorf Levee No. 2 Lower	Non-Accredited Levee System
Menard	Doyle-Pottorf Levee No. 2 Upper	Non-Accredited Levee System
Menard	J. Lewis Levee - LDB	Non-Accredited Levee System
Menard	Levees East of Hubly Bridge	Non-Accredited Levee System
Menard	North Sangamon-Lattimore Creek Mutual DD - Sub-District A	Non-Accredited Levee System
Menard	Oakford Special DD	Non-Accredited Levee System
Menard	Velde-Nolte-Van Osdal Levee	Non-Accredited Levee System
Menard	Watts Levee	Non-Accredited Levee System
Mercer	Keithsburg Levee	Non-Accredited Levee System
Mercer, Rock Island	Bay Island D&LD No. 1 and Subdistrict No. 1 of Drainage Union No. 1	Non-Accredited Levee System
Monroe	Columbia Drainage & Levee District No.3 System	Non-Accredited Levee System
Monroe, Randolph	Harrisonville / Stringtown / Ft Chartres Levee System	Non-Accredited Levee System
Monroe, St. Clair	Prairie du Pont / Fish Lake System	Accredited Levee System
Morgan	Meridosia North Levee	Non-Accredited Levee System
Morgan	Smith Private Levee	Non-Accredited Levee System
Morgan, Scott	Coon Run Drainage & Levee District SE System	Non-Accredited Levee System
Morgan, Scott	Willow Creek / Coon Run NW System	Non-Accredited Levee System
Ogle	Beach Creek Levee RB	Non-Accredited Levee System
Ogle	Kyte River Levee 3	Non-Accredited Levee System
Ogle	Kyte River Levee_RB_Section 1	Non-Accredited Levee System
Ogle	Kyte River Levee_RB_Section 2	Non-Accredited Levee System
Ogle	Kyte River Trib 3	Non-Accredited Levee System
Ogle	Rochelle Pond Levee	Non-Accredited Levee System
Peoria	Banner Special D&LD	Accredited Levee System
Peoria	Banner Special Levee - Segment #5	Accredited Levee System
Peoria	Banner Special Levee - Segment #6	Accredited Levee System
Peoria	Evonik Mapleton Plant Site Levee	Non-Accredited Levee System
Peoria	Greater Peoria Sanitary District	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Peoria	Keystone Steel	Non-Accredited Levee System
Peoria	Keystone Steel 2	Non-Accredited Levee System
Peoria	Komatsu Levee	Accredited Levee System
Peoria	Lonza	Non-Accredited Levee System
Peoria	Pekin and LaMarsh D&LD	Non-Accredited Levee System
Perry, Randolph	Bois Brule Levee & Drainage District System	Non-Accredited Levee System
Piatt	Cronninger Levee	Non-Accredited Levee System
Pike	Brewster Creek Levee System	Non-Accredited Levee System
Pike	Brown Branch Levee System	Non-Accredited Levee System
Pike	EB Atlas Creek Levee System 1	Non-Accredited Levee System
Pike	EB Atlas Creek Levee System 2	Non-Accredited Levee System
Pike	EB Sny Bend Levee System 1/Sny Bend Trib Levee 2	Non-Accredited Levee System
Pike	EB Sny Bend Levee System 3/EB Sny Levee System 2	Non-Accredited Levee System
Pike	Hadley-McCraney Diversion Ditch Levee	Non-Accredited Levee System
Pike	Hadley-McCraney Diversion Ditch Levee 2	Non-Accredited Levee System
Pike	Hadley-McCraney Diversion Ditch Levee 3	Non-Accredited Levee System
Pike	Hardy Creek Levee System	Non-Accredited Levee System
Pike	NB Twomile Creek Levee	Non-Accredited Levee System
Pike	Pike County Levee 1	Non-Accredited Levee System
Pike	Pike County Levee 3	Non-Accredited Levee System
Pike	Pike County Levee 4	Non-Accredited Levee System
Pike	Sny Bend Trib Levee System 1	Non-Accredited Levee System
Pike	Sny Island LDD - Kinderhook V	Provisionally Accredited Levee (PAL) System
Pike	Sny Island LDD - Pigeon Creek Left Bank	Non-Accredited Levee System
Pike	Sny Island LDD - Pigeon Creek Right Bank	Non-Accredited Levee System
Pike	Sny Island LDD - Pleasant Hill V	Provisionally Accredited Levee (PAL) System
Pike	Sny Island LDD - Reach 2	Provisionally Accredited Levee (PAL) System
Pike	Sny Levee 1	Non-Accredited Levee System
Pike	Sny Levee 2	Non-Accredited Levee System
Pike	Sny Levee 3	Non-Accredited Levee System
Pike	Strip Mine Levees	Non-Accredited Levee System
Pike	Valley City Drainage & Levee District System	Non-Accredited Levee System
Pike	Walnut Creek	Accredited Levee System
Pike	WB Atlas Creek Levee System	Non-Accredited Levee System
Pike	WB Sny Bend Levee System 1/EB Sny Levee System 1	Non-Accredited Levee System
Pike	WB Sny Levee System 1	Non-Accredited Levee System
Pike	WB Sny Levee System 2	Non-Accredited Levee System
Pope	Golconda Levee System	No Regulatory Flood Hazard Information Published by FEMA
Pulaski	City of Mound City Levee	Non-Accredited Levee System
Putnam	Hennepin D&LD	Non-Accredited Levee System
Putnam	Hennepin Levee 1	Non-Accredited Levee System
Randolph	Kaskaskia Island Drainage & Levee District System	Non-Accredited Levee System
Randolph	Prairie du Rocher / Edgar Lake System	Non-Accredited Levee System
Randolph, Ste. Genevieve	Sainte Genevieve Levee System No. 2	Non-Accredited Levee System
Rock Island	Andalusia, IL - East	Non-Accredited Levee System
Rock Island	Andalusia, IL - West	Non-Accredited Levee System
Rock Island	City of East Moline Levee - Segment 1	Provisionally Accredited Levee (PAL) System
Rock Island	Drury DD	Non-Accredited Levee System
Rock Island	Milan, IL - East	Provisionally Accredited Levee (PAL) System

County	Levee Name	FEMA Accreditation Status
Rock Island	Milan, IL - South Slough	Provisionally Accredited Levee (PAL) System
Rock Island	Milan, IL and Big Island RCD	Provisionally Accredited Levee (PAL) System
Rock Island	Rock Island Arsenal Levee	Provisionally Accredited Levee (PAL) System
Rock Island	Rock Island, IL	Provisionally Accredited Levee (PAL) System
Rock Island	Zuma-Canoe Creek Special Service Area	Non-Accredited Levee System
Rock Island, Whiteside	Meredosia D&LD	Provisionally Accredited Levee (PAL) System
Saline	Harrisburg Levee System	Accredited Levee System
Sangamon	Bell, F. Levee	Non-Accredited Levee System
Sangamon	Cessna Levee	Non-Accredited Levee System
Sangamon	Dowdell-Moomey Levee	Non-Accredited Levee System
Sangamon	Doyle-Pottorf Levee No. 1	Non-Accredited Levee System
Sangamon	Halford Levee	Non-Accredited Levee System
Sangamon	Hawk Levee	Non-Accredited Levee System
Sangamon	Hinds-Croniste Levee	Non-Accredited Levee System
Sangamon	McCray Levee	Non-Accredited Levee System
Sangamon	Newcomb-Bullard Levee	Non-Accredited Levee System
Sangamon	Rhodes-Cronister Levee	Non-Accredited Levee System
Sangamon	Sangamon Levee	Non-Accredited Levee System
Sangamon	Schmidgall Levee	Non-Accredited Levee System
Sangamon	Spring Creek Levee	Non-Accredited Levee System
Sangamon	Watson S.P Levee	Non-Accredited Levee System
Schuyler	Big Lake D&LD	Non-Accredited Levee System
Schuyler	Blackburn Levee	Non-Accredited Levee System
Schuyler	Bunchman Levee	Non-Accredited Levee System
Schuyler	Coal Creek D&LD	Accredited Levee System
Schuyler	Crane Creek D&LD	Non-Accredited Levee System
Schuyler	Hale-Volger Levee	Non-Accredited Levee System
Schuyler	Hoffman Levee 2	Non-Accredited Levee System
Schuyler	Irvin-Blackburn Levee	Non-Accredited Levee System
Schuyler	Kelly Lake Drainage and Levee District	Non-Accredited Levee System
Schuyler	King Levee	Non-Accredited Levee System
Schuyler	Lewis-Swanger Levee	Non-Accredited Levee System
Schuyler	Pelton Levee	Non-Accredited Levee System
Schuyler	Peters Levee	Non-Accredited Levee System
Schuyler	Ransom Levee*	Non-Accredited Levee System
Schuyler	Shelts-Rosine Levee	Non-Accredited Levee System
Schuyler	Thomas Levee	Non-Accredited Levee System
Schuyler	Unger Levee	Non-Accredited Levee System
Schuyler	Walker-Rosine Levee	Non-Accredited Levee System
Scott	Big Swan Drainage & Levee District System	Non-Accredited Levee System
Scott	COON RUN D. & L. DIST. Levee LB	Non-Accredited Levee System
Scott	Coon Run Trib 1	Non-Accredited Levee System
Scott	Coon Run Trib 2 _RB_section 2	Non-Accredited Levee System
Scott	Coon Run Trib 2 LB	Non-Accredited Levee System
Scott	Mauvaise Terre Drainage & Levee System	Non-Accredited Levee System
Scott	Robertson Mutual Levee System	Non-Accredited Levee System
Scott	Scott County Stream Levee LB	Non-Accredited Levee System
Scott	Scott County Drainage & Levee District System	Non-Accredited Levee System
Scott	Walnut Creek Levee System	Non-Accredited Levee System
St. Clair	Blue Waters Pump Station	Non-Accredited Levee System

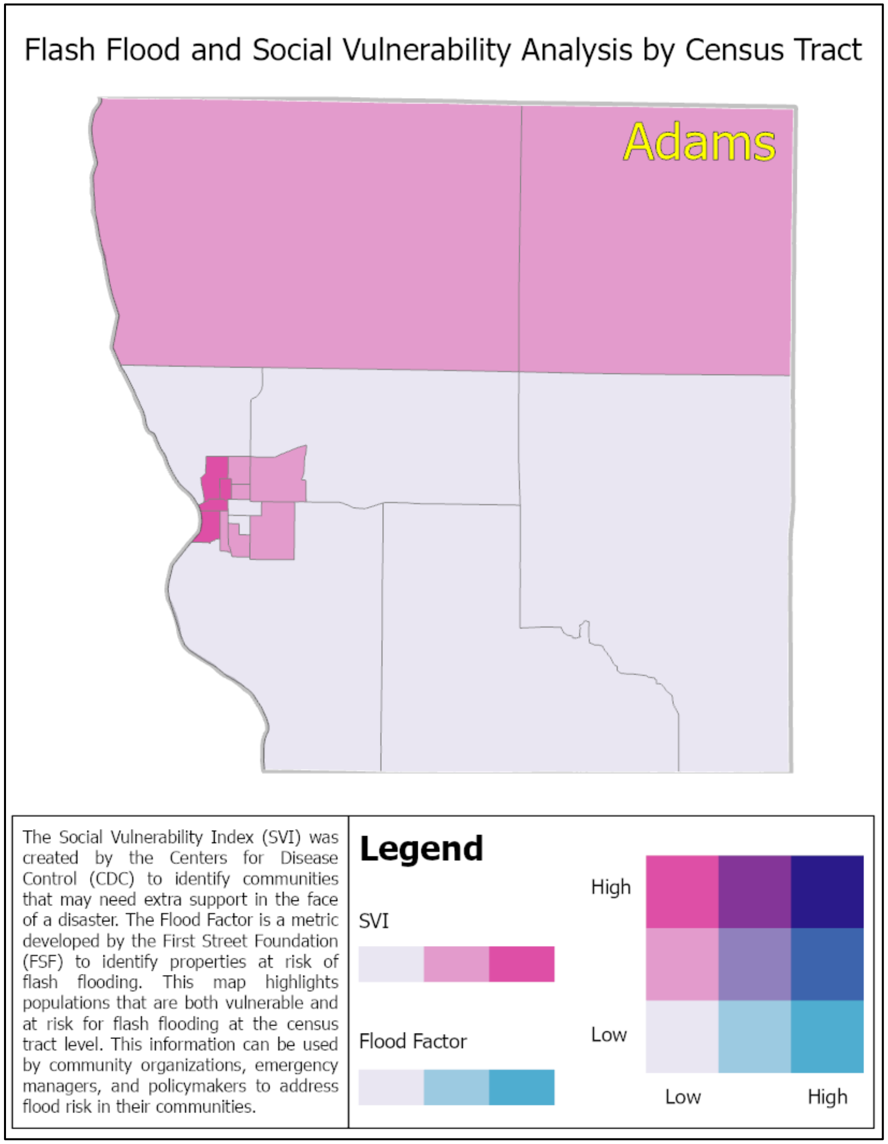
County	Levee Name	FEMA Accreditation Status
St. Clair	Blue Waters Pump Station #1	Non-Accredited Levee System
St. Clair	Blue Waters Pump Station #2	Non-Accredited Levee System
St. Clair	Blue Waters Pump Station #3	Non-Accredited Levee System
St. Clair	Cahokia Channel Unnamed Levee Segment #1	Non-Accredited Levee System
St. Clair	Cahokia Channel Unnamed Levee Segment #2	Non-Accredited Levee System
St. Clair	Cahokia Channel Unnamed Levee Segment #4	Non-Accredited Levee System
St. Clair	Metro East Sanitary District #2	Non-Accredited Levee System
St. Clair	Metro East Sanitary District #3	Non-Accredited Levee System
St. Clair	Metro East Sanitary District 4	Accredited Levee System
St. Clair	Metro East Sanitary District 5	Accredited Levee System
St. Clair	St. Clair County Unnamed Levee Segment #1	Non-Accredited Levee System
St. Clair	St. Clair County Unnamed Levee Segment #2	Non-Accredited Levee System
St. Clair	St. Clair Unincorporated Levee 1	Non-Accredited Levee System
St. Clair	St. Clair Unincorporated Levee 2	Non-Accredited Levee System
St. Clair	St. Clair Unincorporated Levee 3	Non-Accredited Levee System
St. Clair	Village of New Athens System	Accredited Levee System
St. Clair	Village of New Athens_St. Clair	Non-Accredited Levee System
Stark	Don Morrisey	Non-Accredited Levee System
Stephenson	Currier Creek Levee	Non-Accredited Levee System
Stephenson	Stephenson Levee 1	Non-Accredited Levee System
Stephenson	Stephenson Levee 2	Non-Accredited Levee System
Stephenson	Stephenson Levee 3	Non-Accredited Levee System
Stephenson	Stephenson Levee 4	Non-Accredited Levee System
Stephenson	Stephenson Levee 5	Non-Accredited Levee System
Stephenson	Stephenson Levee 6	Non-Accredited Levee System
Stephenson	Stephenson Levee 7	Non-Accredited Levee System
Tazewell	Billmeyer-Connell-Springer Levee	Non-Accredited Levee System
Tazewell	Bolliger-Franks Levee	Non-Accredited Levee System
Tazewell	Carrier Levee*	Non-Accredited Levee System
Tazewell	Cassell Levee	Non-Accredited Levee System
Tazewell	Cincinnati D&LD	Non-Accredited Levee System
Tazewell	Connell, A. Levee	Non-Accredited Levee System
Tazewell	Cullinan, R.A. Levee*	Non-Accredited Levee System
Tazewell	E. FRANKS NO.1 LEVEE	Non-Accredited Levee System
Tazewell	East Peoria Sanitary District 4	Provisionally Accredited Levee (PAL) System
Tazewell	EPD&LD and EPSD - Farm Creek LB / Cole Creek LB	Provisionally Accredited Levee (PAL) System
Tazewell	EPSD - Farm Creek LB / Dempsey Creek LB / Kerfoot Creek RB	Provisionally Accredited Levee (PAL) System
Tazewell	EPSD - Farm Creek LB / Dempsey Creek RB	Provisionally Accredited Levee (PAL) System
Tazewell	EPSD - Farm Creek LB / Kerfoot Creek LB / Cole Creek RB	Provisionally Accredited Levee (PAL) System
Tazewell	EPSD - Farm Creek RB / Overflow Channel LB	Non-Accredited Levee System
Tazewell	EPSD - Farm Creek RB / Overflow Channel RB	Provisionally Accredited Levee (PAL) System
Tazewell	Franks, C. Levee	Non-Accredited Levee System
Tazewell	GOEKEN-GARMAN LEVEE	Non-Accredited Levee System
Tazewell	Hanes Levee	Non-Accredited Levee System
Tazewell	Hild Levee	Non-Accredited Levee System
Tazewell	Hinman-Bouris Levee	Non-Accredited Levee System
Tazewell	Hoffman Levee 1	Non-Accredited Levee System
Tazewell	Hymbaugh, W. No.1 Levee	Non-Accredited Levee System
Tazewell	Hymbaugh, W. No.2 Levee	Non-Accredited Levee System
Tazewell	Ingram Levee	Non-Accredited Levee System

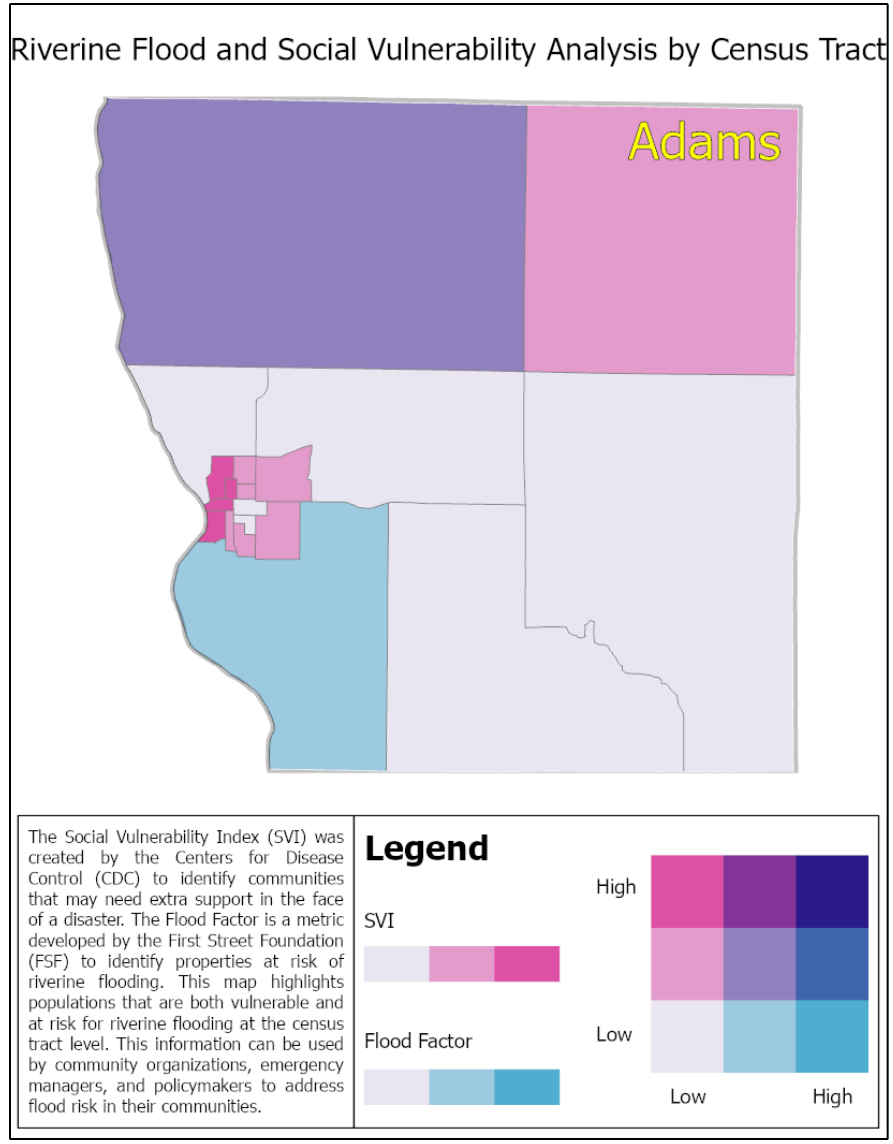
County	Levee Name	FEMA Accreditation Status
Tazewell	Iungerich No. 1 - Fisher Levee	Non-Accredited Levee System
Tazewell	Iungerich No. 2 Levee	Non-Accredited Levee System
Tazewell	Iungerich No. 3-Fluegel Levee	Non-Accredited Levee System
Tazewell	Judy-Dunham-Oedewaldt-Johnson-Lay Levee	Non-Accredited Levee System
Tazewell	Kahler-Dixon Levee	Non-Accredited Levee System
Tazewell	Littlefield Levee*	Non-Accredited Levee System
Tazewell	Mackinaw River L&DD No. 1	Non-Accredited Levee System
Tazewell	Maurer-Woodrow Levee	Non-Accredited Levee System
Tazewell	McMullen- Beebe-Twohig Lower Levee	Non-Accredited Levee System
Tazewell	McMullen- Beebe-Twohig Middle Levee	Non-Accredited Levee System
Tazewell	McMullen- Beebe-Twohig Upper Levee	Non-Accredited Levee System
Tazewell	Meyer Levee*	Non-Accredited Levee System
Tazewell	Moorehead Levee	Non-Accredited Levee System
Tazewell	Morris, A. Levee	Non-Accredited Levee System
Tazewell	Morris, D. Levee*	Non-Accredited Levee System
Tazewell	Morris-Winkler-Cullinan Levee	Non-Accredited Levee System
Tazewell	Mura Levee	Non-Accredited Levee System
Tazewell	Murphy Levee	Non-Accredited Levee System
Tazewell	Murphy Levee 2	Non-Accredited Levee System
Tazewell	Murphy Vawter Levee	Non-Accredited Levee System
Tazewell	Proehl, Velde, Goldsmith, Horn and Garman Levee	Non-Accredited Levee System
Tazewell	Rocky Ford Drainage and Levee District	Non-Accredited Levee System
Tazewell	Scully, J. Levee*	Non-Accredited Levee System
Tazewell	Speece Levee	Non-Accredited Levee System
Tazewell	Spring Lake D&LD	Provisionally Accredited Levee (PAL) System
Tazewell	Stout Levee	Non-Accredited Levee System
Tazewell	Stout-Lipkin Levee	Non-Accredited Levee System
Tazewell	Stowell-Haning Levee	Non-Accredited Levee System
Tazewell	Tazewell Levee 10	Non-Accredited Levee System
Tazewell	Tazewell Levee 11	Non-Accredited Levee System
Tazewell	Tazewell Levee 12	Non-Accredited Levee System
Tazewell	Tazewell Levee 3	Non-Accredited Levee System
Tazewell	Tazewell Levee 4	Non-Accredited Levee System
Tazewell	Tazewell Levee 5	Non-Accredited Levee System
Tazewell	Tazewell Levee 6	Non-Accredited Levee System
Tazewell	Tazewell Levee 8	Non-Accredited Levee System
Tazewell	Tazewell Levee 9	Non-Accredited Levee System
Tazewell	Trimble Levee*	Non-Accredited Levee System
Tazewell	Tyrrell No. 1 Levee	Non-Accredited Levee System
Tazewell	Tyrrell No. 2 Levee	Non-Accredited Levee System
Tazewell	Village of North Pekin Levee 96-05-193P	Accredited Levee System
Tazewell	Warner, F.J. Levee*	Non-Accredited Levee System
Tazewell	Weishaupt Levee	Non-Accredited Levee System
Union	Clear Creek Levee & Drainage District #2	Non-Accredited Levee System
Vermilion	Danville Sanitary District Levee	Accredited Levee System
Vermilion	Danville Sanitary District Levee 2	Non-Accredited Levee System
Wabash	Mount Carmel Levee System	Provisionally Accredited Levee (PAL) System
Wabash	Rochester-McCleary's Bluff Levee	Non-Accredited Levee System
Wabash	Rochester-McCleary's Bluff Levee System	Non-Accredited Levee System
Wabash	Wabash Unincorporated Levee	Non-Accredited Levee System

County	Levee Name	FEMA Accreditation Status
Wabash	Wabash Unincorporated Levee 2	Non-Accredited Levee System
Wabash	Wabash Unincorporated Levee 3	Non-Accredited Levee System
Wabash	Wabash Unincorporated Levee 5	Non-Accredited Levee System
Wayne	Dry Fork Drainage Ditch Levee/Skillet Fork Drainage Ditch Levee	Non-Accredited Levee System
Wayne	Fish Slough Creek Levee	Non-Accredited Levee System
Wayne	Fish Slough Creek Levee 2	Non-Accredited Levee System
Wayne	Fish Slough Creek Levee 2/ Skillet Fork Drainage Ditch Levee	Non-Accredited Levee System
Wayne	Fish Slough Creek Levee 3	Non-Accredited Levee System
White	White County Unicorporated Levee	Non-Accredited Levee System
White	White County Unicorporated Levee 2	Non-Accredited Levee System
Whiteside	Anderson Weaver-Erie Township Levee	Non-Accredited Levee System
Whiteside	Charles Brown Levee	Non-Accredited Levee System
Whiteside	Creamery Road	Non-Accredited Levee System
Whiteside	Fulton FCD	Accredited Levee System
Whiteside	Fulton LFPP	Accredited Levee System
Whiteside	Morrison City Park & Golf Course Levee	Non-Accredited Levee System
Whiteside	Paul Young Levee	Non-Accredited Levee System
Whiteside	Rock Creek Levee, Whiteside	Non-Accredited Levee System
Will	Isle a la Cache	Accredited Levee System
Winnebago	Rockford, IL - Alpine Dam	Non-Accredited Levee System
Winnebago	Rockford, IL - Kent Creek - Leving's Lake Dam	Non-Accredited Levee System
Winnebago	Rockford, IL - Kent Creek North Branch - Page Park Dam	Non-Accredited Levee System
Woodford	Burhans Levee	Non-Accredited Levee System
Woodford	Hartter Levee	Non-Accredited Levee System
Woodford	Herman Drainage District Levee	Non-Accredited Levee System

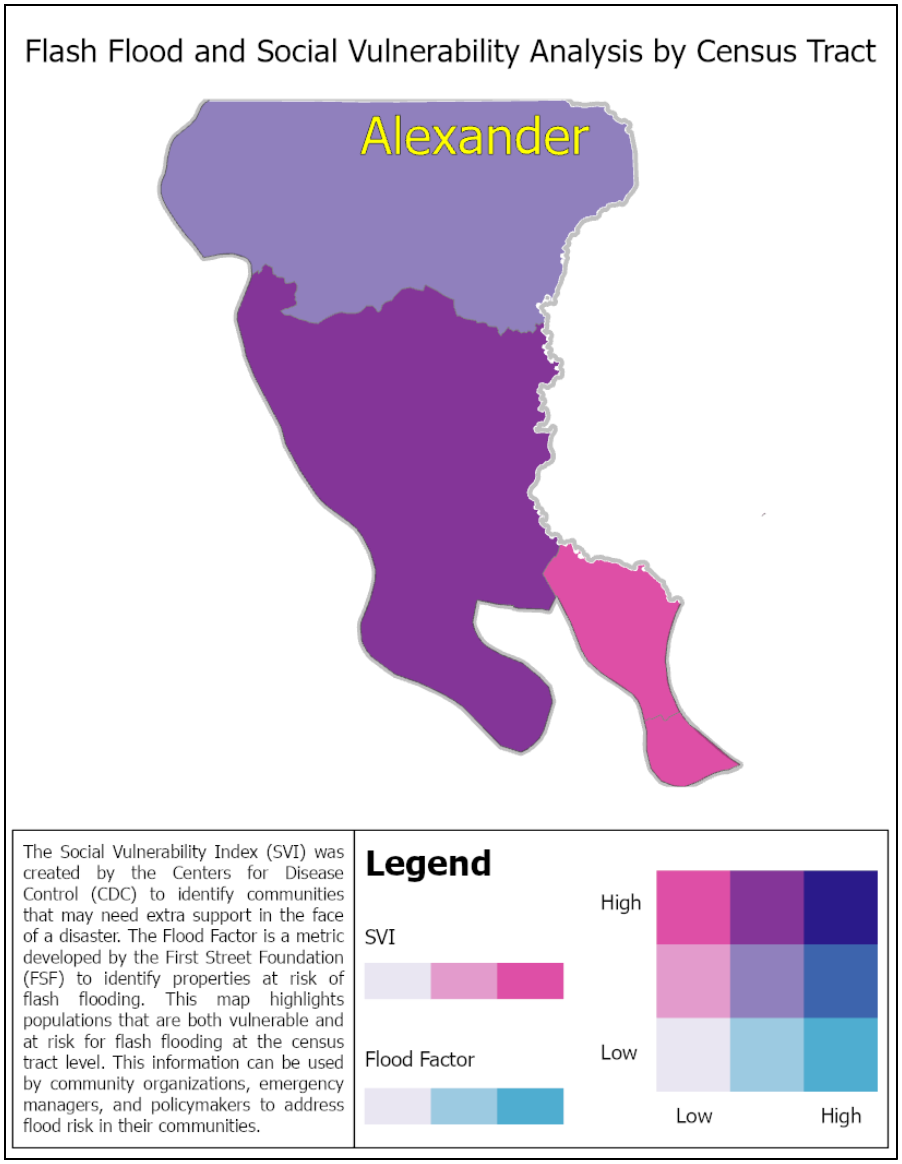
Appendix 2.5 Flash and Riverine Flooding SVI Analysis

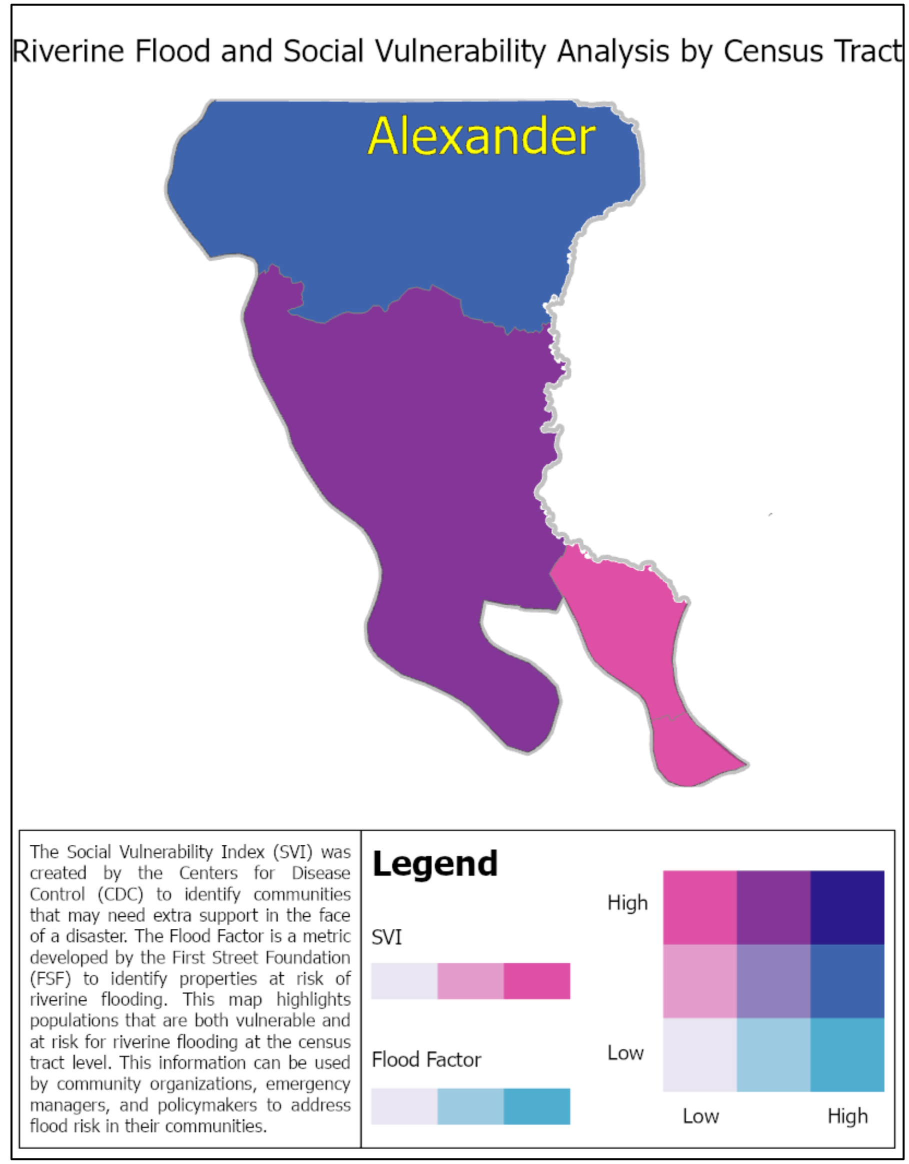
Adams County



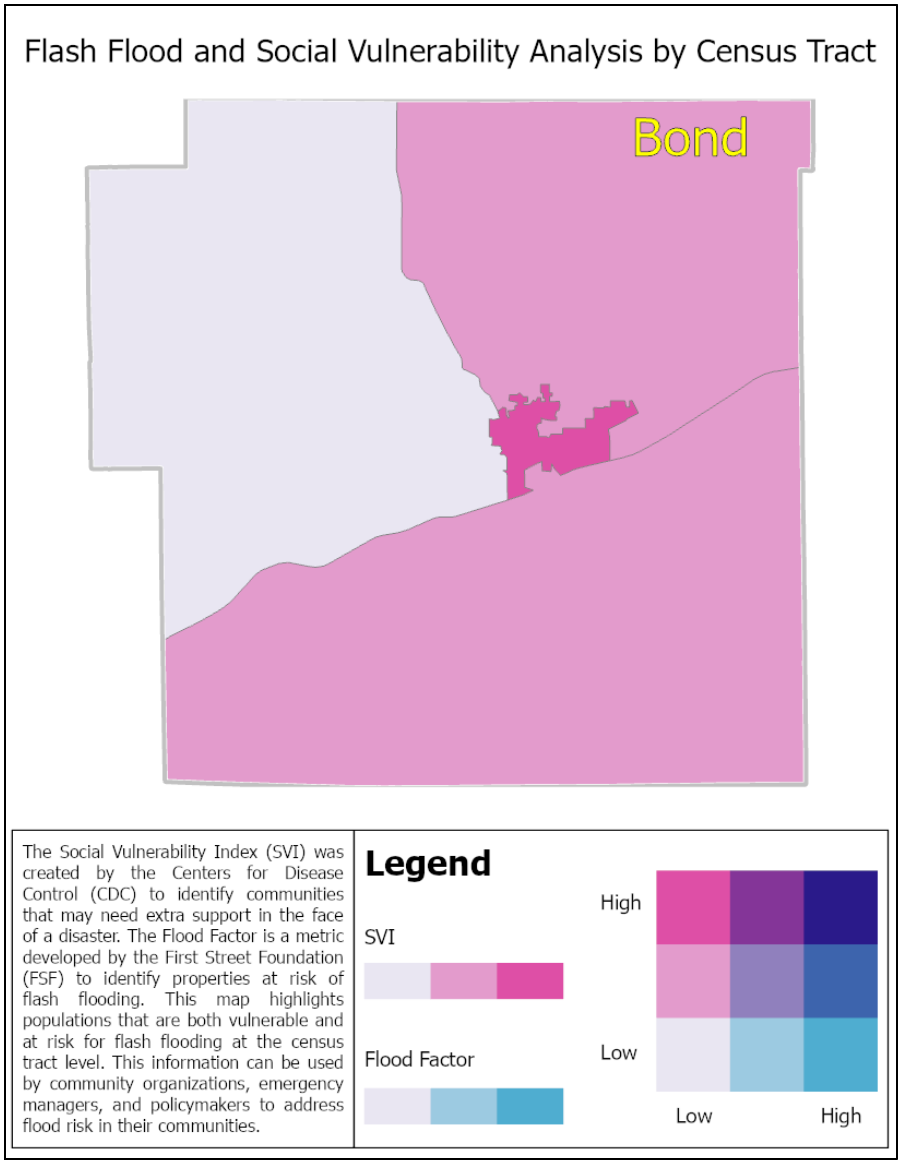


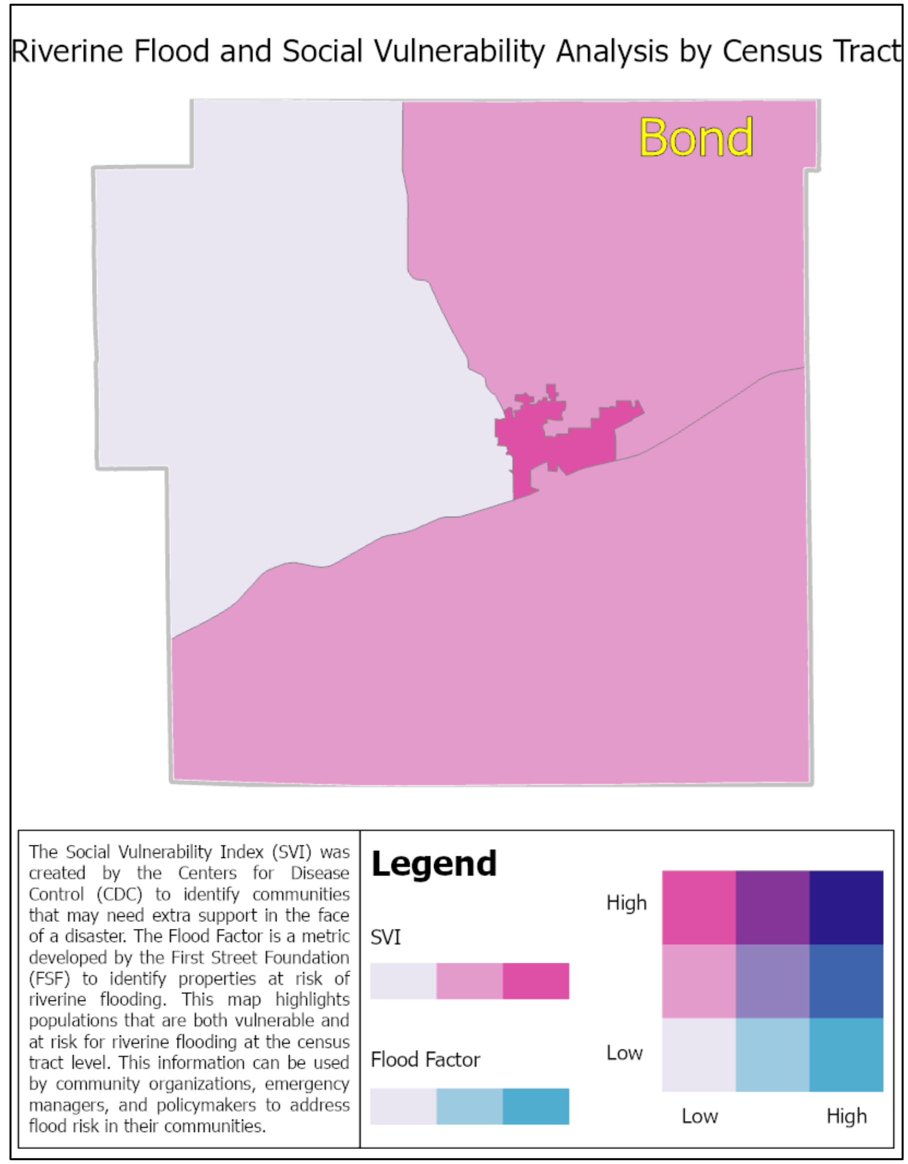
Alexander County





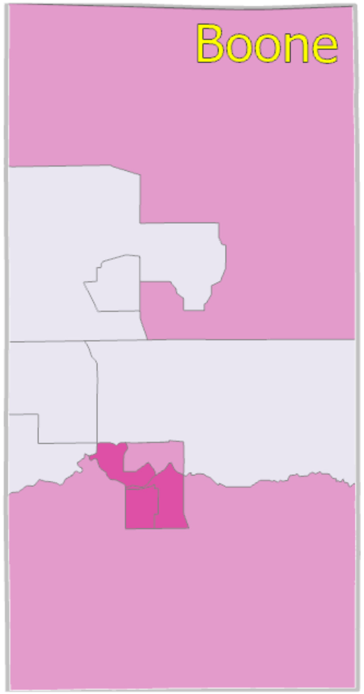
Bond County


Flash Flood and Social Vulnerability Analysis by Census Tract
Bond
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High


Riverine Flood and Social Vulnerability Analysis by Census Tract
Bond
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

Boone County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

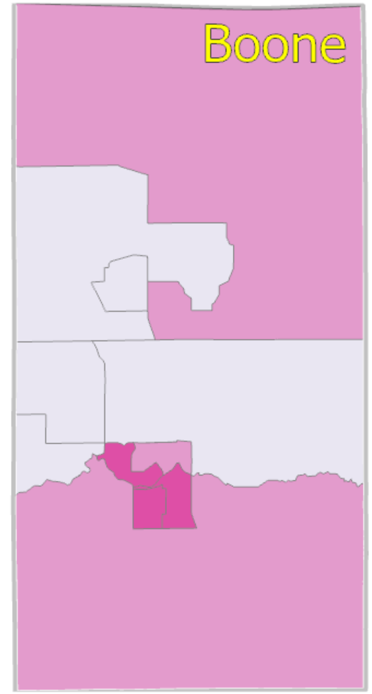
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

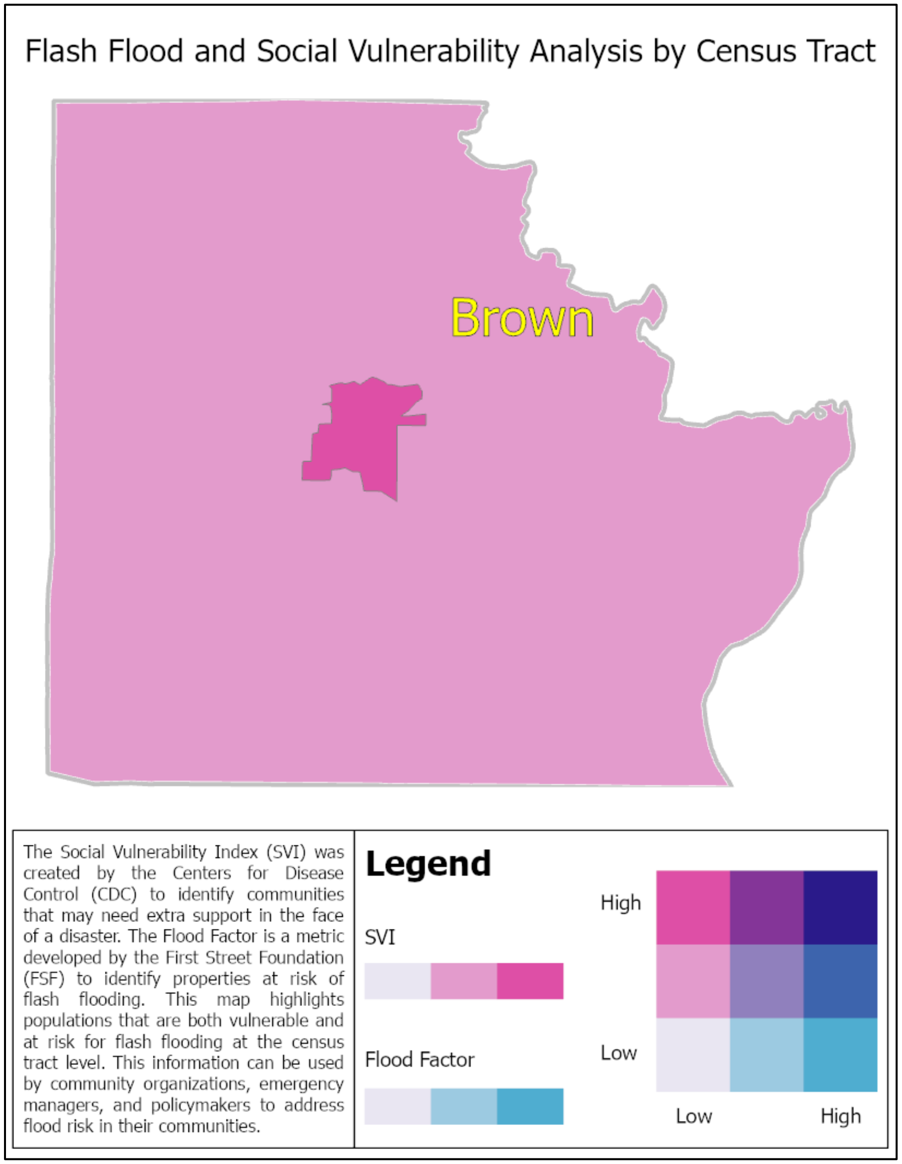
Flood Factor

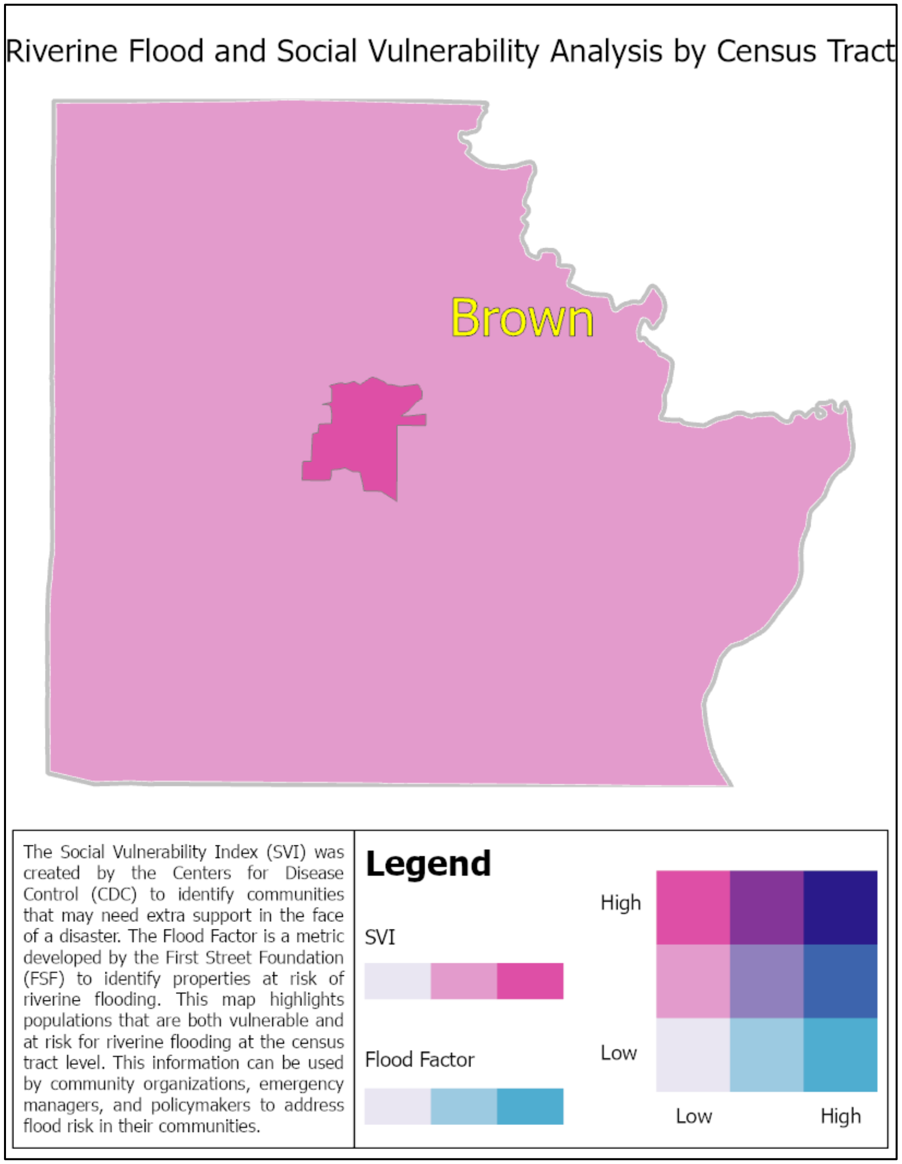
High

Low

Low High

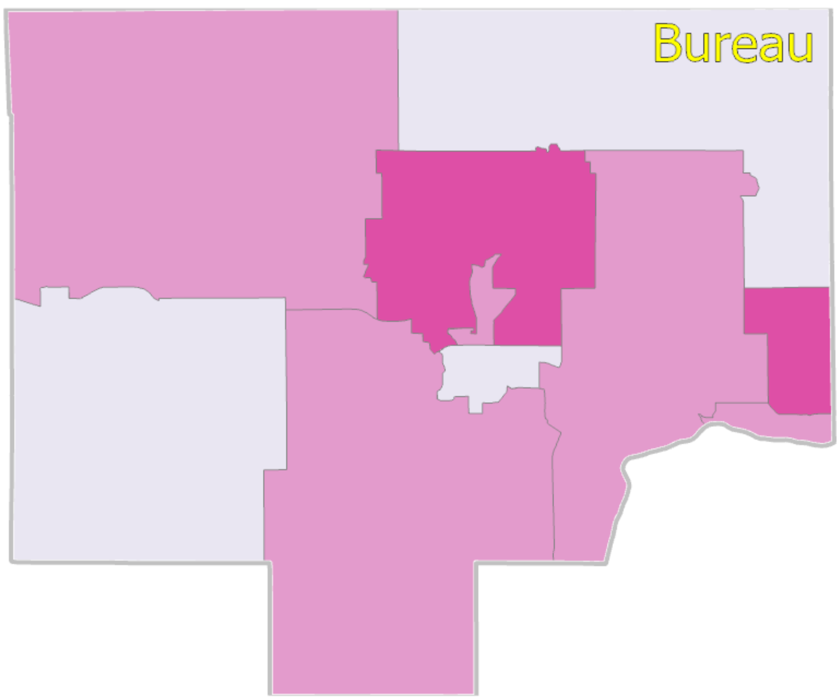
Brown County



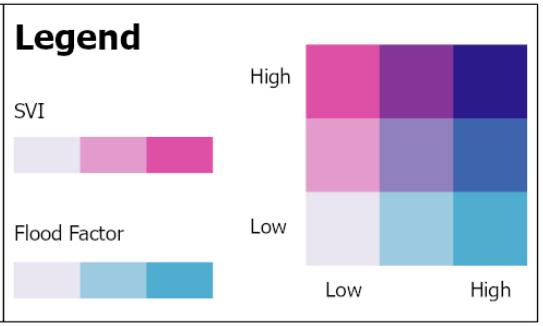


Bureau County

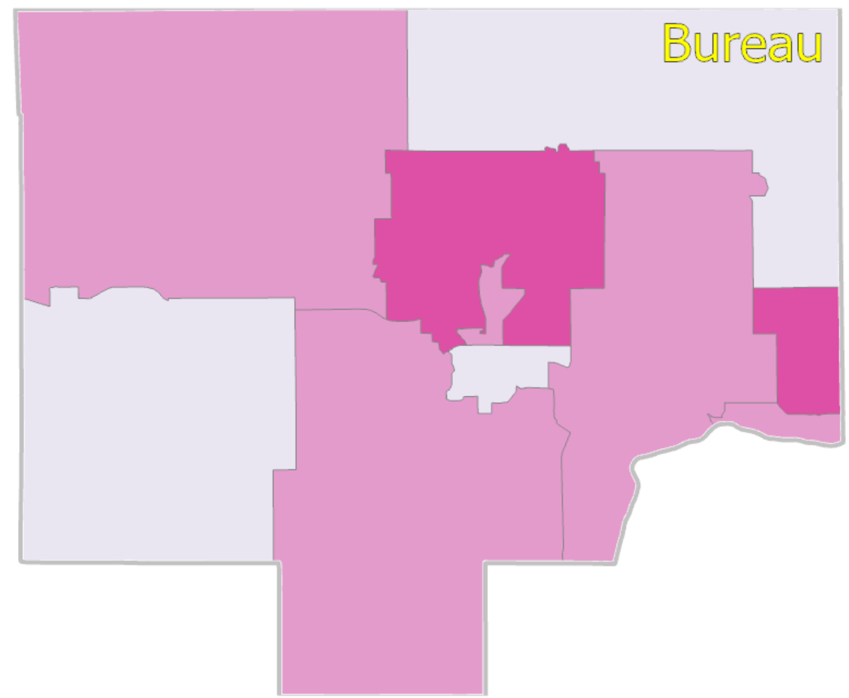
Flash Flood and Social Vulnerability Analysis by Census Tract



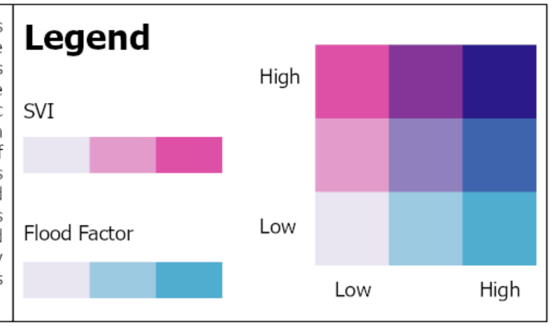
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

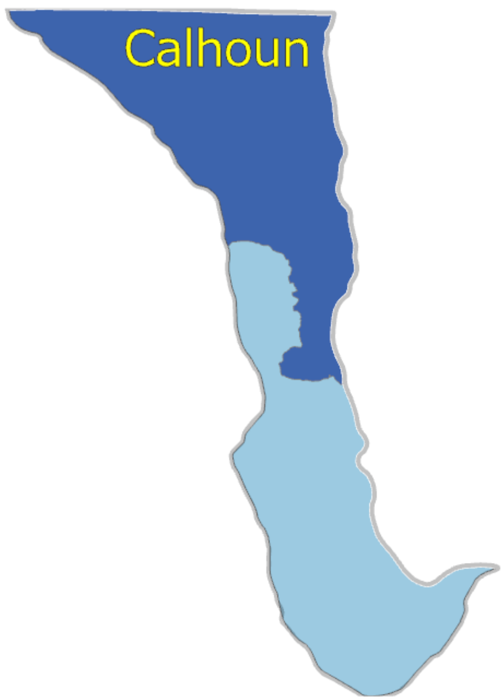


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

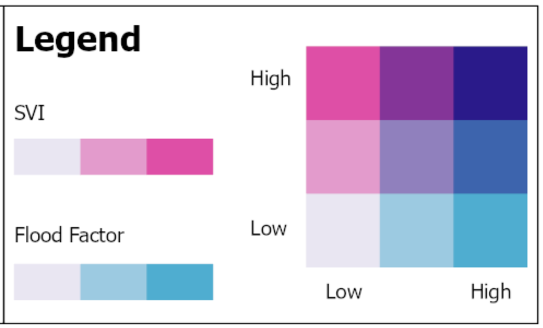


Calhoun County

Flash Flood and Social Vulnerability Analysis by Census Tract

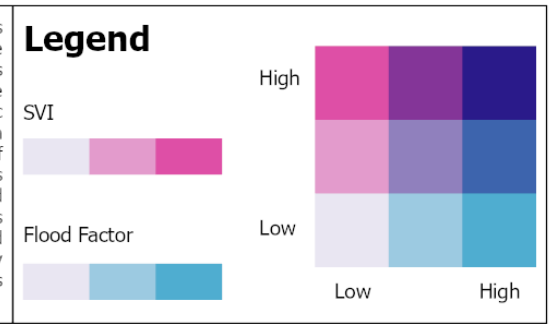


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



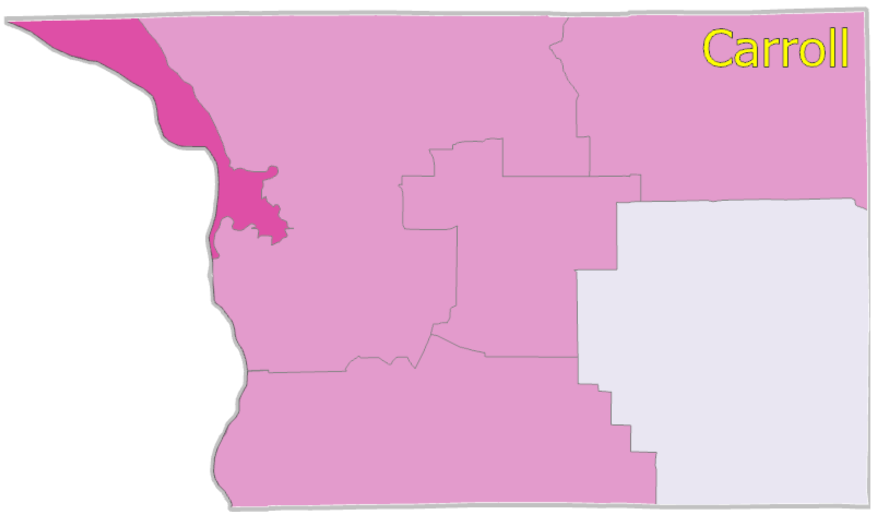
Riverine Flood and Social Vulnerability Analysis by Census Tract

The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Carroll County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

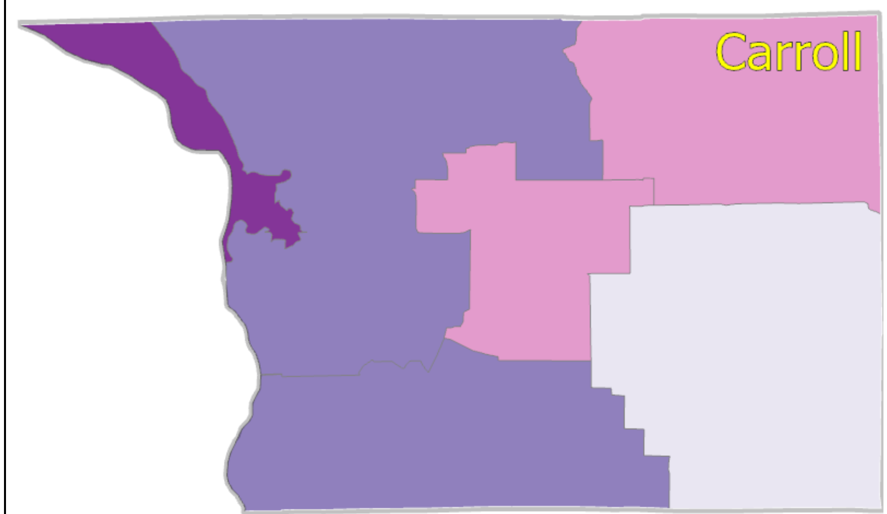
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

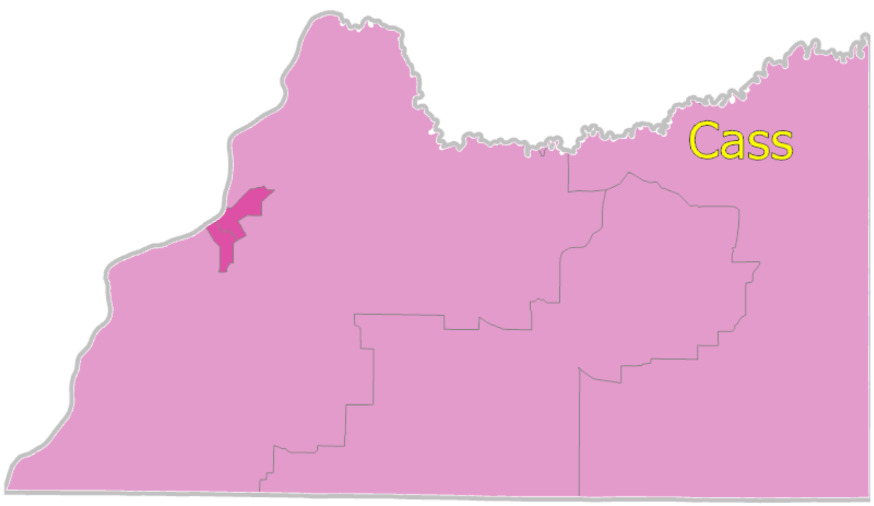
High

Low

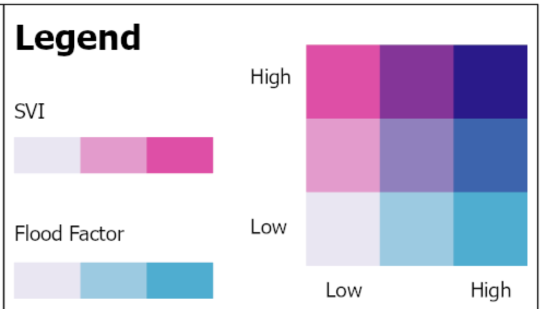
Low High

Cass County

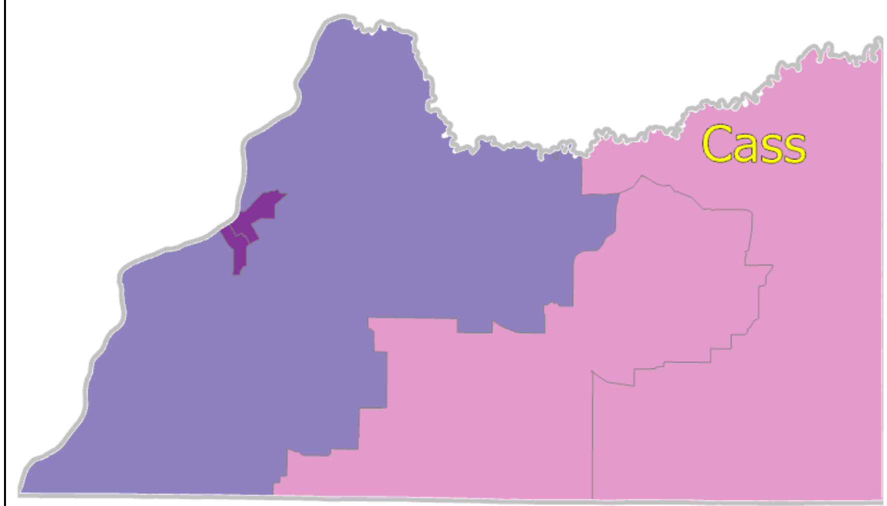
Flash Flood and Social Vulnerability Analysis by Census Tract



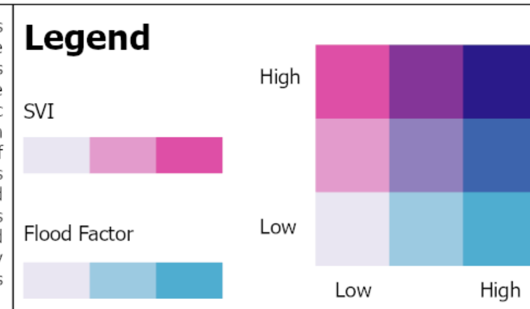
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

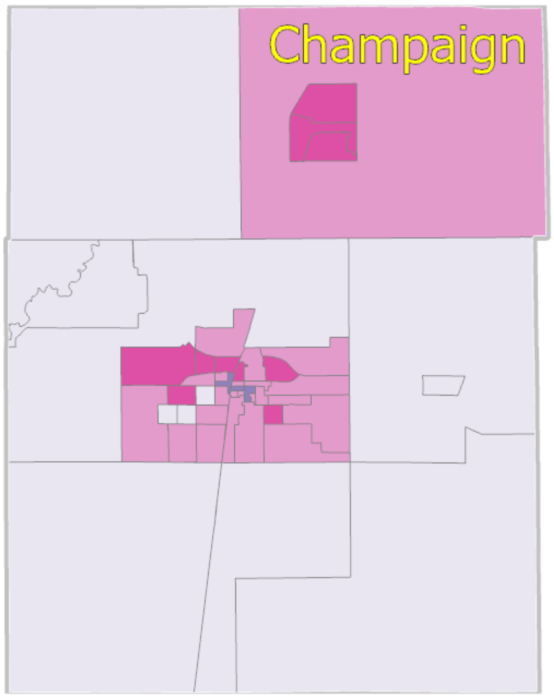


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

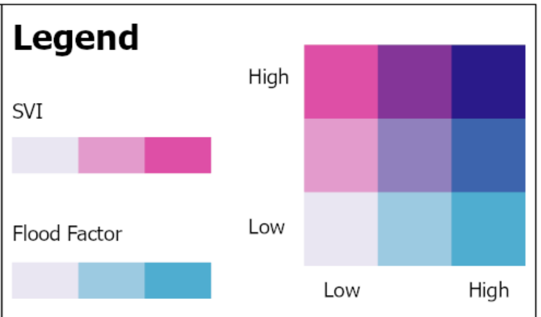


Champaign County

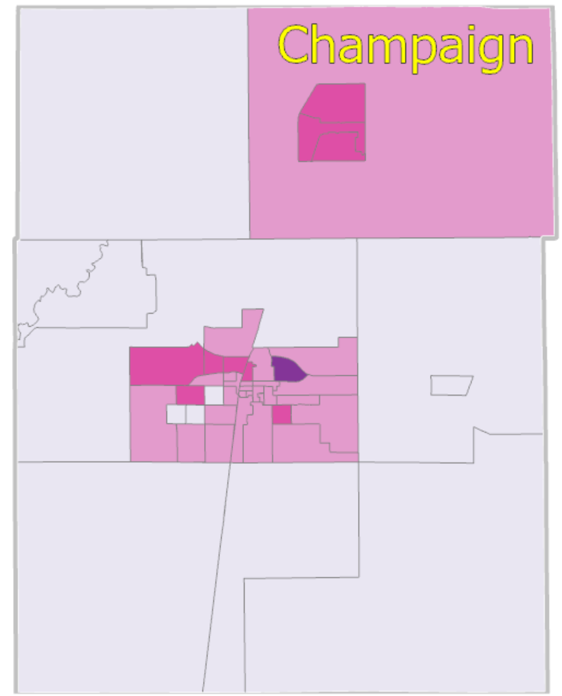
Flash Flood and Social Vulnerability Analysis by Census Tract



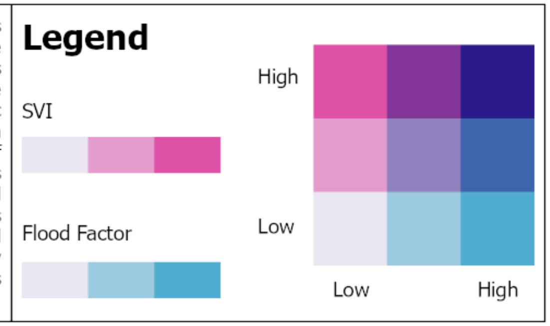
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



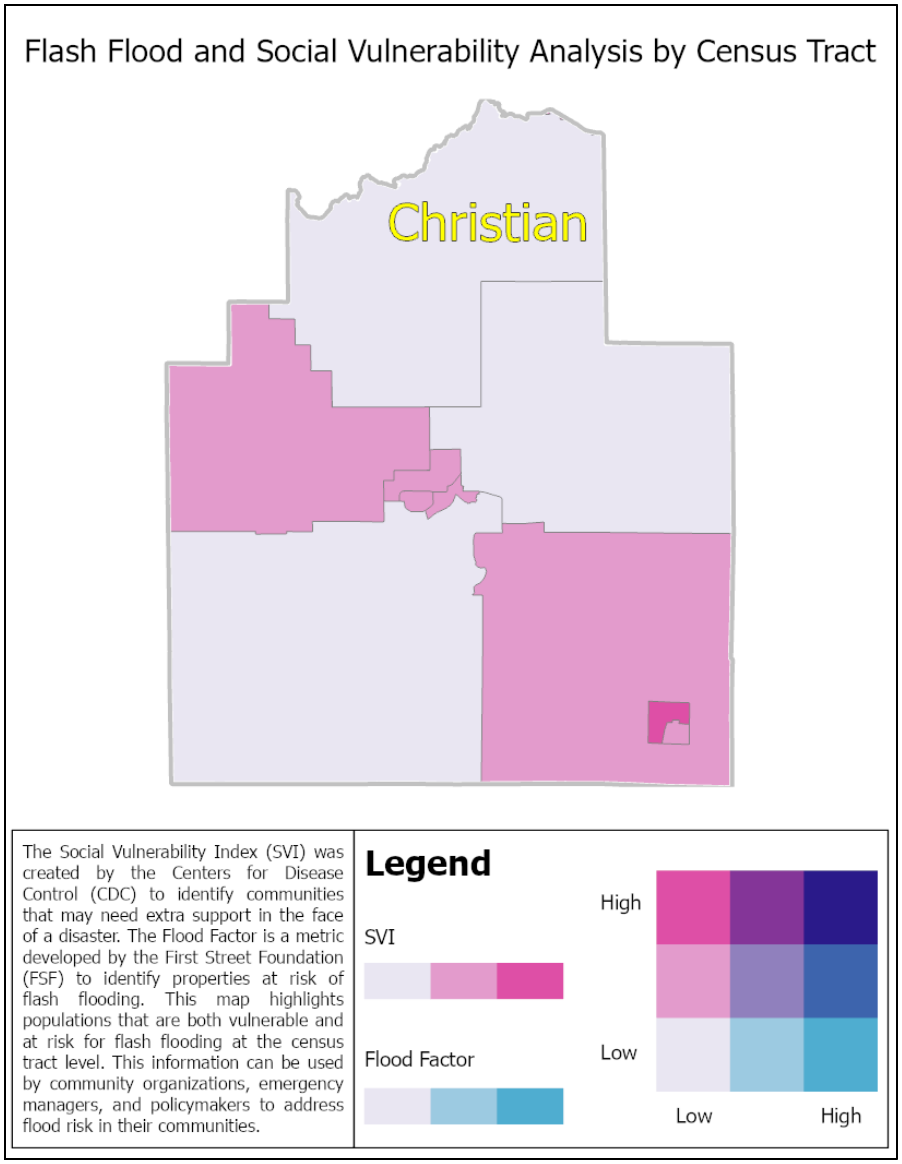
Riverine Flood and Social Vulnerability Analysis by Census Tract

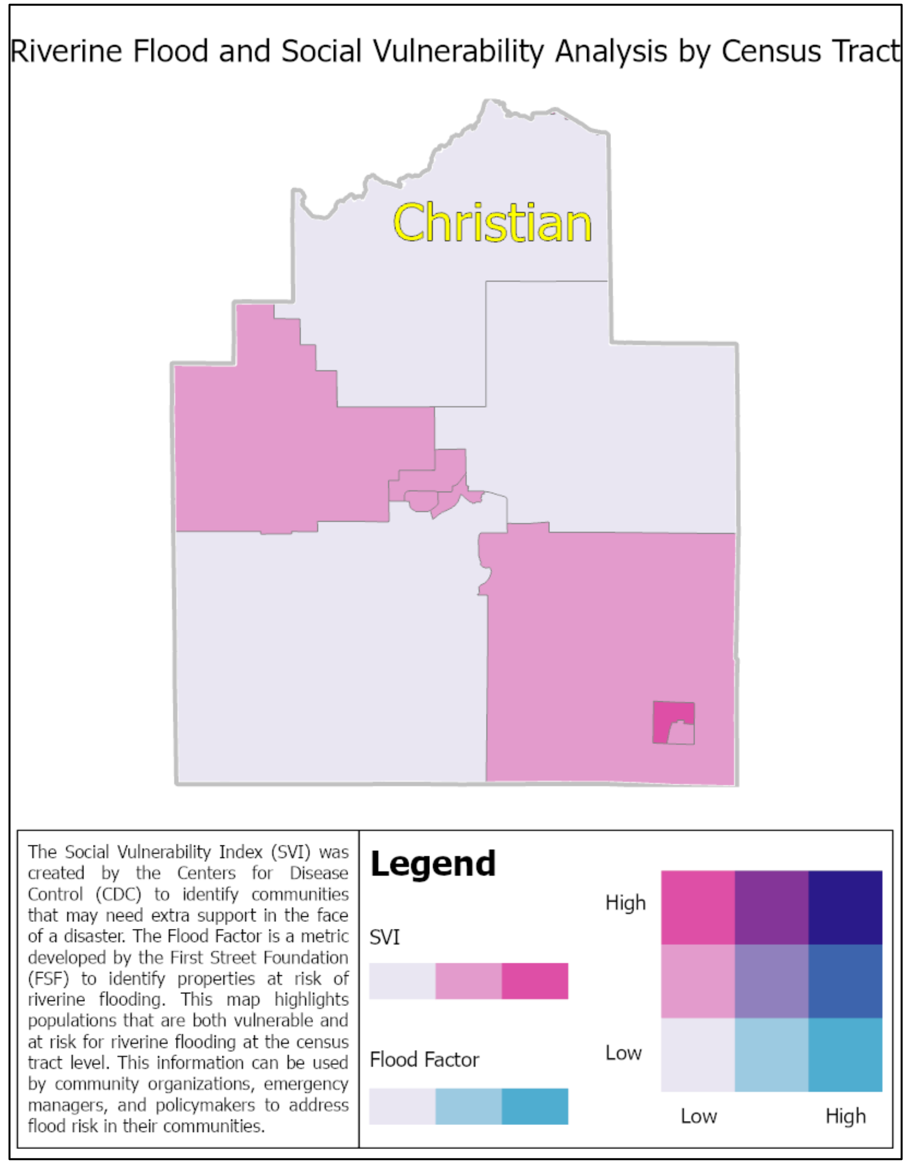


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



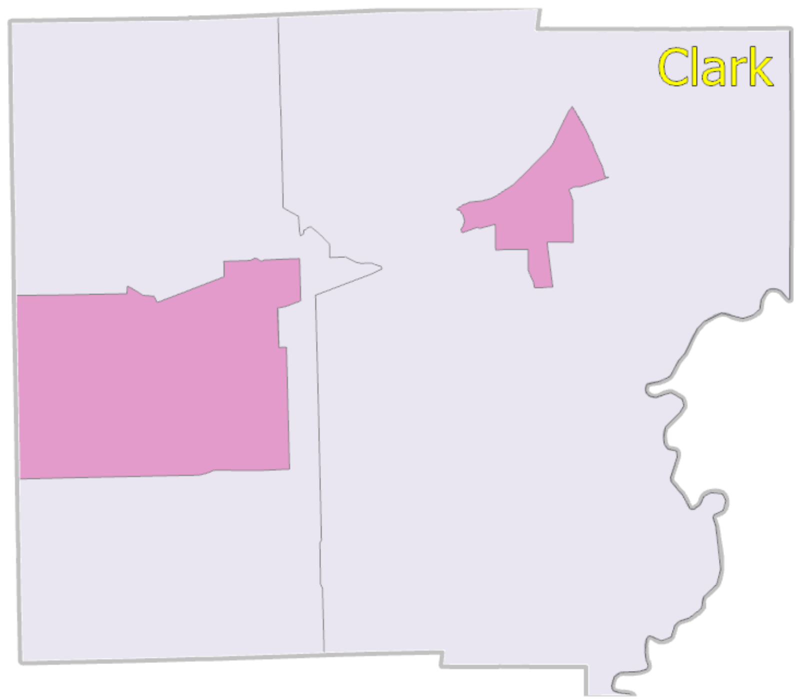
Christian County



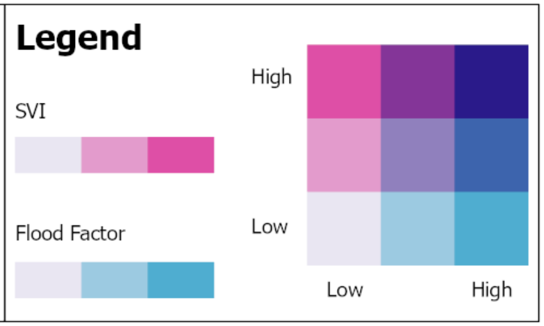


Clark County

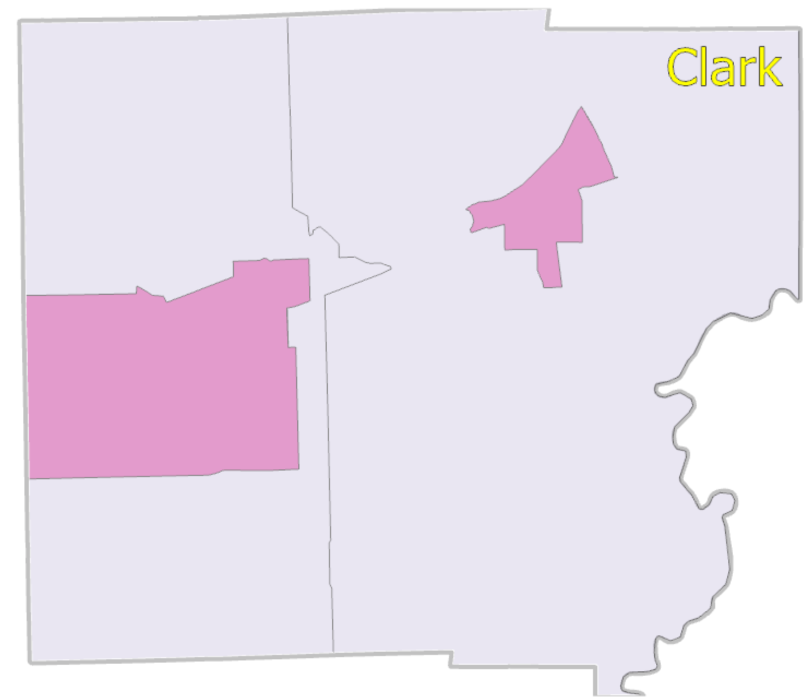
Flash Flood and Social Vulnerability Analysis by Census Tract



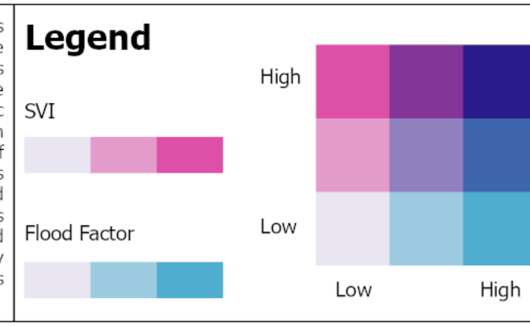
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

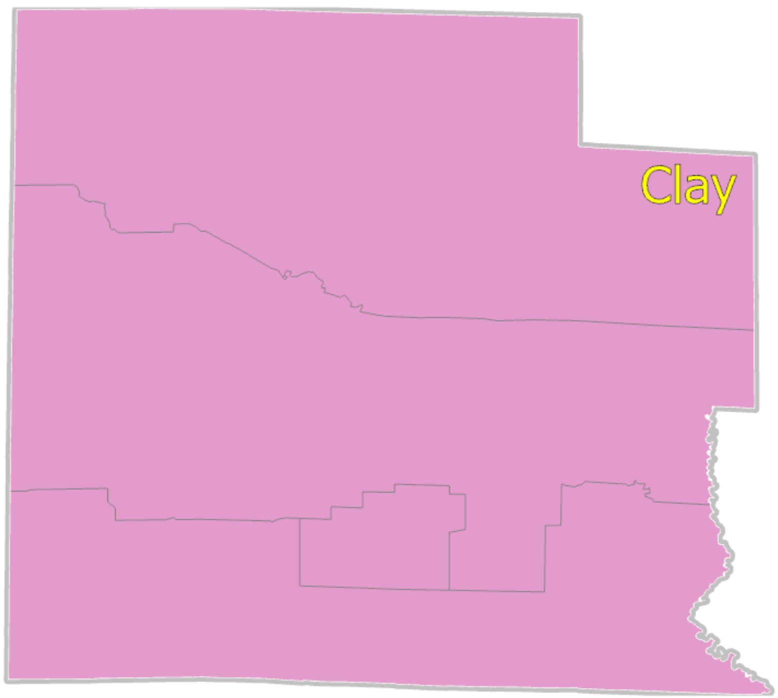


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

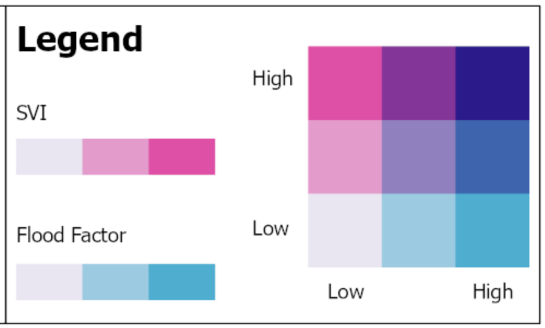


Clay County

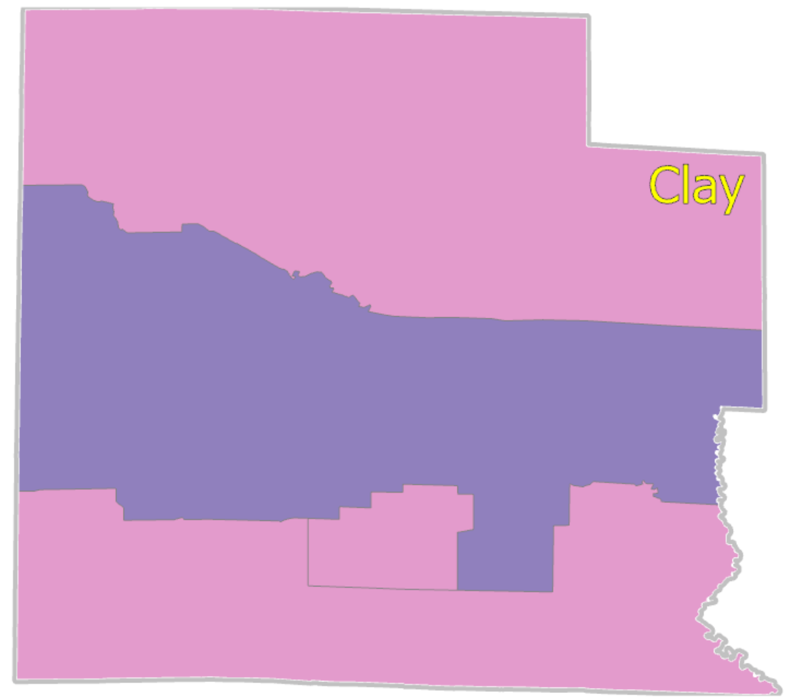
Flash Flood and Social Vulnerability Analysis by Census Tract



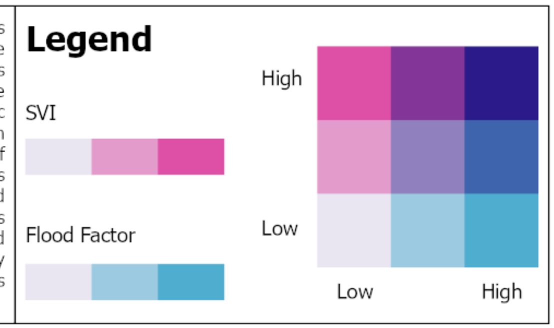
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



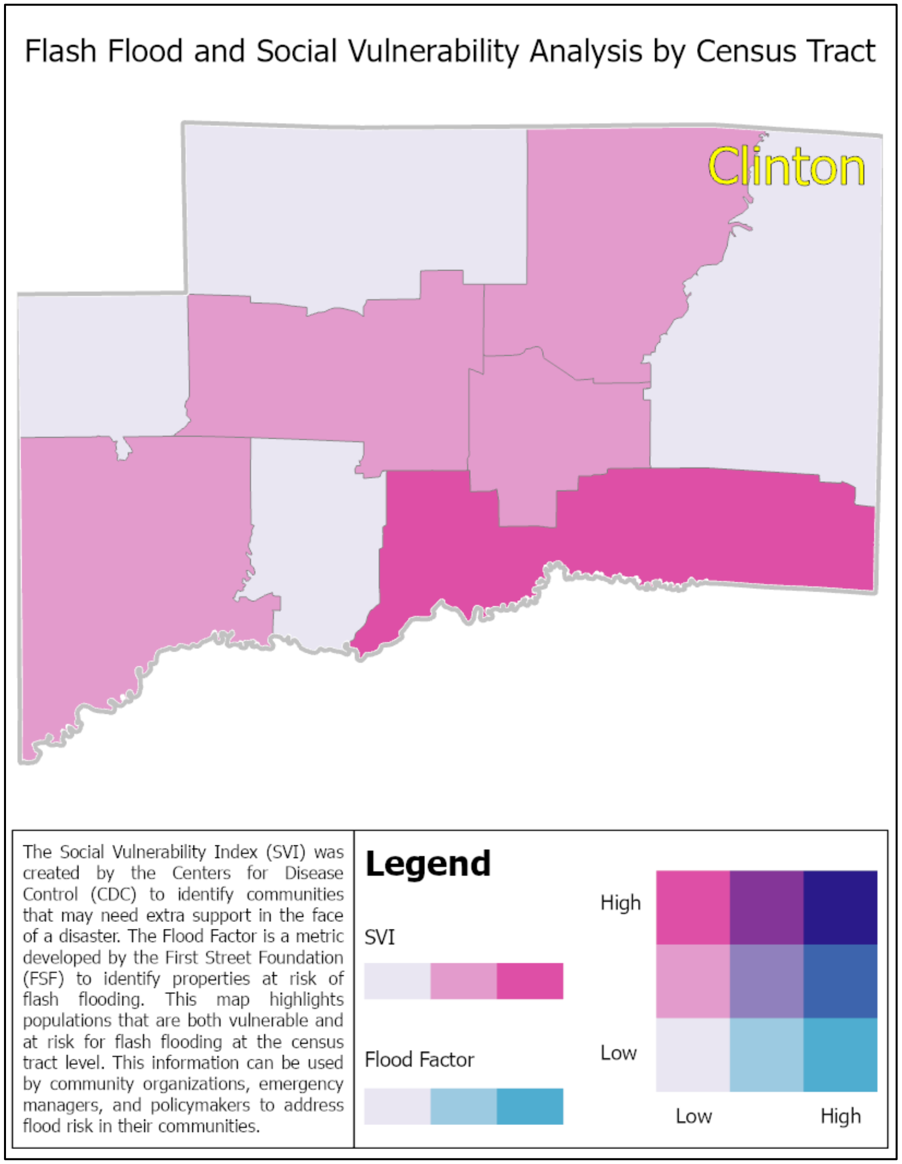
Riverine Flood and Social Vulnerability Analysis by Census Tract

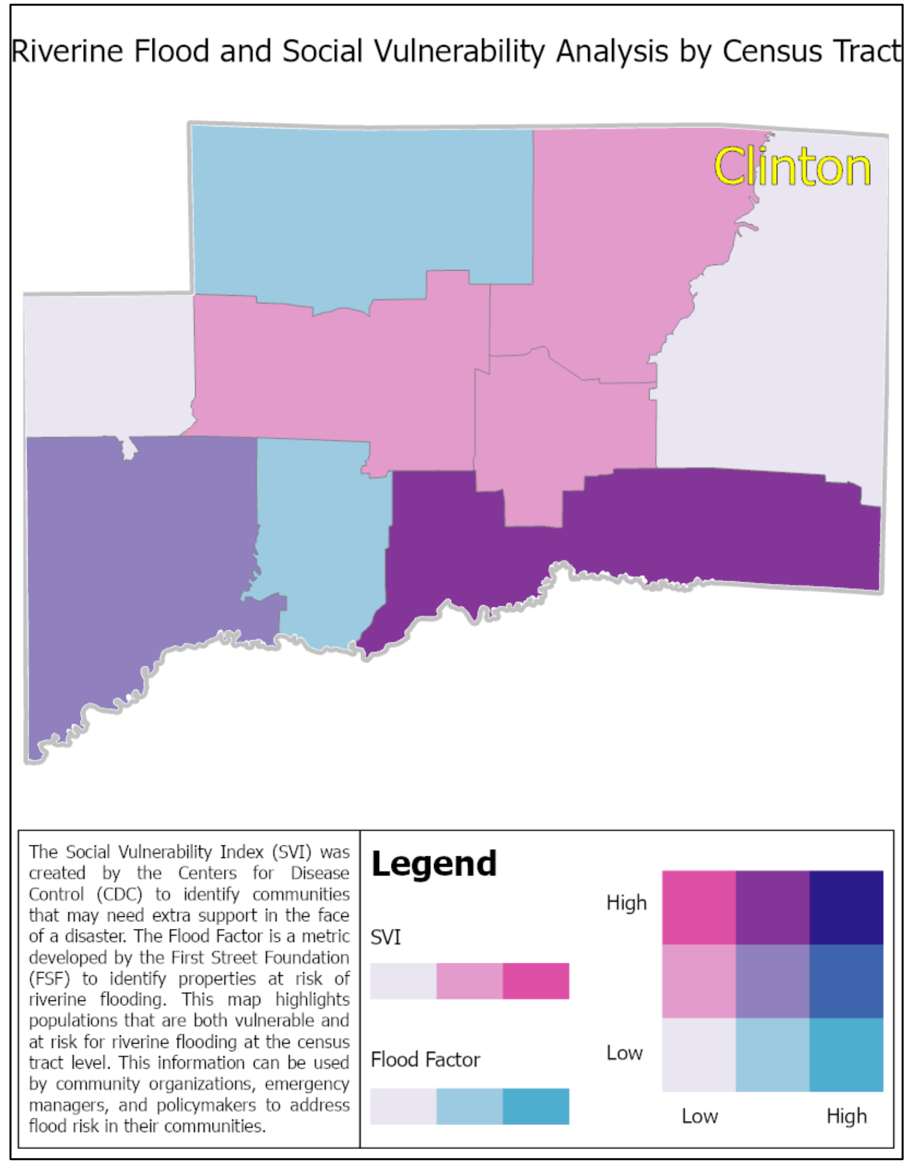


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



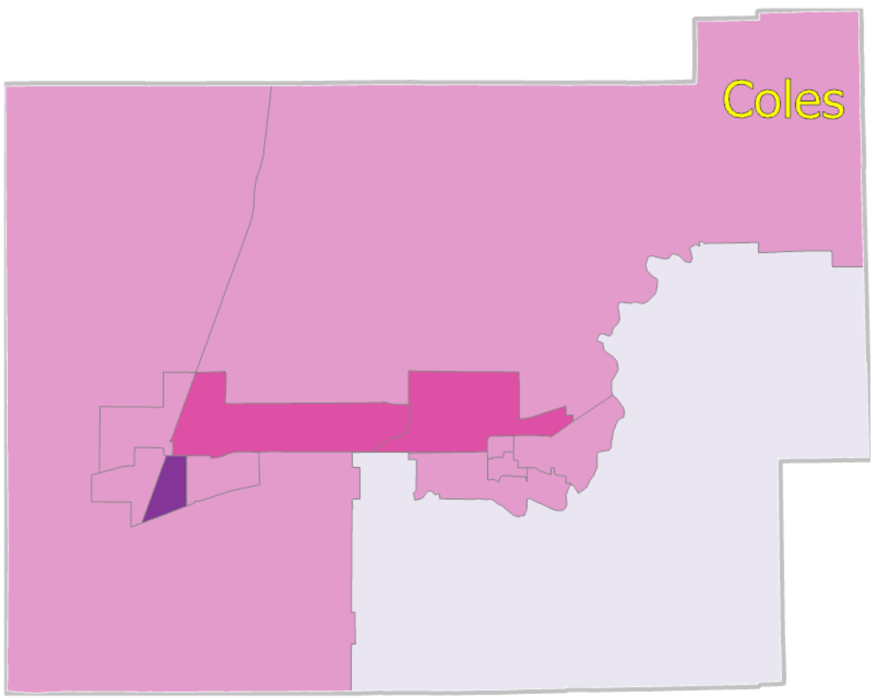
Clinton County



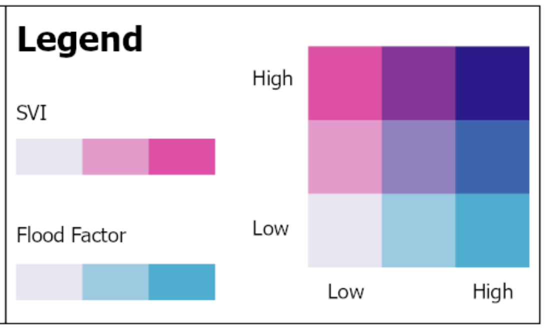


Coles County

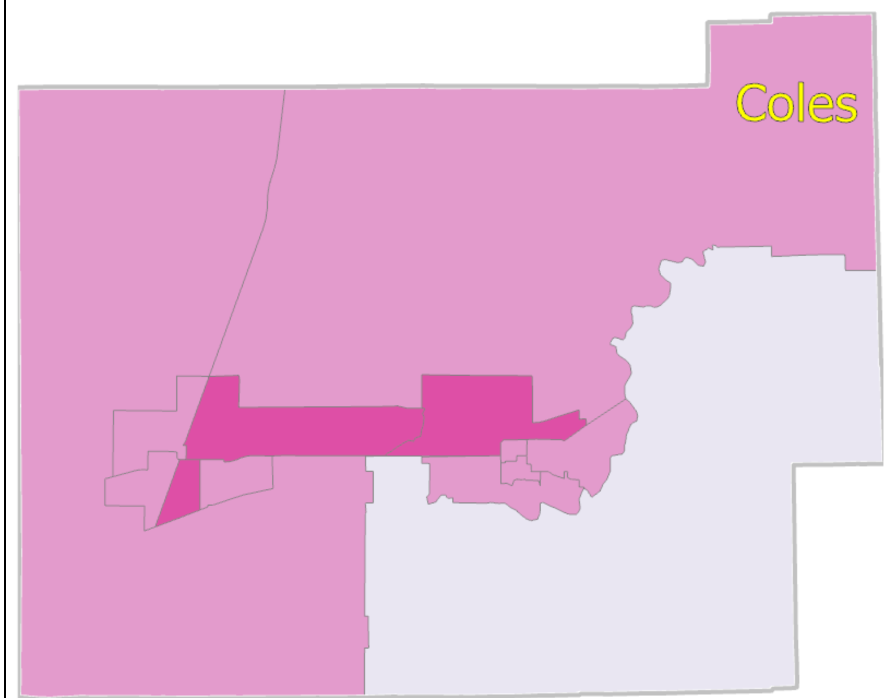
Flash Flood and Social Vulnerability Analysis by Census Tract



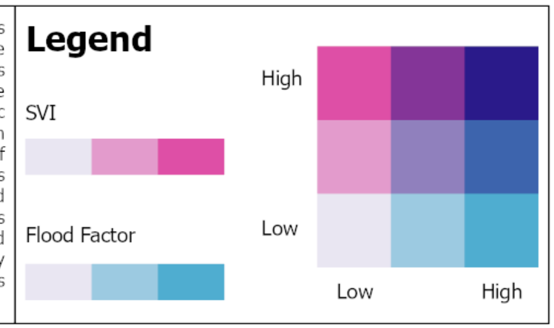
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

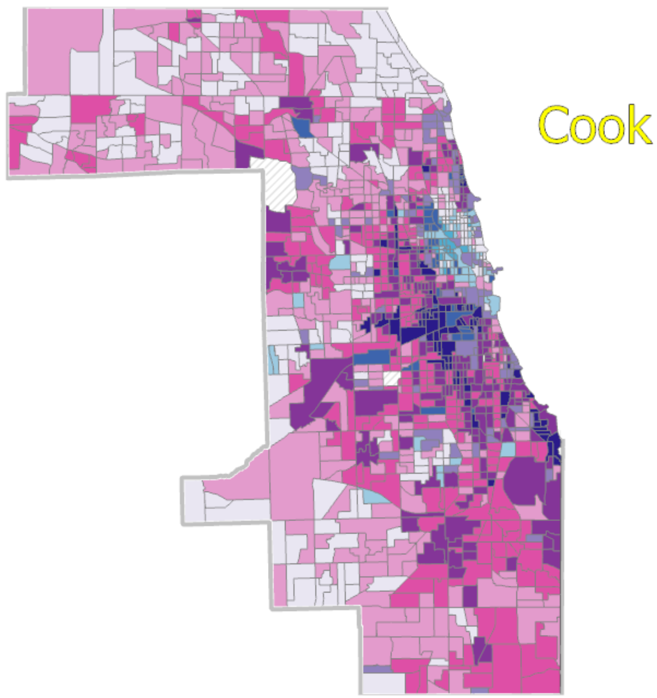


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

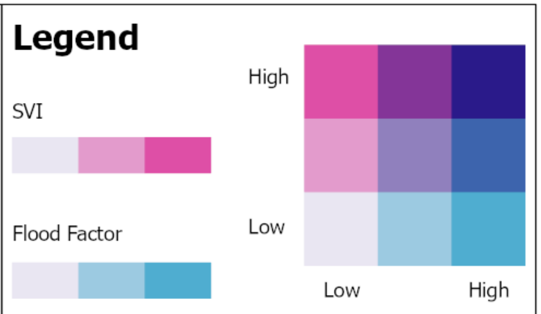


Cook County

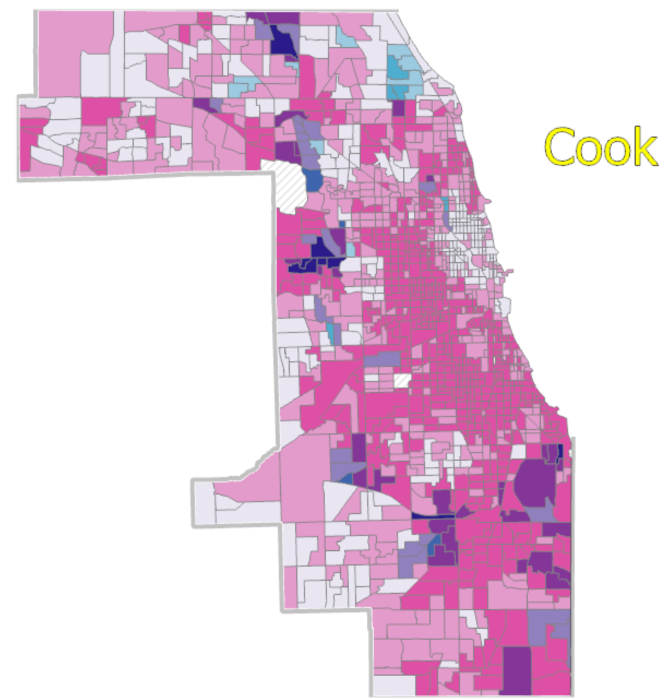
Flash Flood and Social Vulnerability Analysis by Census Tract



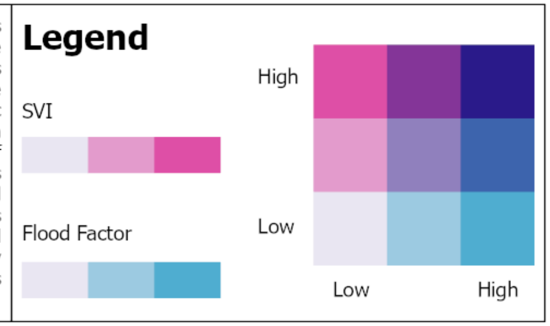
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



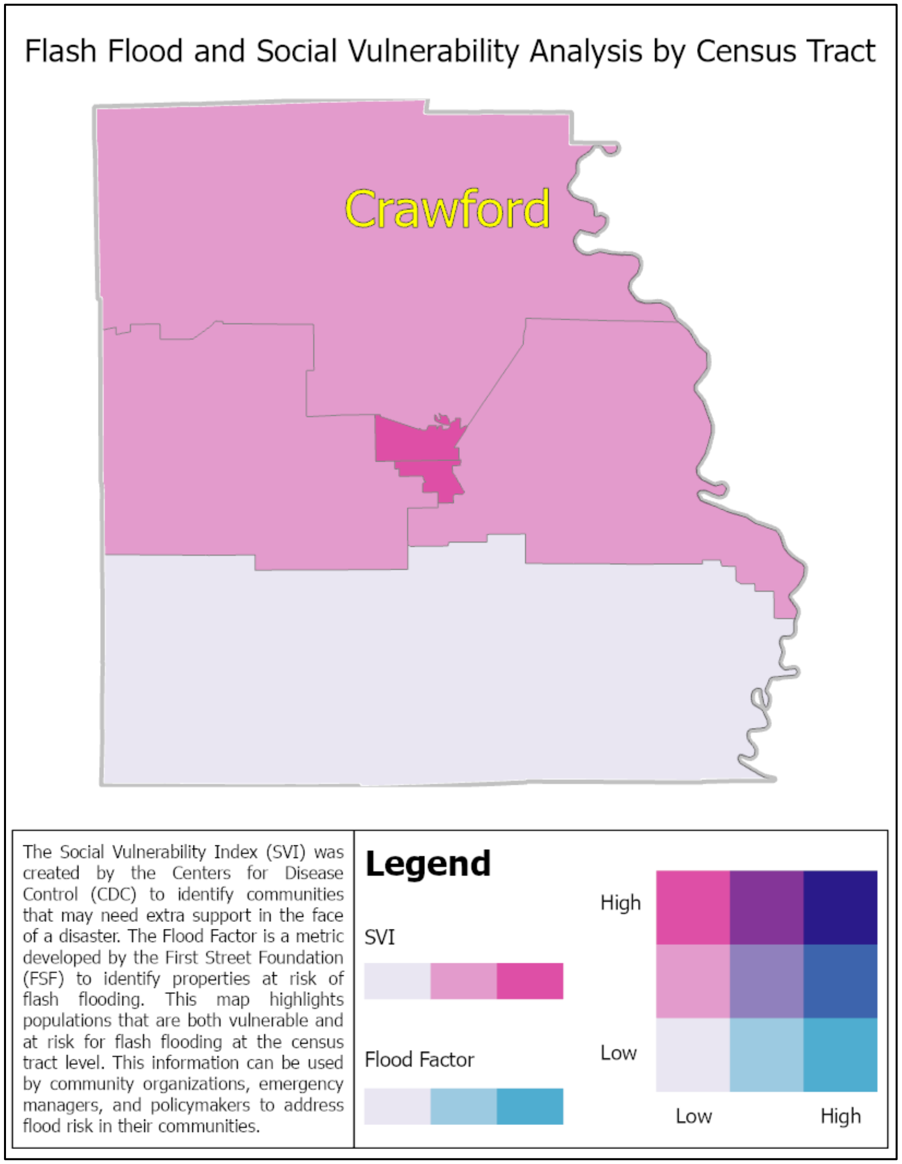
Riverine Flood and Social Vulnerability Analysis by Census Tract

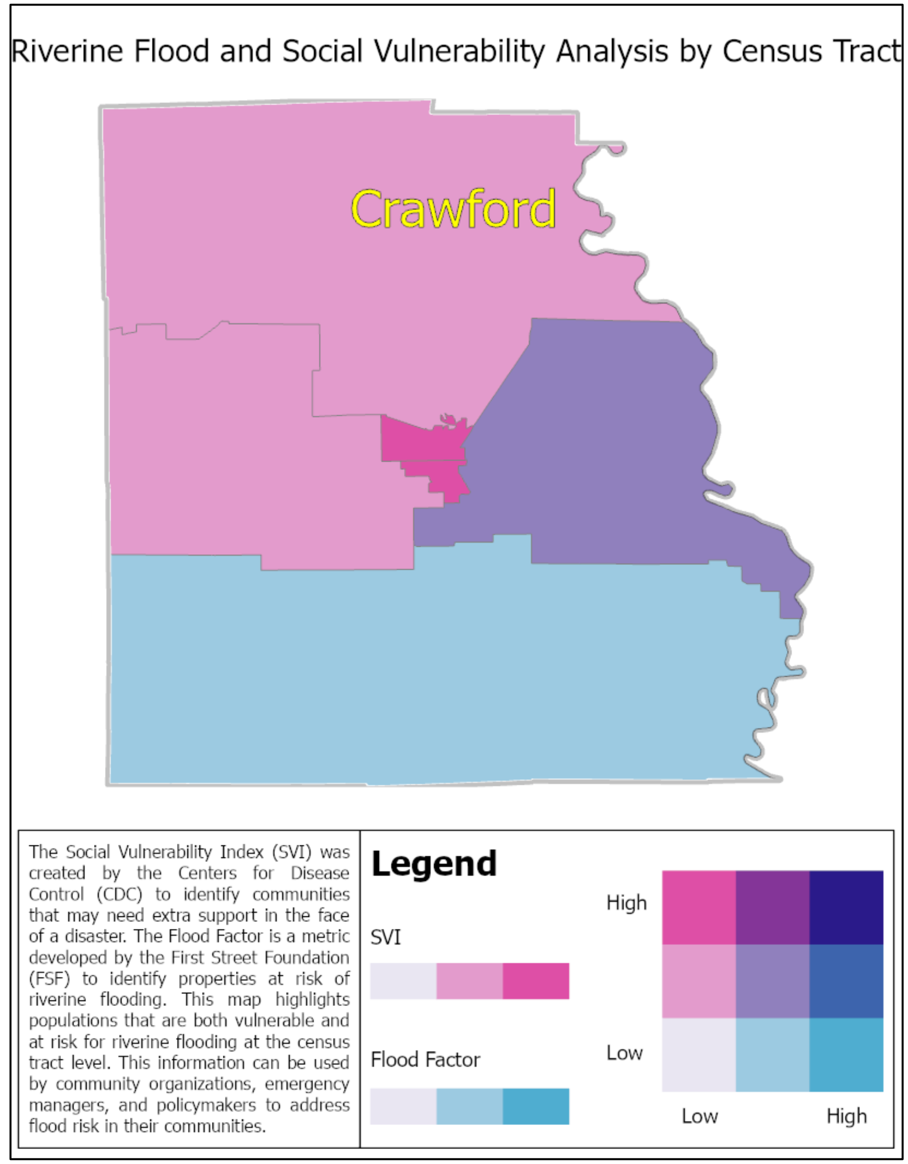


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

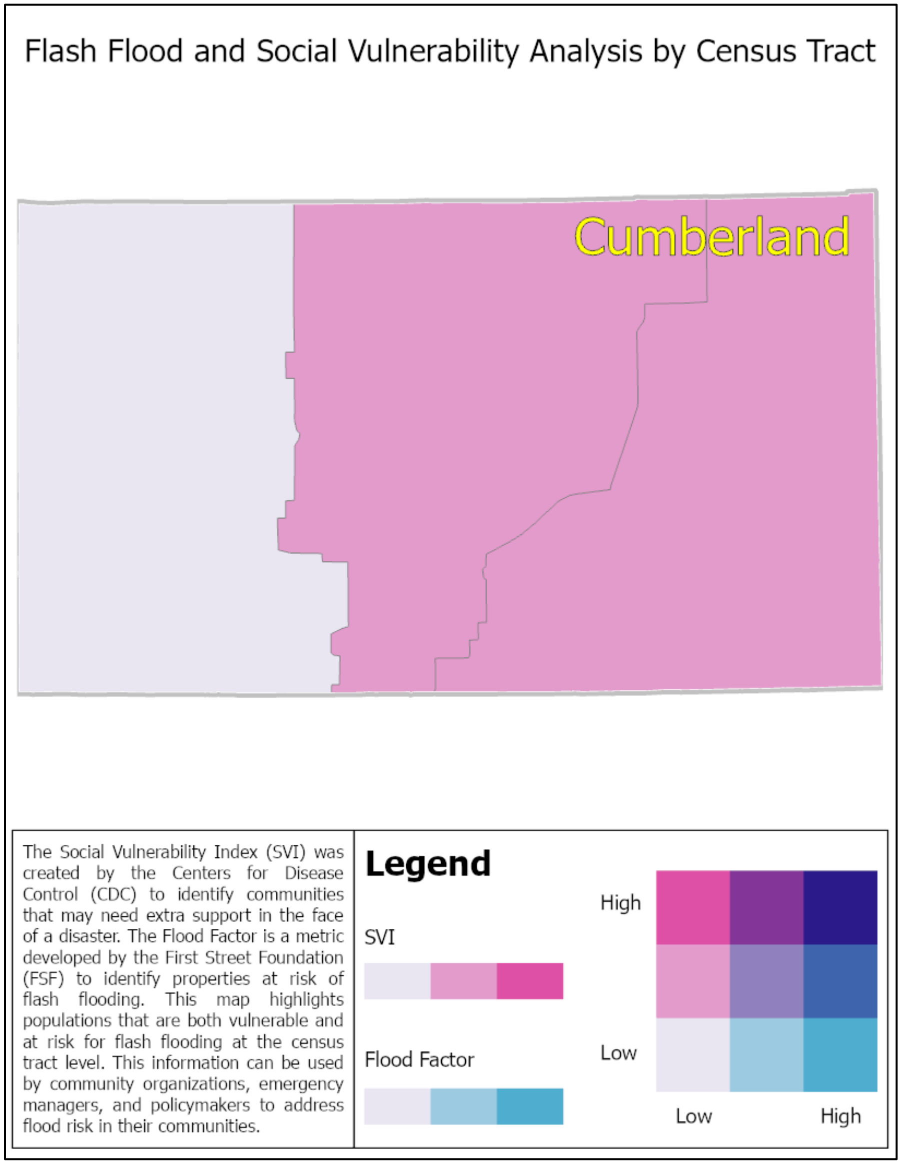


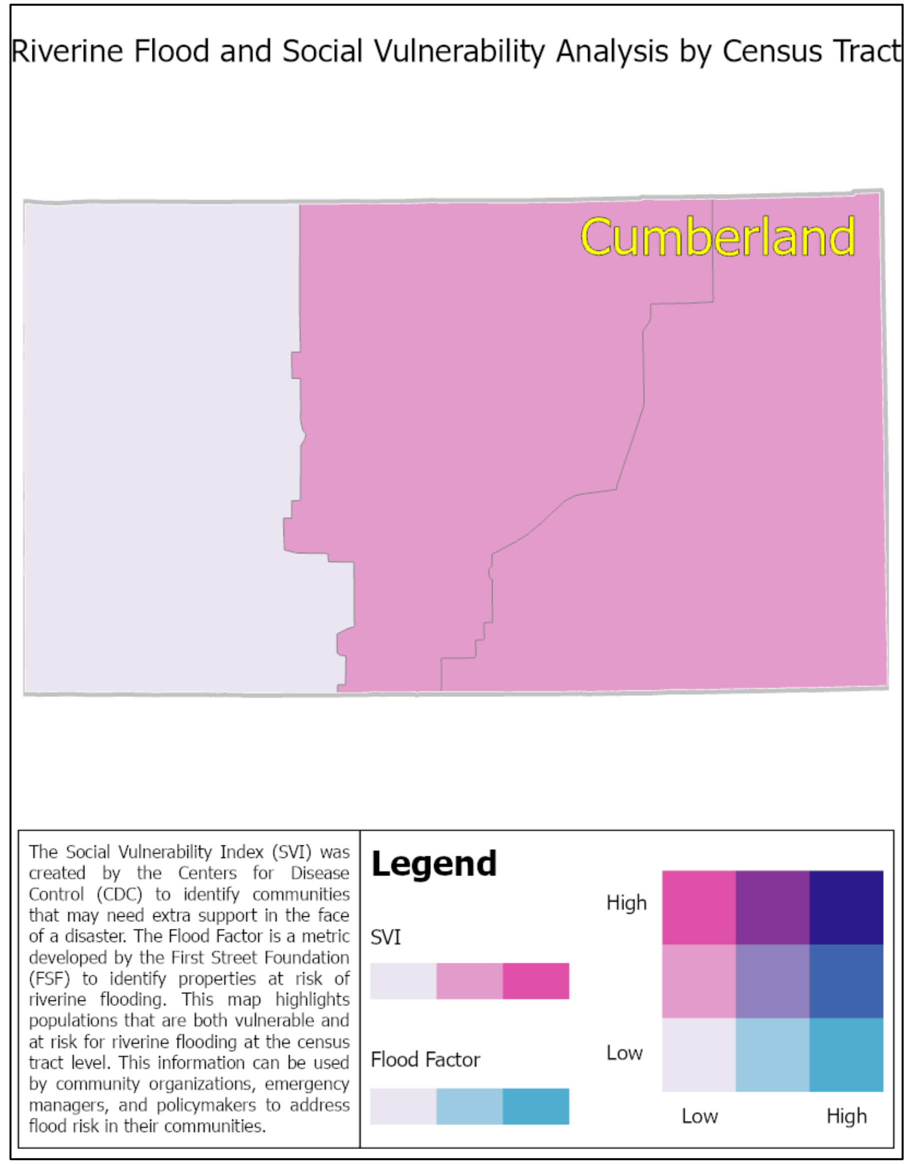
Crawford County





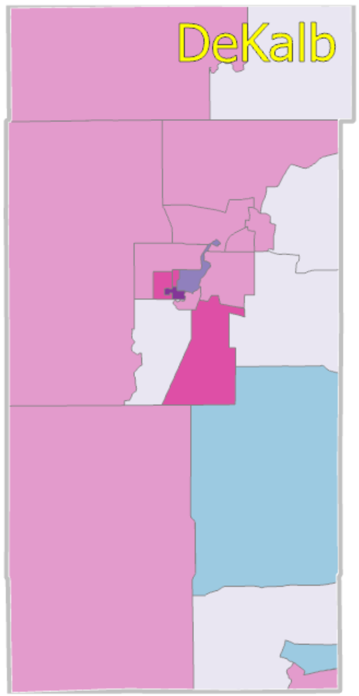
Cumberland County





DeKalb County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

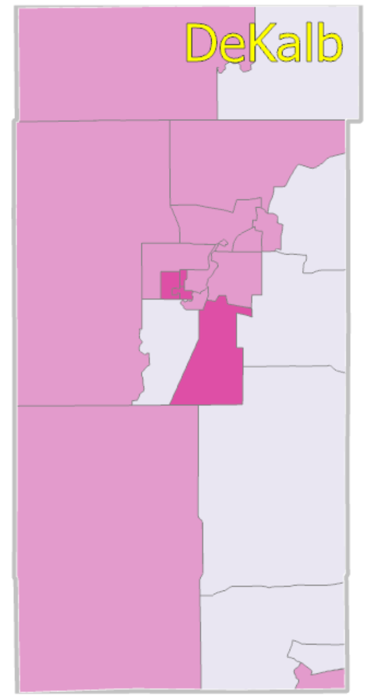
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

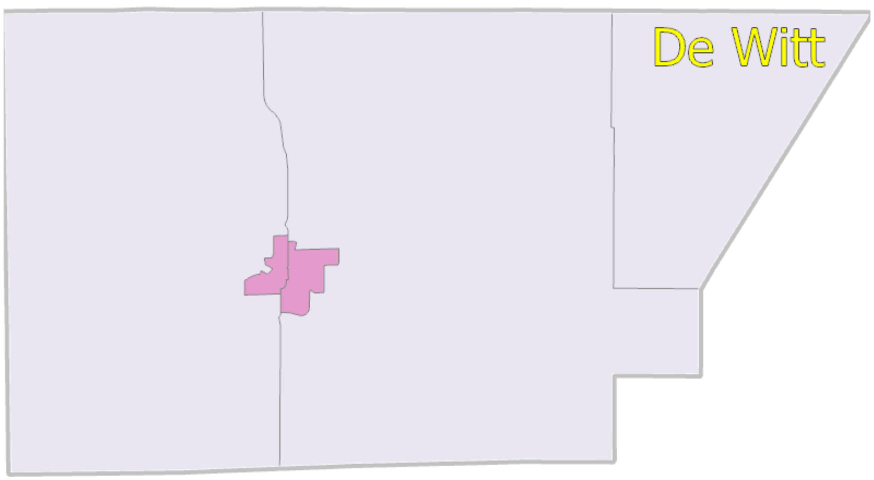
High

Low

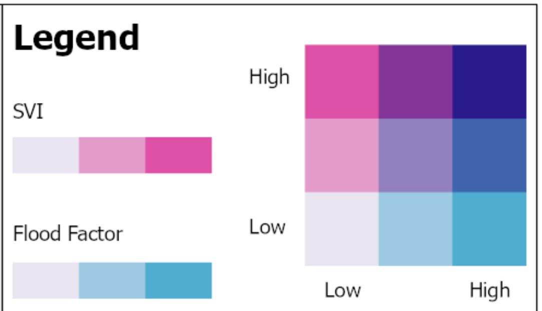
Low High

De Witt County

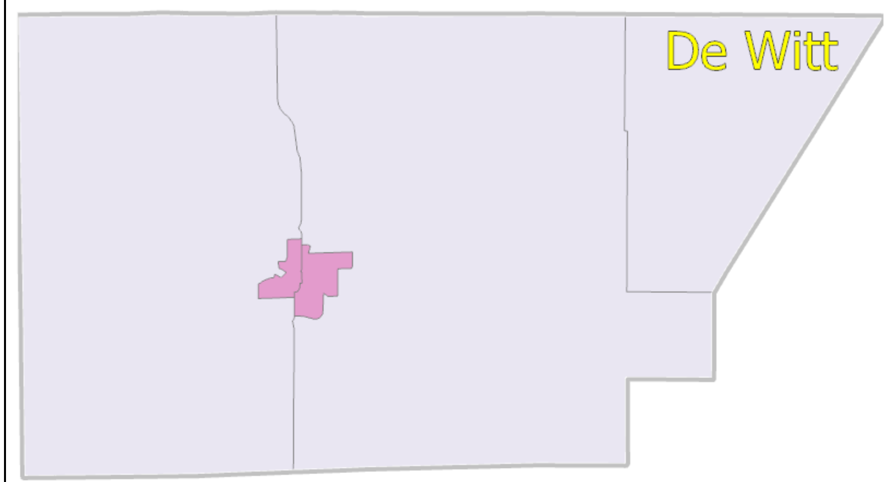
Flash Flood and Social Vulnerability Analysis by Census Tract



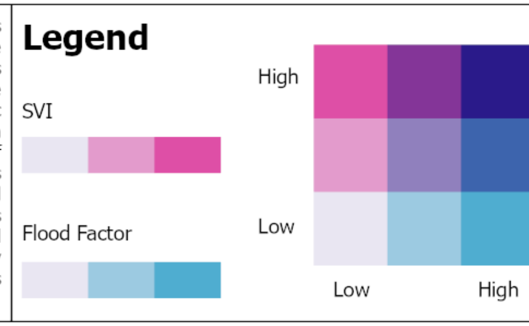
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



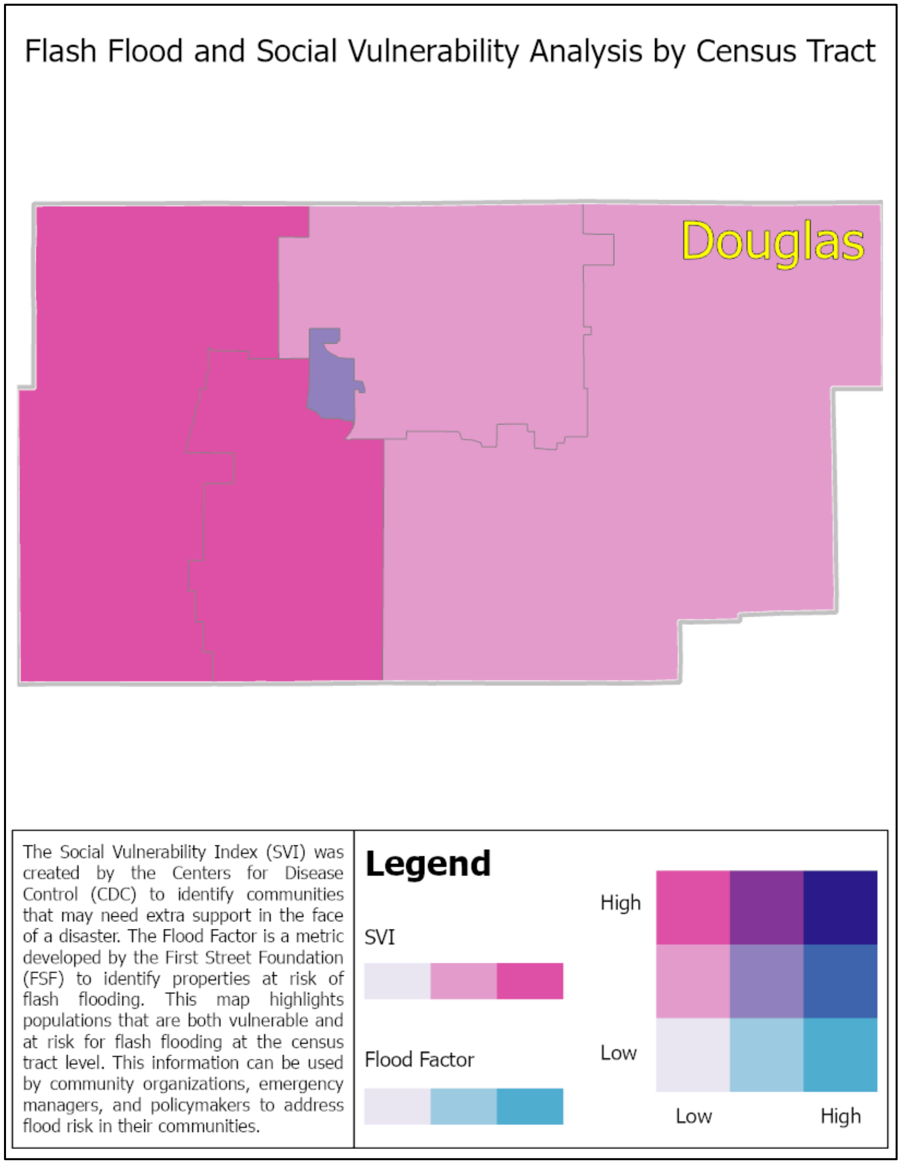
Riverine Flood and Social Vulnerability Analysis by Census Tract

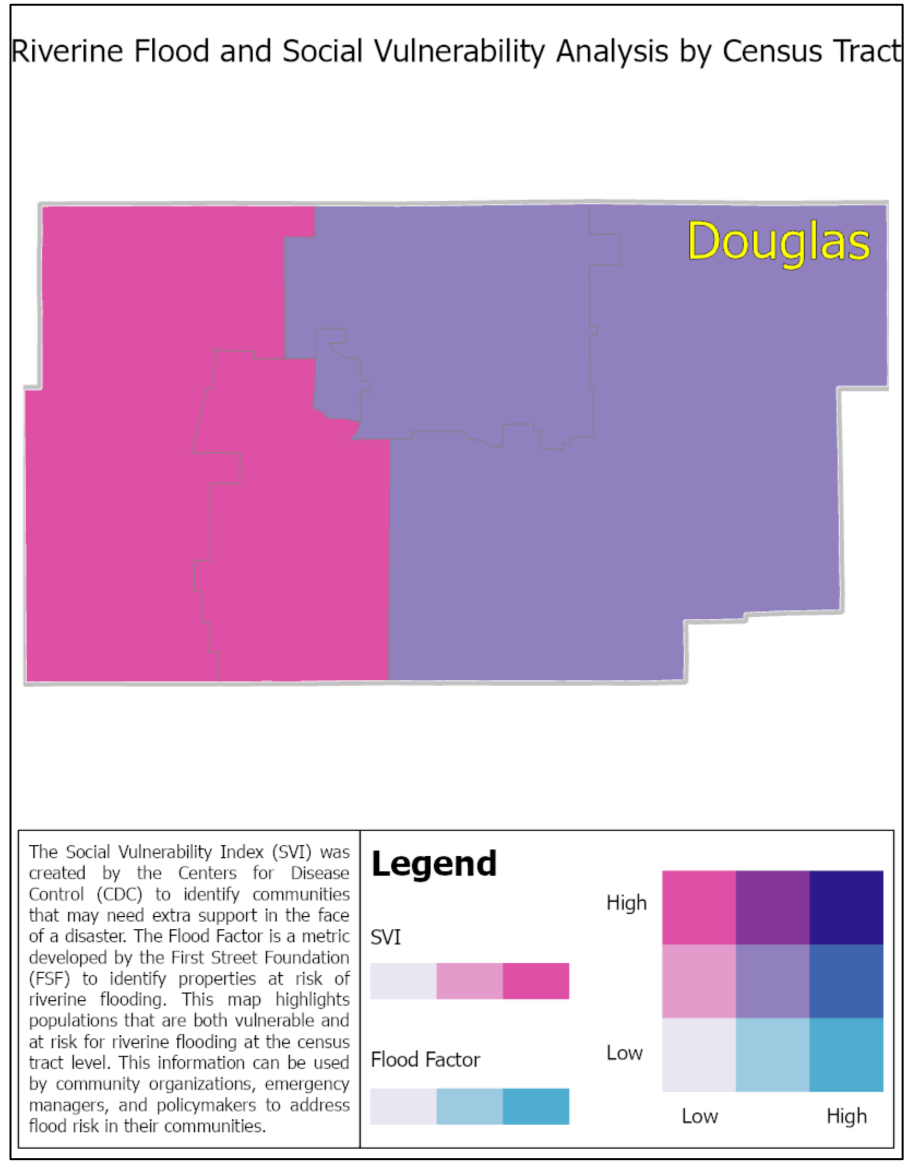


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



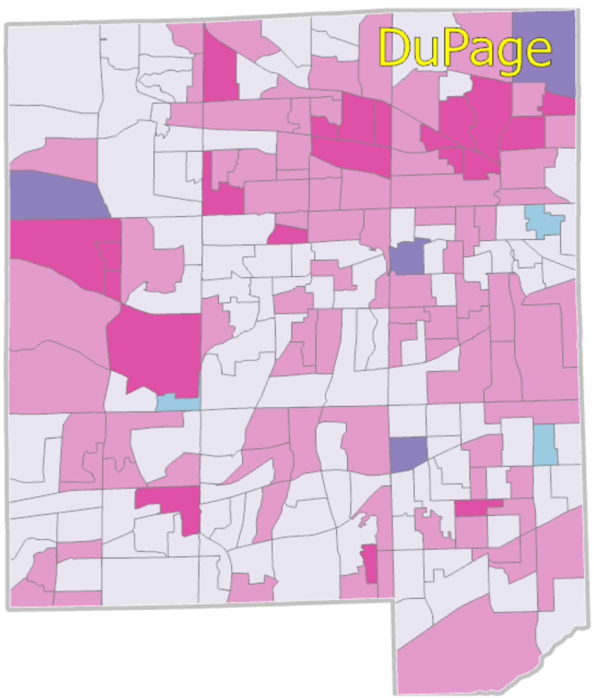
Douglas County





DuPage County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

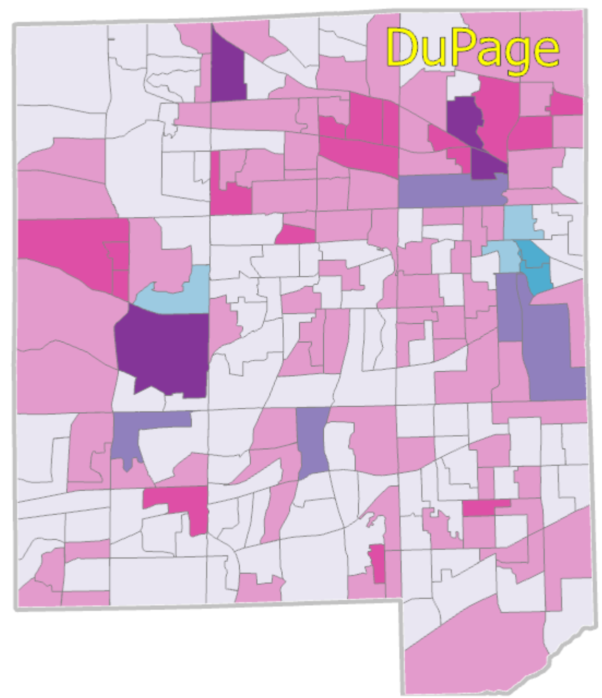
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

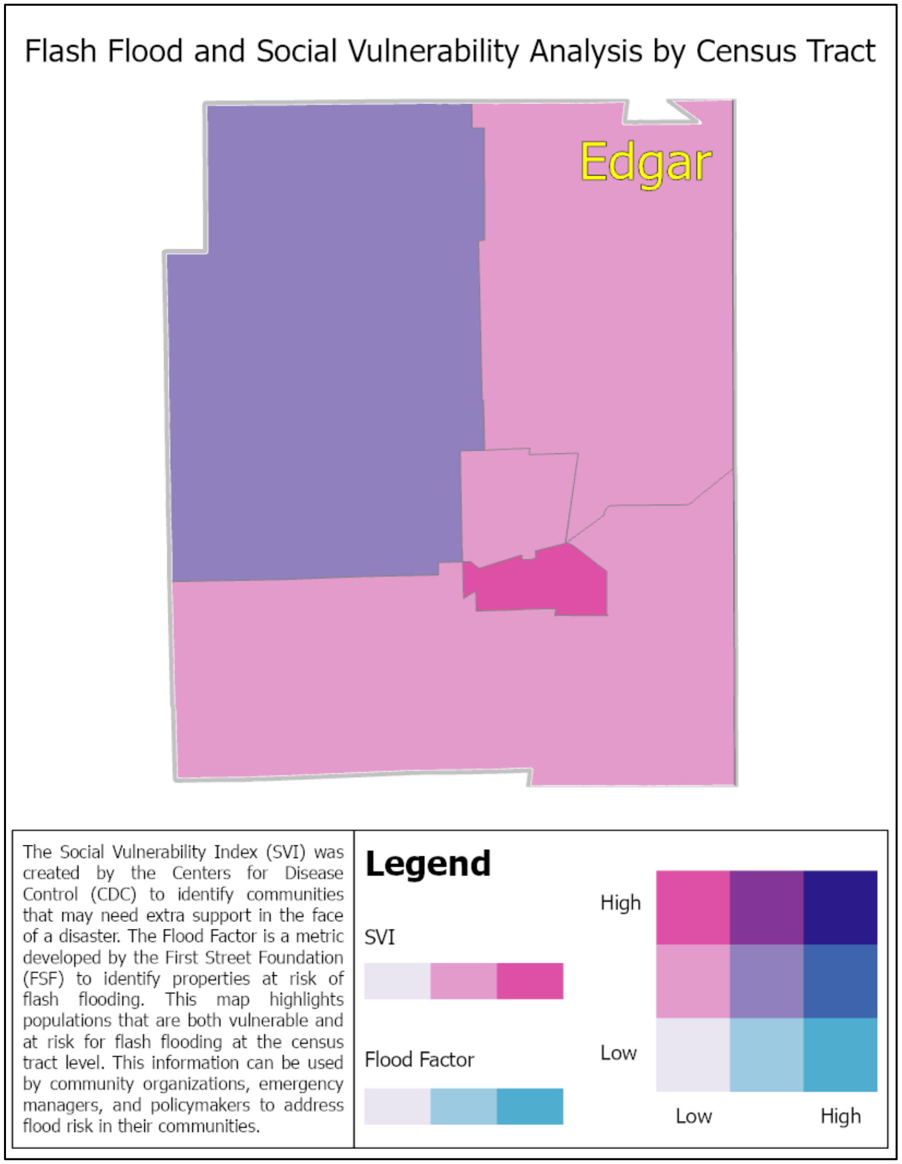
Flood Factor

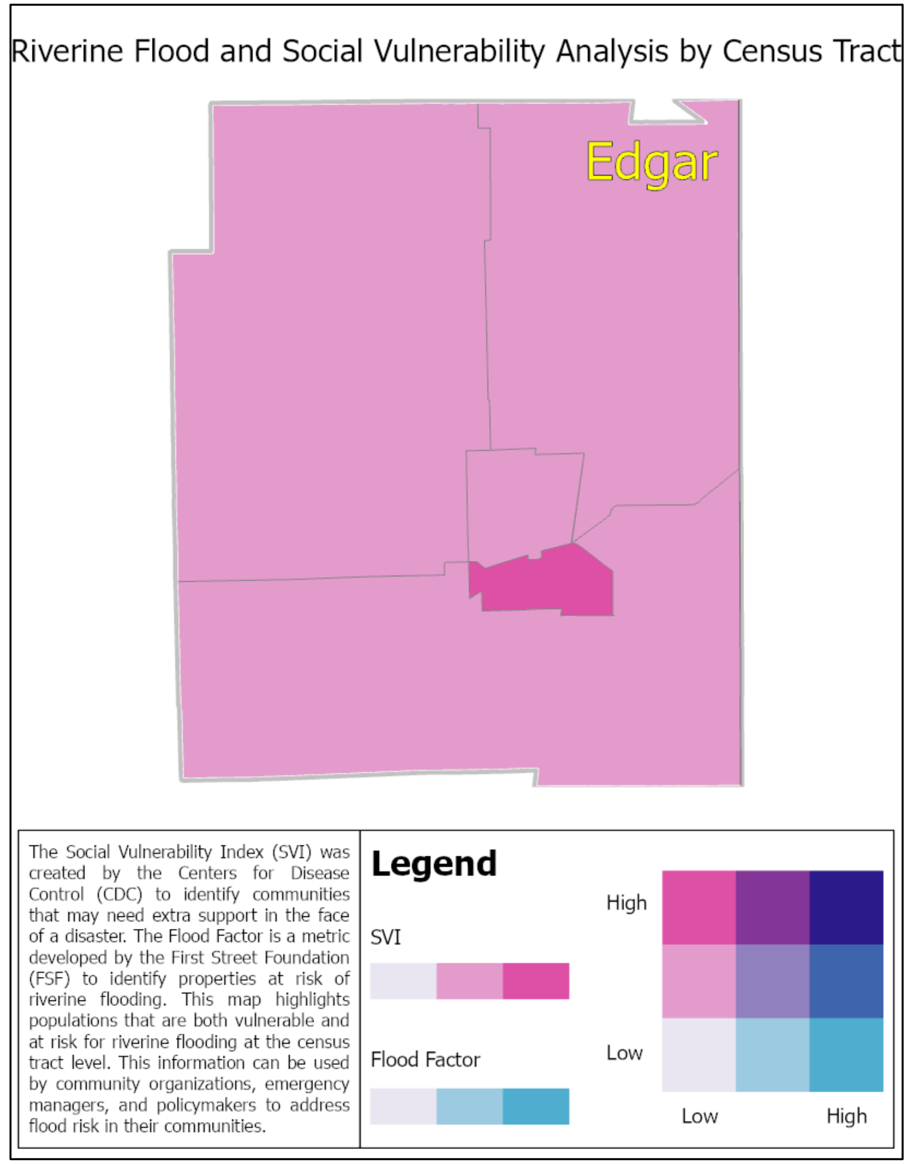
High

Low

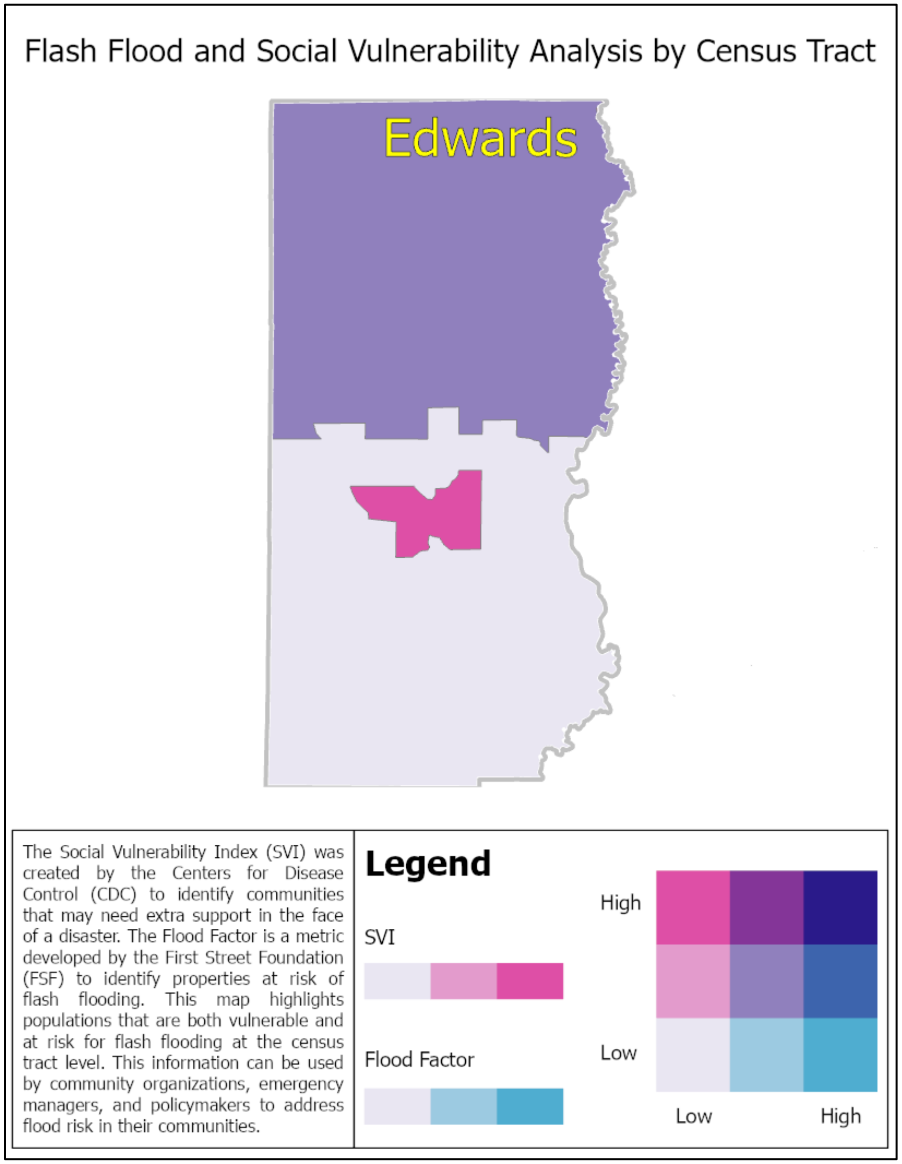
Low High

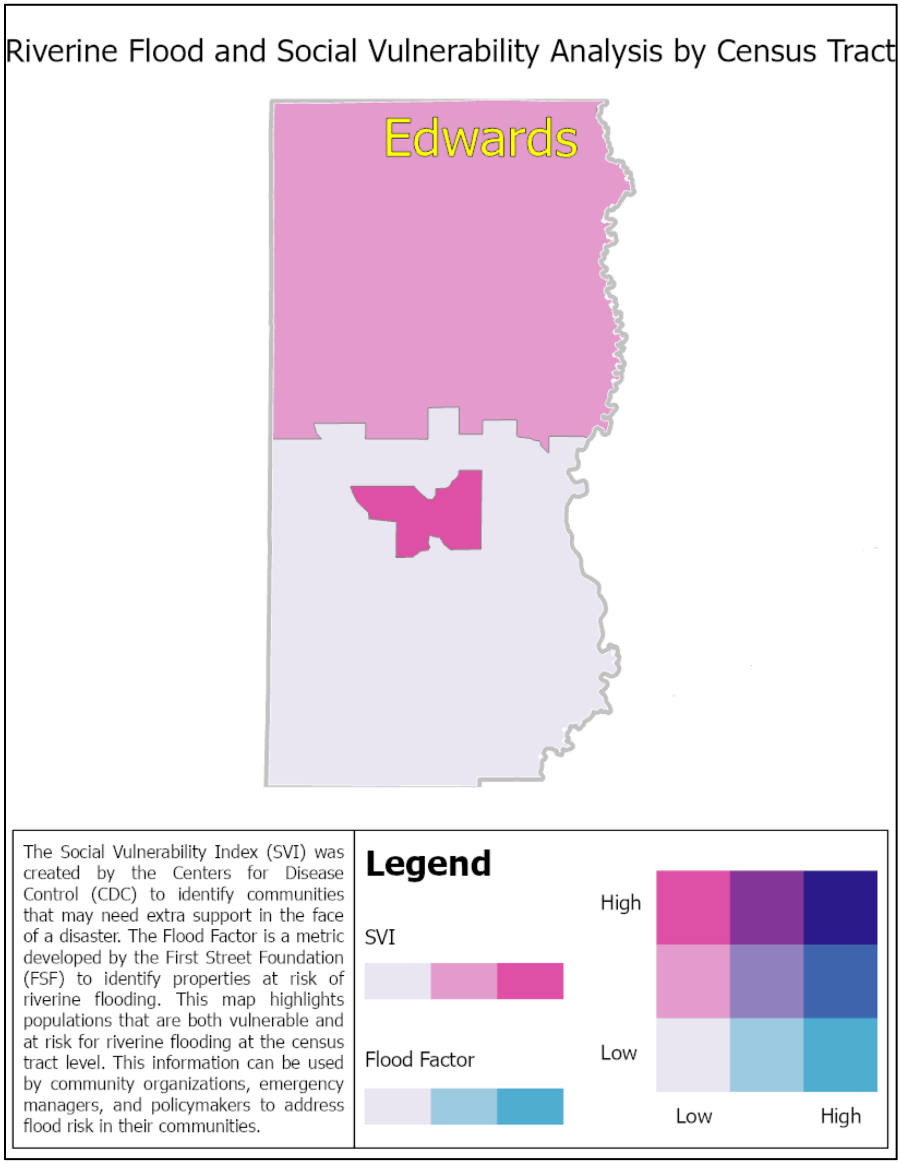
Edgar County



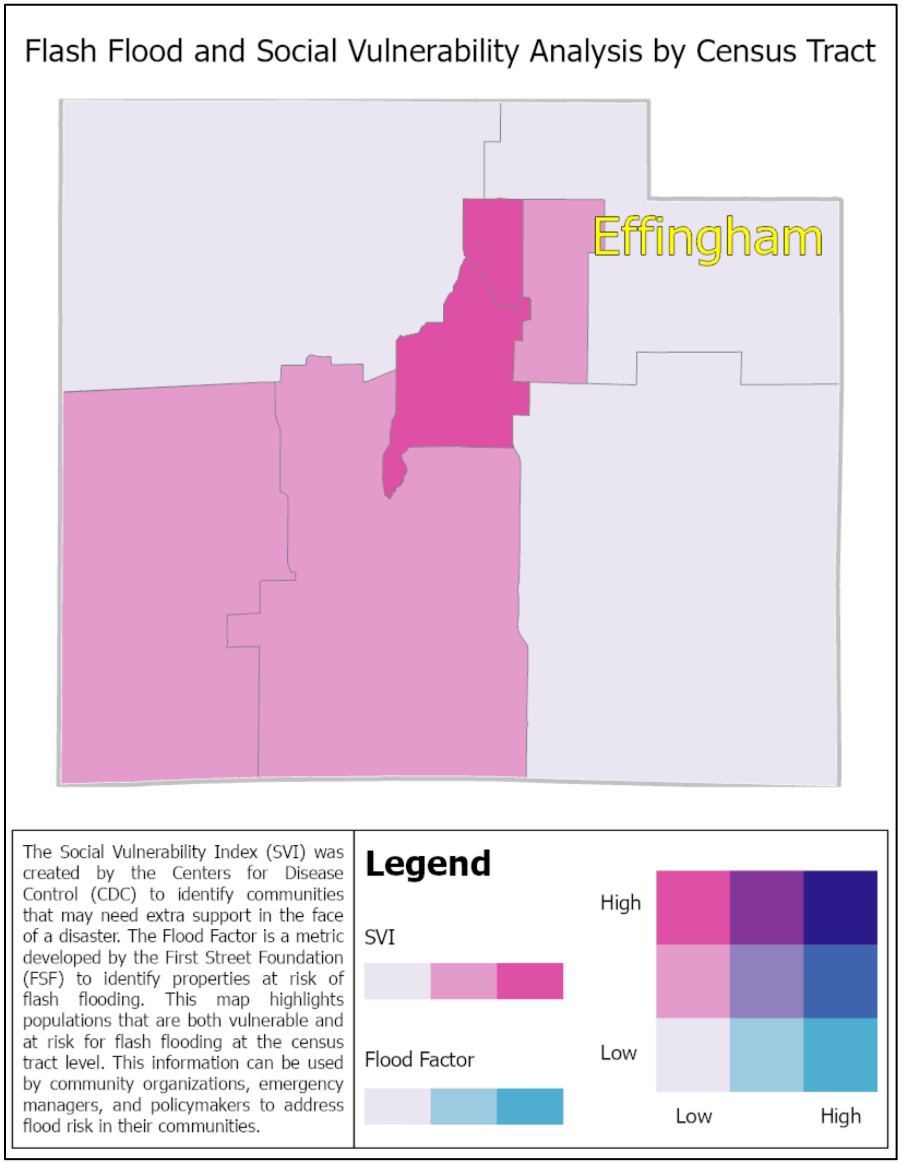


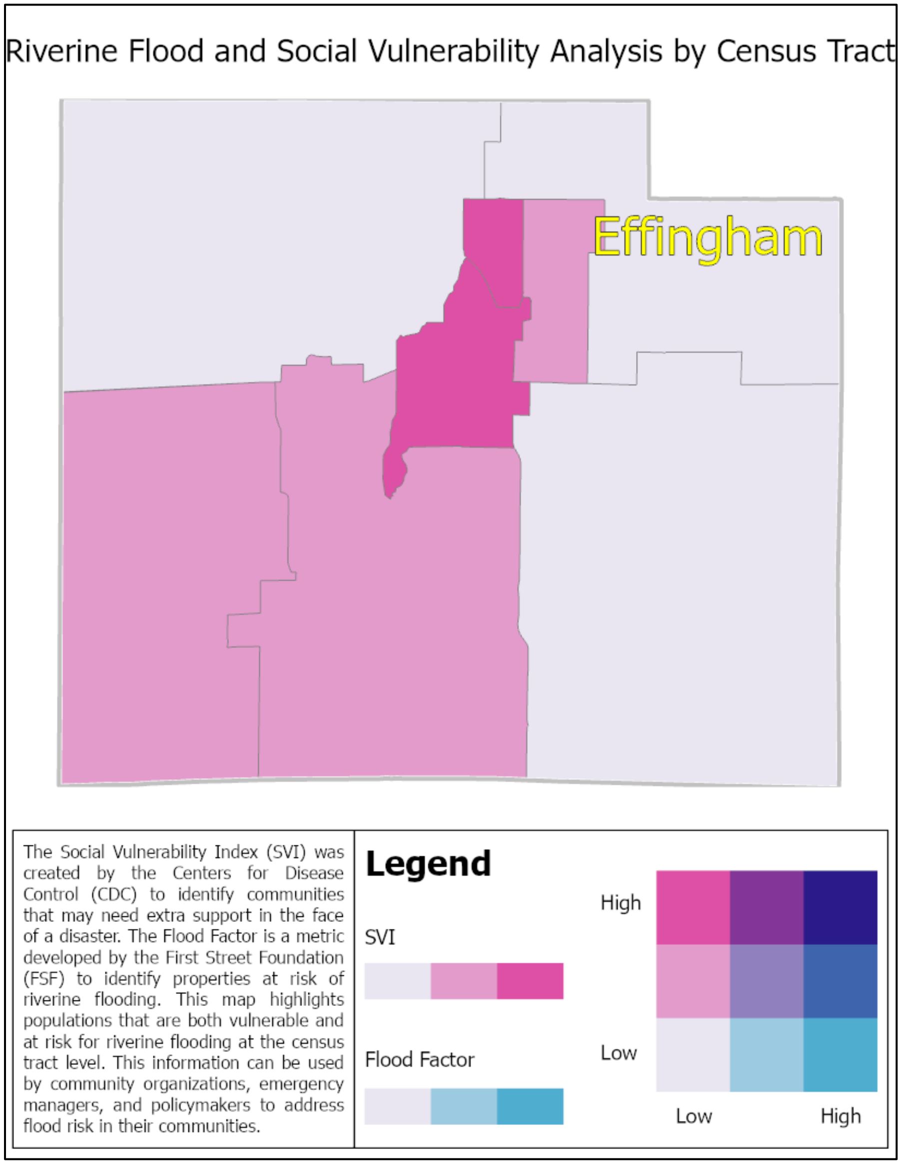
Edwards County



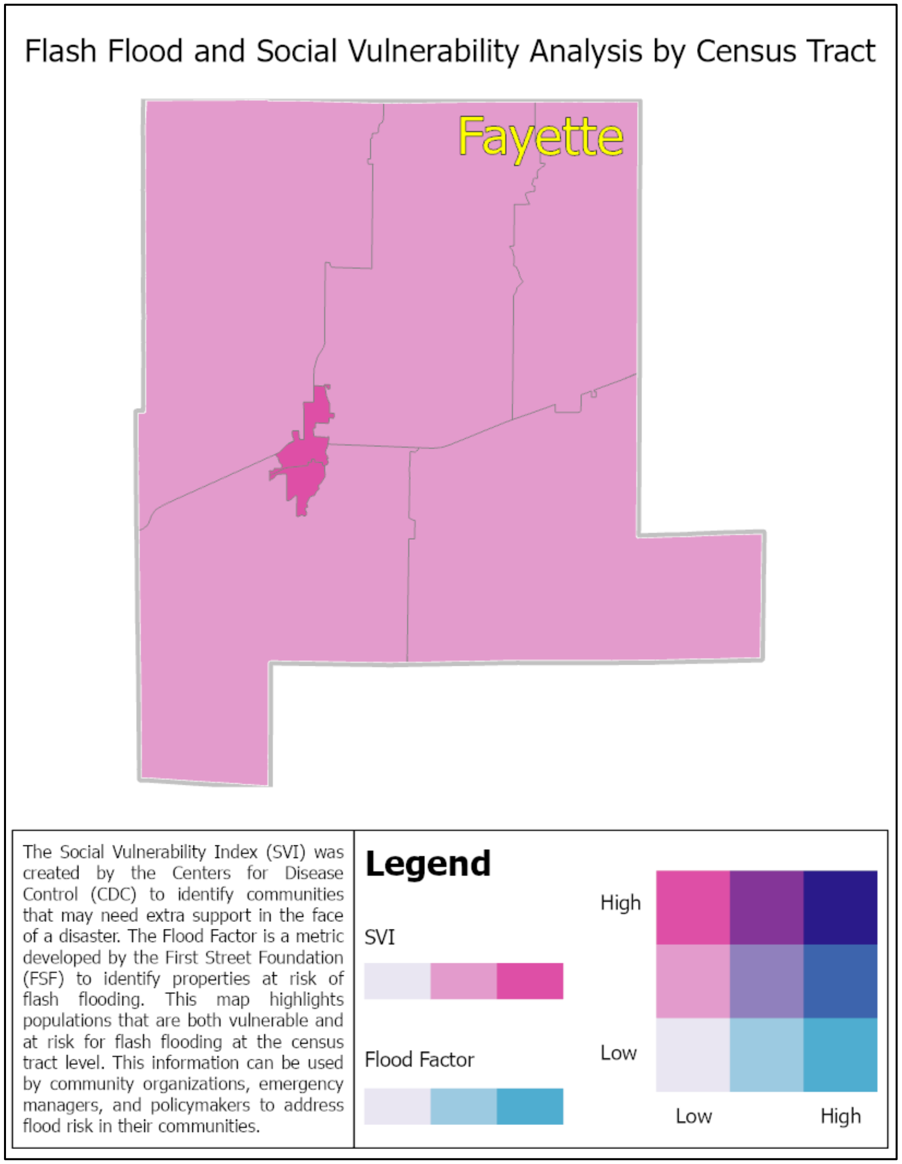


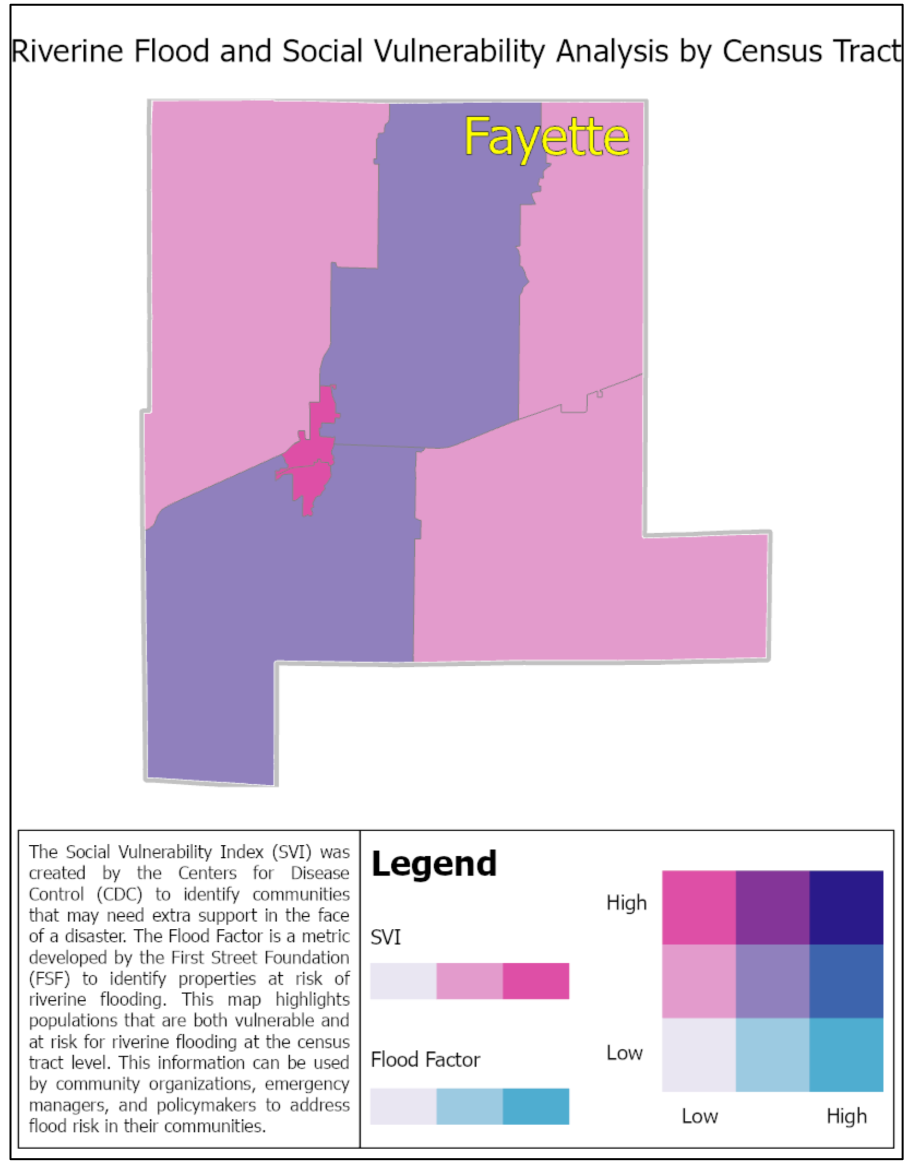
Effingham County



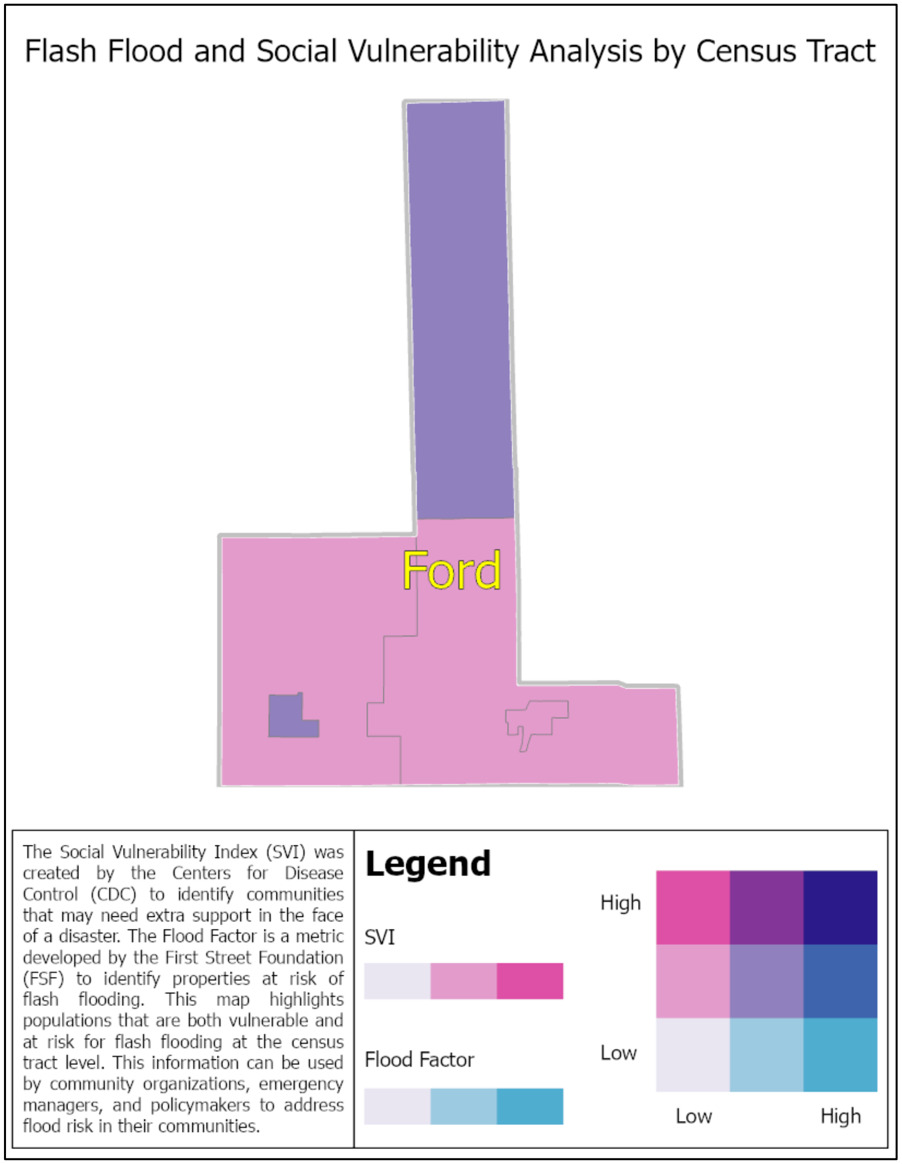


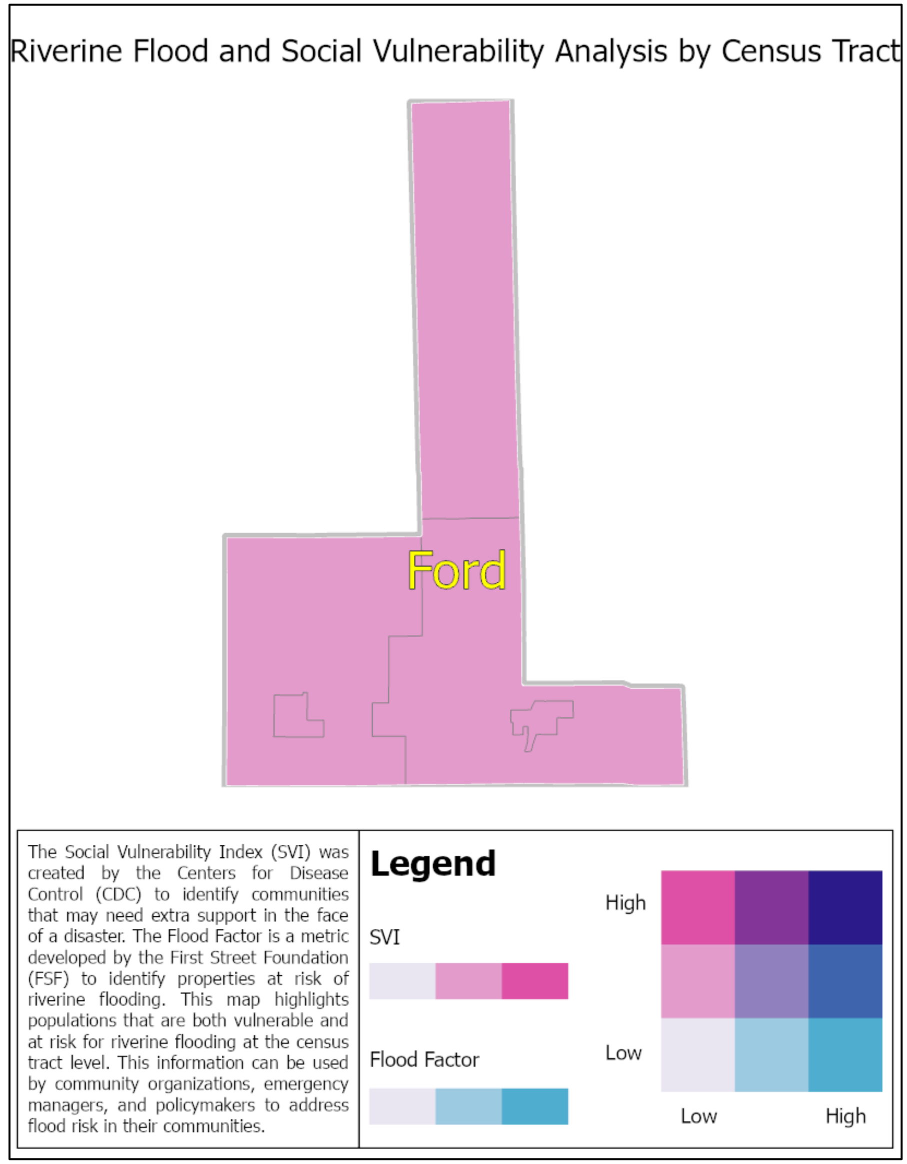
Fayette County





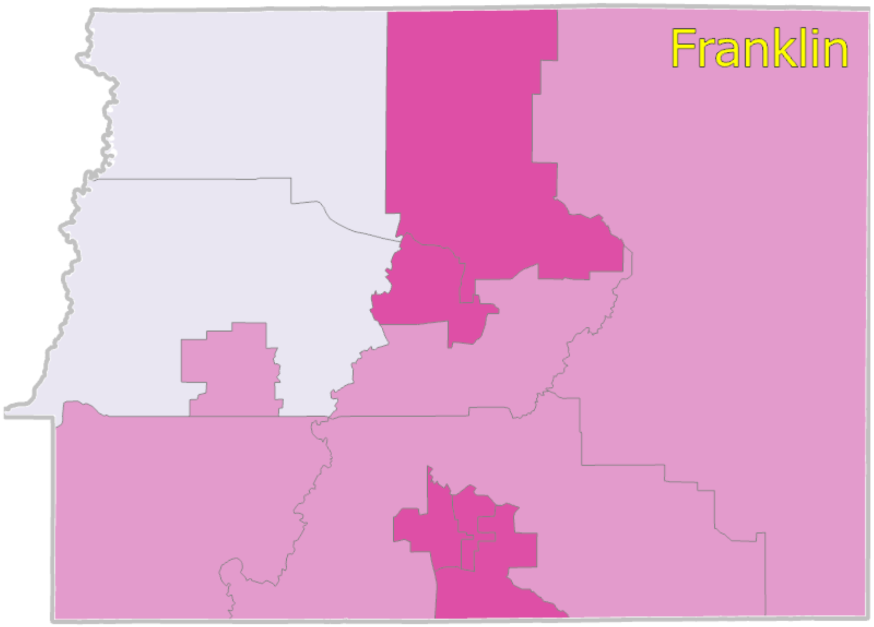
Ford County


Flash Flood and Social Vulnerability Analysis by Census Tract
Ford
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

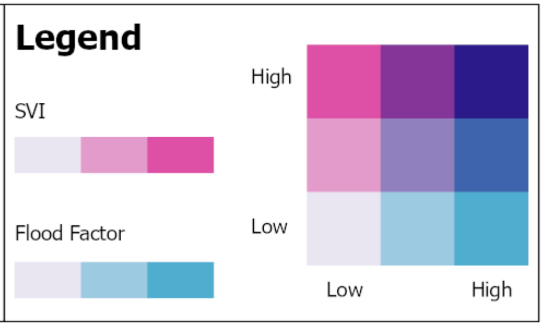

Riverine Flood and Social Vulnerability Analysis by Census Tract
Ford
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

Franklin County

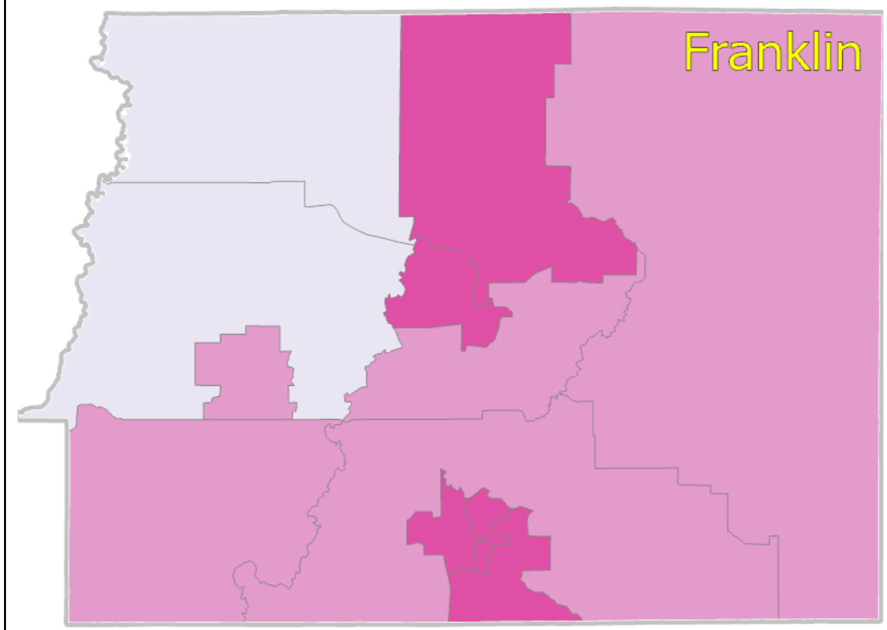
Flash Flood and Social Vulnerability Analysis by Census Tract



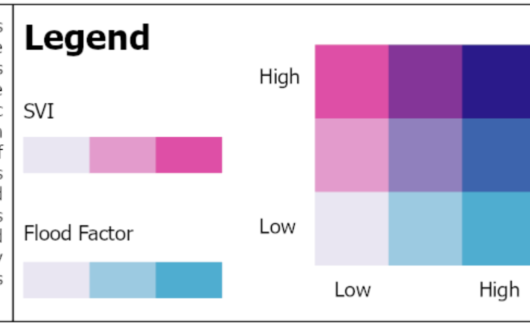
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

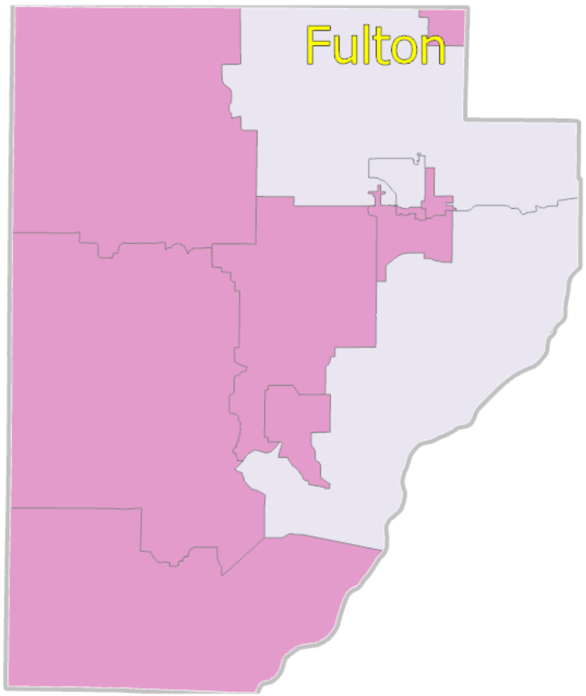


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

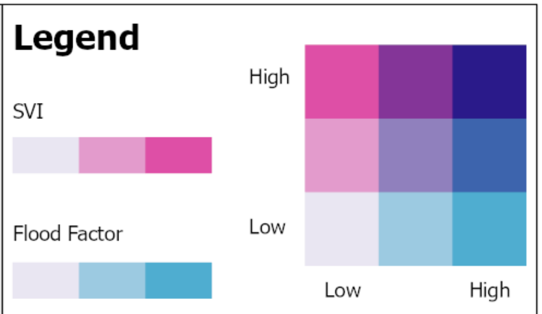


Fulton County

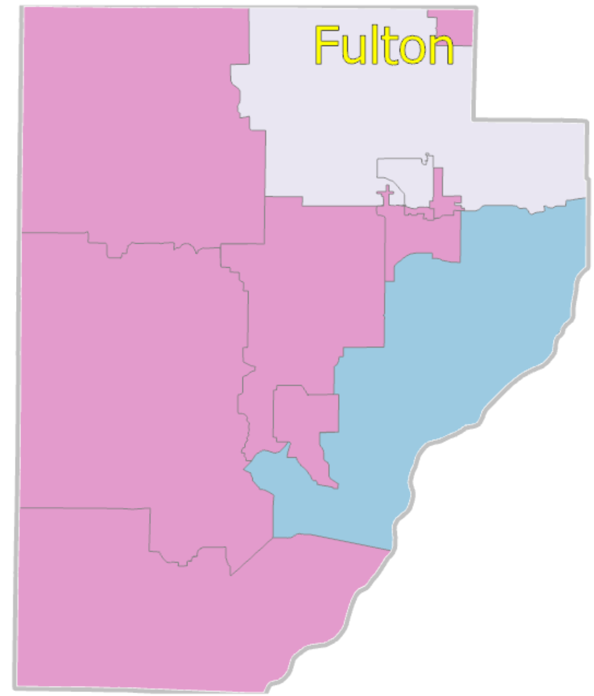
Flash Flood and Social Vulnerability Analysis by Census Tract



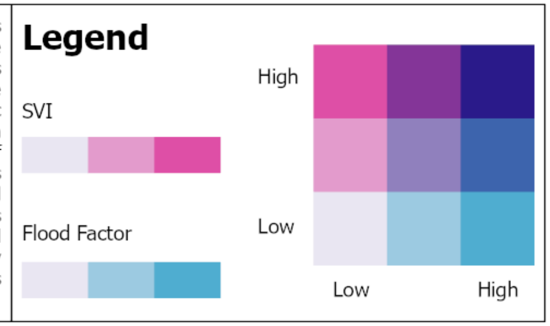
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

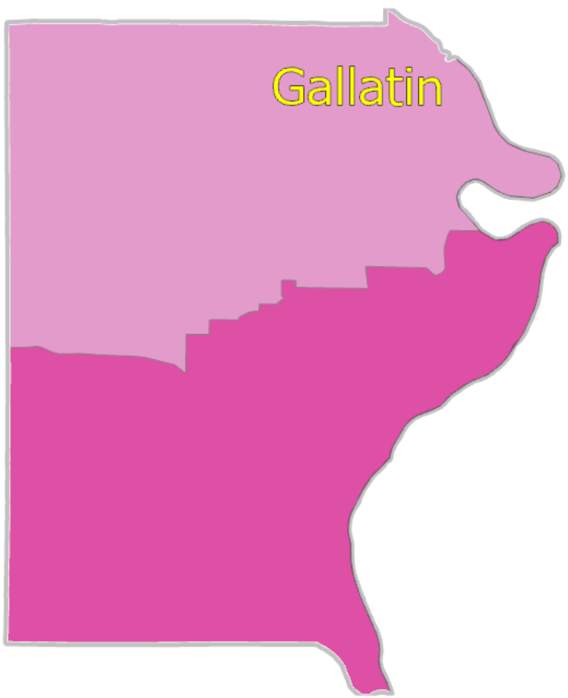


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

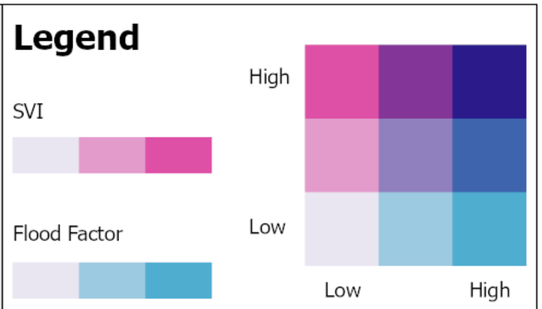


Gallatin County

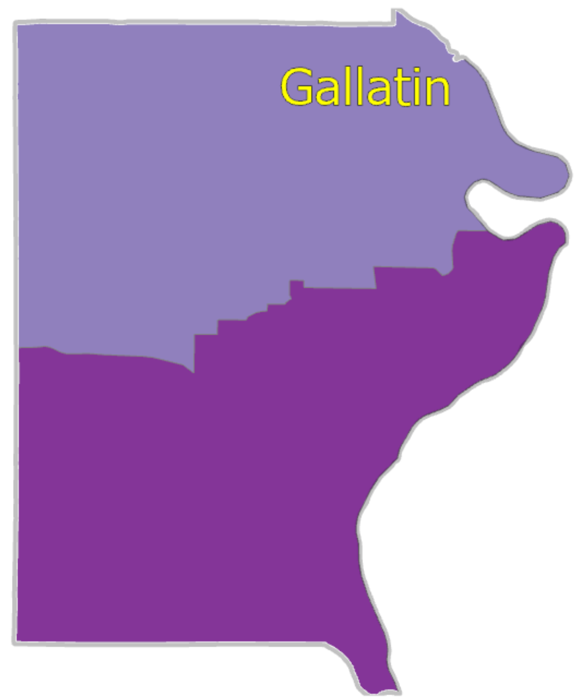
Flash Flood and Social Vulnerability Analysis by Census Tract



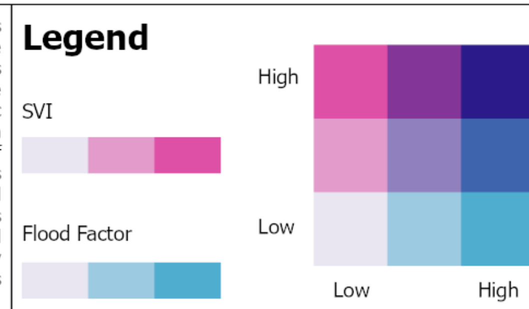
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



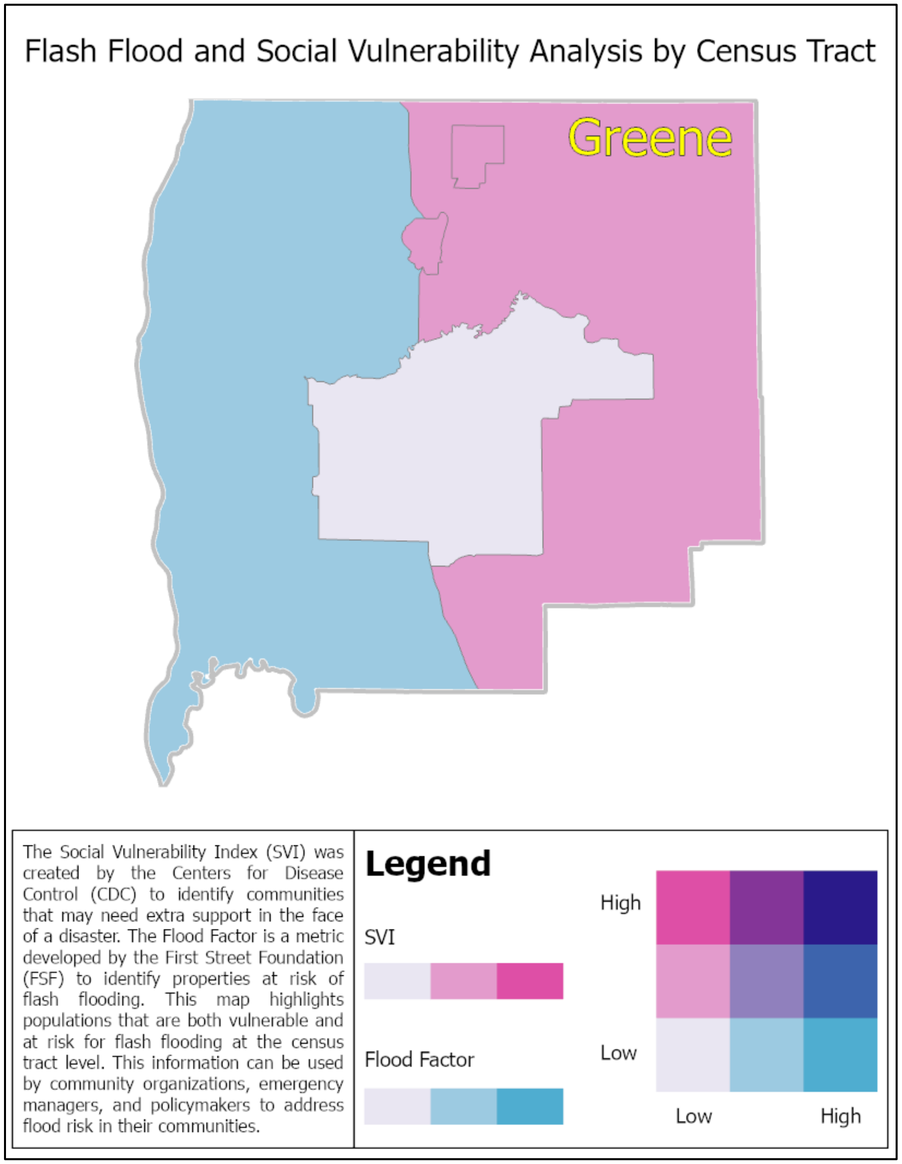
Riverine Flood and Social Vulnerability Analysis by Census Tract

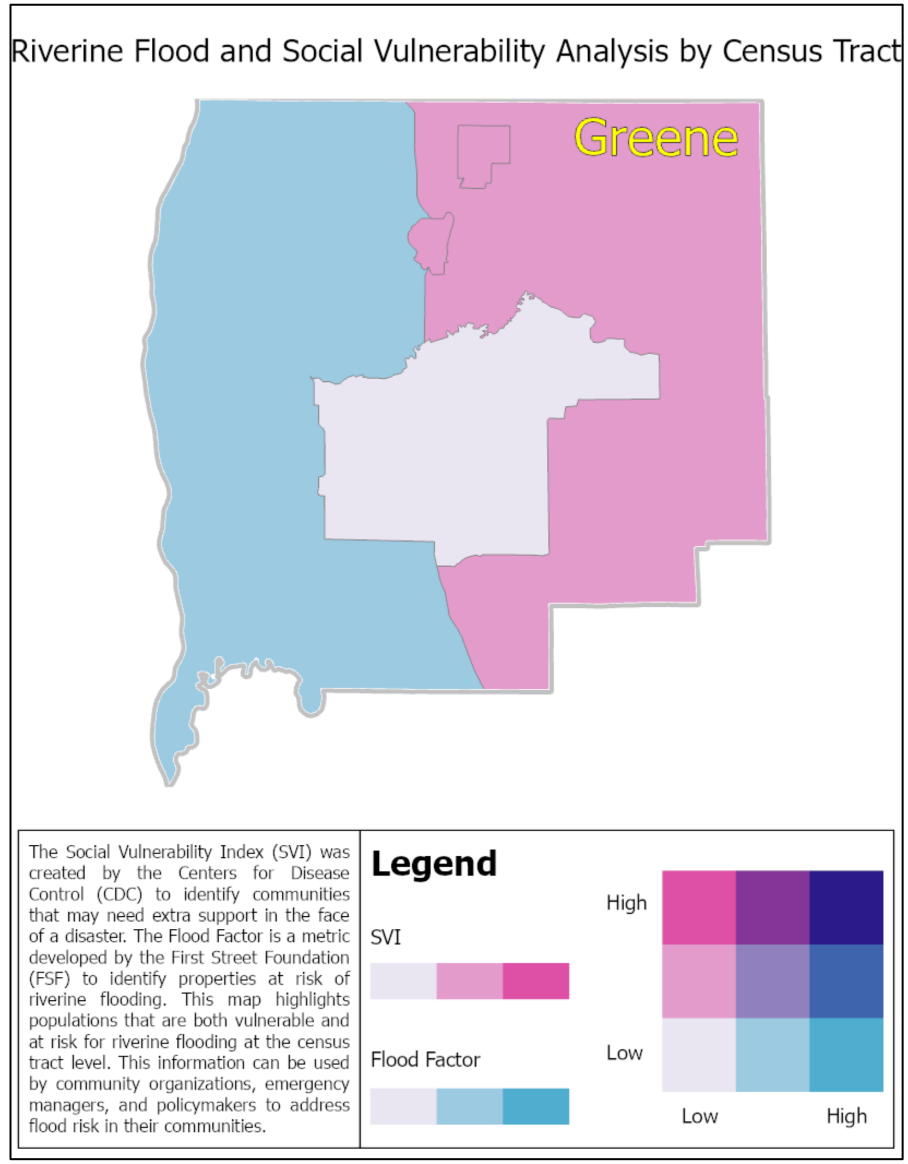


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



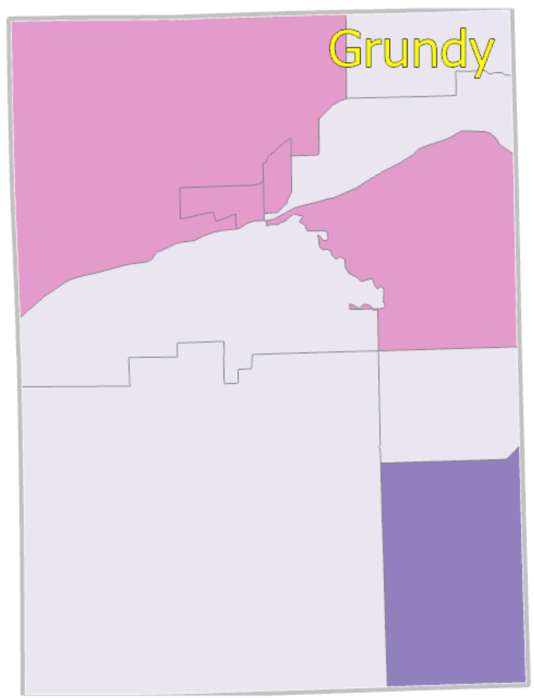
Greene County



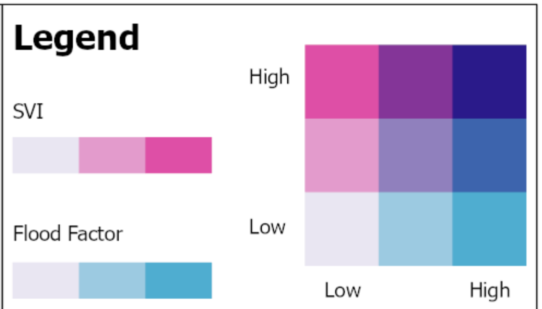


Grundy County

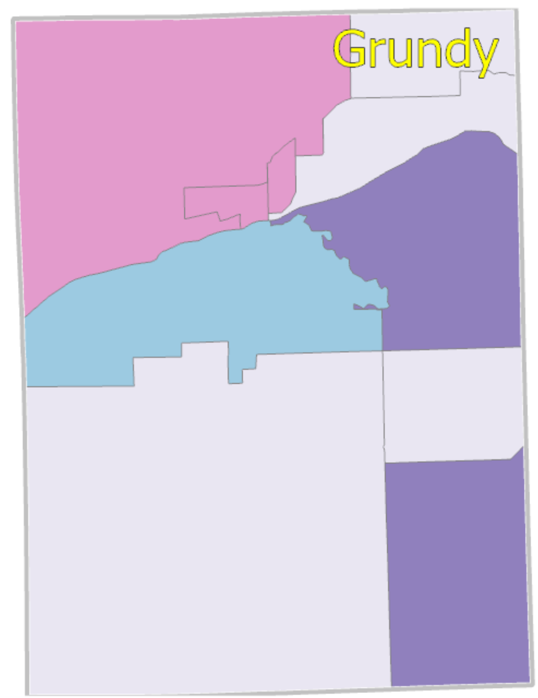
Flash Flood and Social Vulnerability Analysis by Census Tract



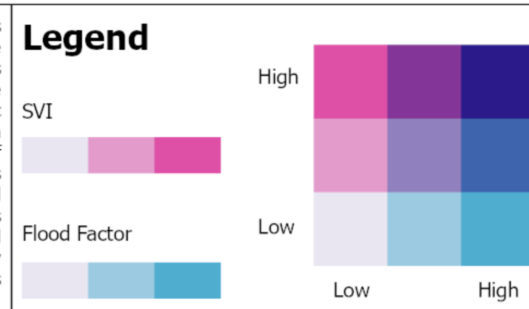
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



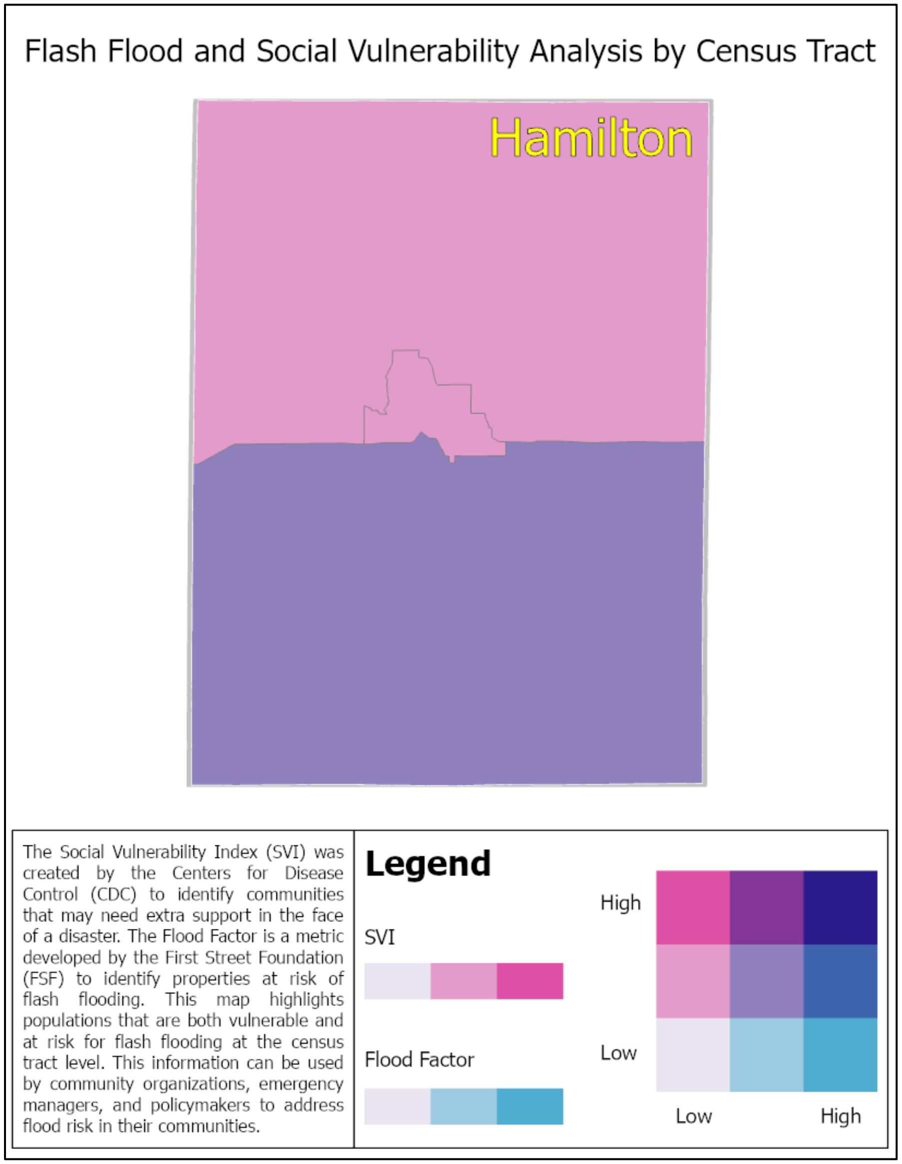
Riverine Flood and Social Vulnerability Analysis by Census Tract

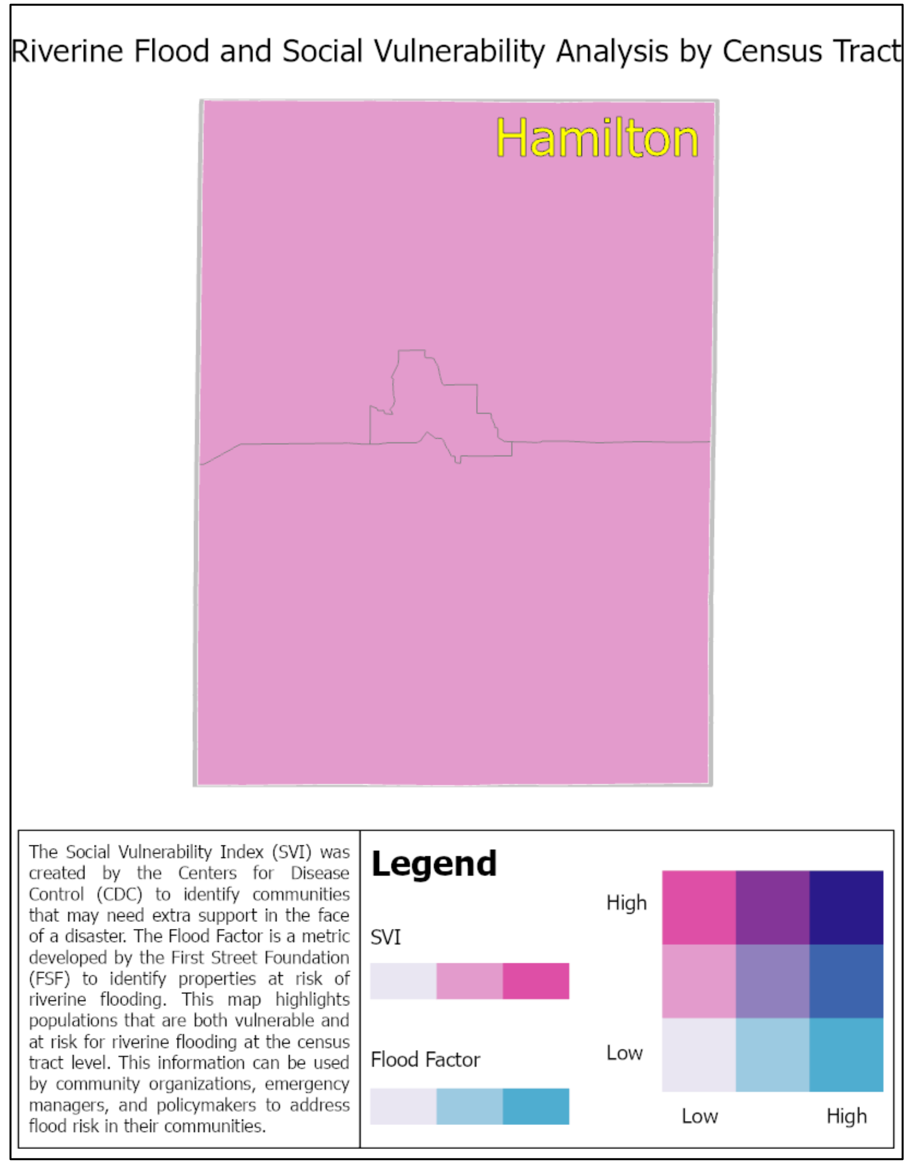


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



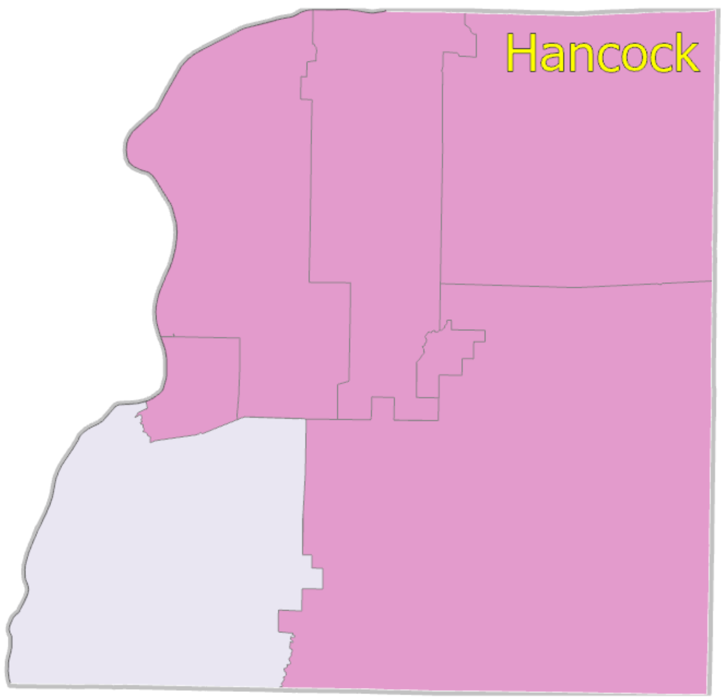
Hamilton County



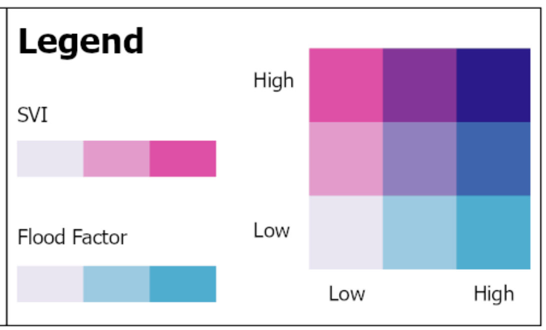


Hancock County

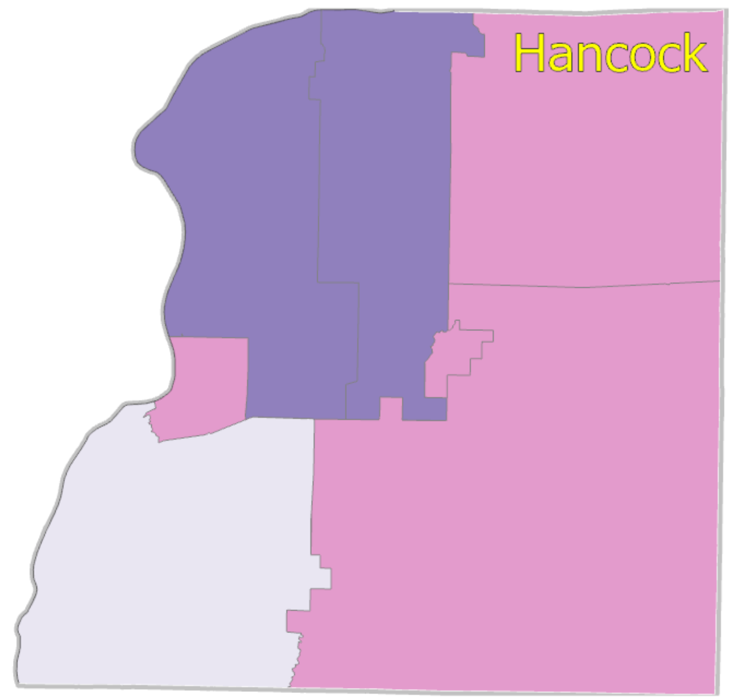
Flash Flood and Social Vulnerability Analysis by Census Tract



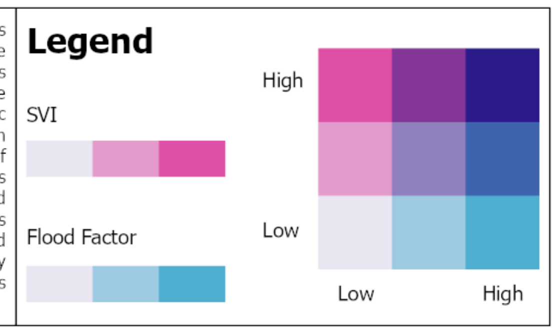
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



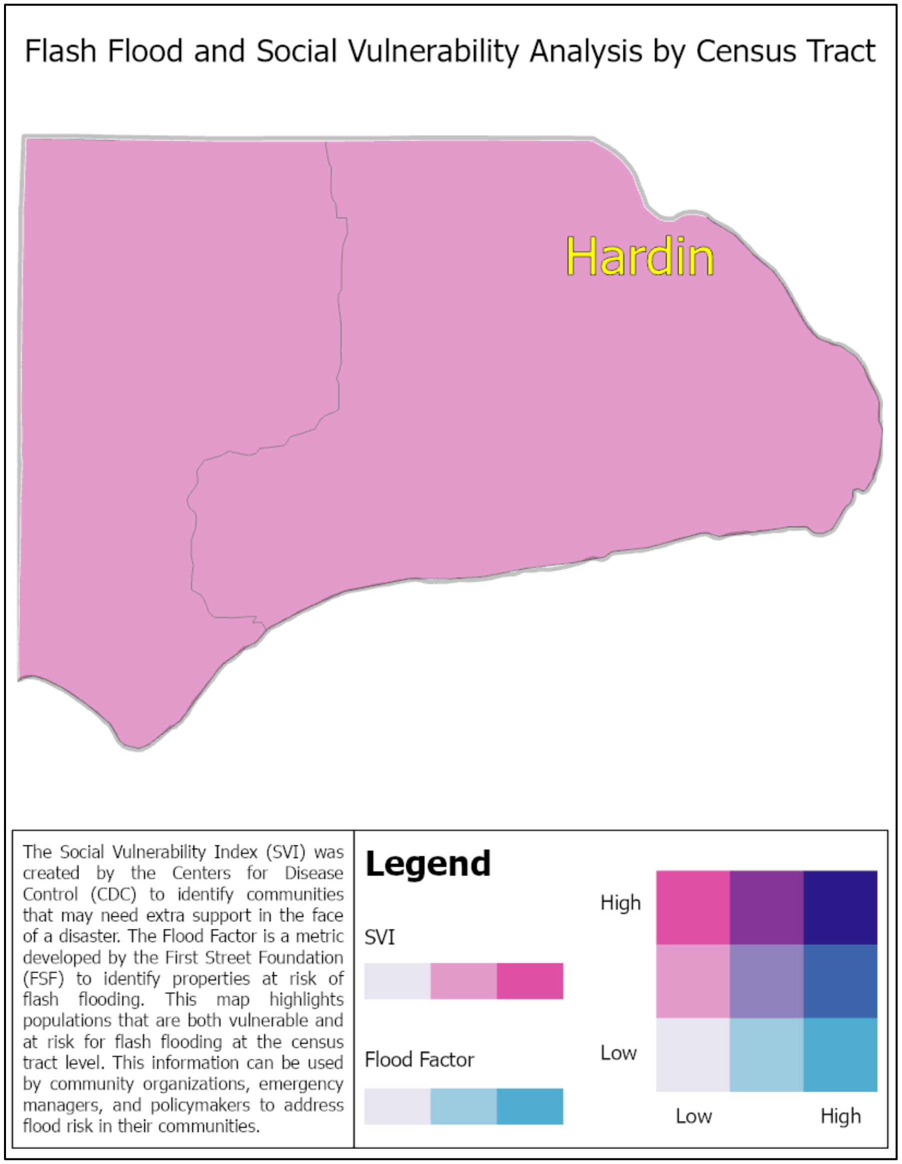
Riverine Flood and Social Vulnerability Analysis by Census Tract

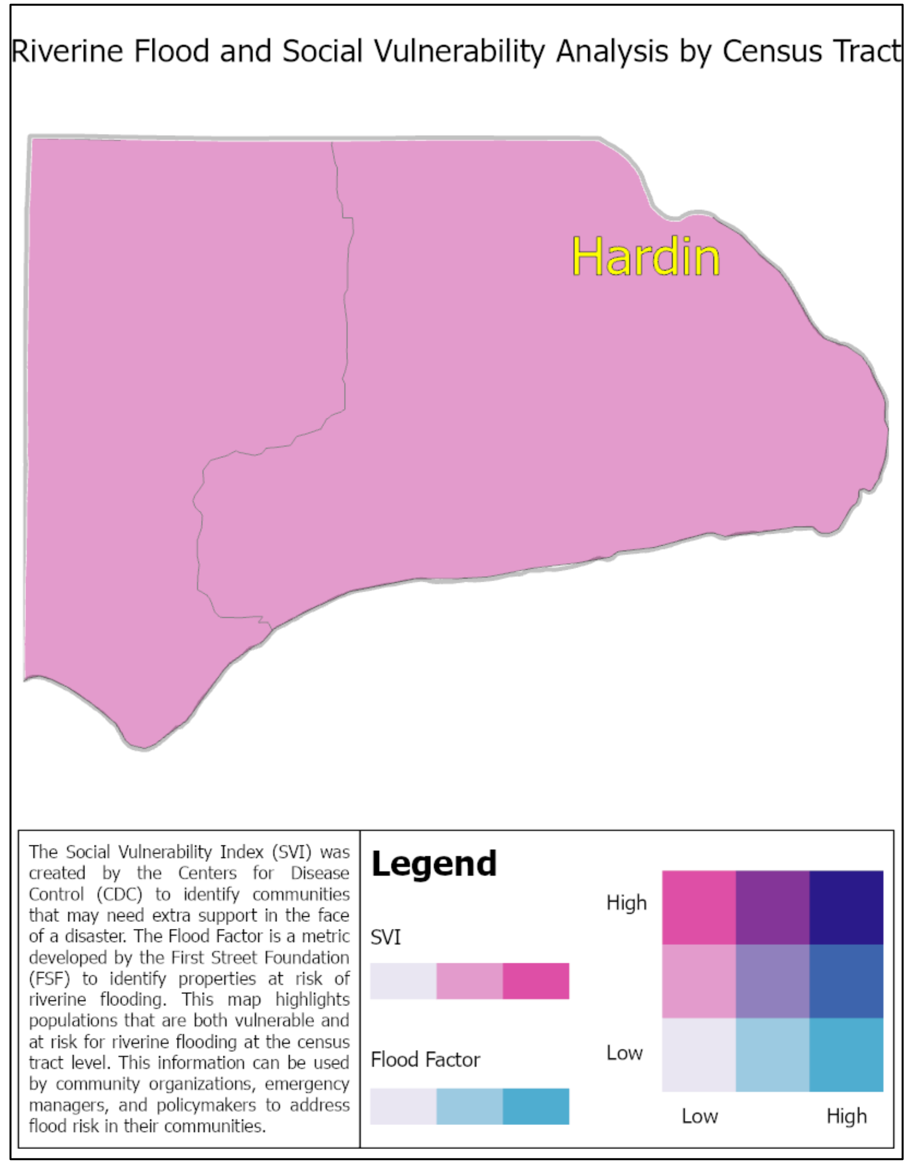


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



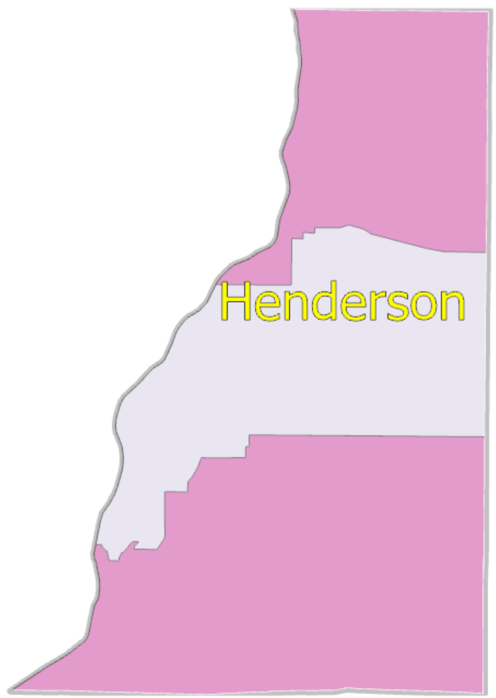
Hardin County



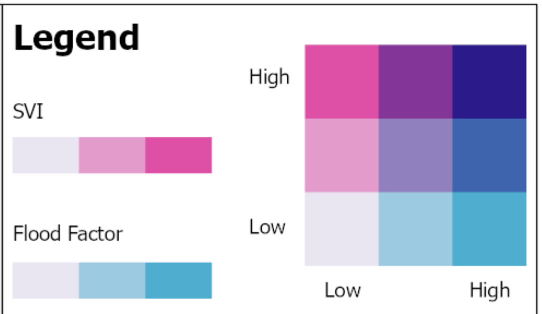


Henderson County

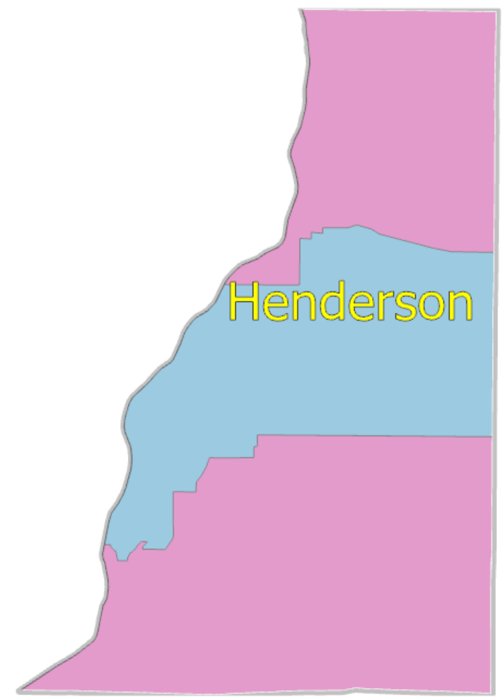
Flash Flood and Social Vulnerability Analysis by Census Tract



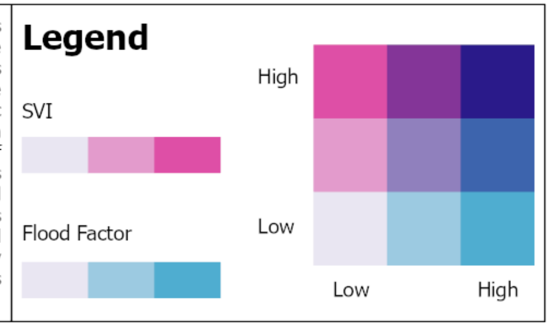
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

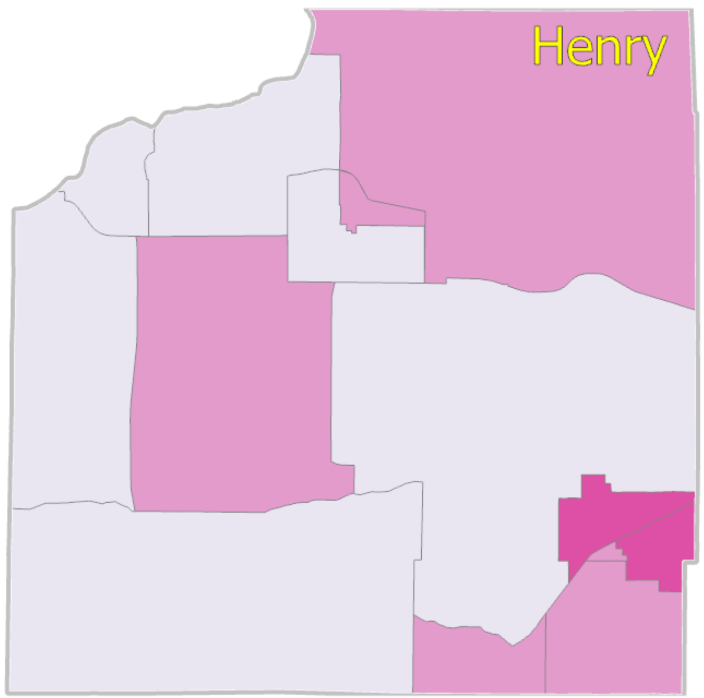


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

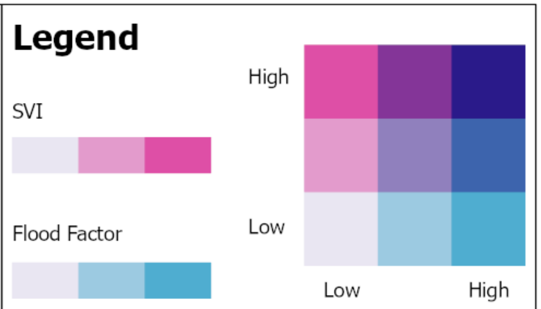


Henry County

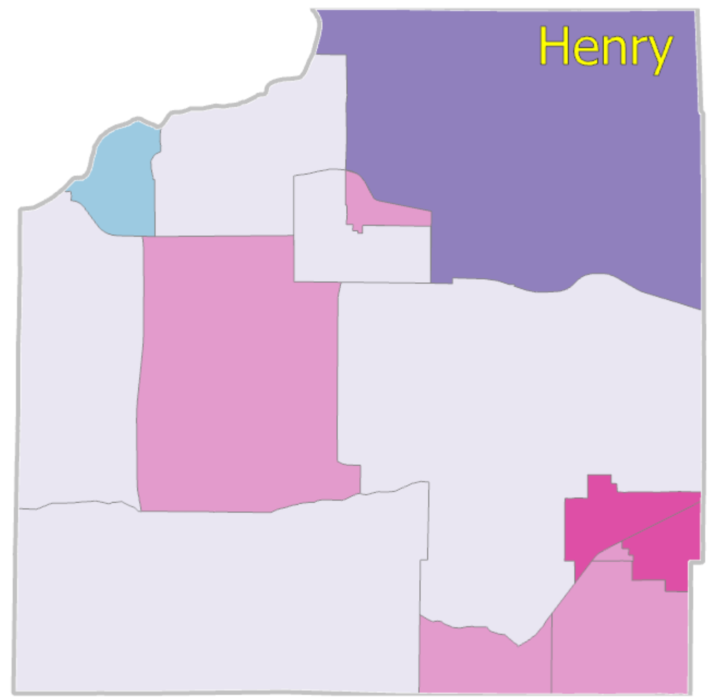
Flash Flood and Social Vulnerability Analysis by Census Tract



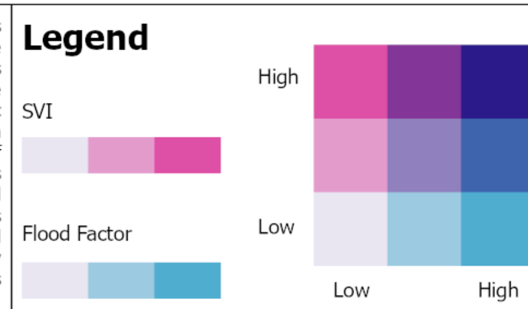
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

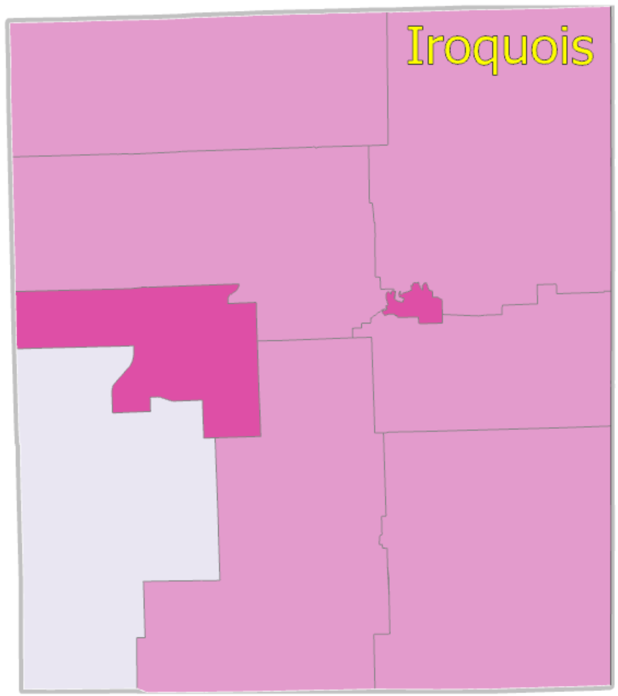


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

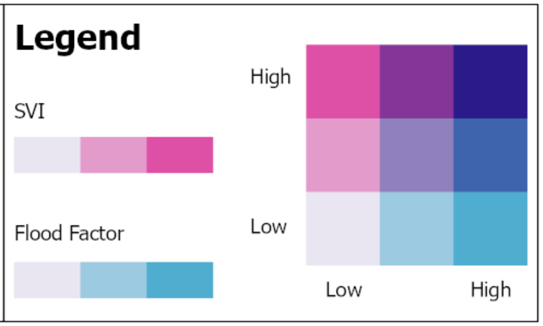


Iroquois County

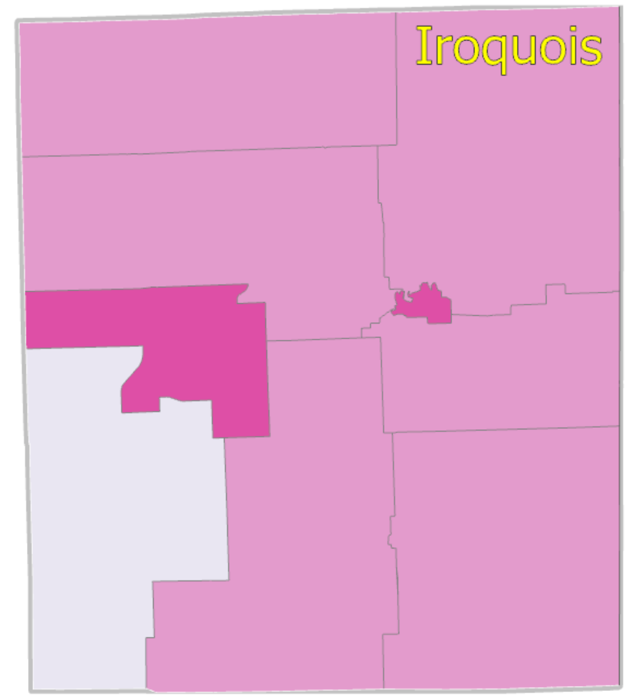
Flash Flood and Social Vulnerability Analysis by Census Tract



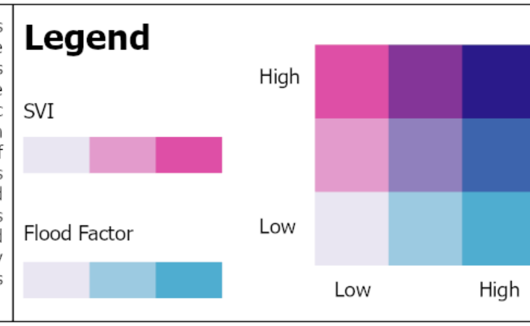
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



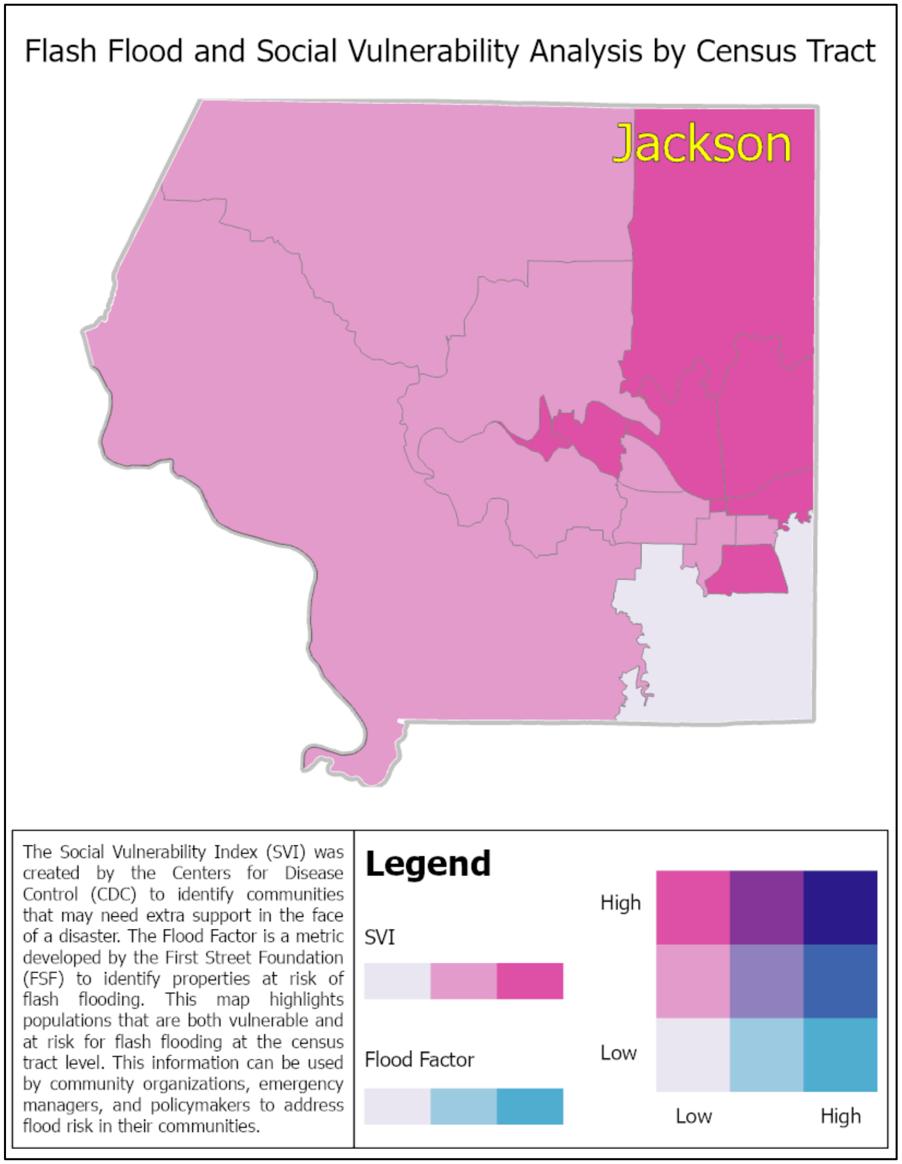
Riverine Flood and Social Vulnerability Analysis by Census Tract

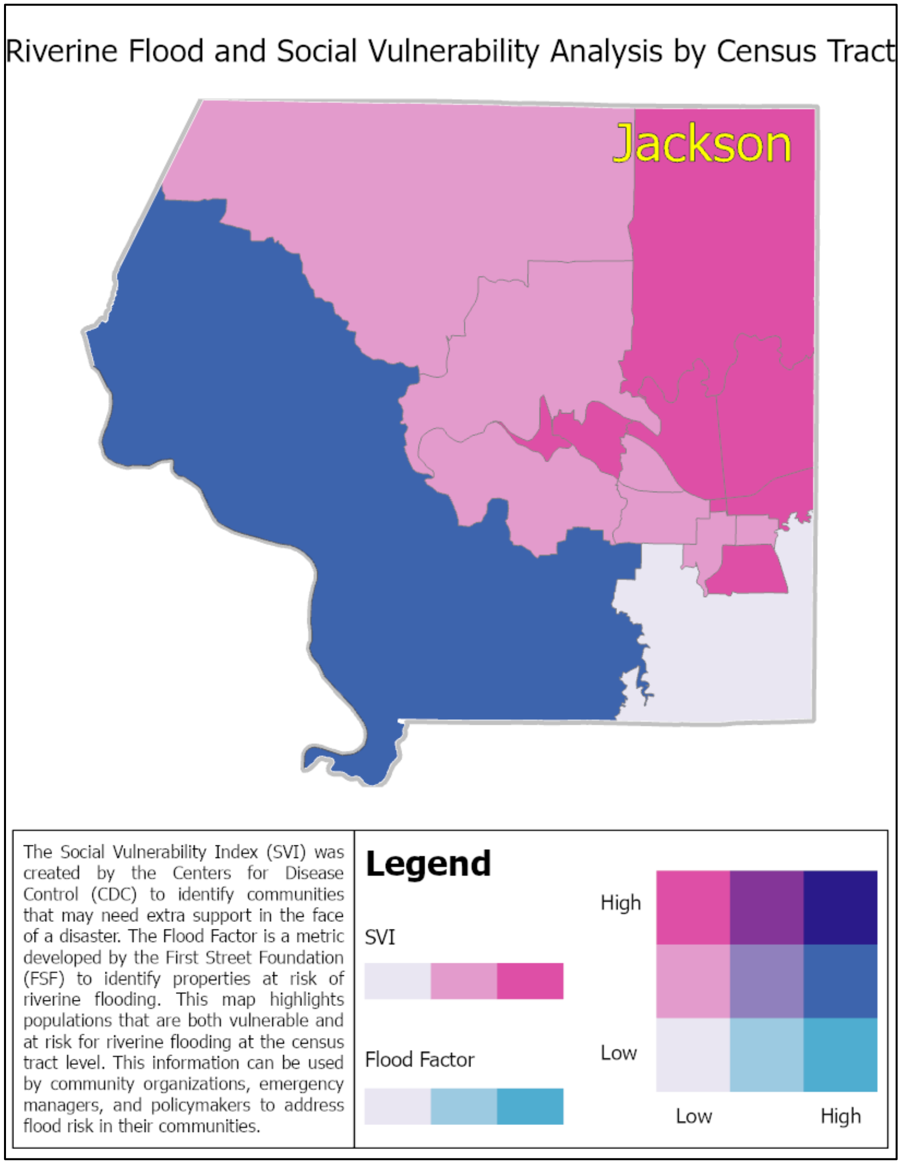


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

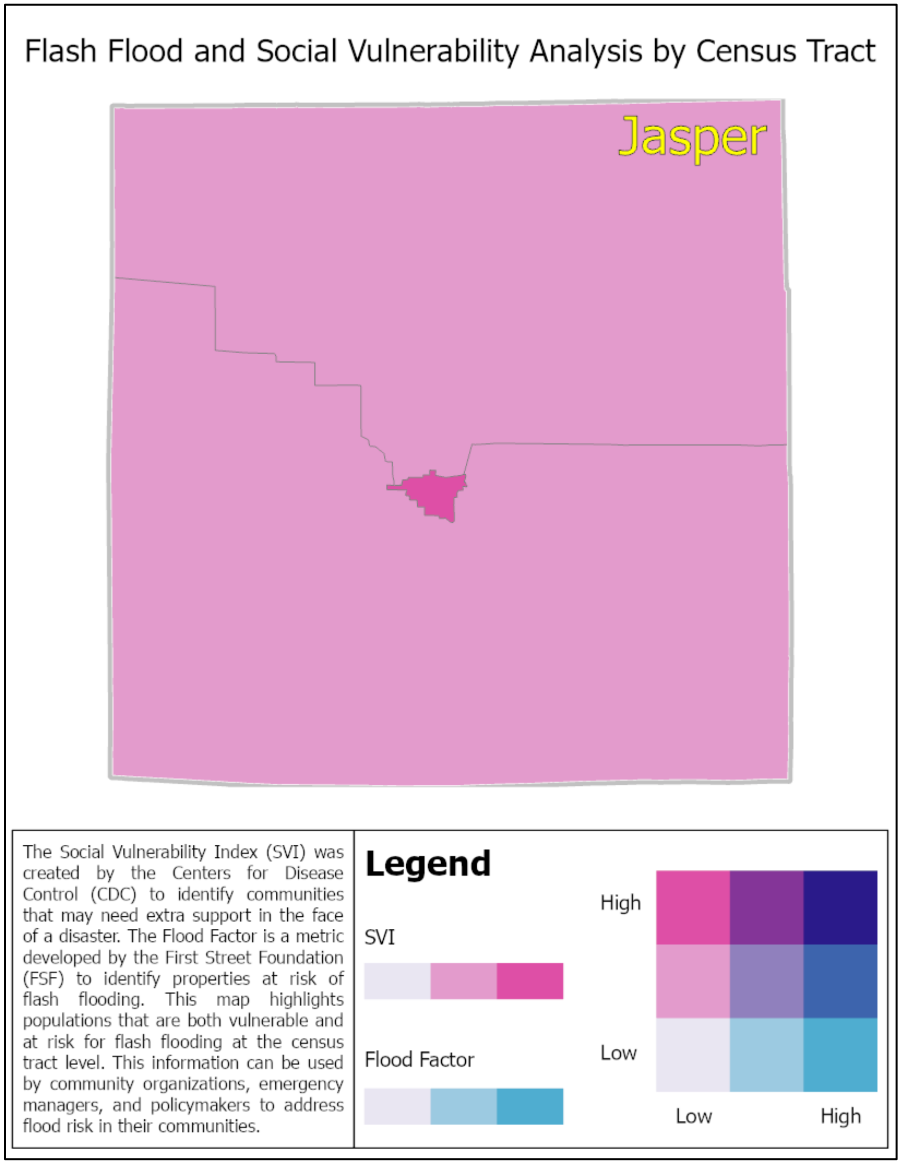


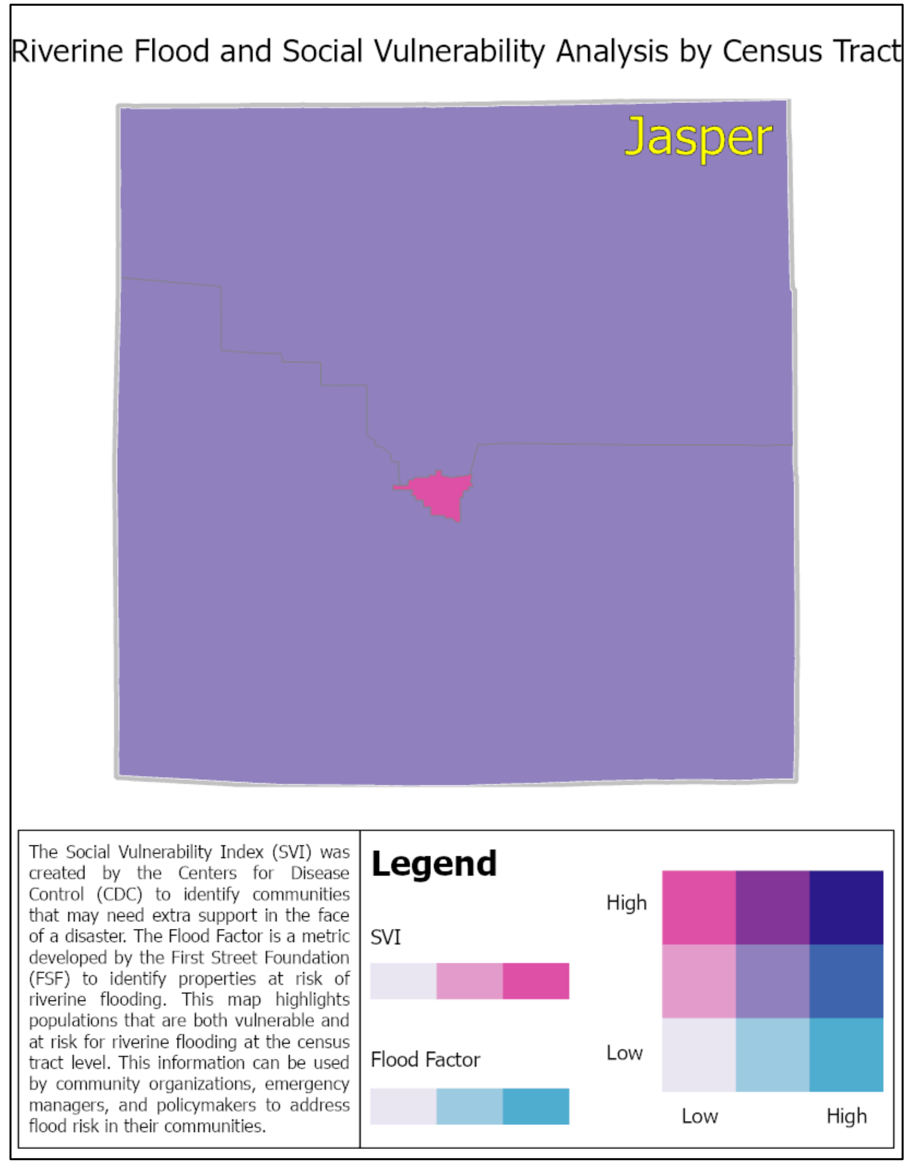
Jackson County





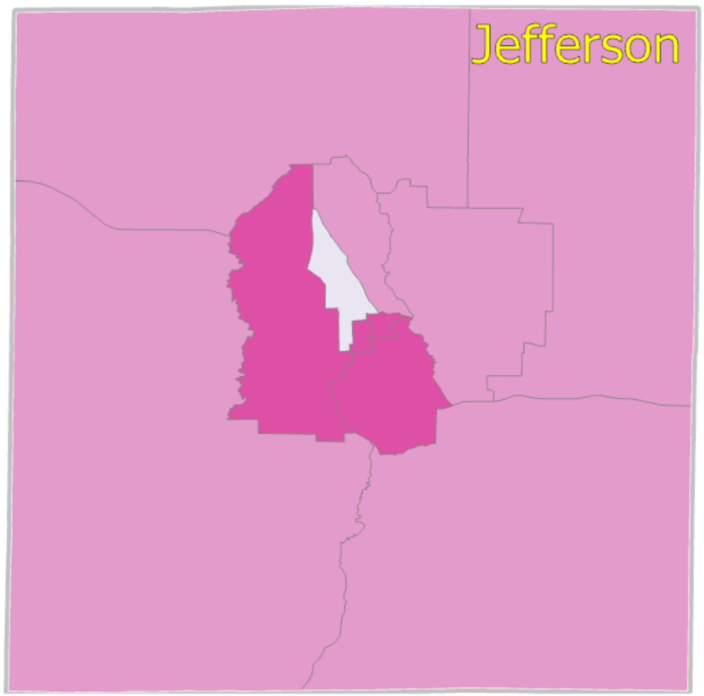
Jasper County





Jefferson County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

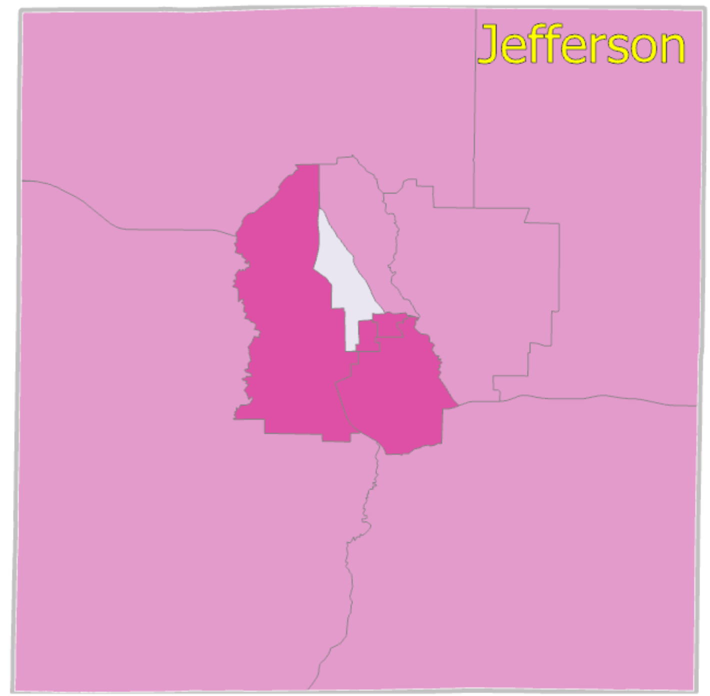
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

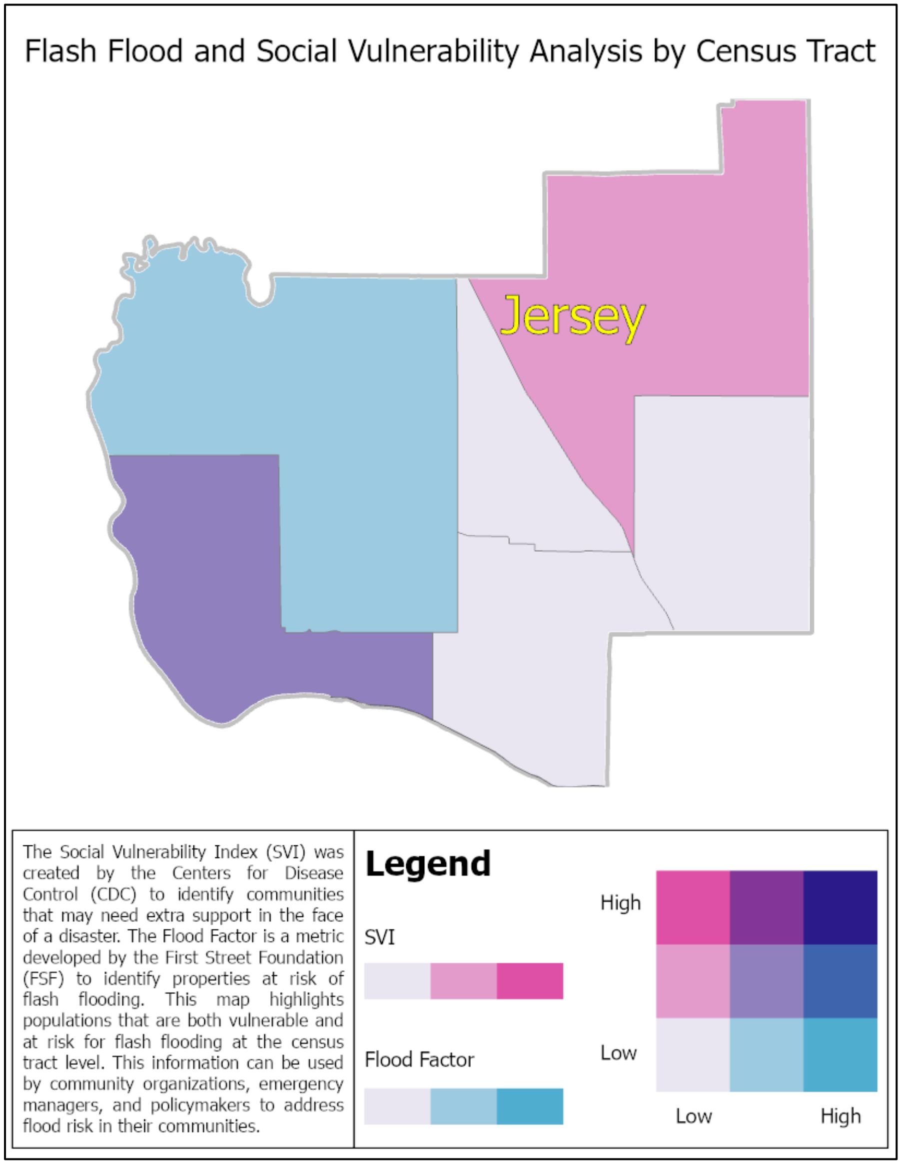
Flood Factor

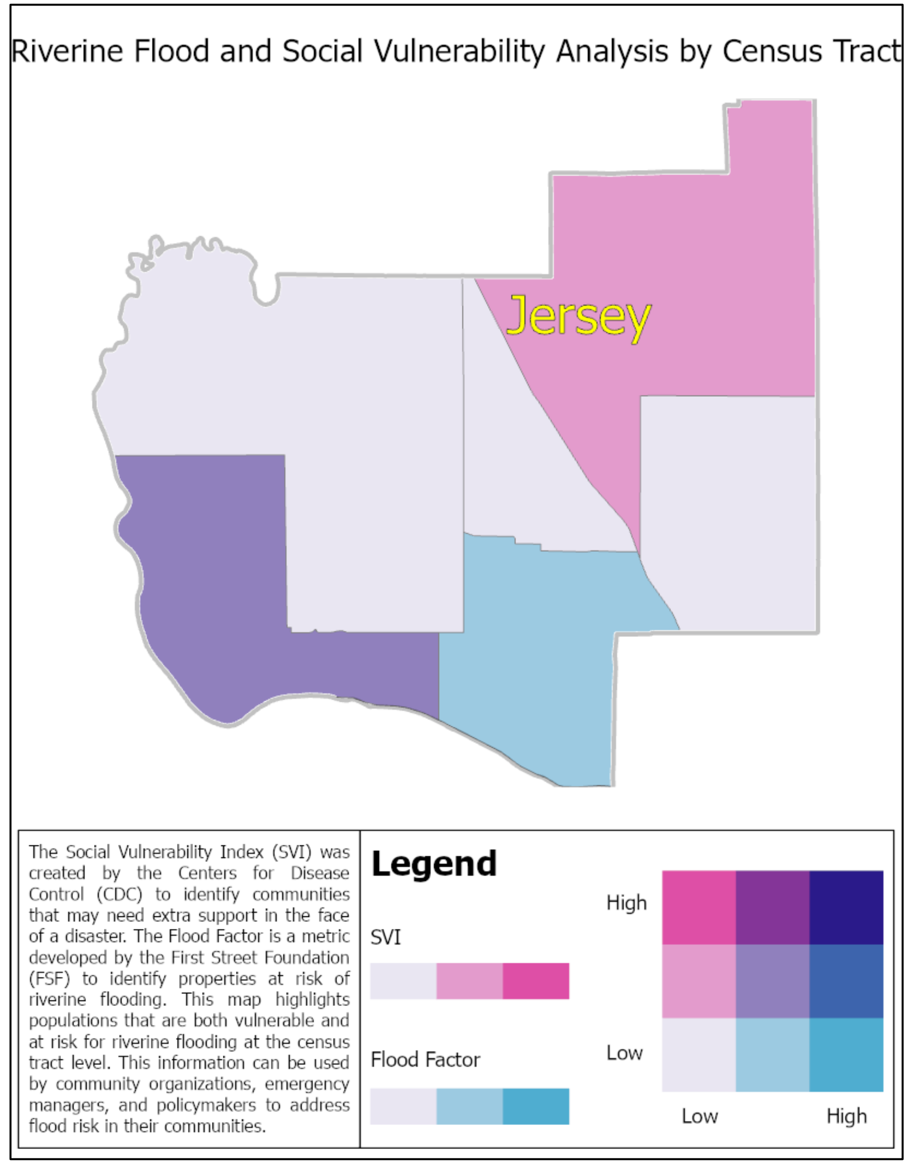
High

Low

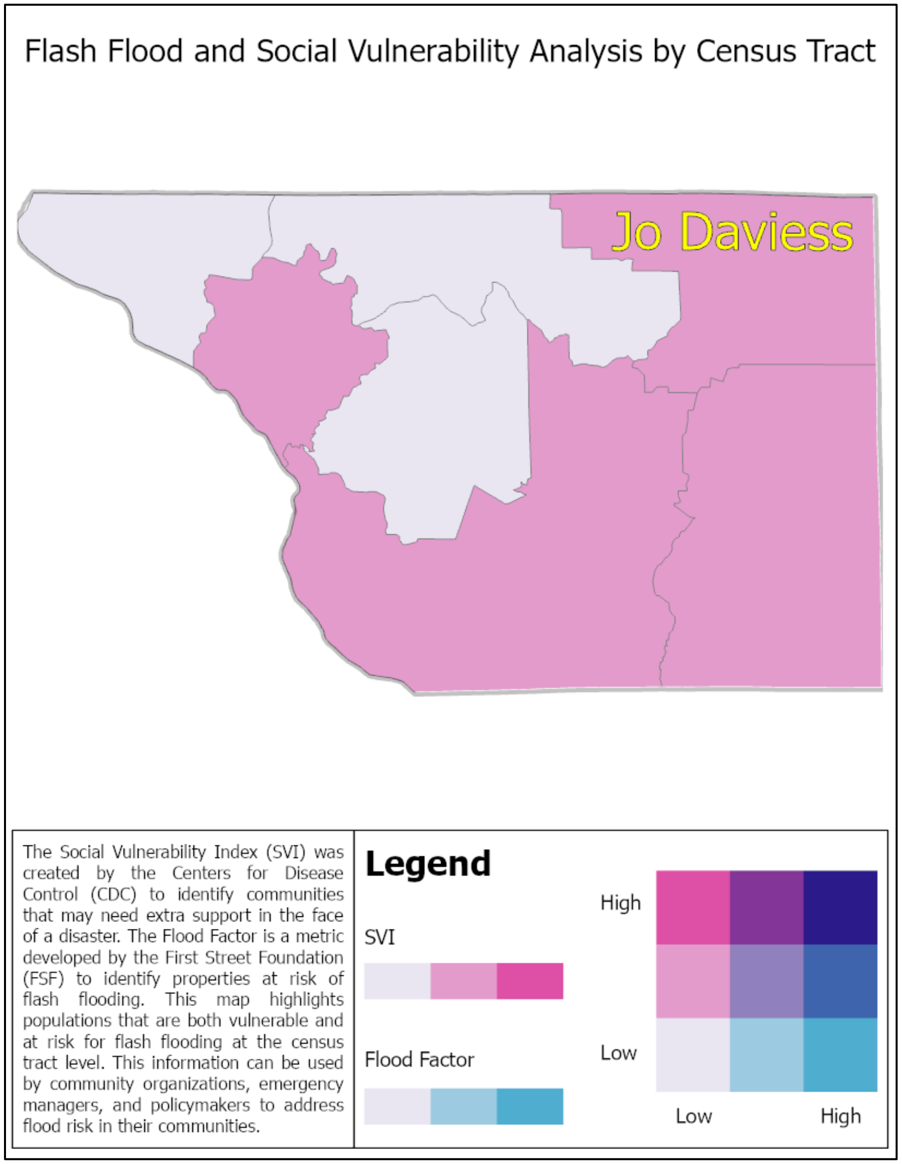
Low High

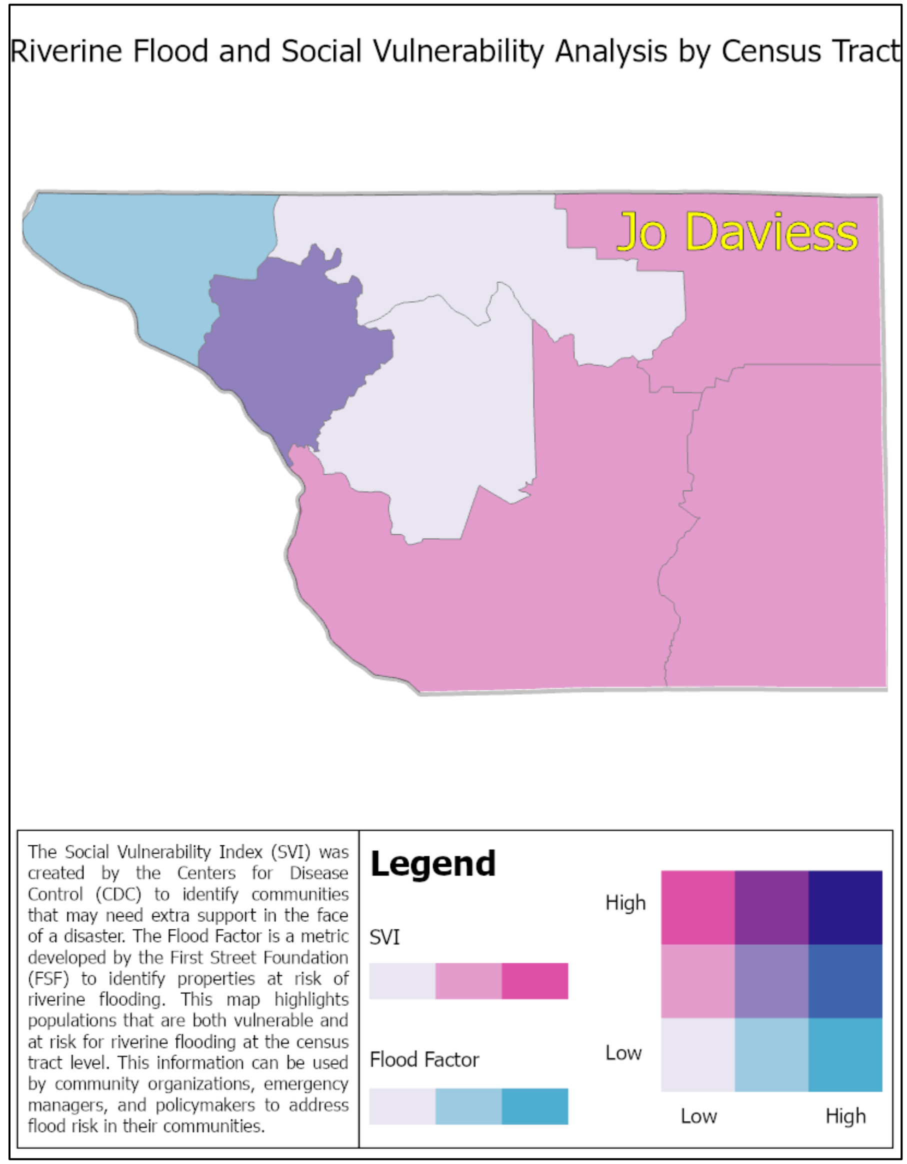
Jersey County



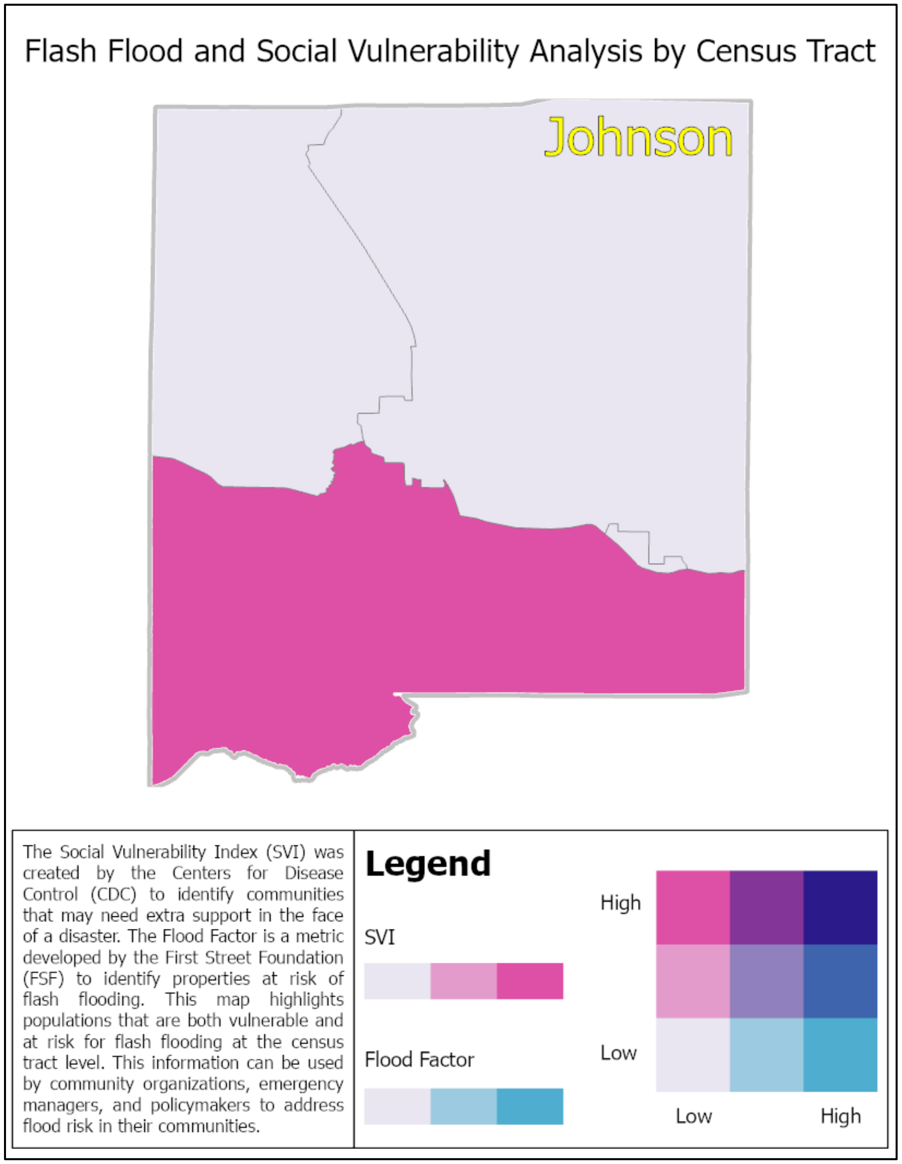


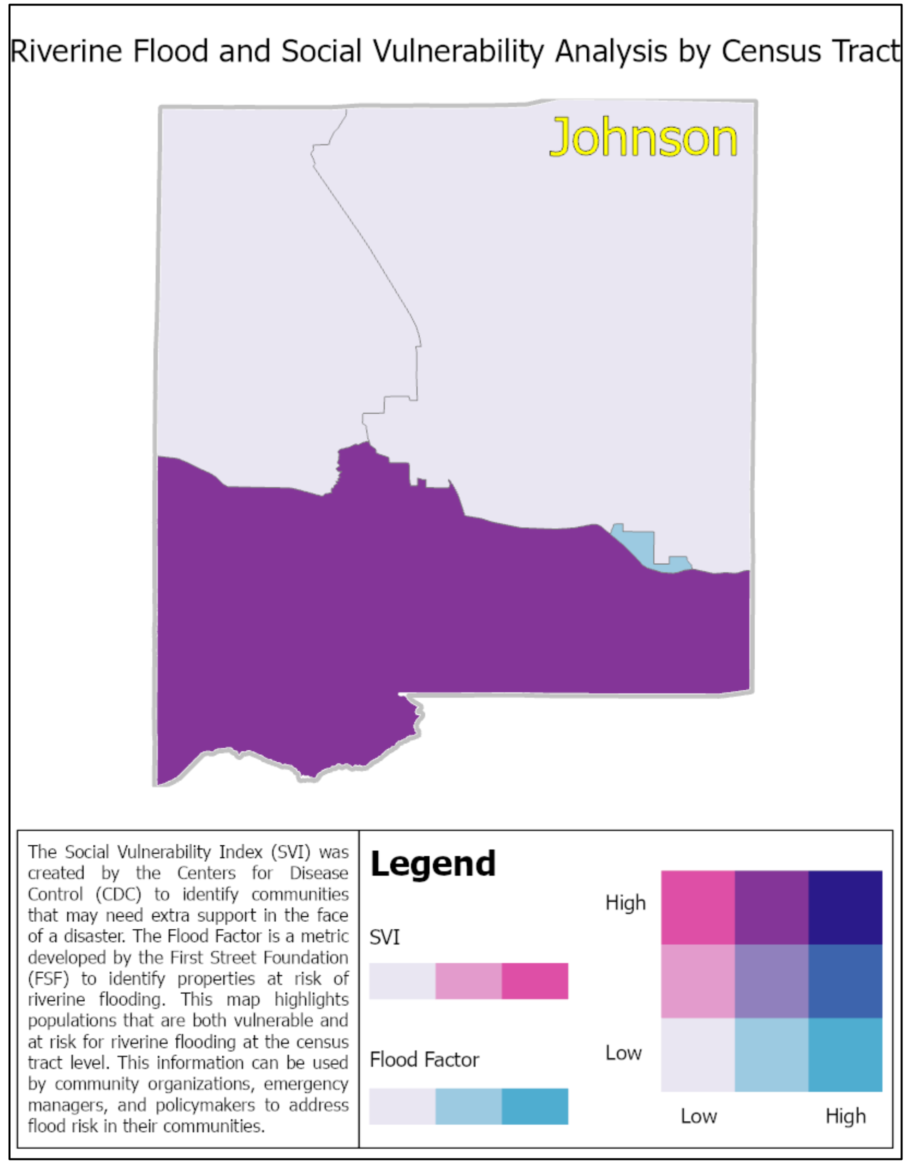
Jo Daviess County





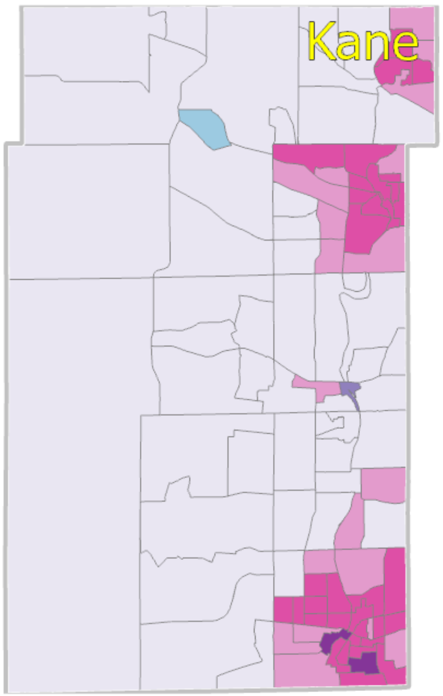
Johnson County



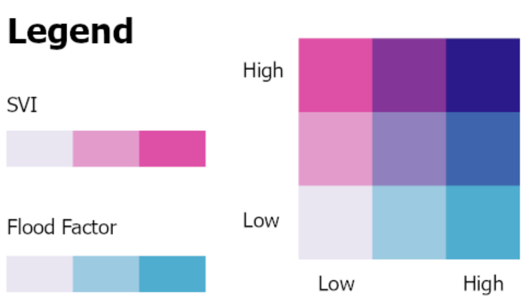


Kane County

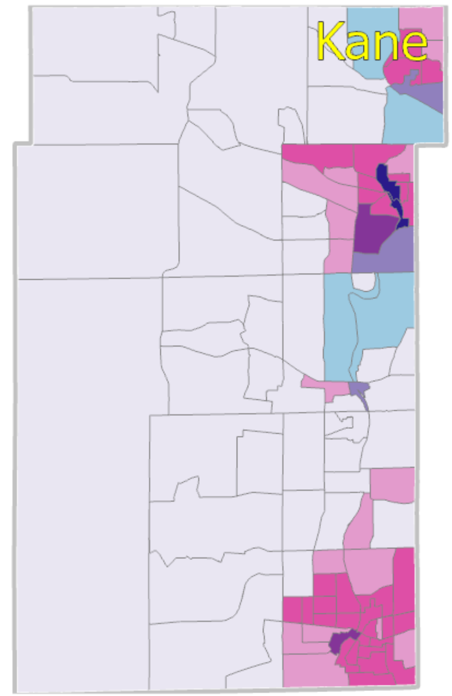
Flash Flood and Social Vulnerability Analysis by Census Tract



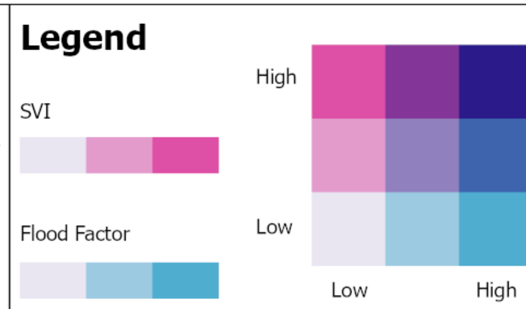
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

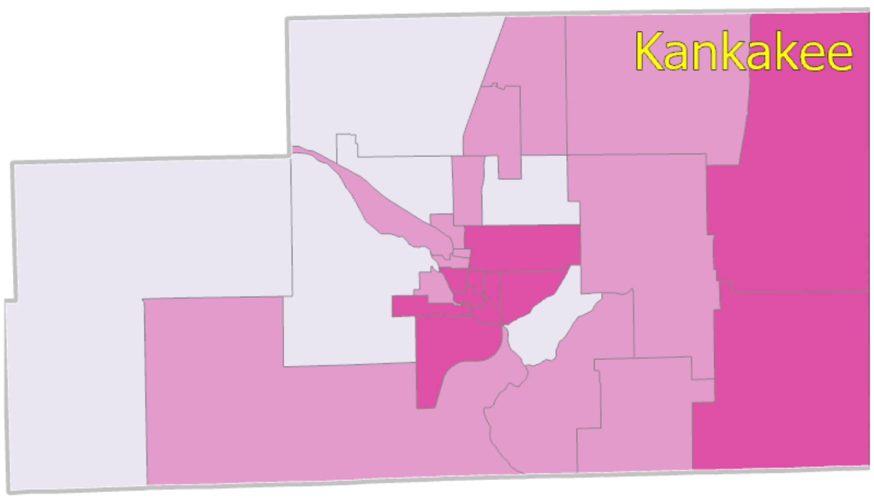


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

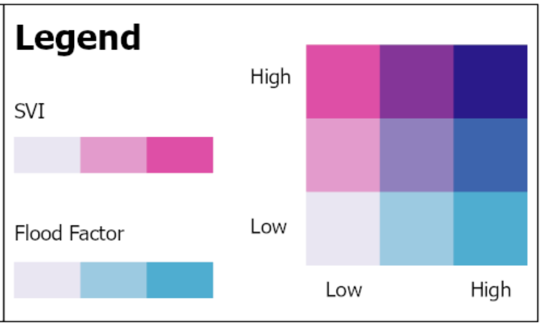


Kankakee County

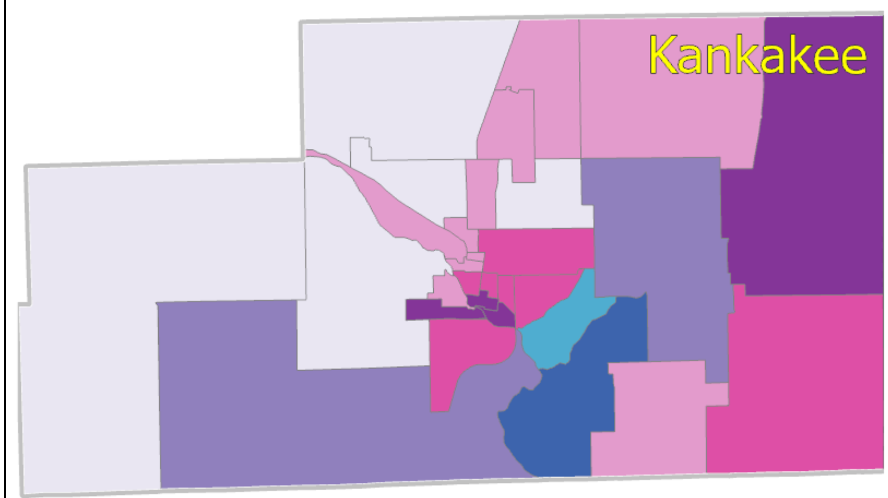
Flash Flood and Social Vulnerability Analysis by Census Tract



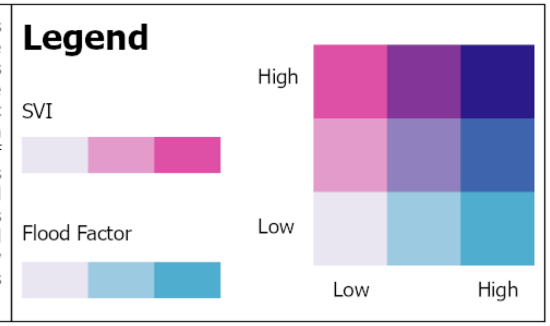
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

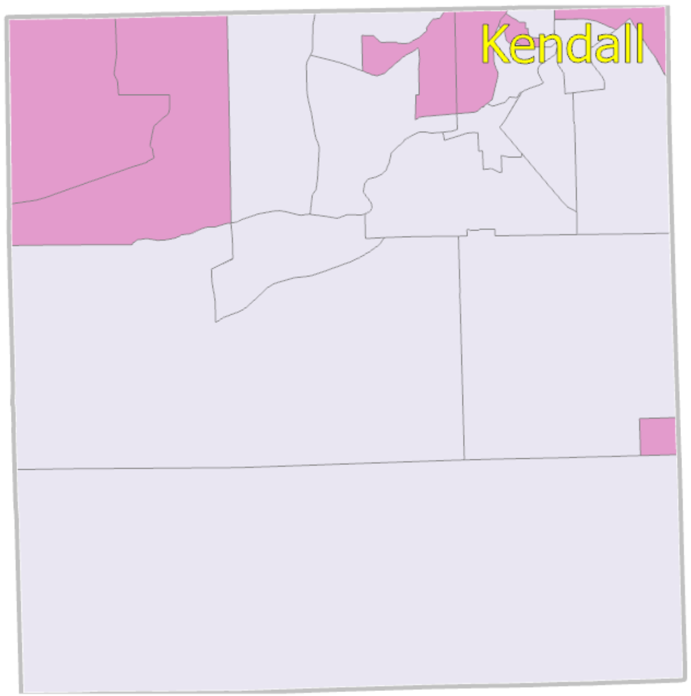


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

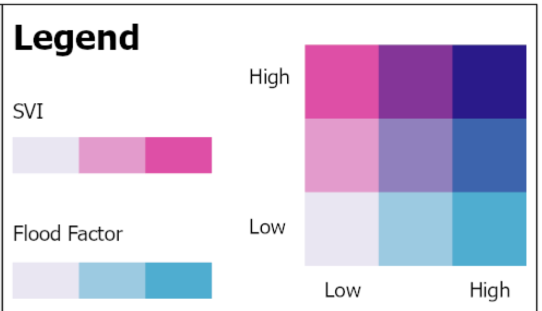


Kendall County

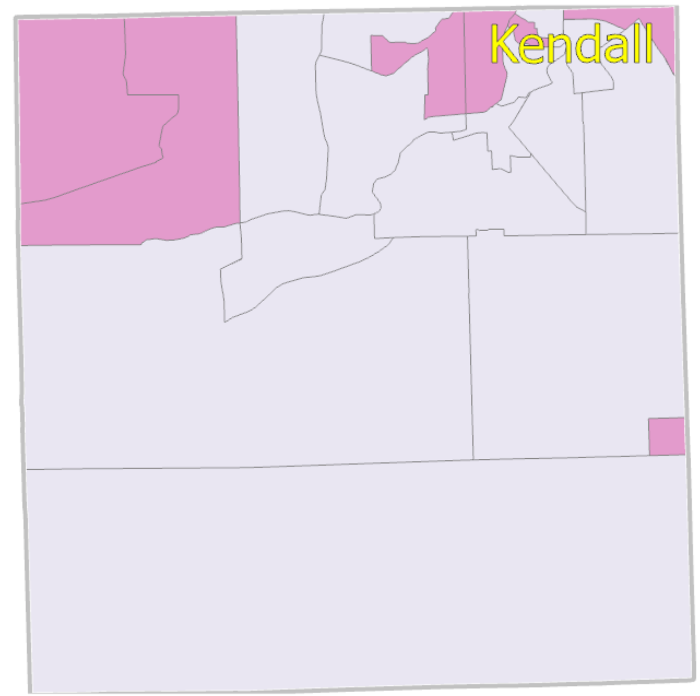
Flash Flood and Social Vulnerability Analysis by Census Tract



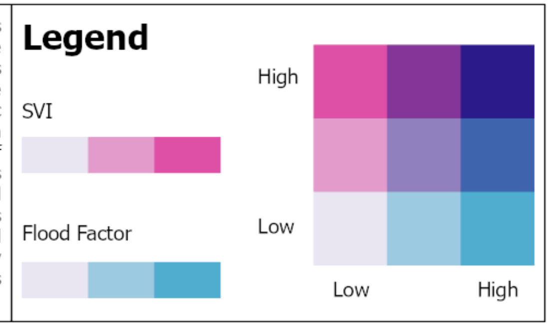
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

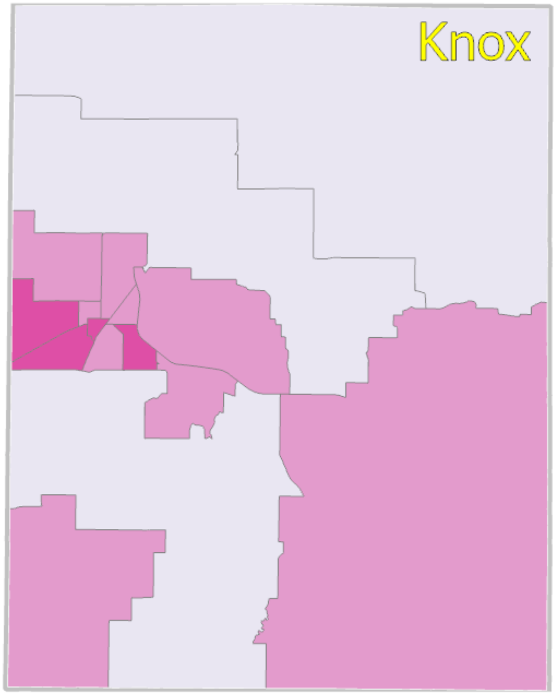


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

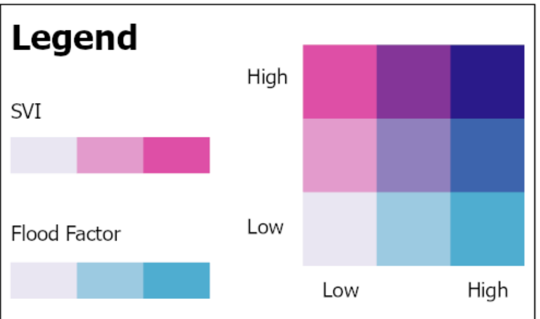


Knox County

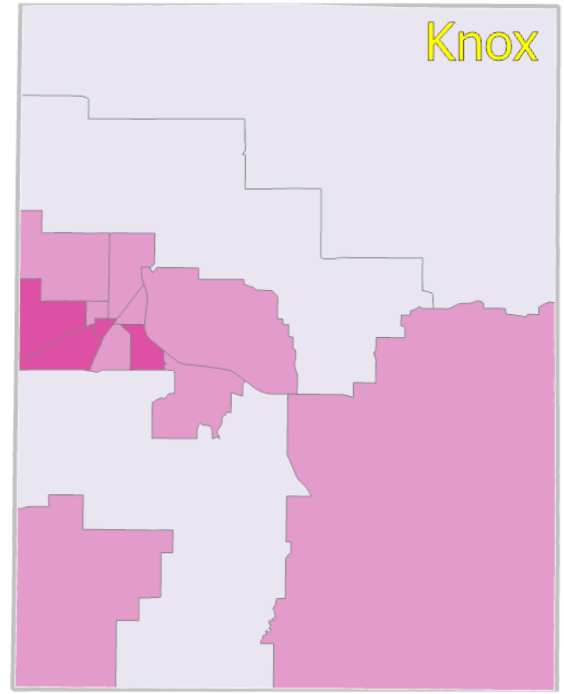
Flash Flood and Social Vulnerability Analysis by Census Tract



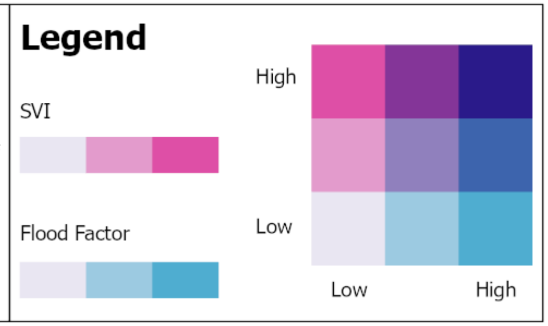
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

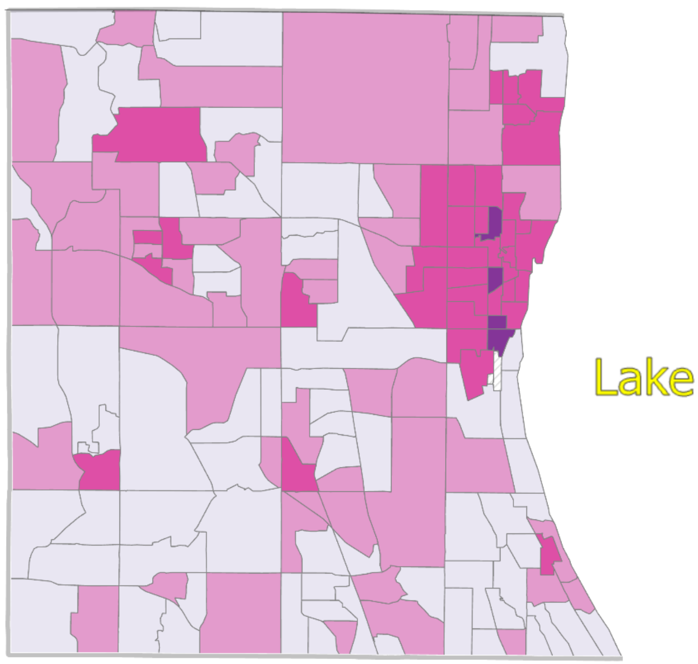


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Lake County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

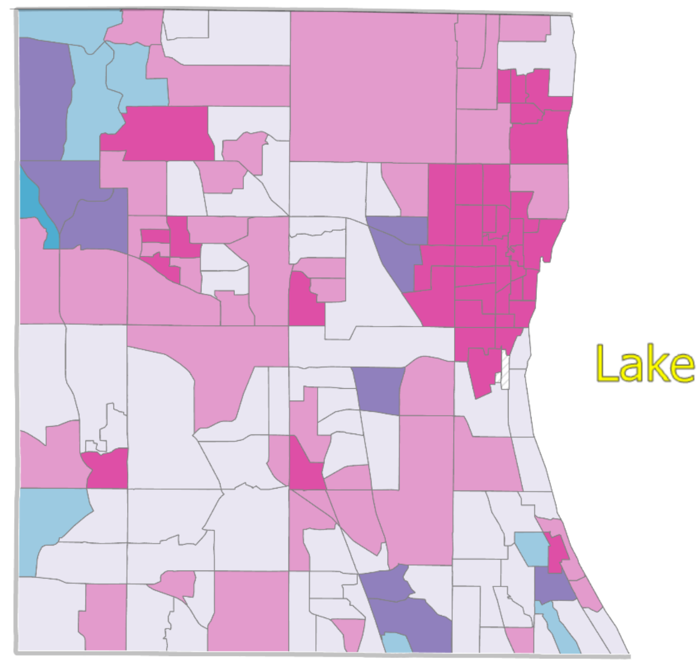
High

Low

Low

High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

High

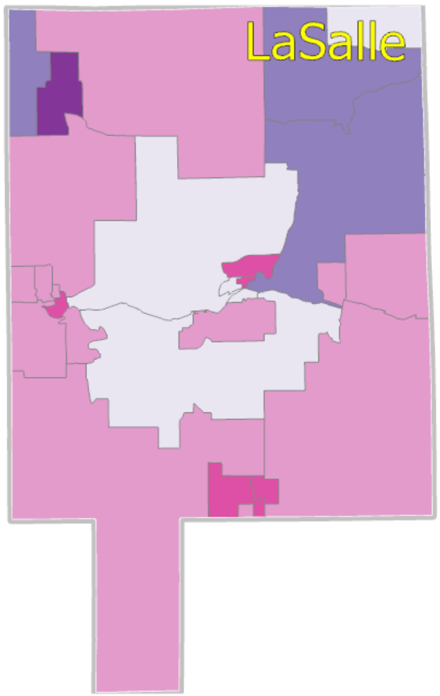
Low

Low

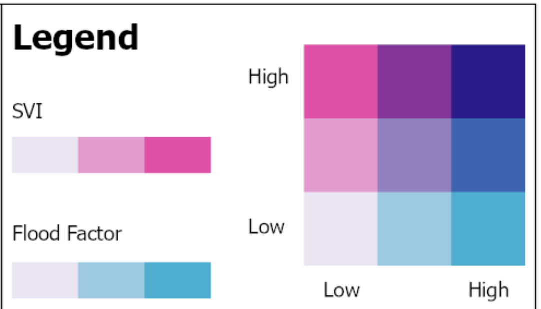
High

LaSalle County

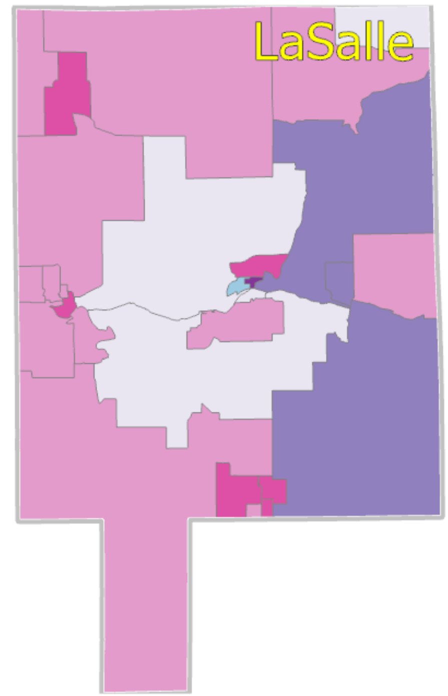
Flash Flood and Social Vulnerability Analysis by Census Tract



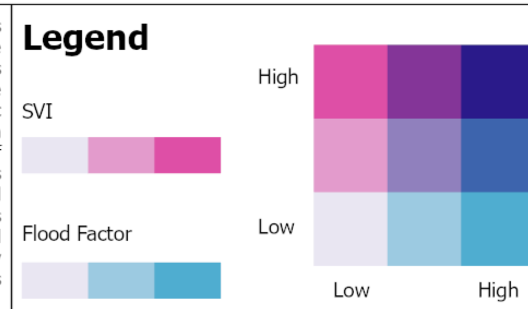
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

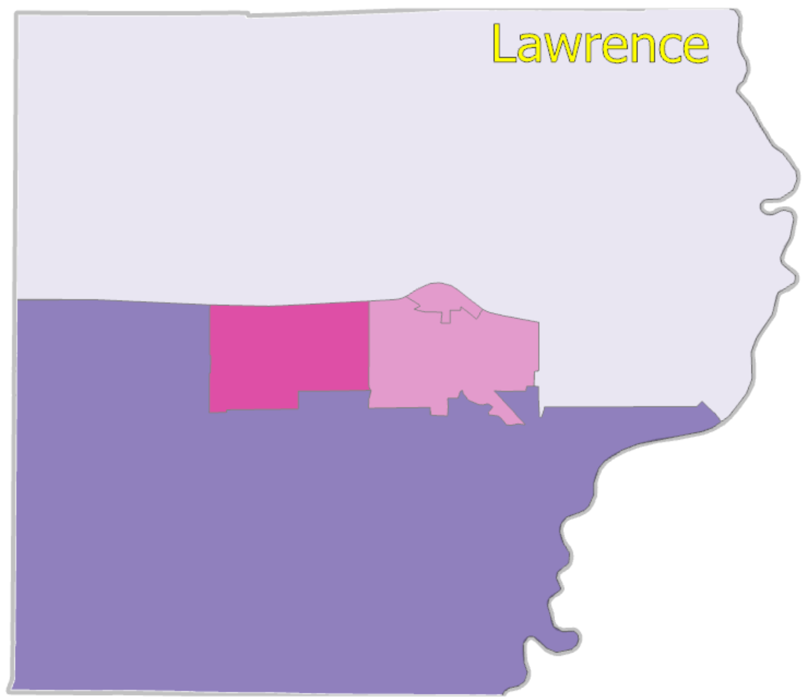


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

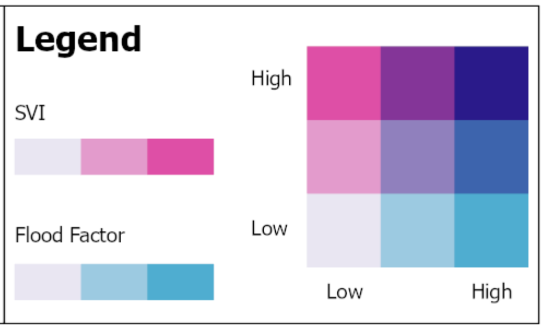


Lawrence County

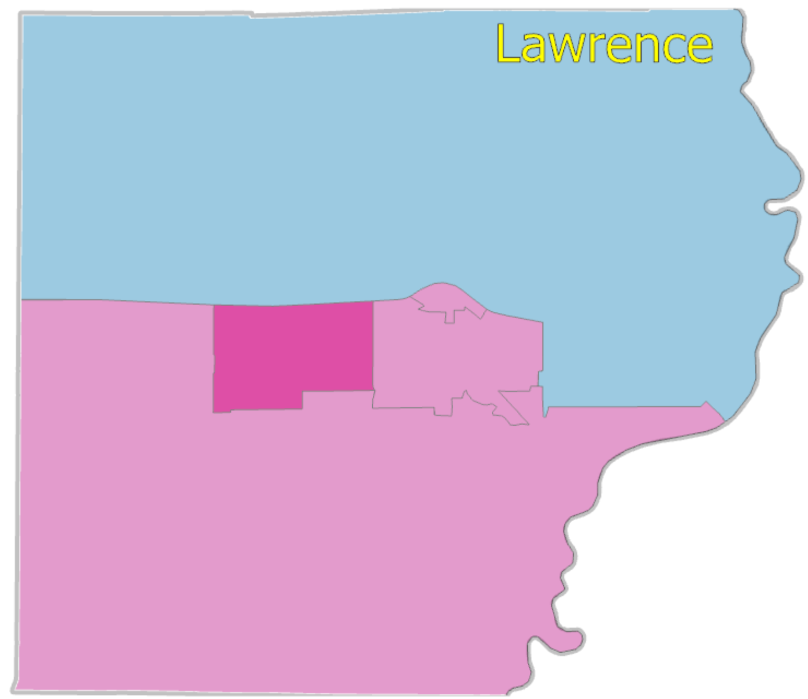
Flash Flood and Social Vulnerability Analysis by Census Tract



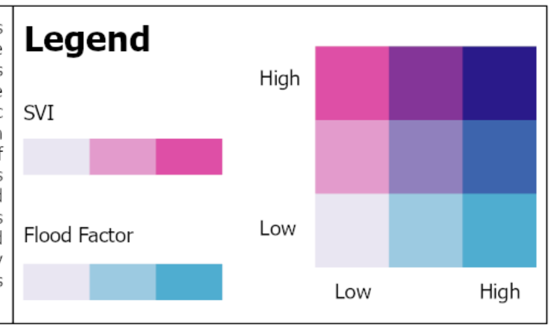
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



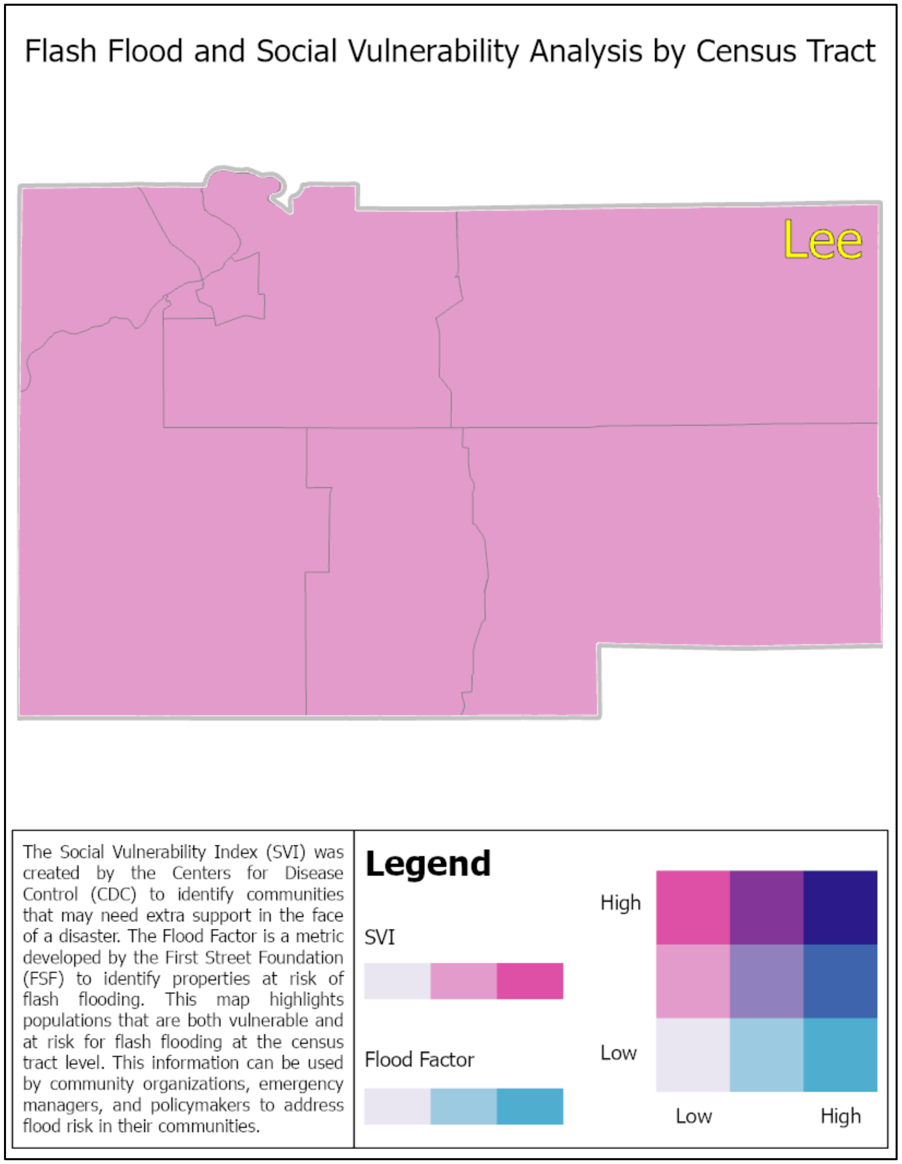
Riverine Flood and Social Vulnerability Analysis by Census Tract

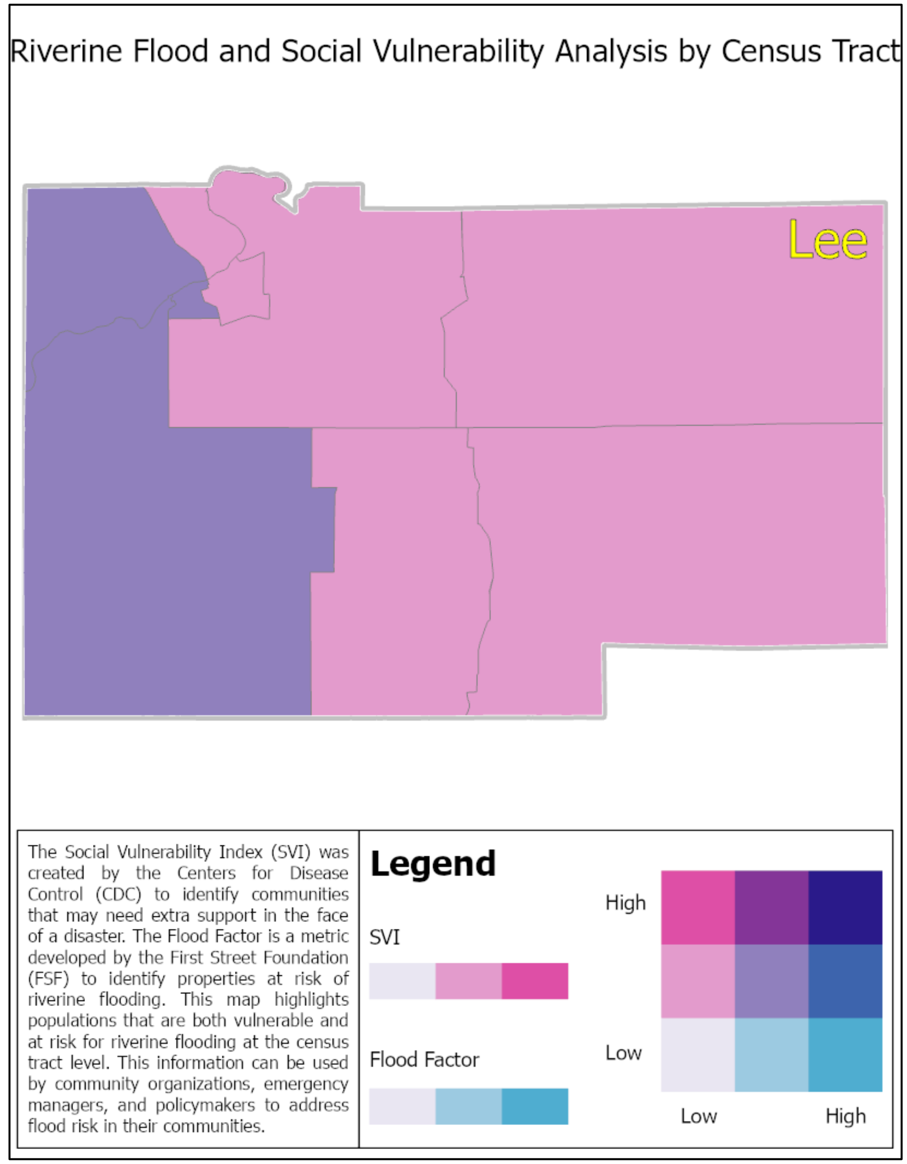


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

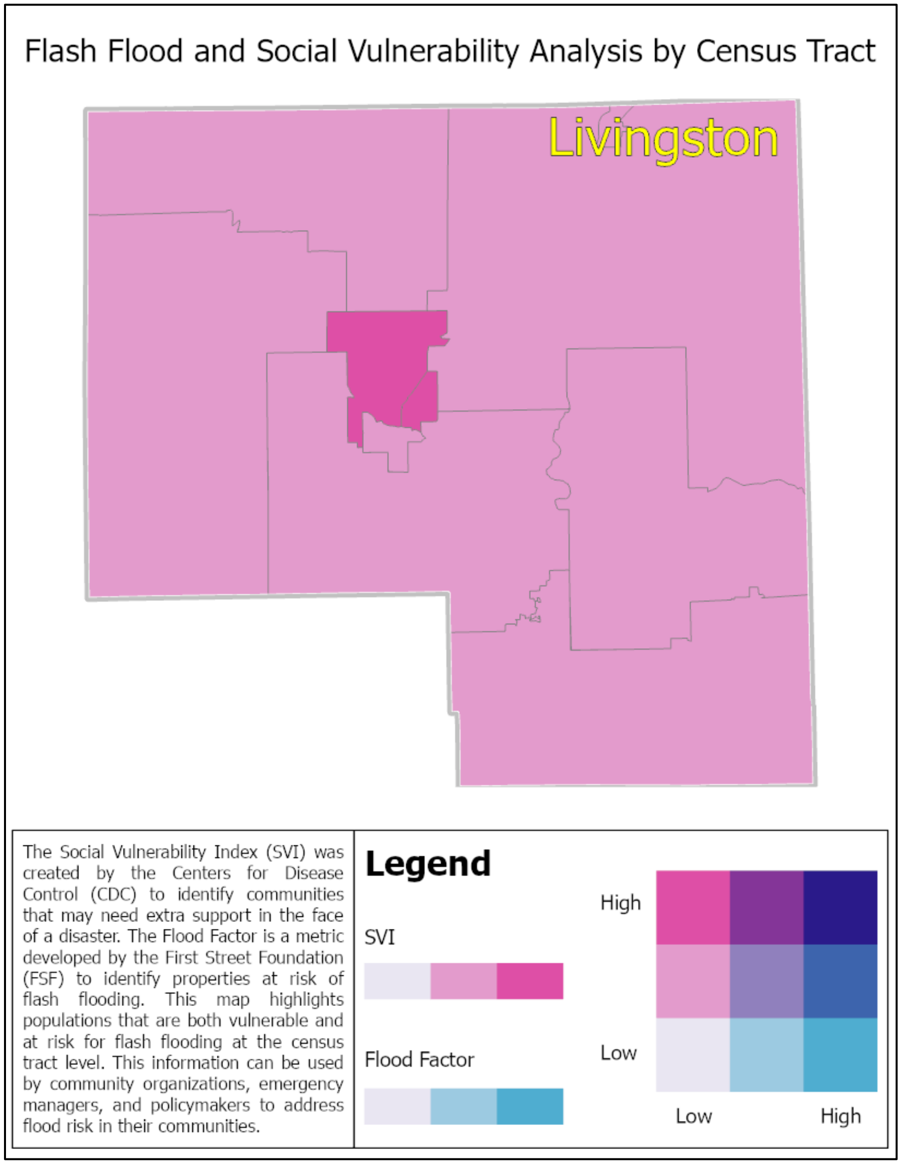


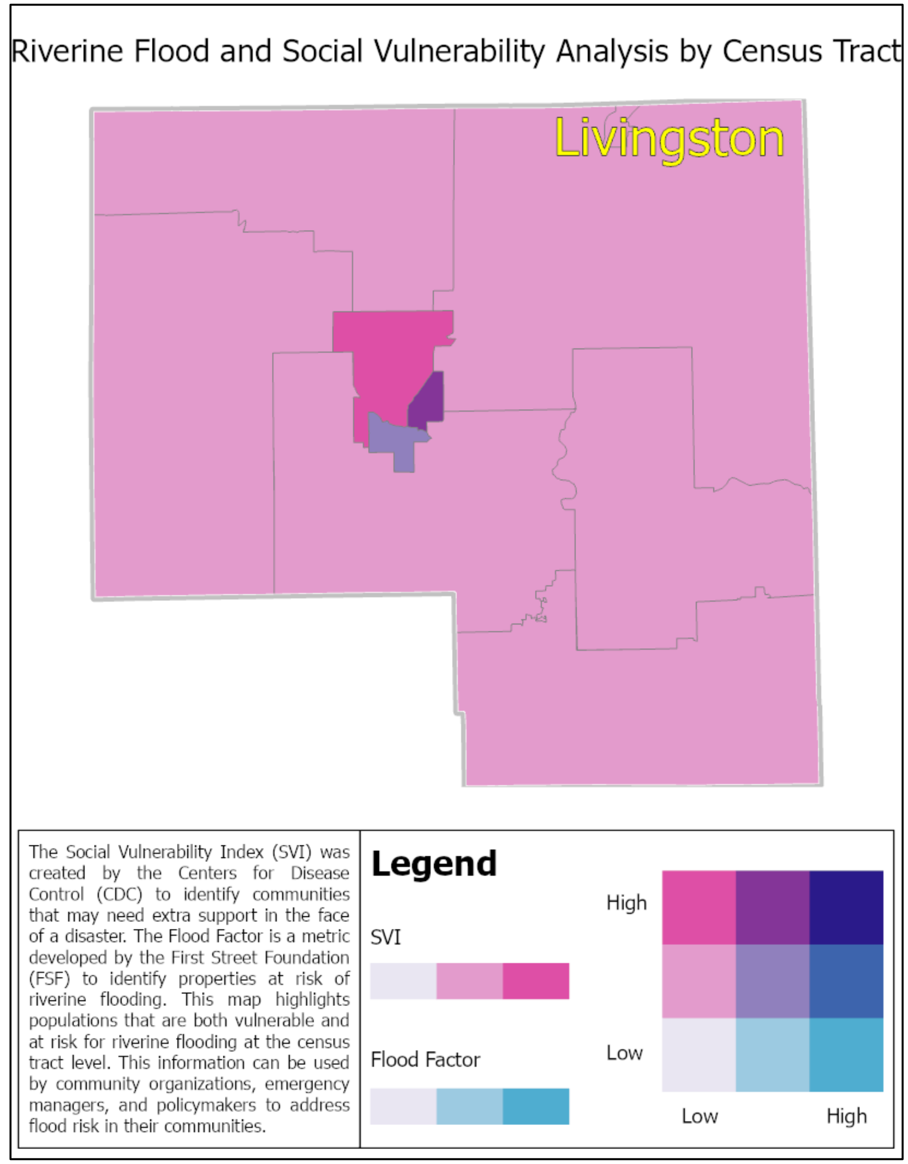
Lee County


Flash Flood and Social Vulnerability Analysis by Census Tract
Lee
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High


Riverine Flood and Social Vulnerability Analysis by Census Tract
Lee
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

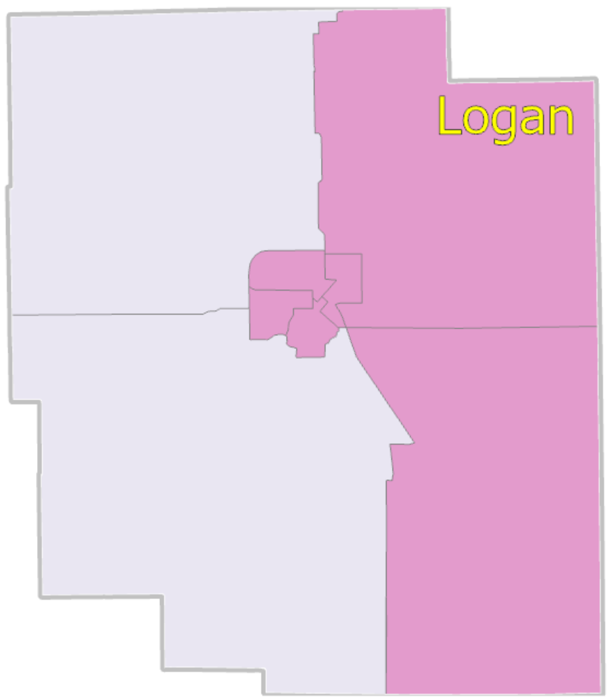
Livingston County



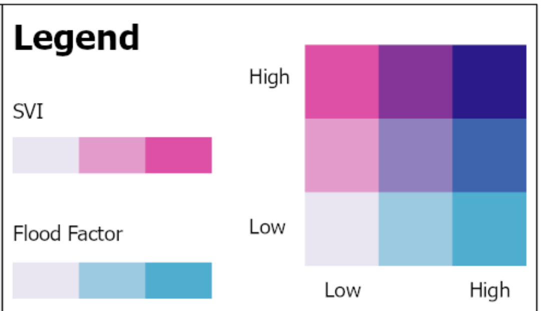


Logan County

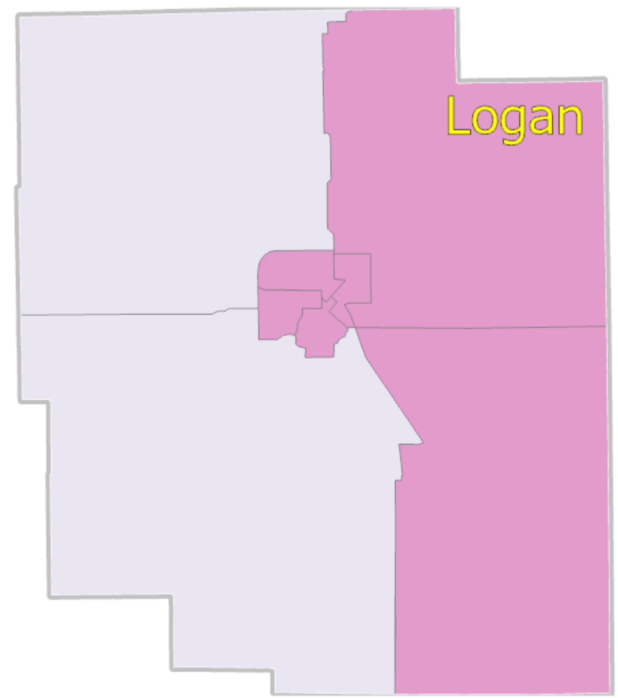
Flash Flood and Social Vulnerability Analysis by Census Tract



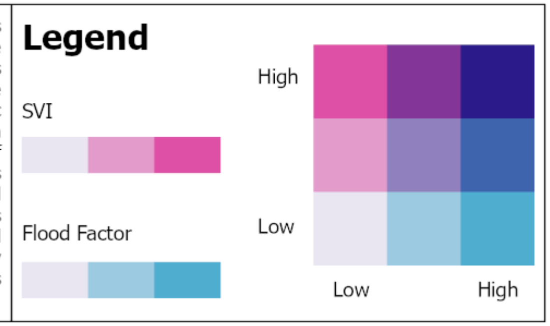
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

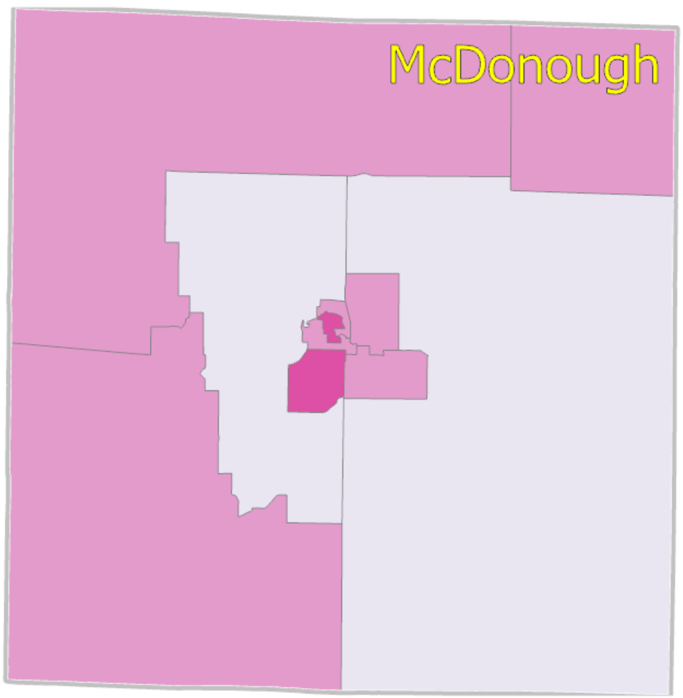


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



McDonough County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

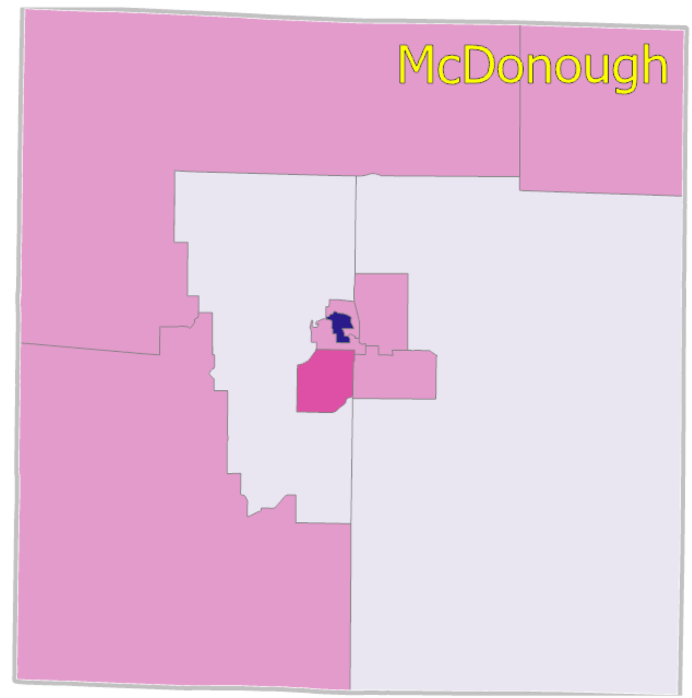
High

Low

Low

High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

High

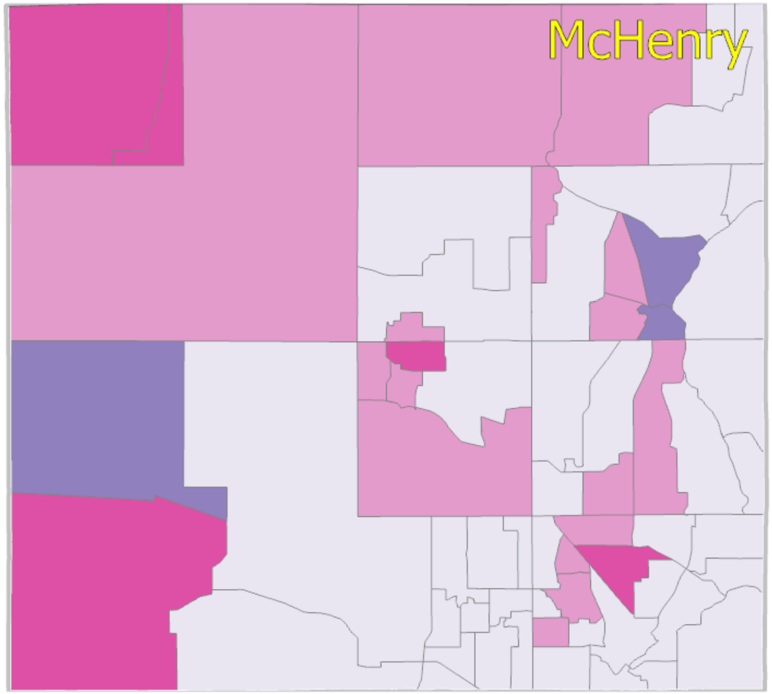
Low

Low

High

McHenry County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

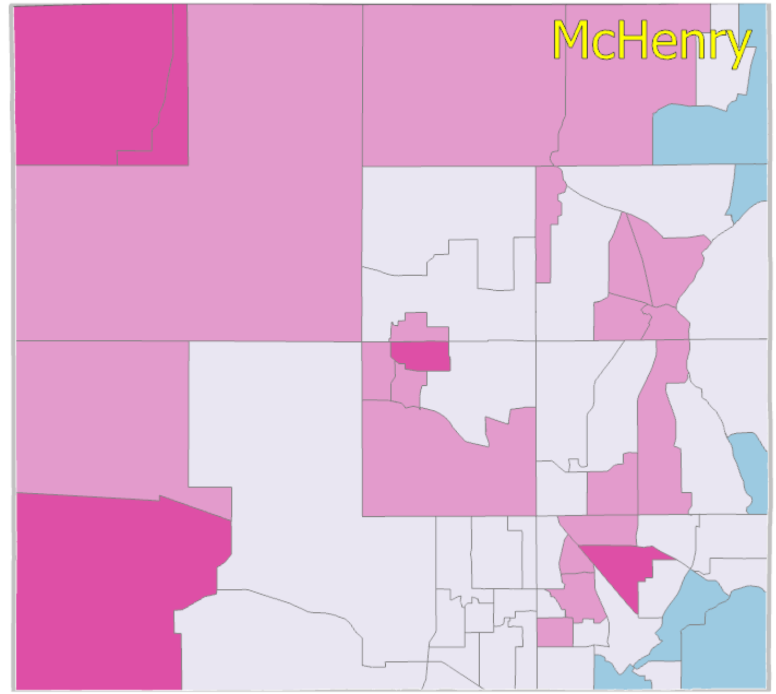
Flood Factor

High

Low

Low High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

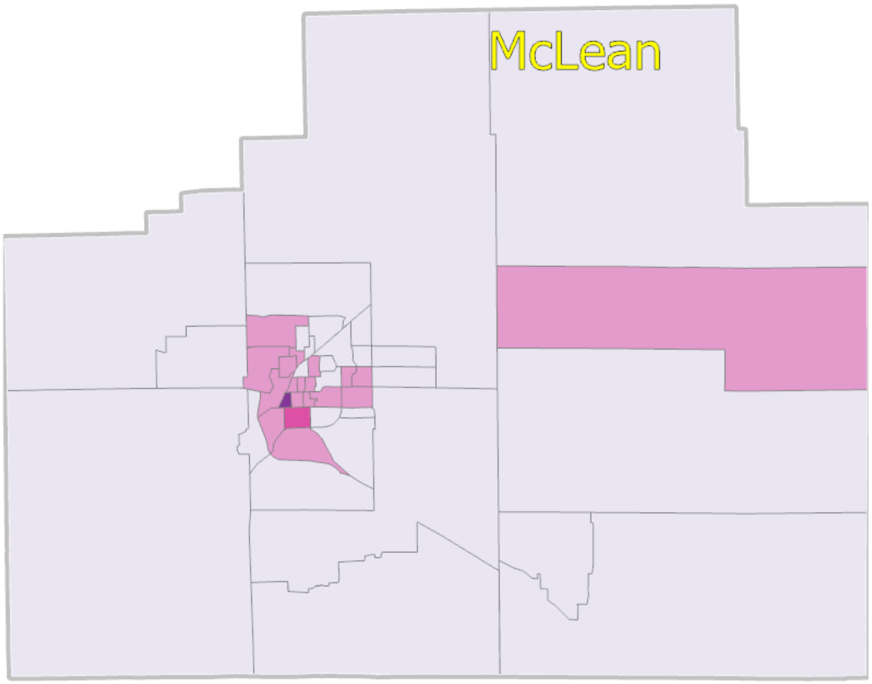
High

Low

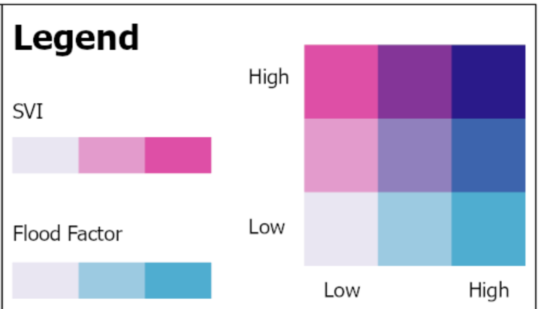
Low High

McLean County

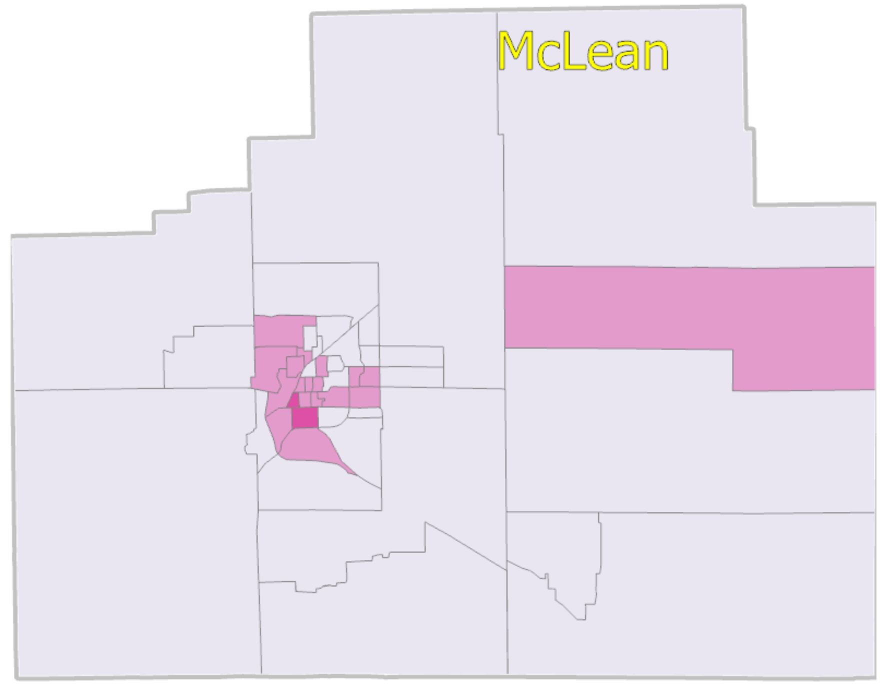
Flash Flood and Social Vulnerability Analysis by Census Tract



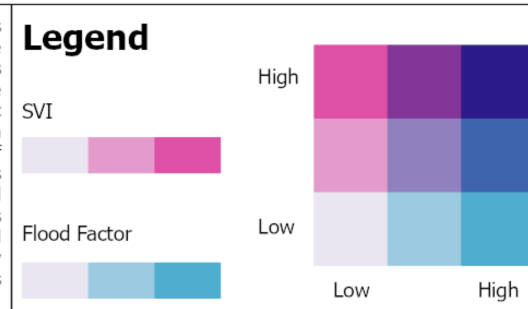
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

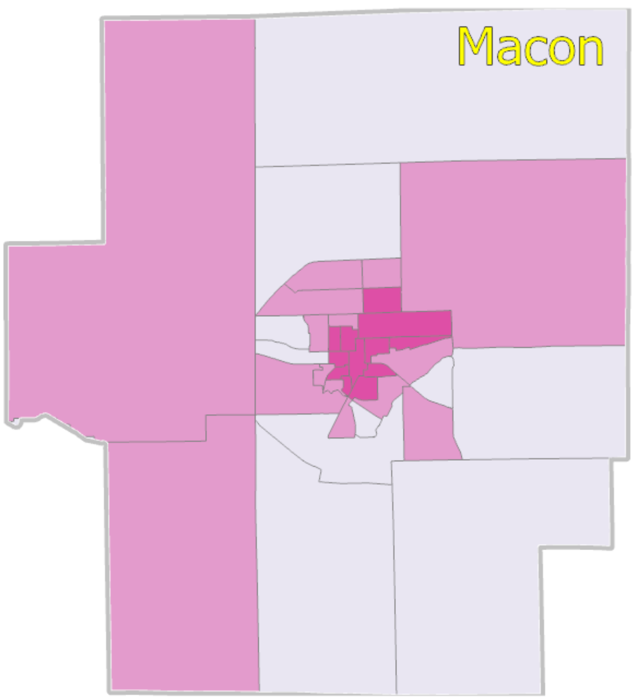


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

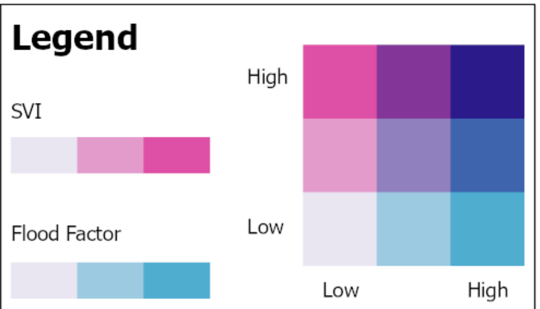


Macon County

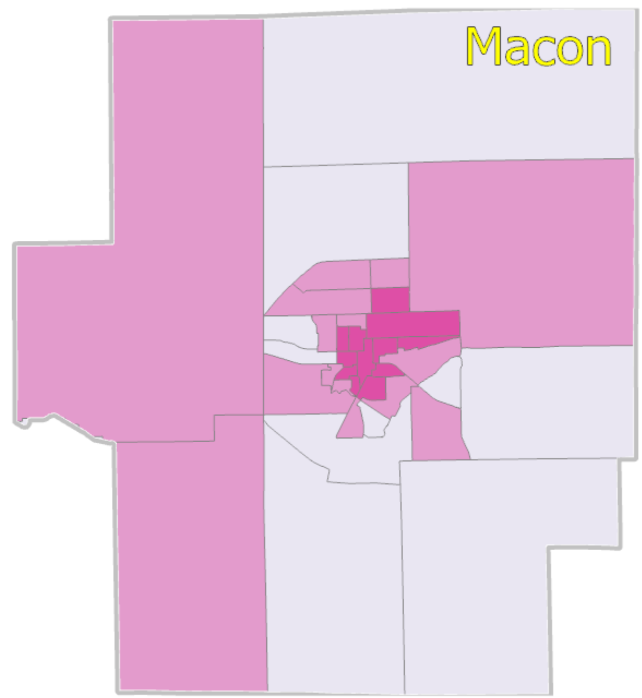
Flash Flood and Social Vulnerability Analysis by Census Tract



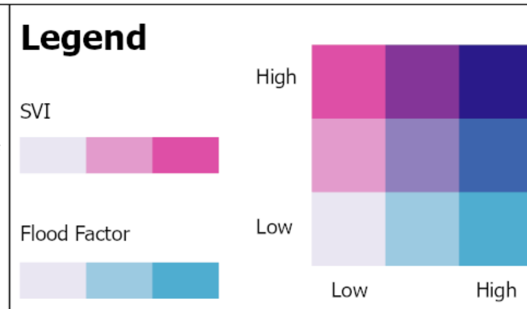
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

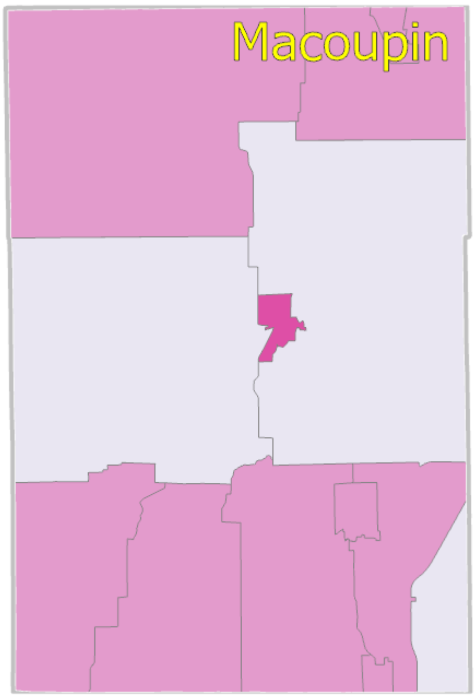


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

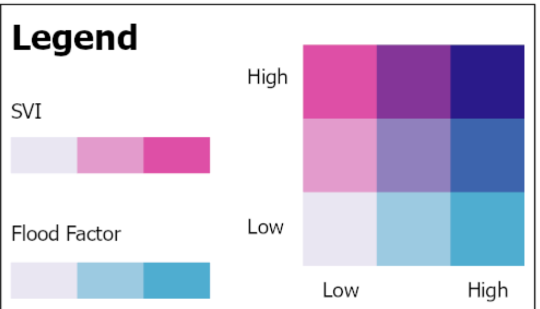


Macoupin County

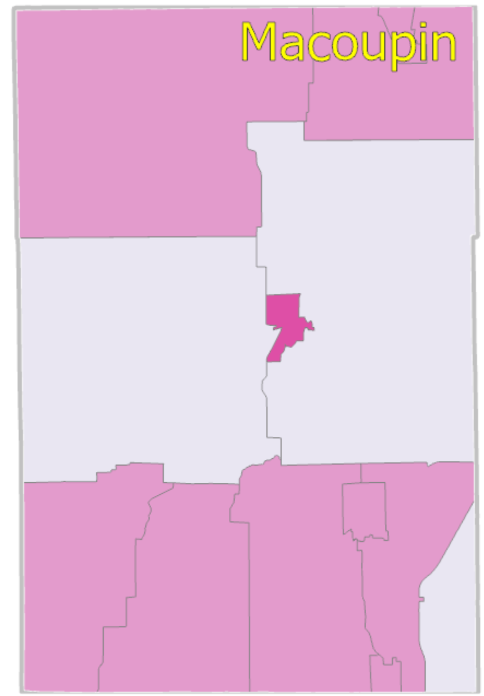
Flash Flood and Social Vulnerability Analysis by Census Tract



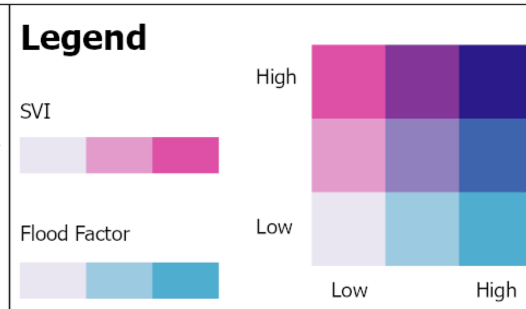
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

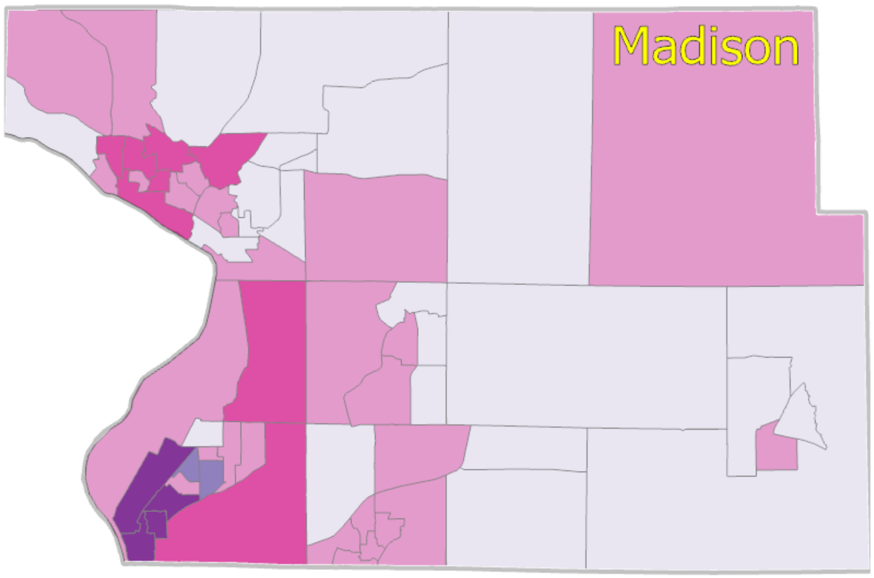


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

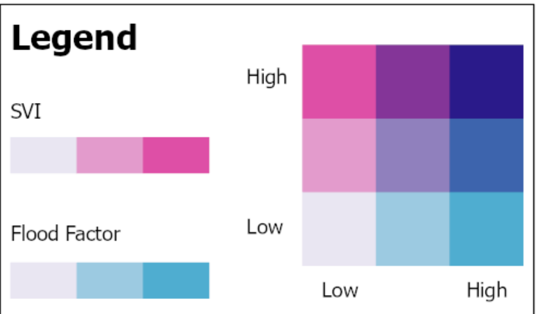


Madison County

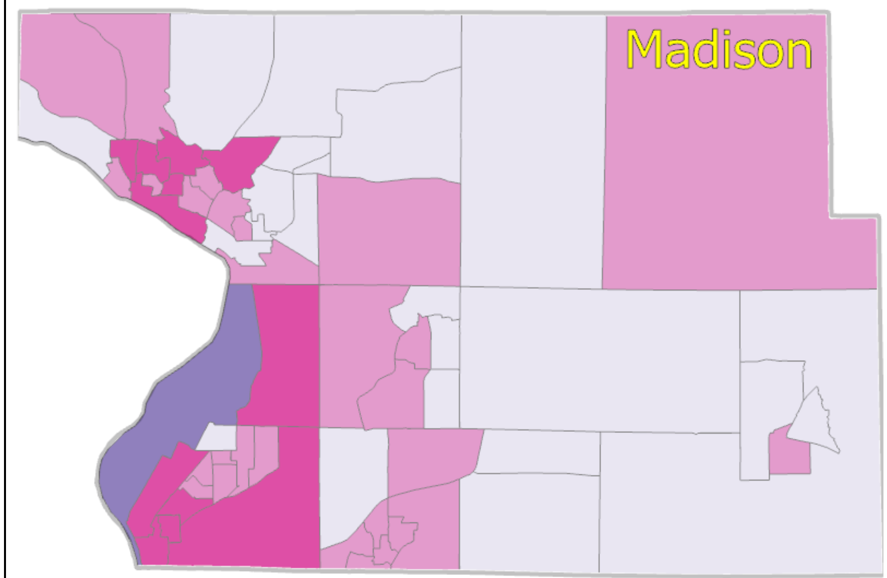
Flash Flood and Social Vulnerability Analysis by Census Tract



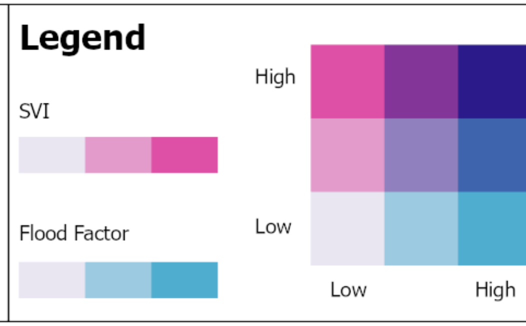
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

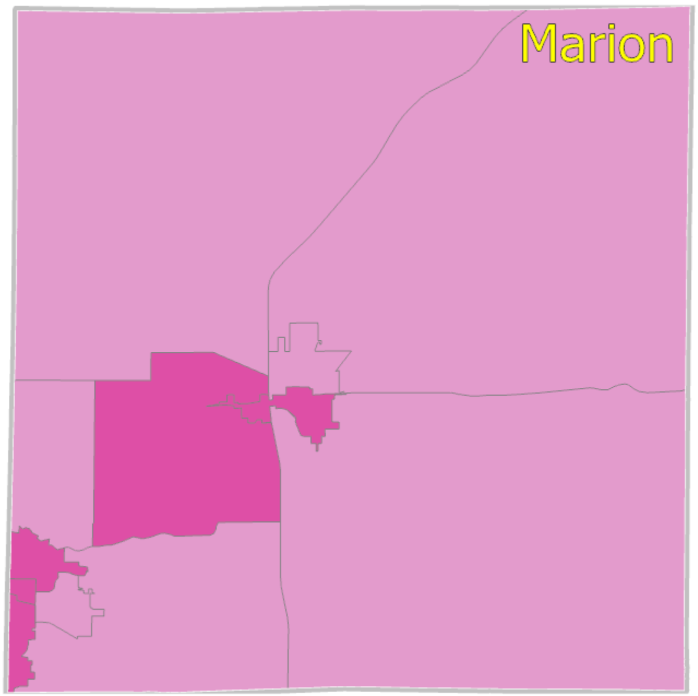


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

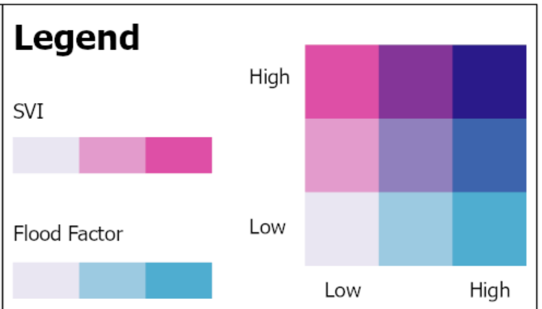


Marion County

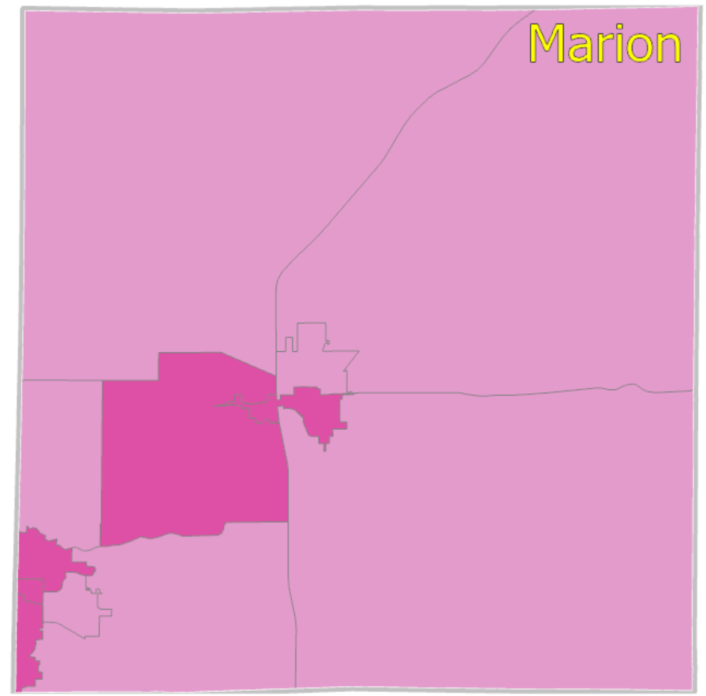
Flash Flood and Social Vulnerability Analysis by Census Tract



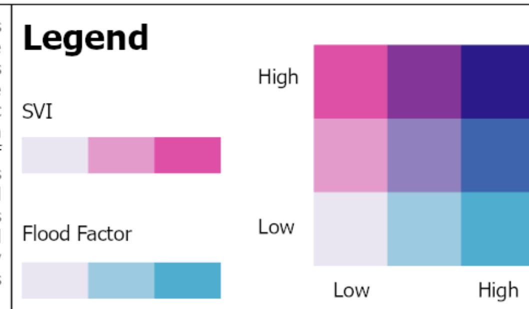
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



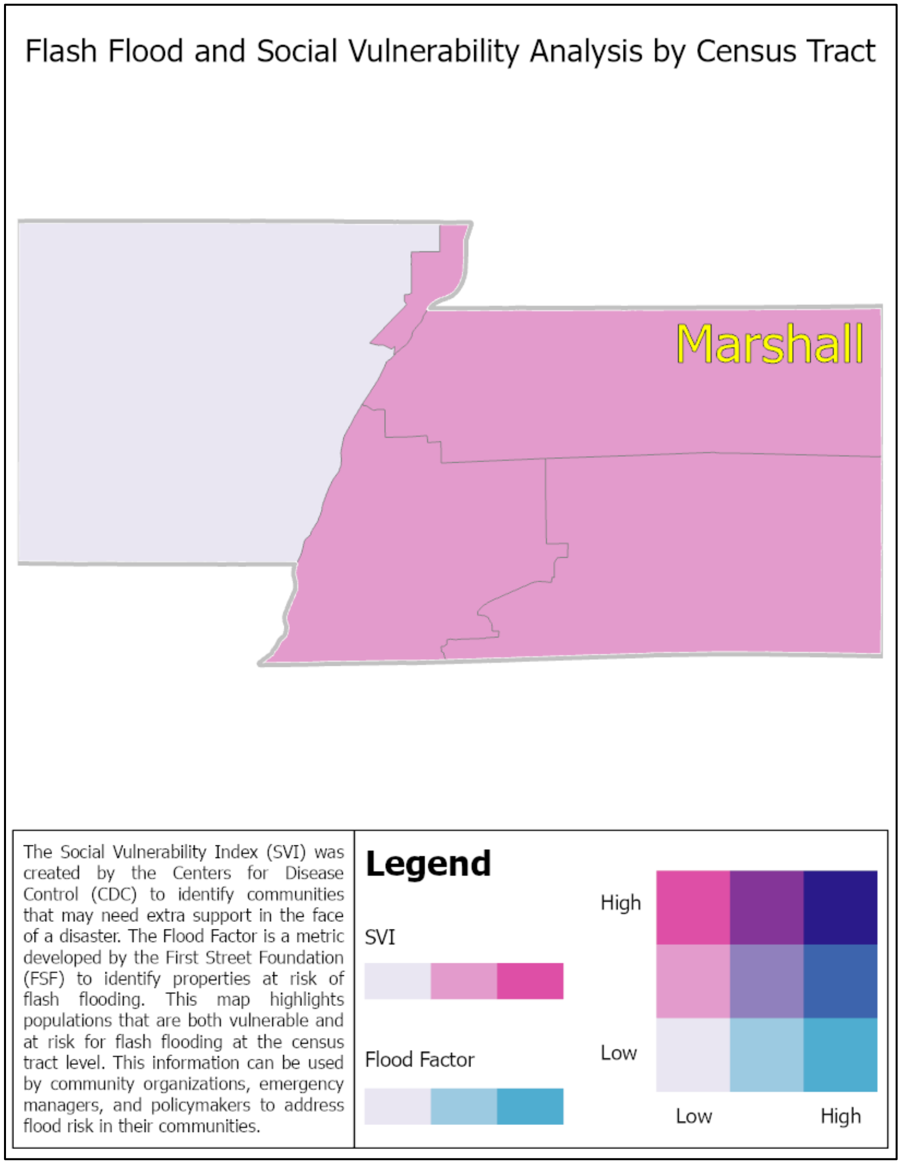
Riverine Flood and Social Vulnerability Analysis by Census Tract

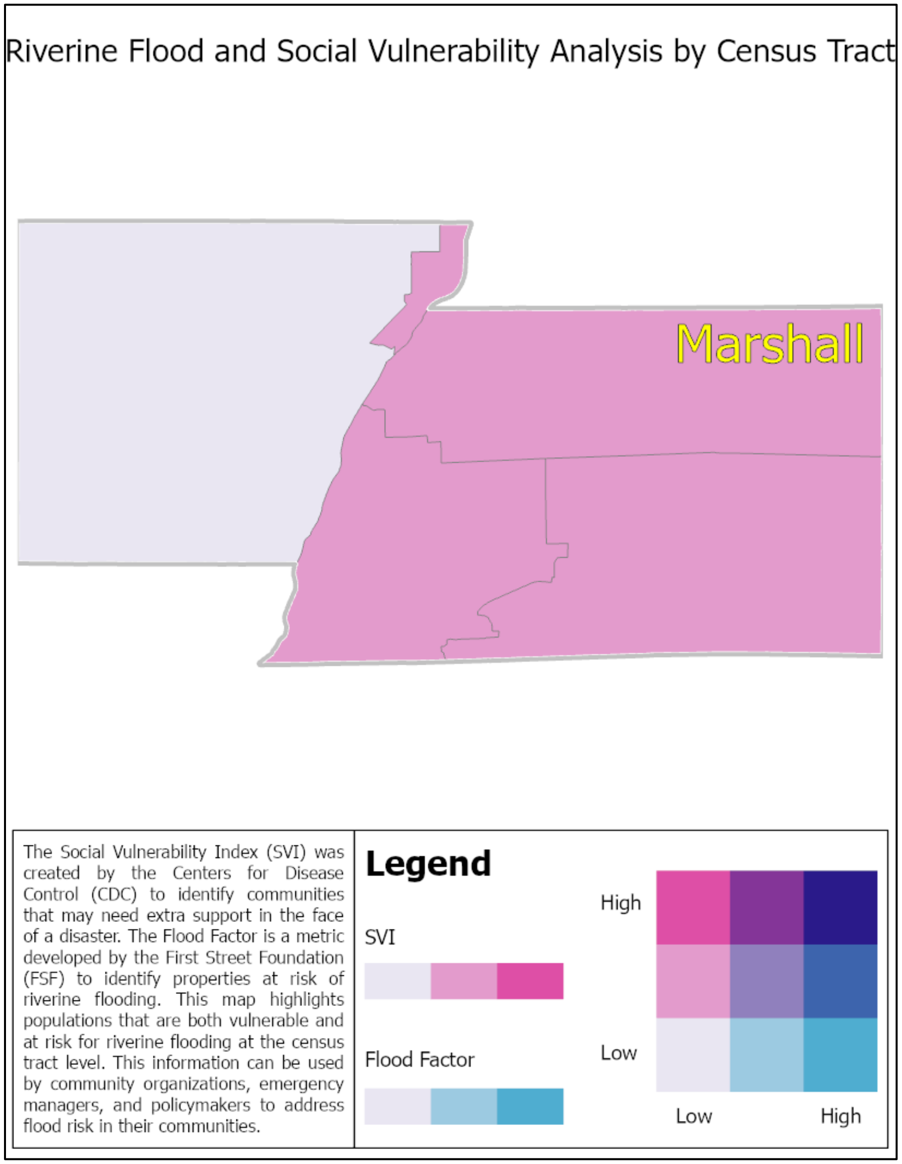


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

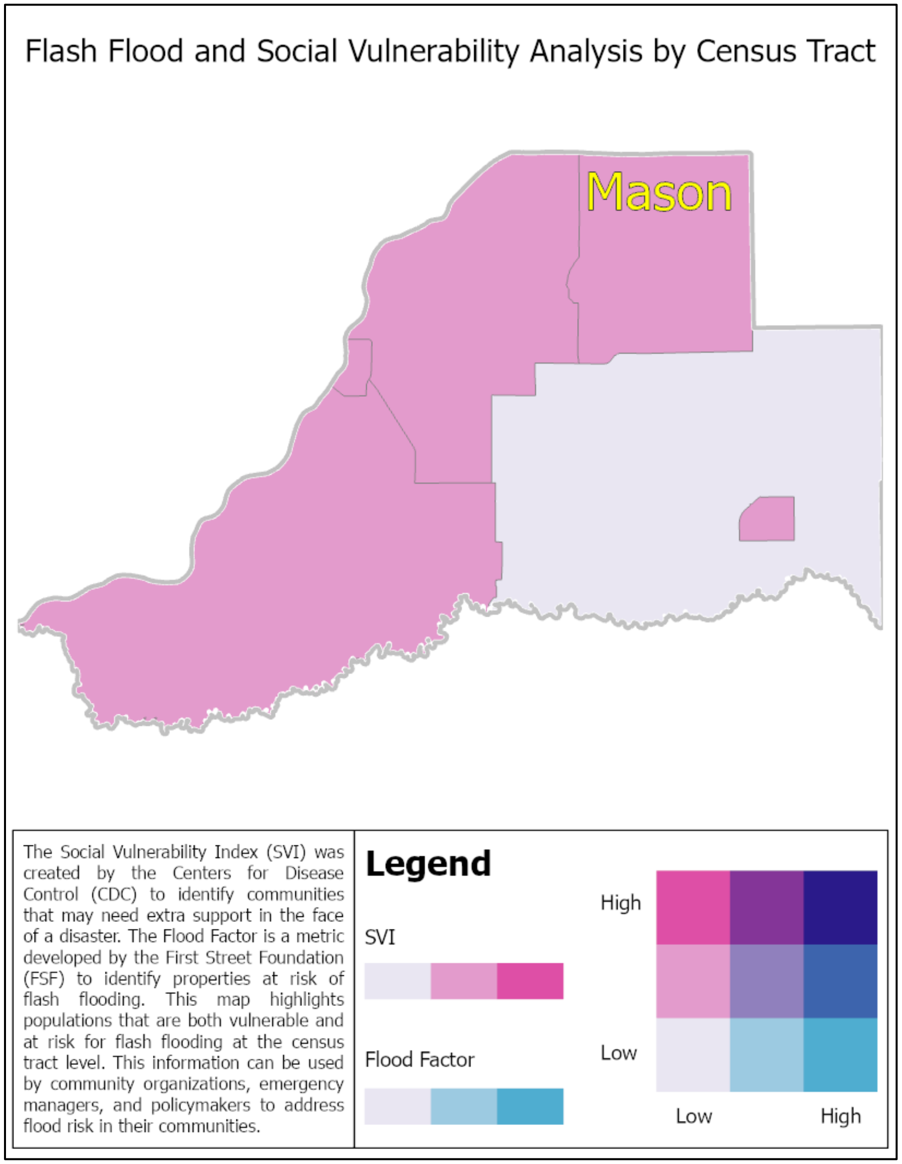


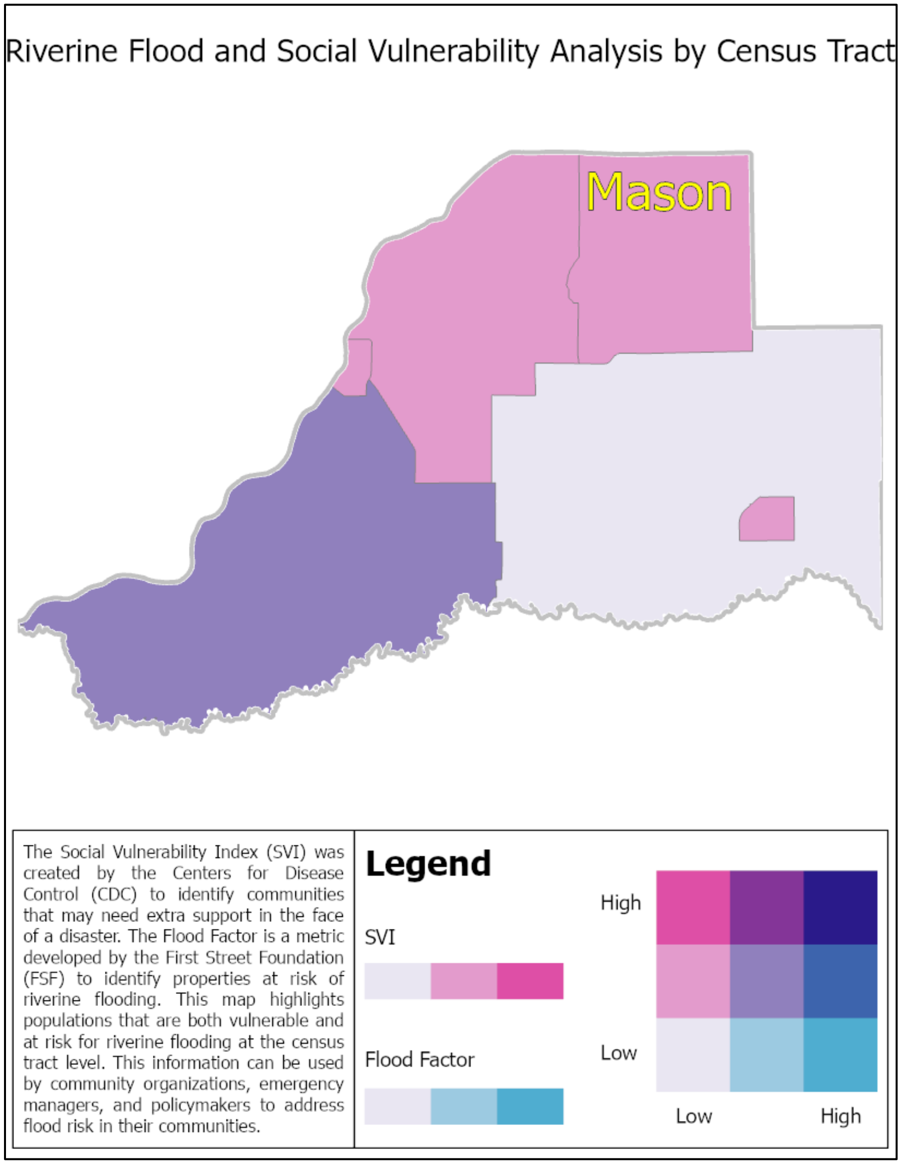
Marshall County



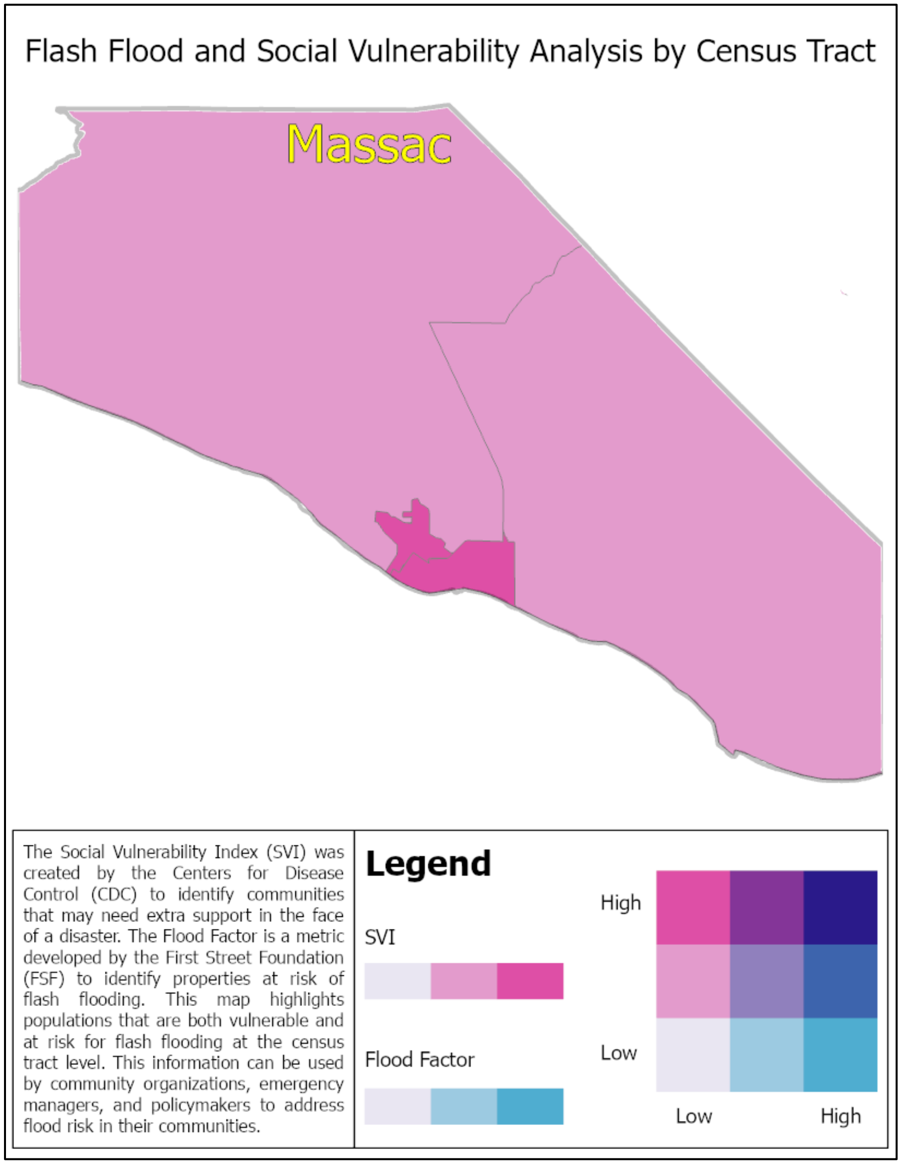


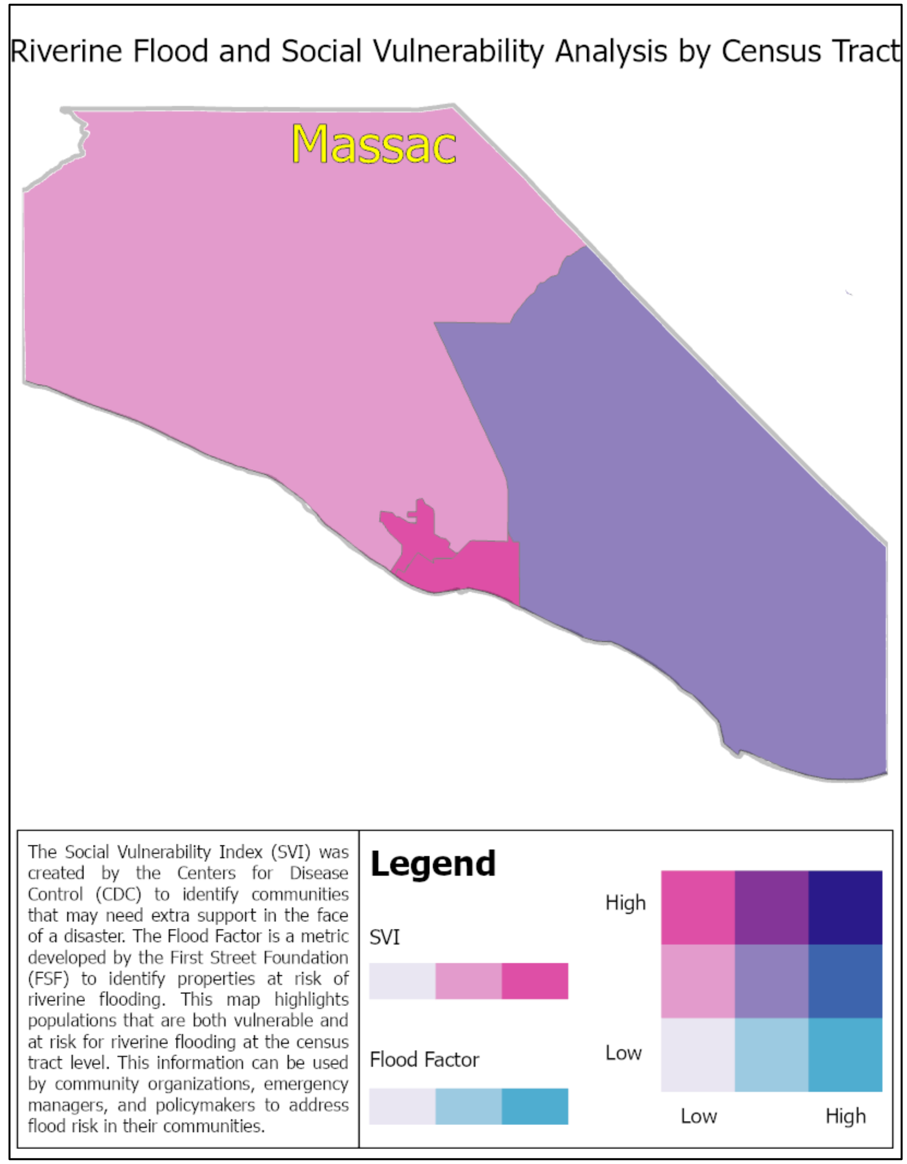
Mason County





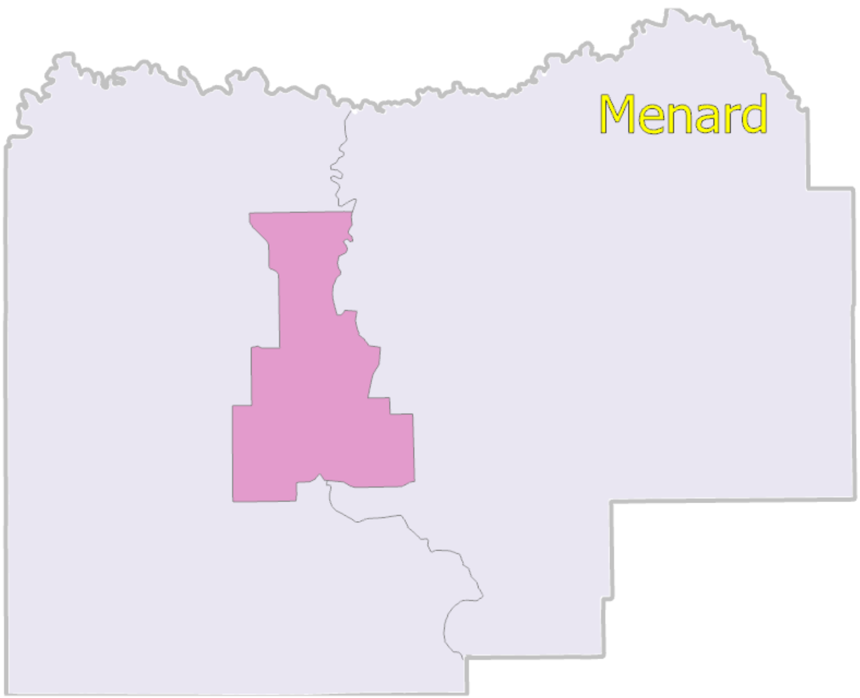
Massac County





Menard County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

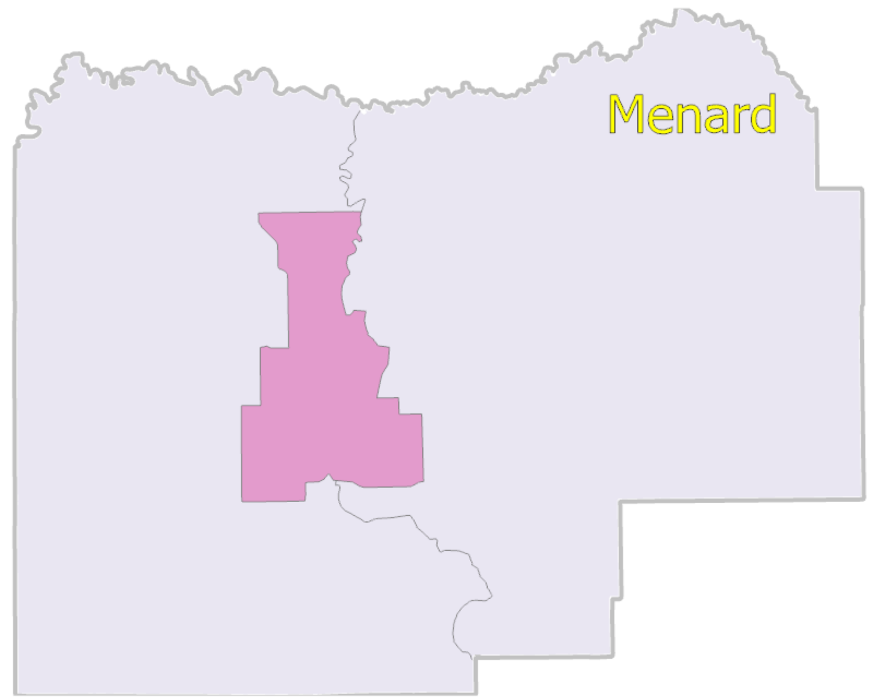
High

Low

Low

High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

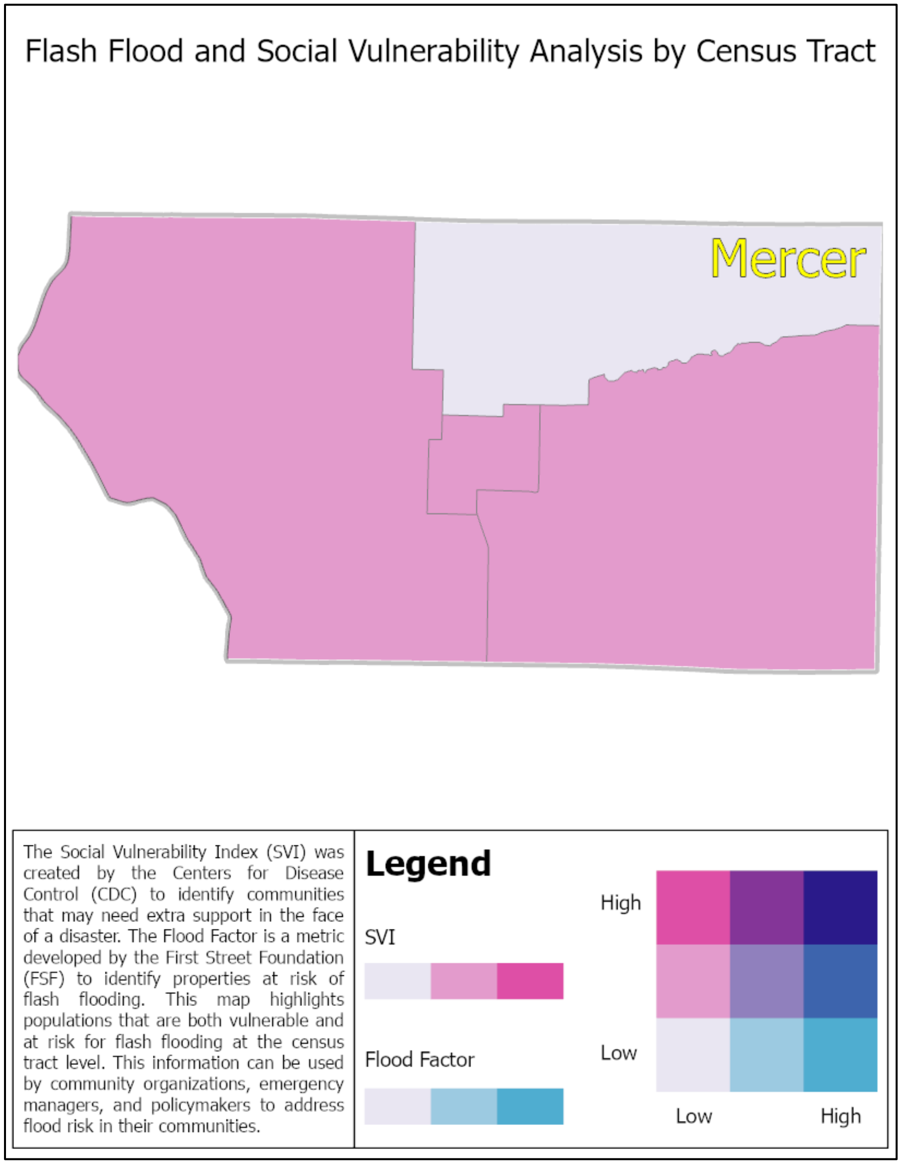
High

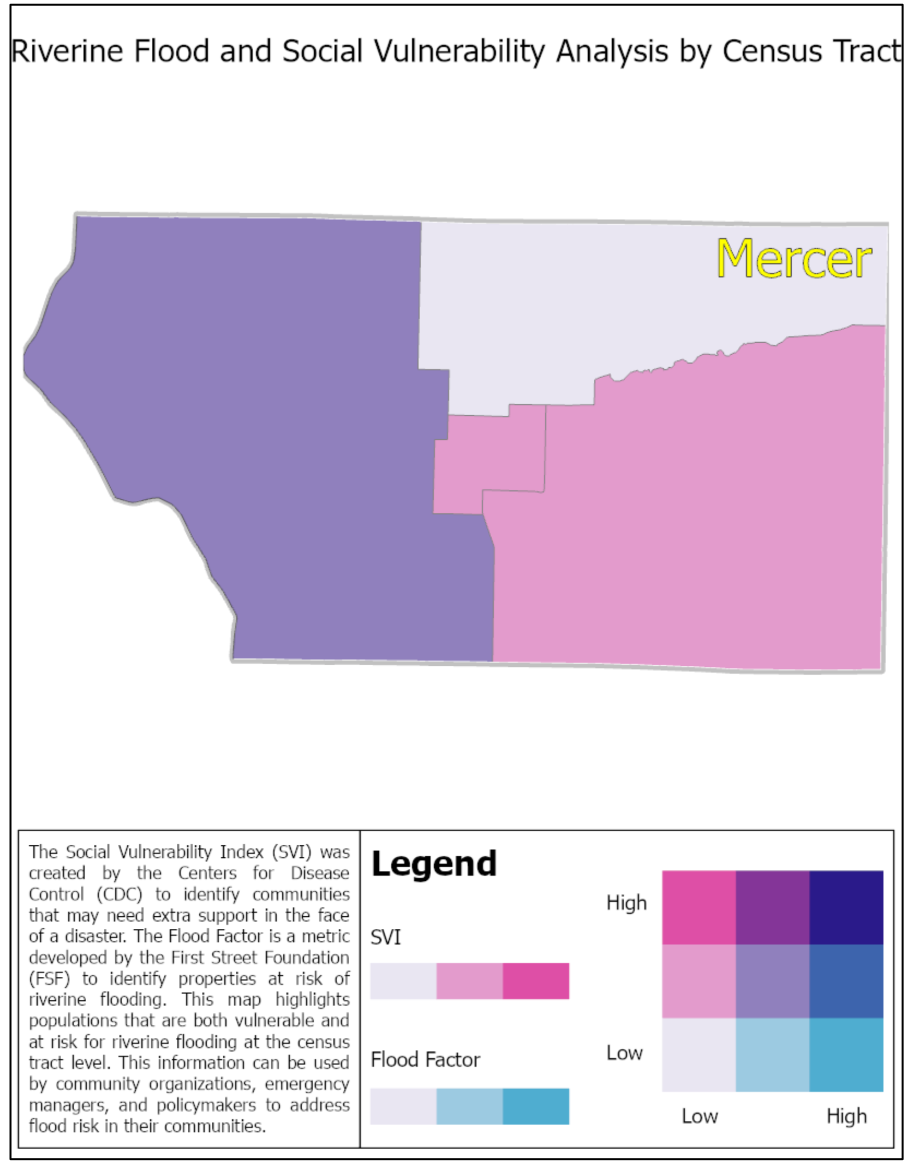
Low

Low

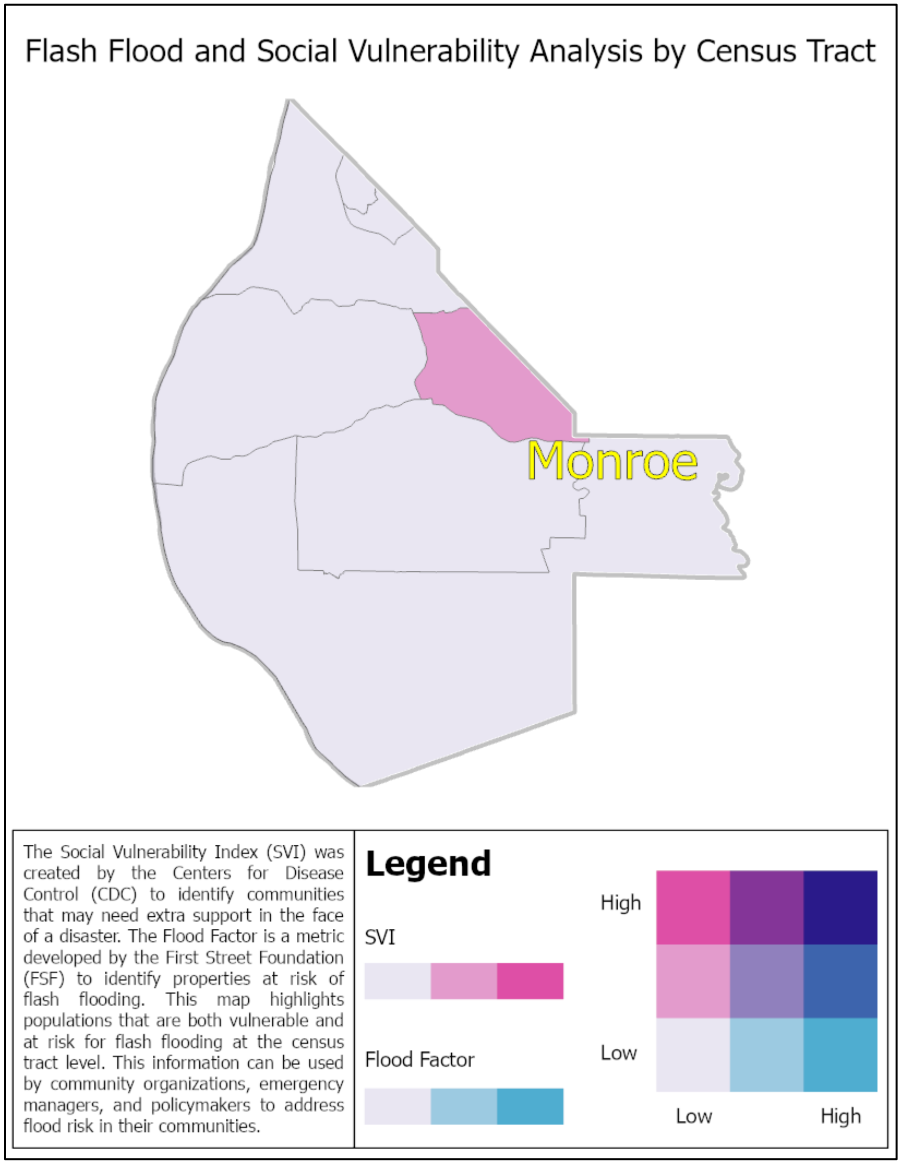
High

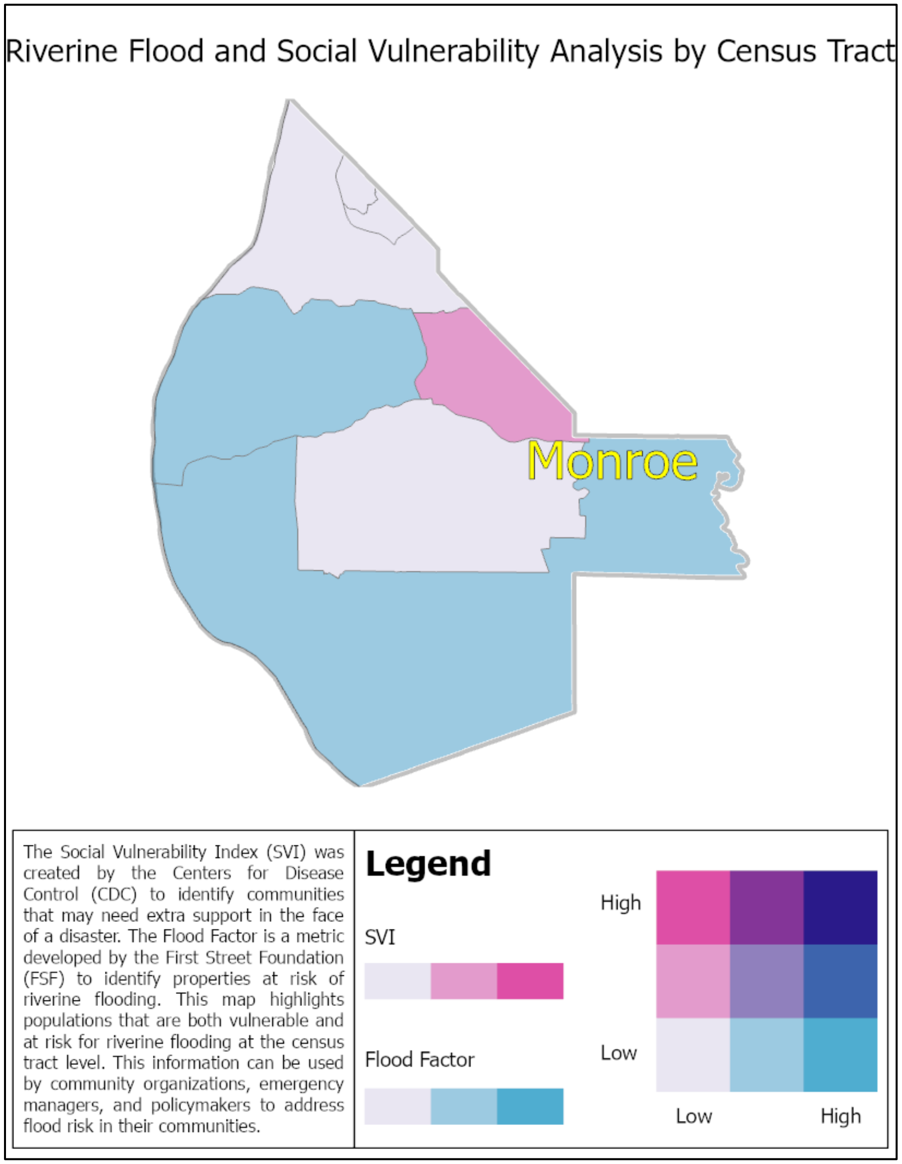
Mercer County



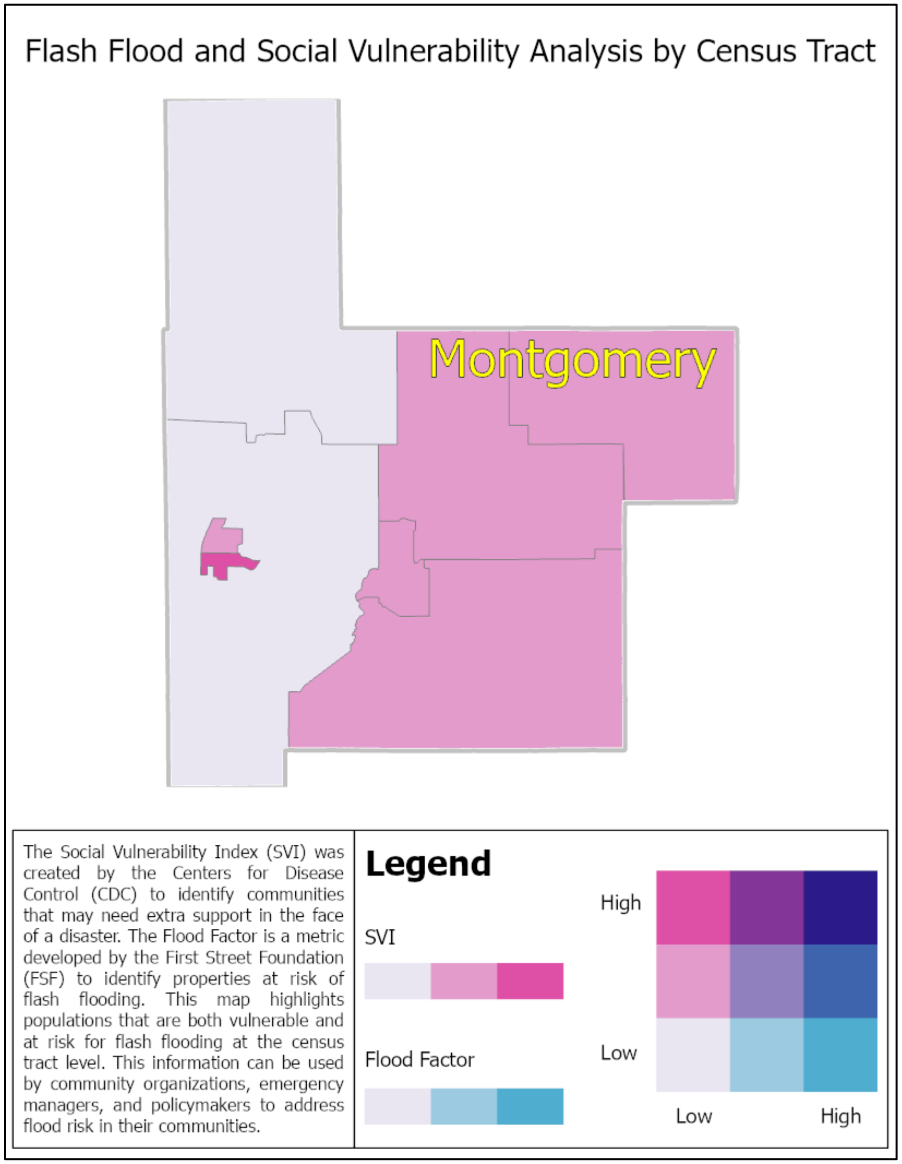


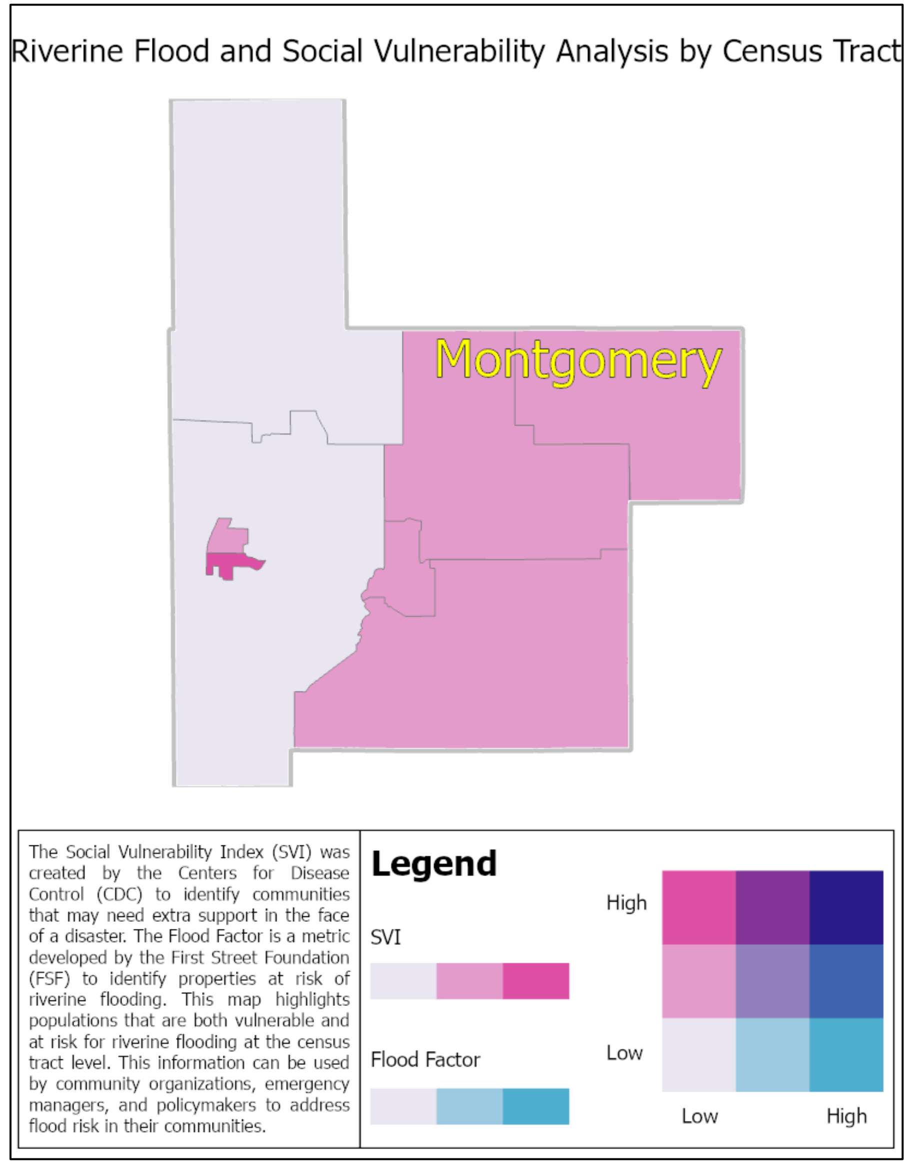
Monroe County



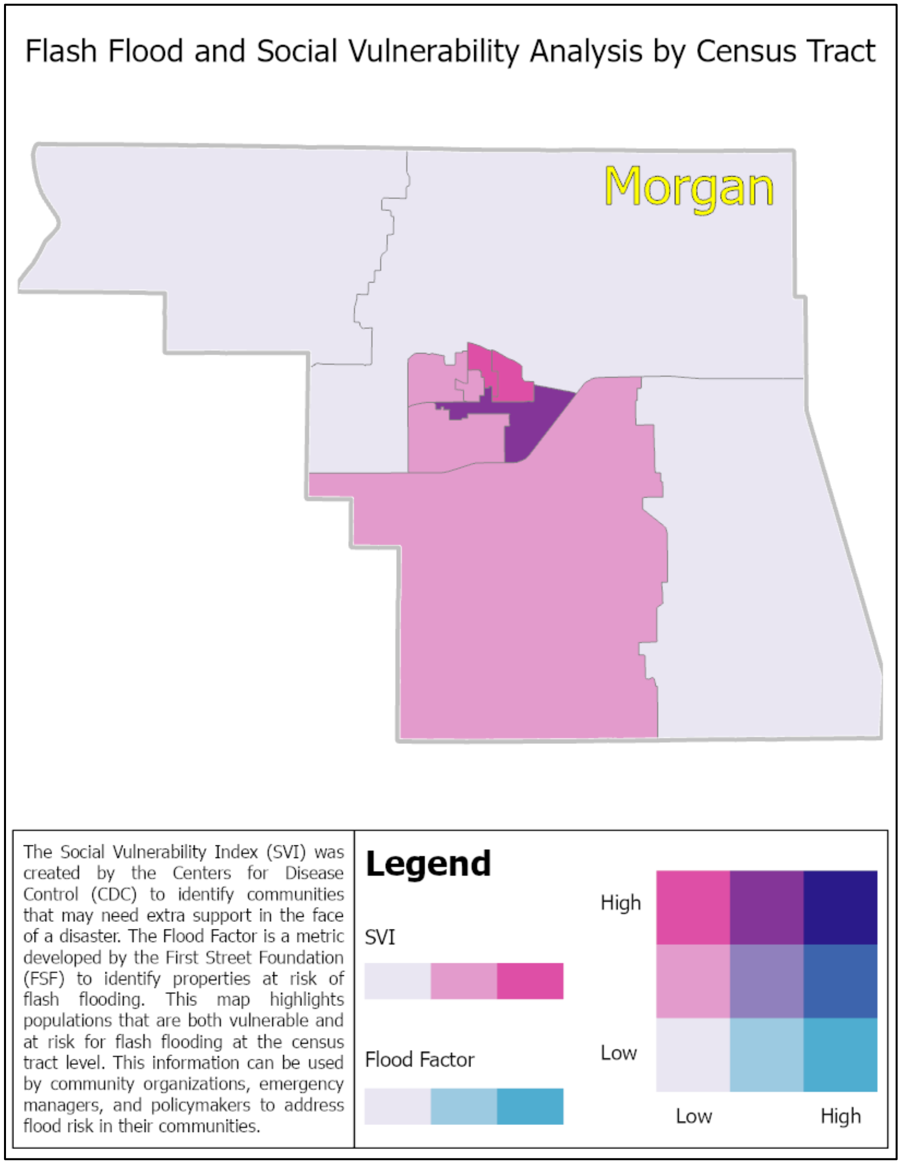


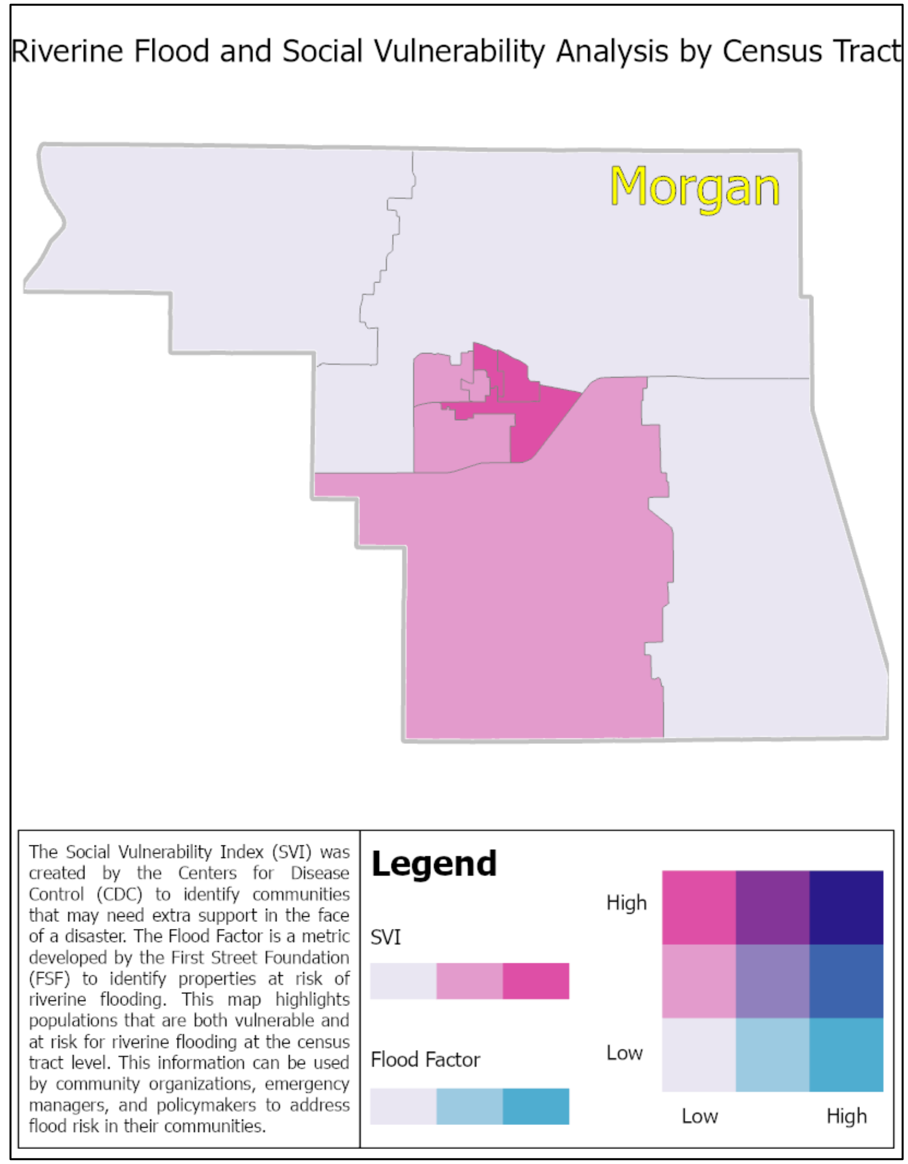
Montgomery County



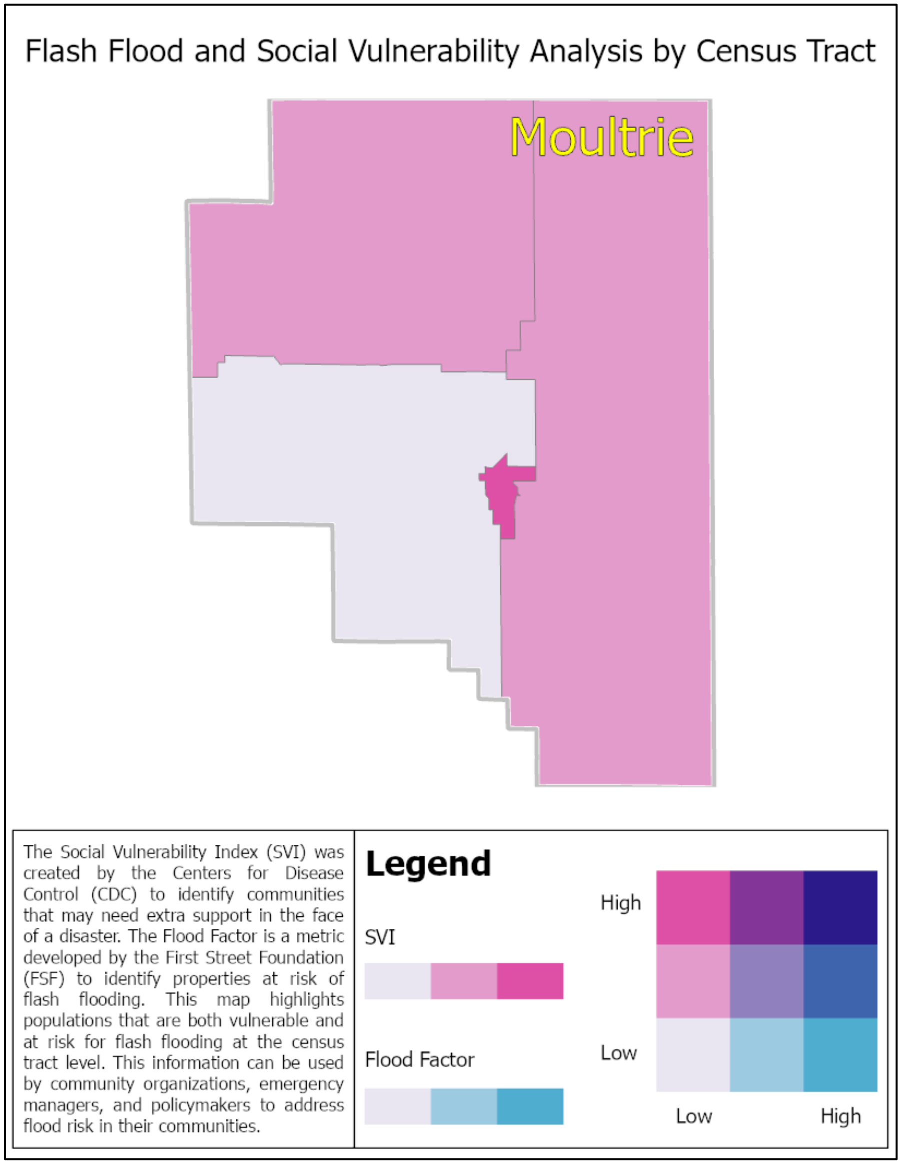


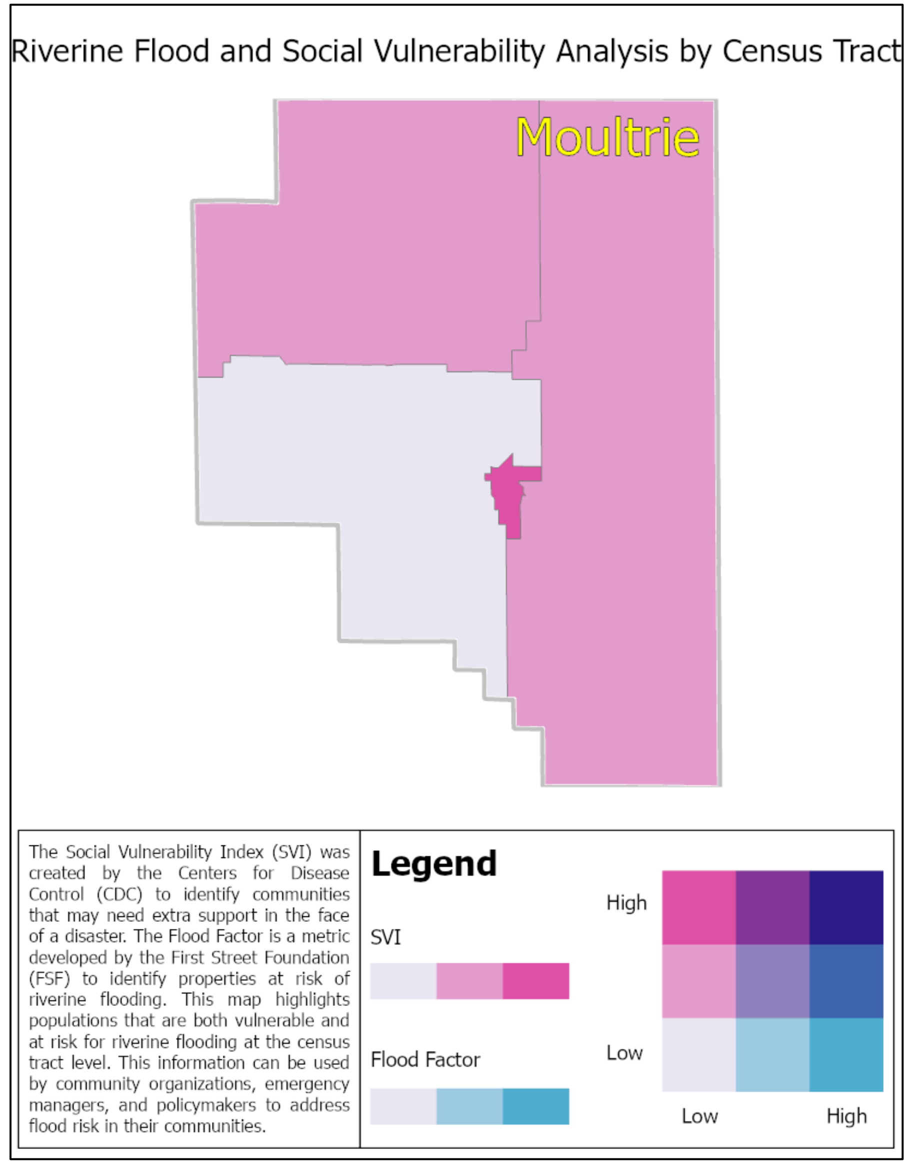
Morgan County





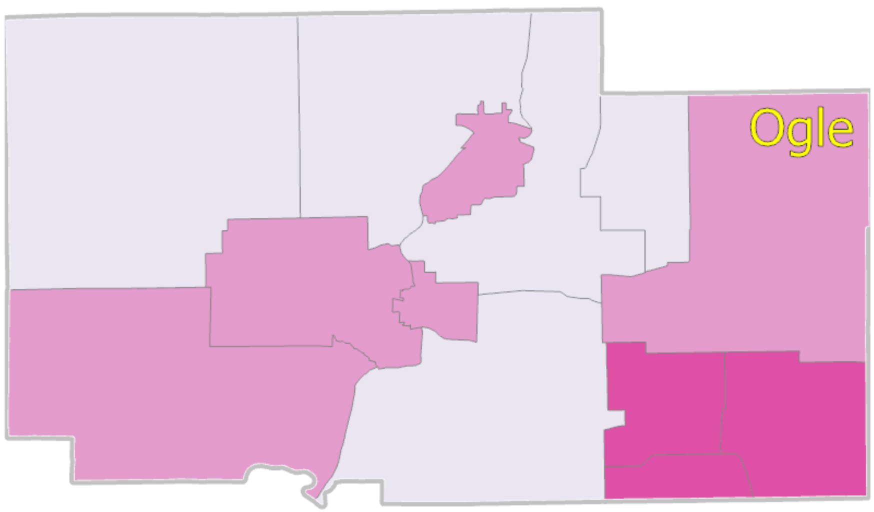
Moultrie County



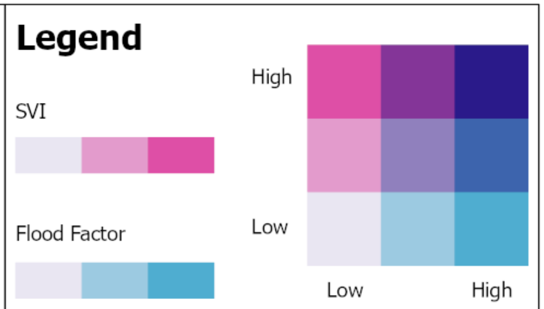


Ogle County

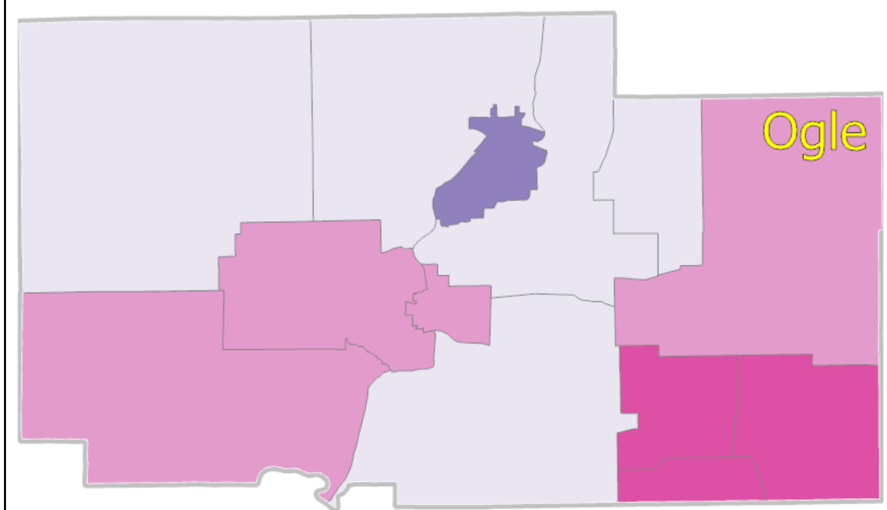
Flash Flood and Social Vulnerability Analysis by Census Tract



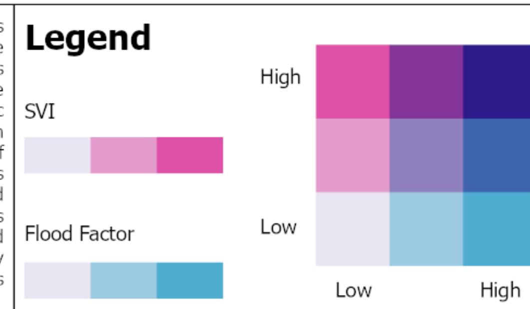
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

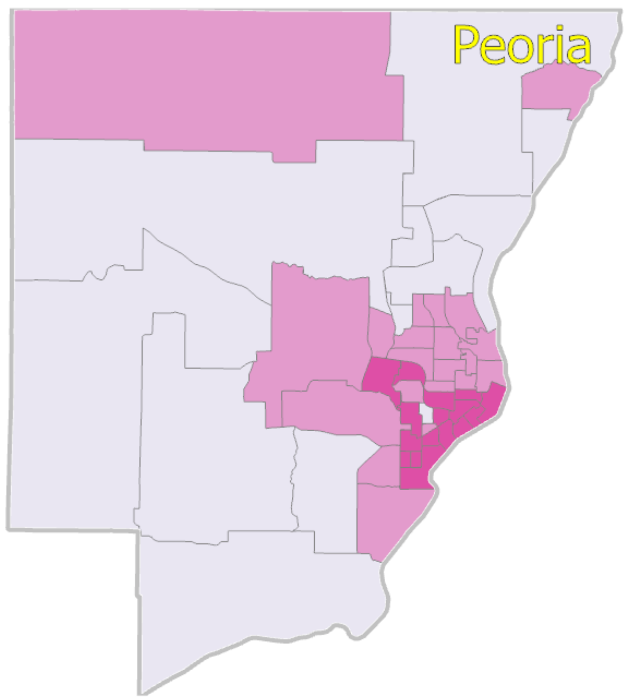


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

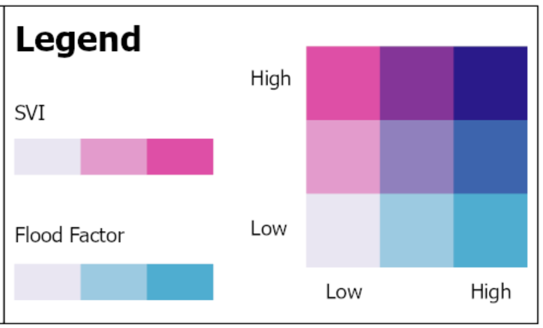


Peoria County

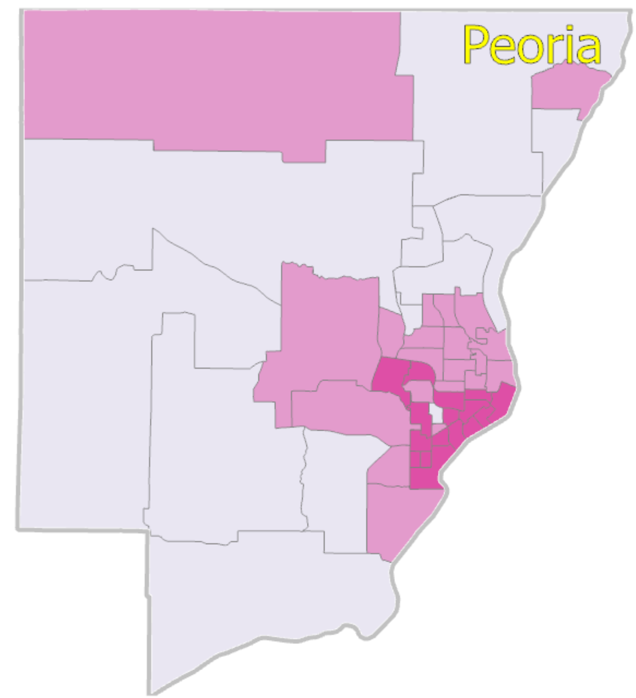
Flash Flood and Social Vulnerability Analysis by Census Tract



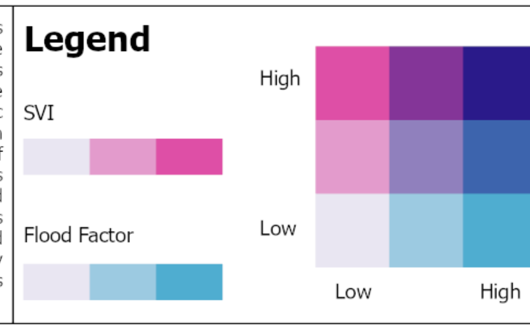
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



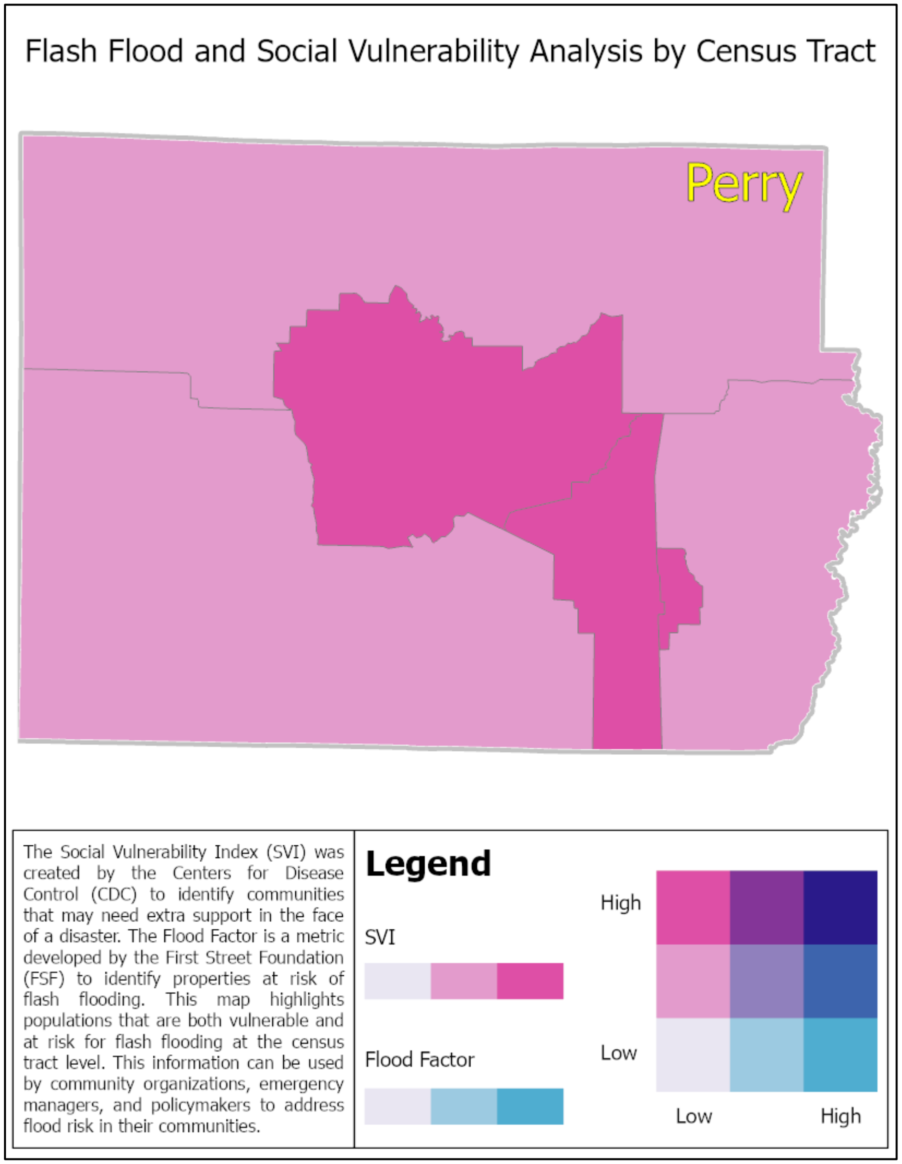
Riverine Flood and Social Vulnerability Analysis by Census Tract

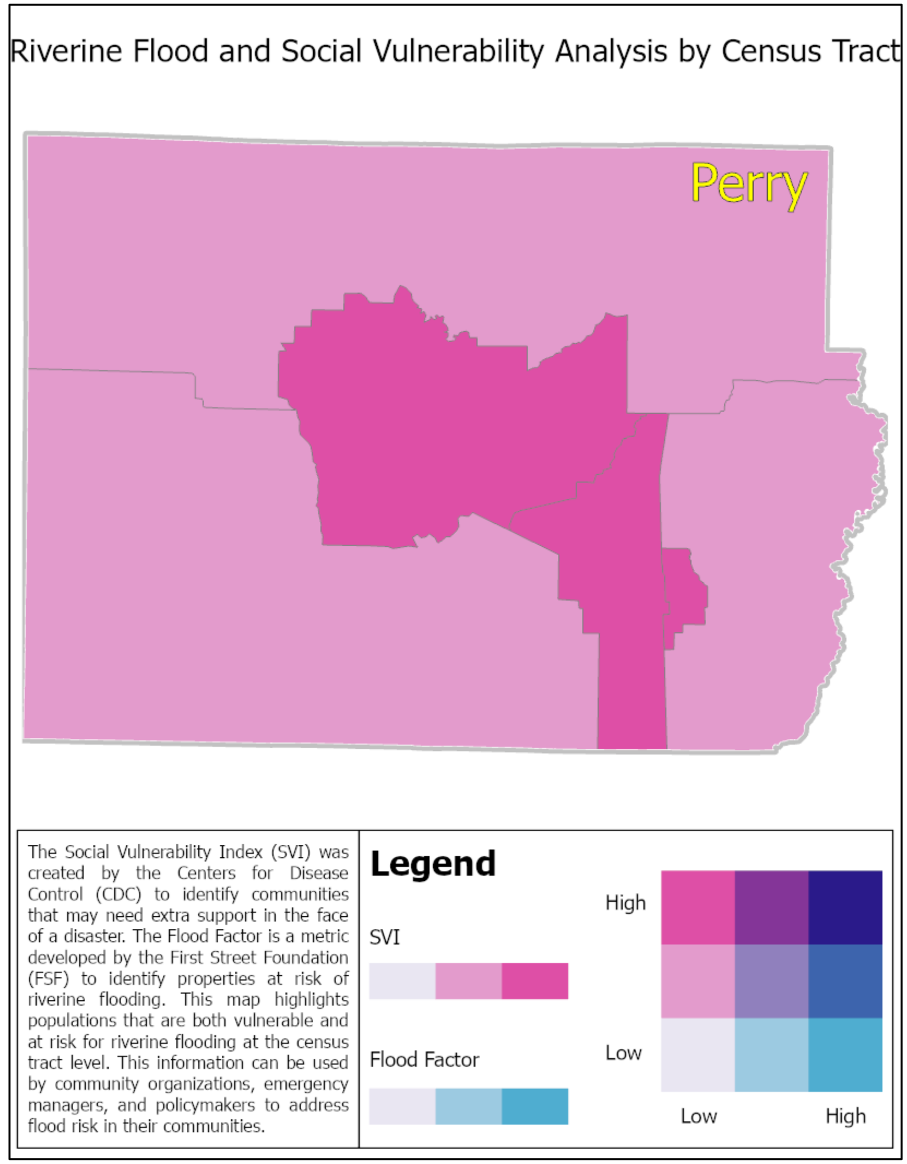


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

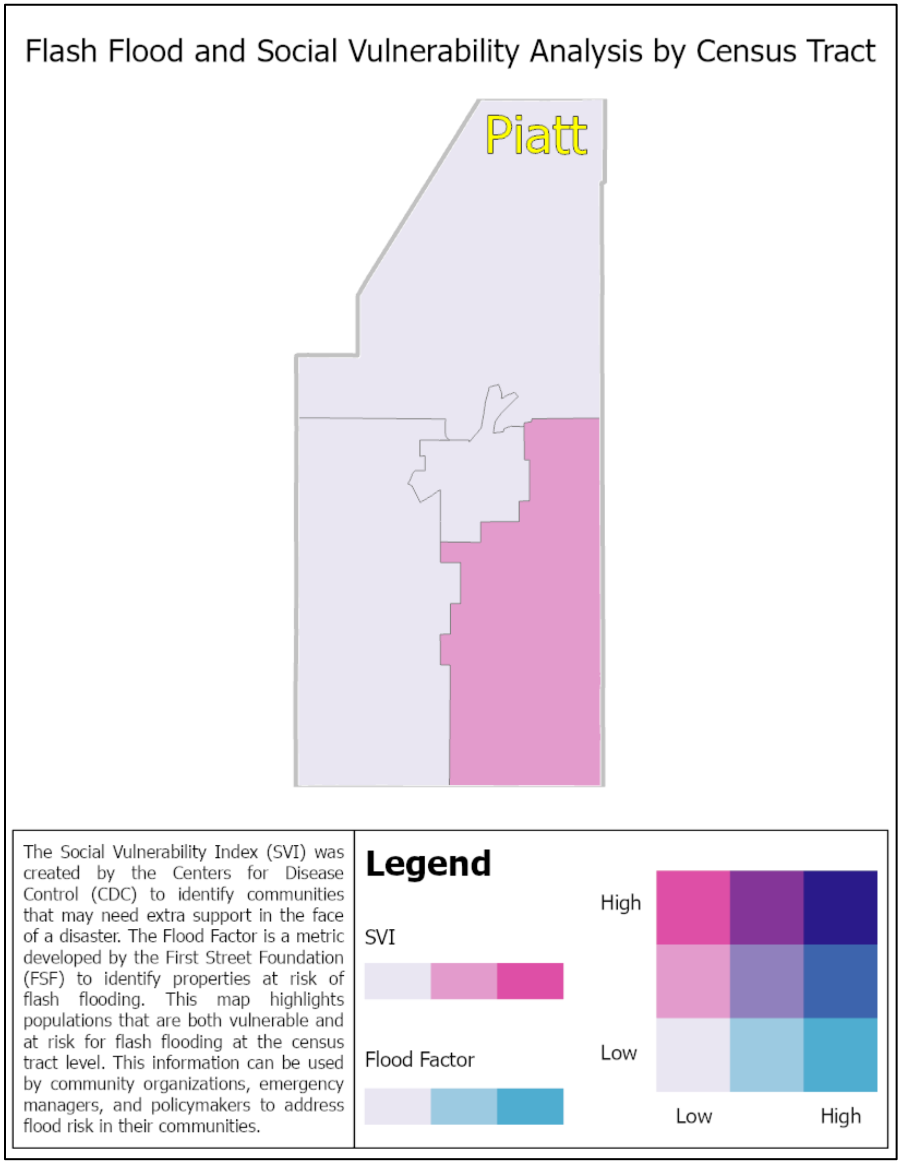


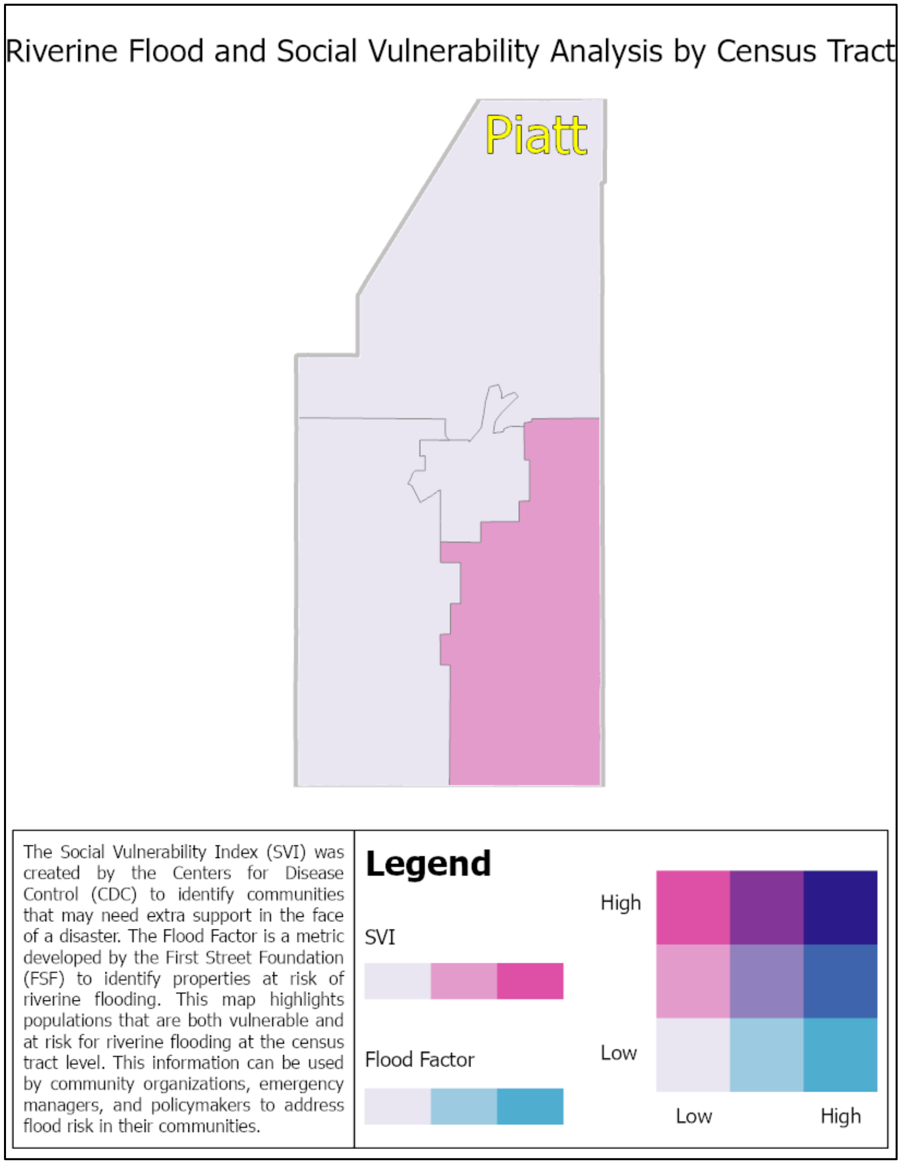
Perry County



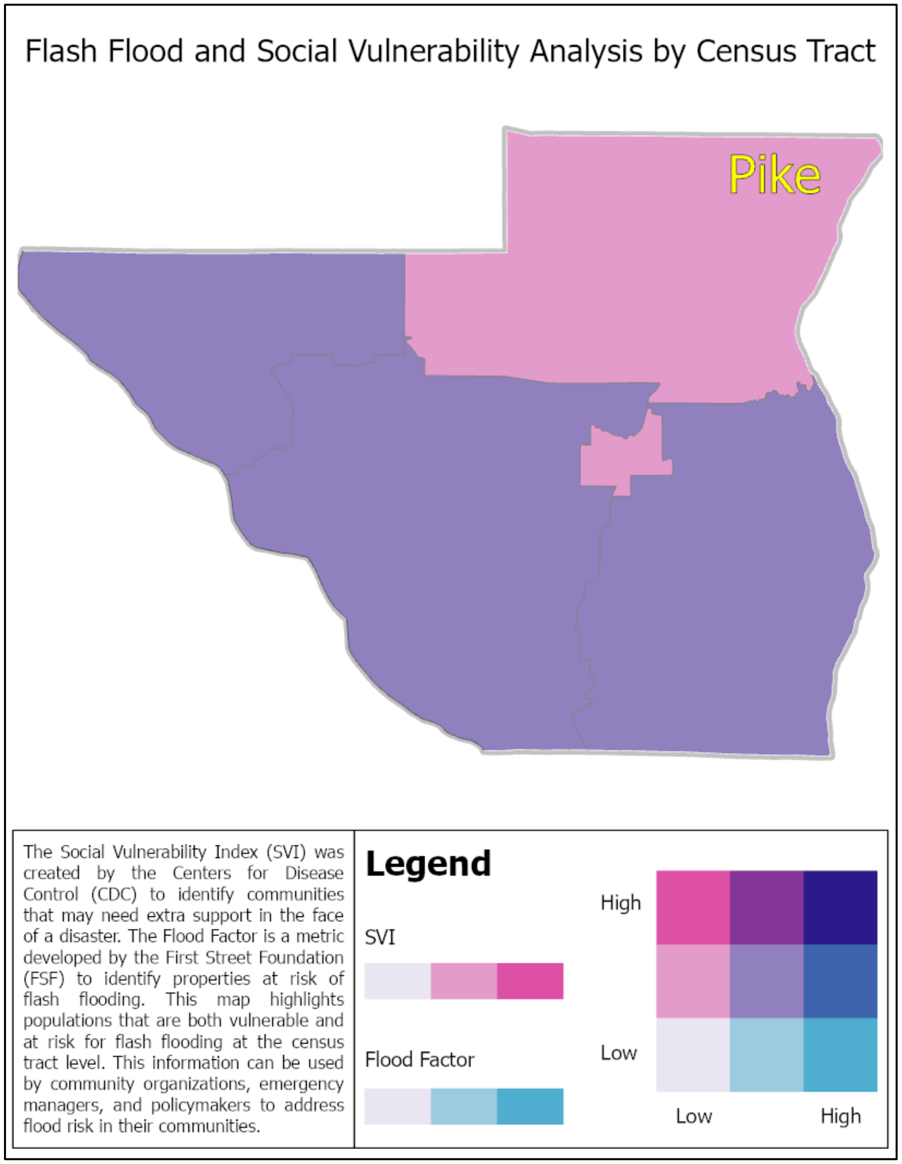


Piatt County

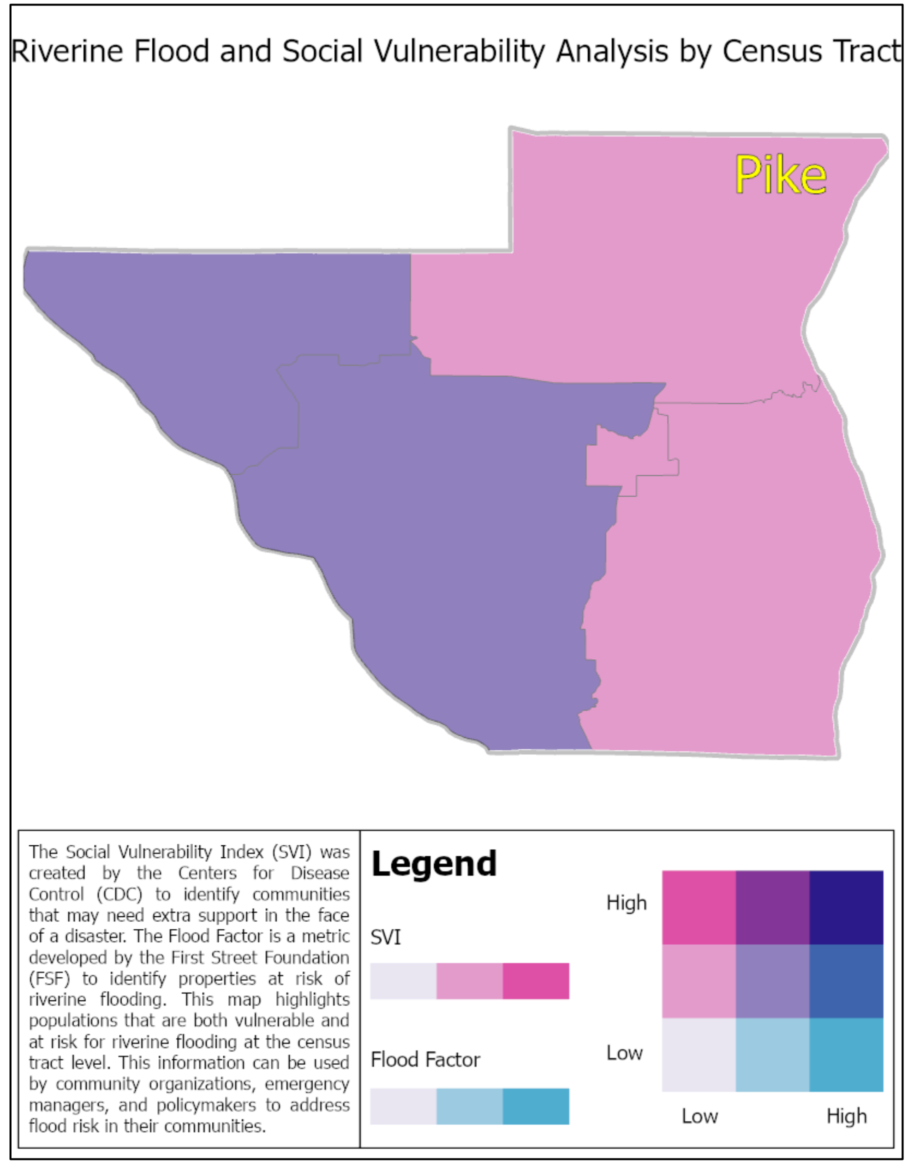




Pike County

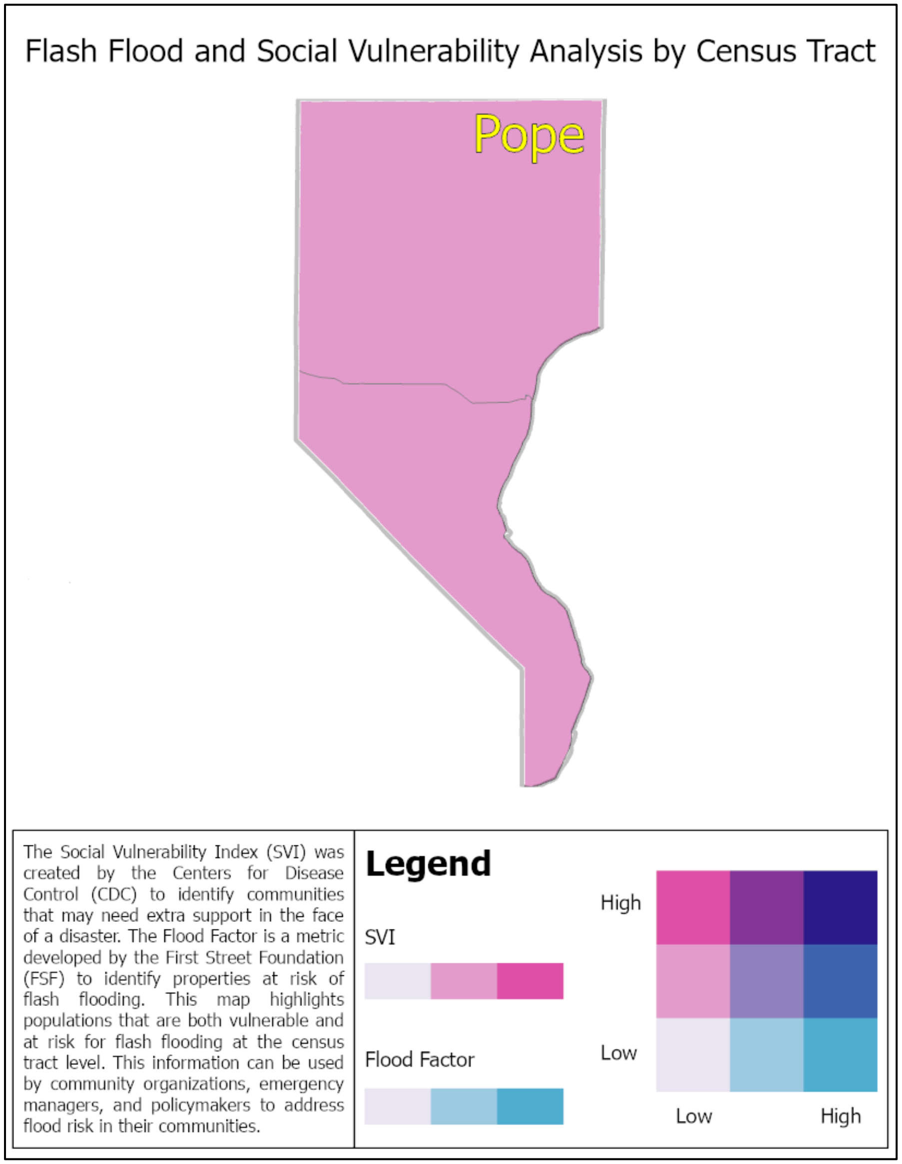


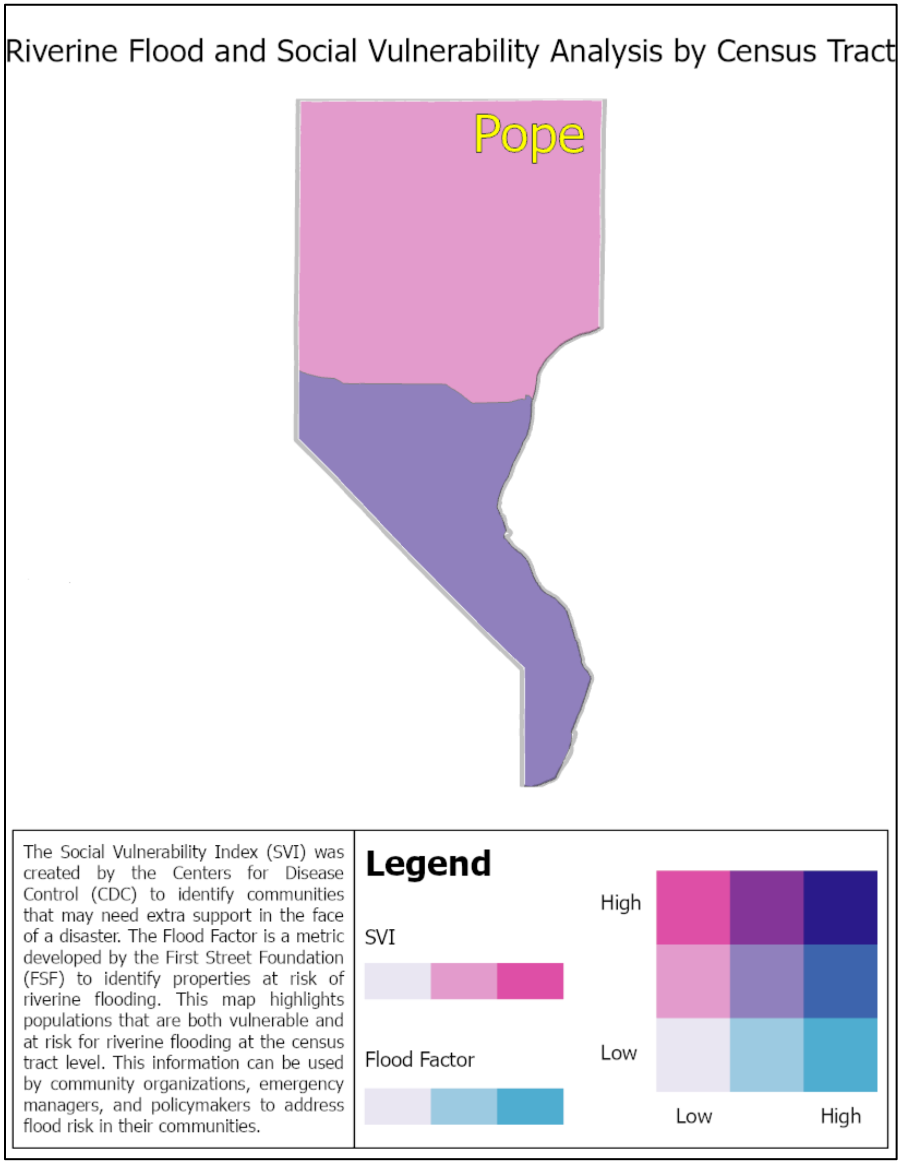
Flash Flood and Social Vulnerability Analysis by Census Tract
Pike
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High



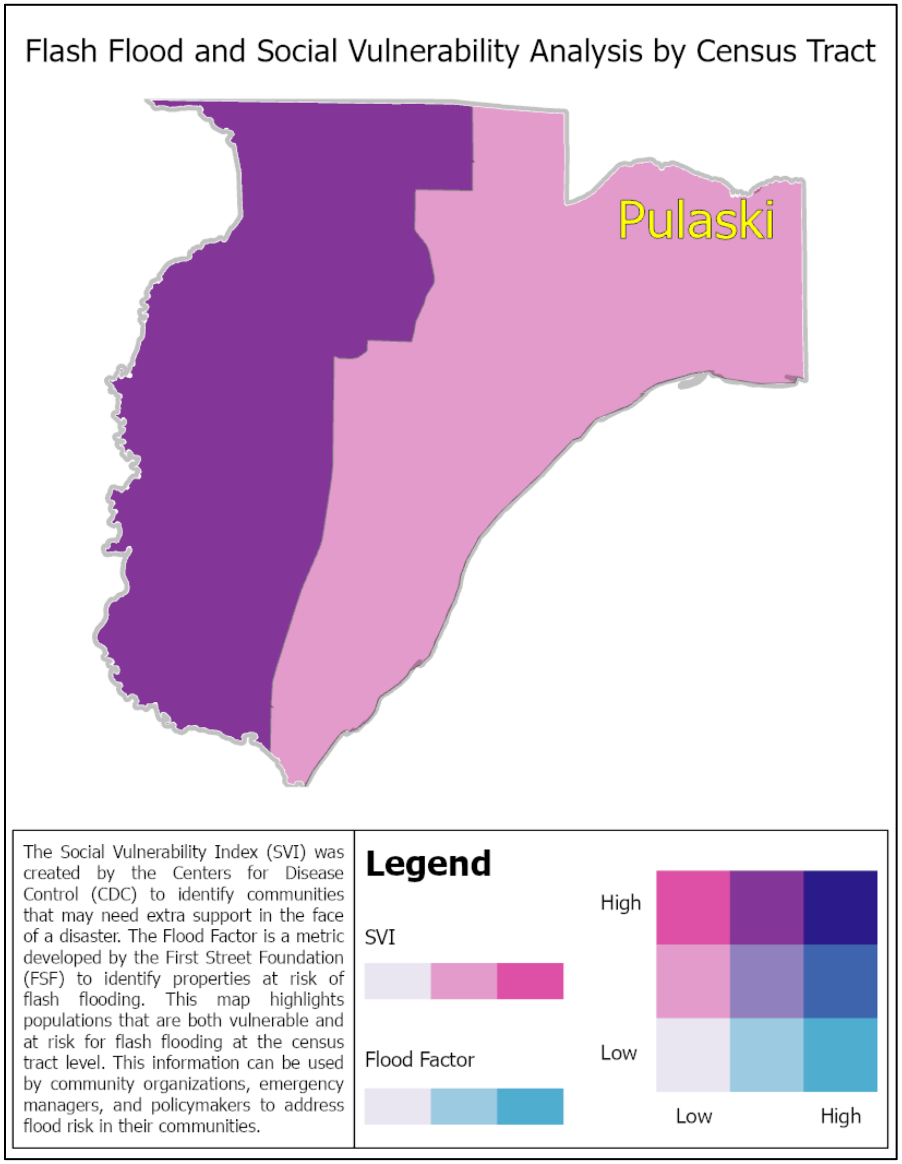
Riverine Flood and Social Vulnerability Analysis by Census Tract
Pike
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

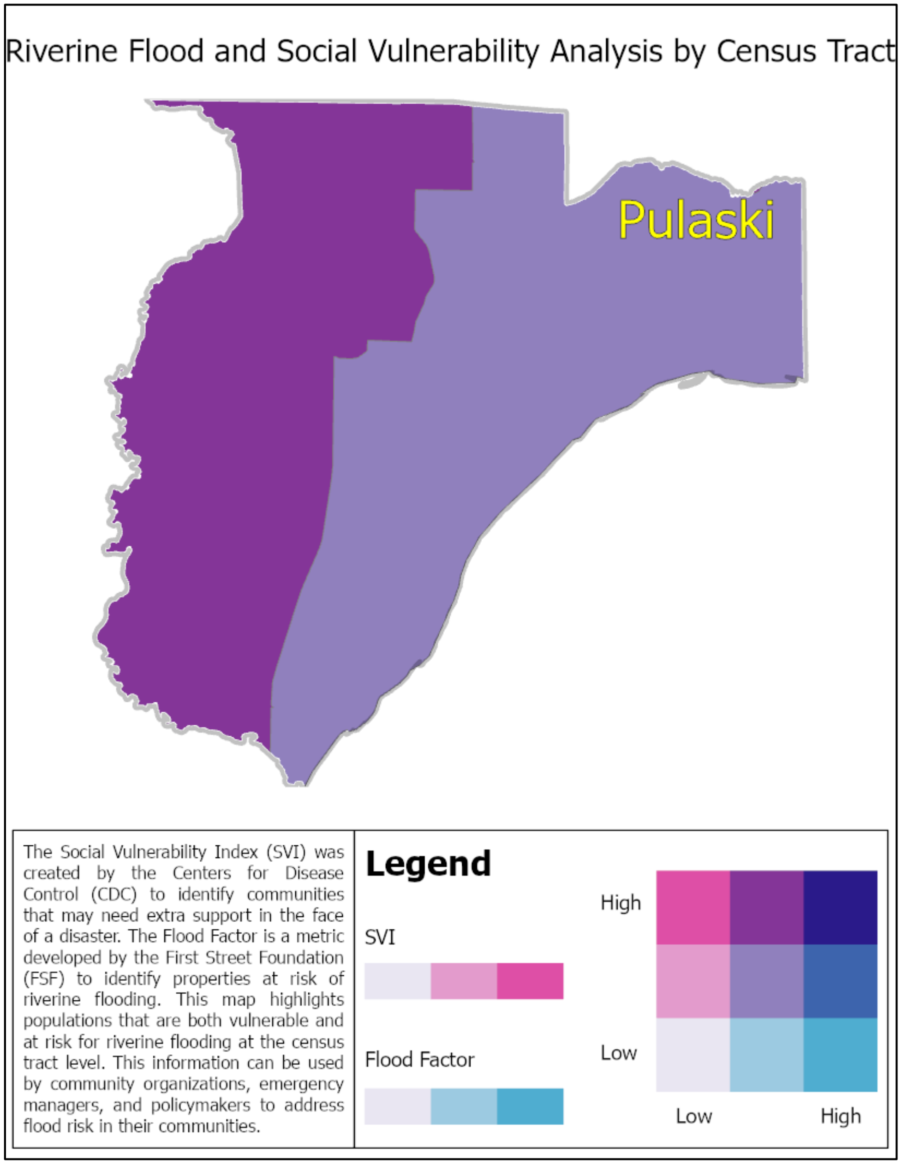
Pope County


Flash Flood and Social Vulnerability Analysis by Census Tract
Pope
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

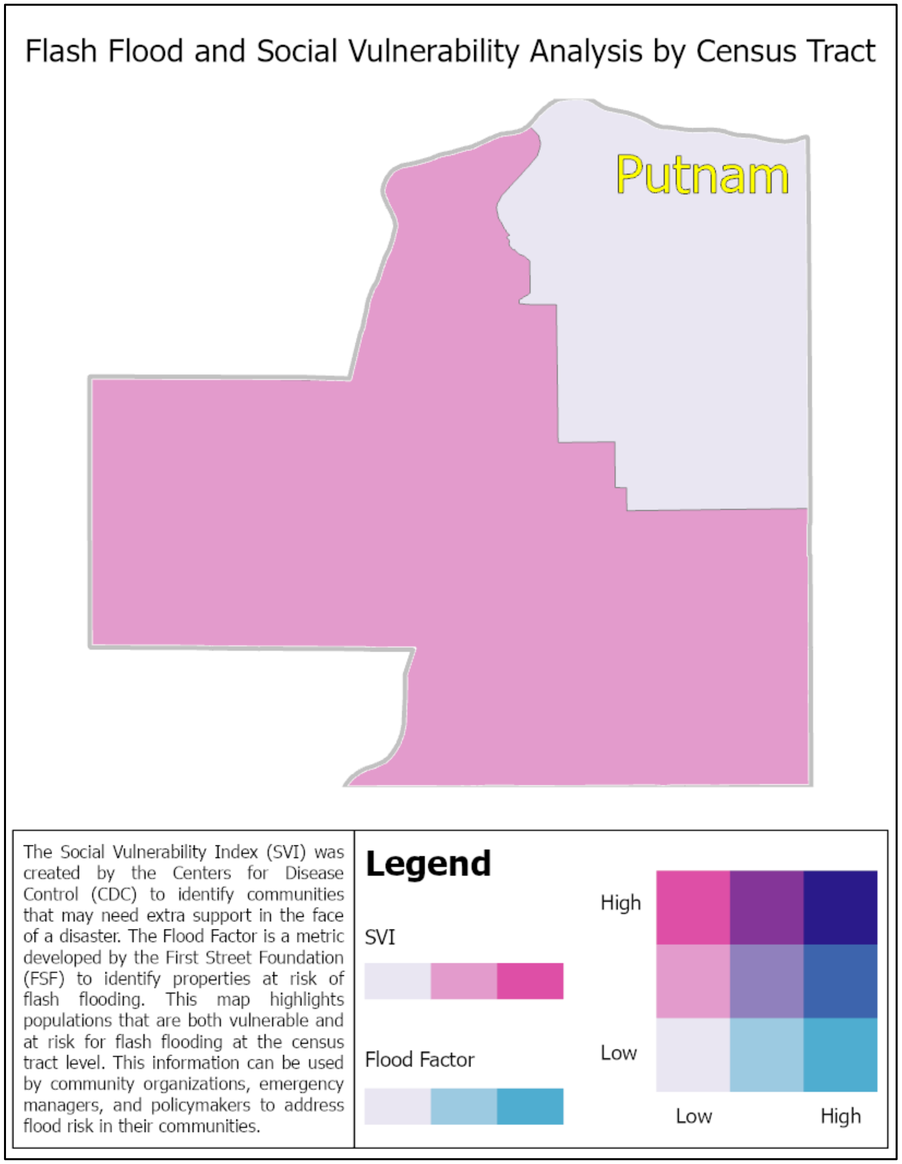

Riverine Flood and Social Vulnerability Analysis by Census Tract
Pope
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

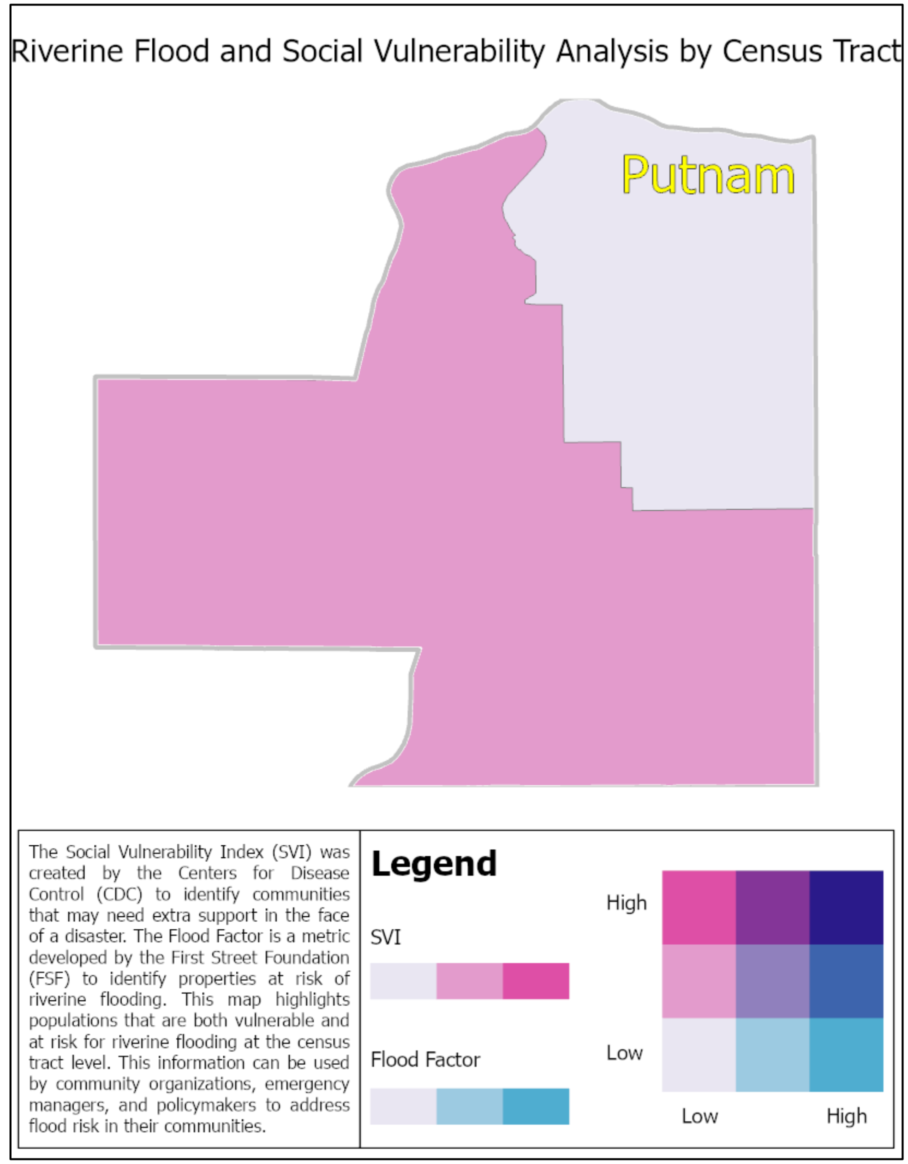
Pulaski County





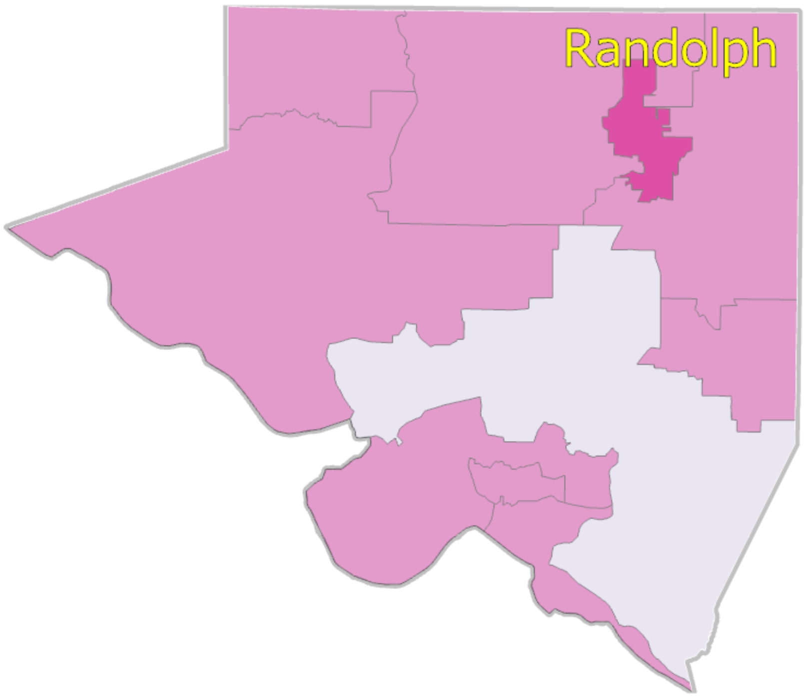
Putnam County



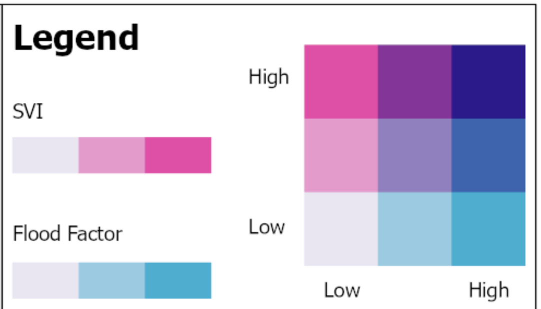


Randolph County

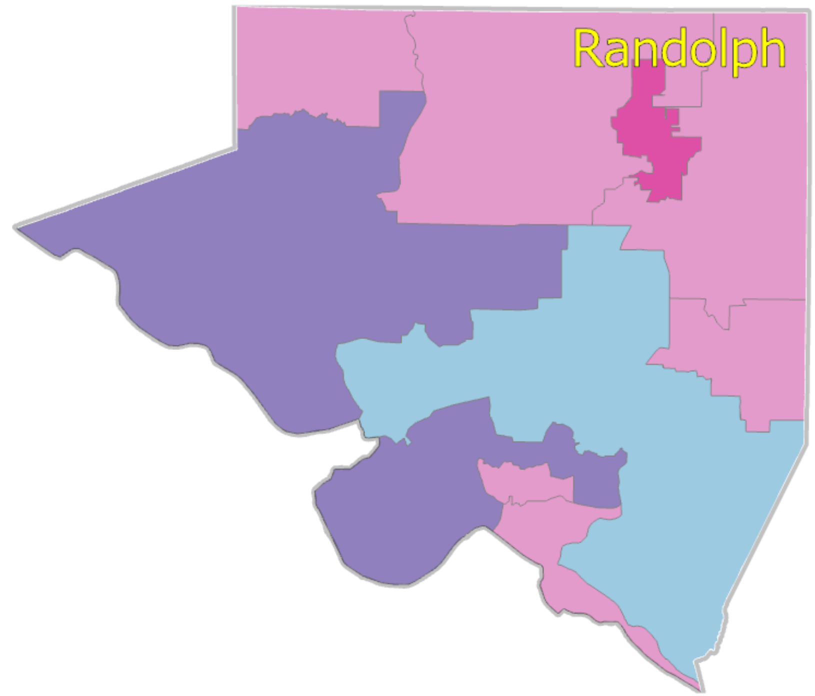
Flash Flood and Social Vulnerability Analysis by Census Tract



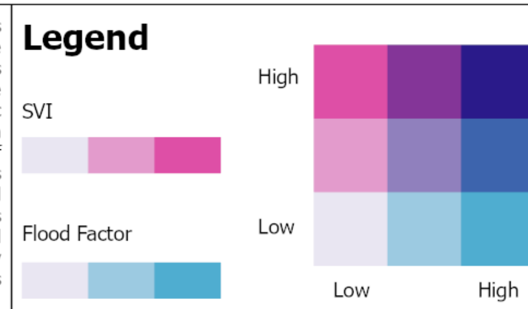
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



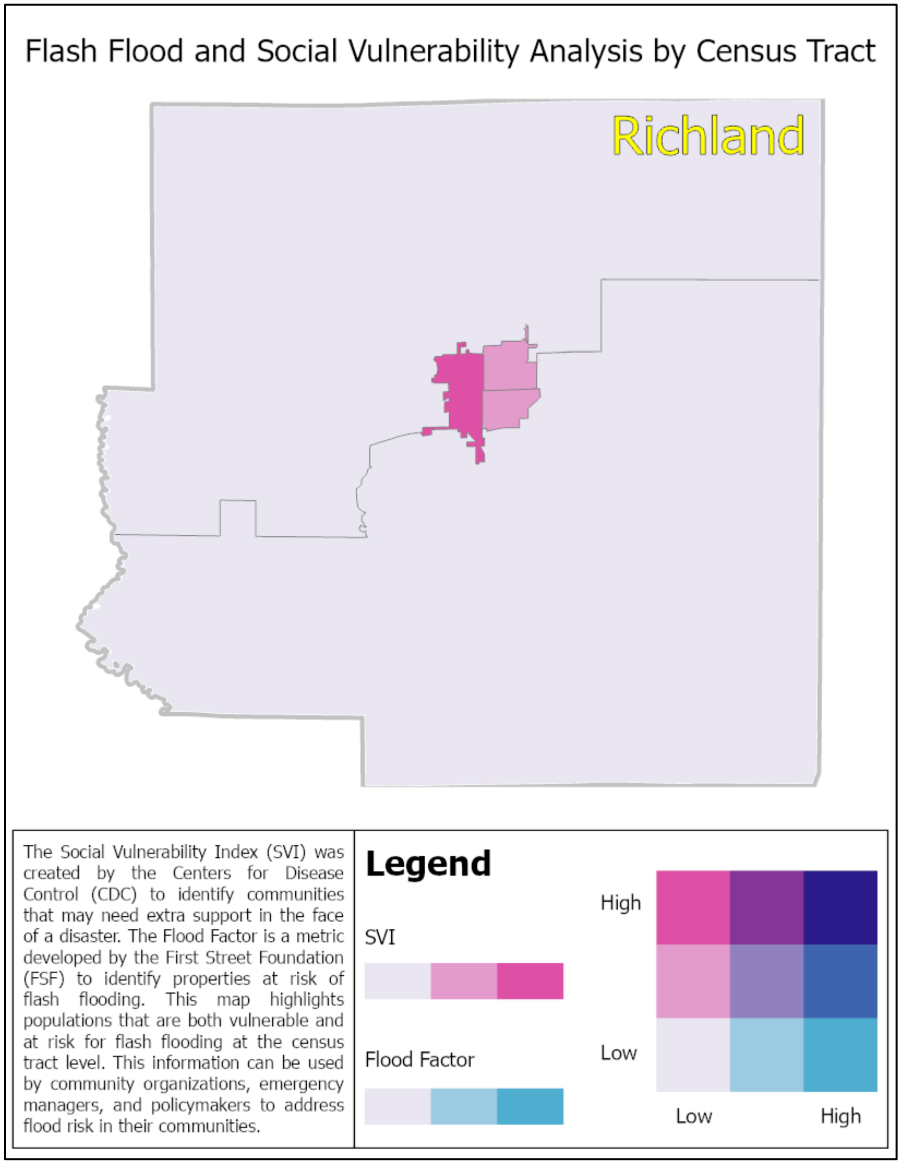
Riverine Flood and Social Vulnerability Analysis by Census Tract

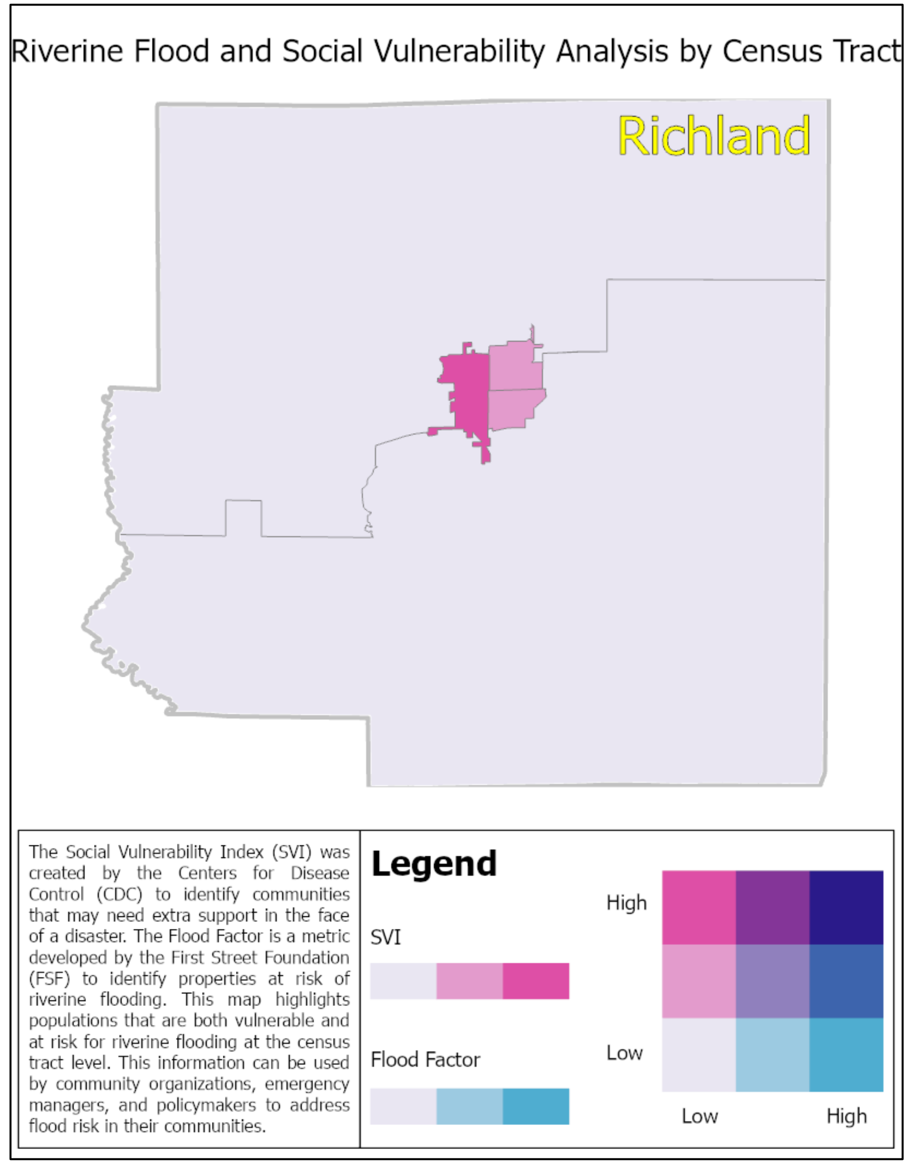


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



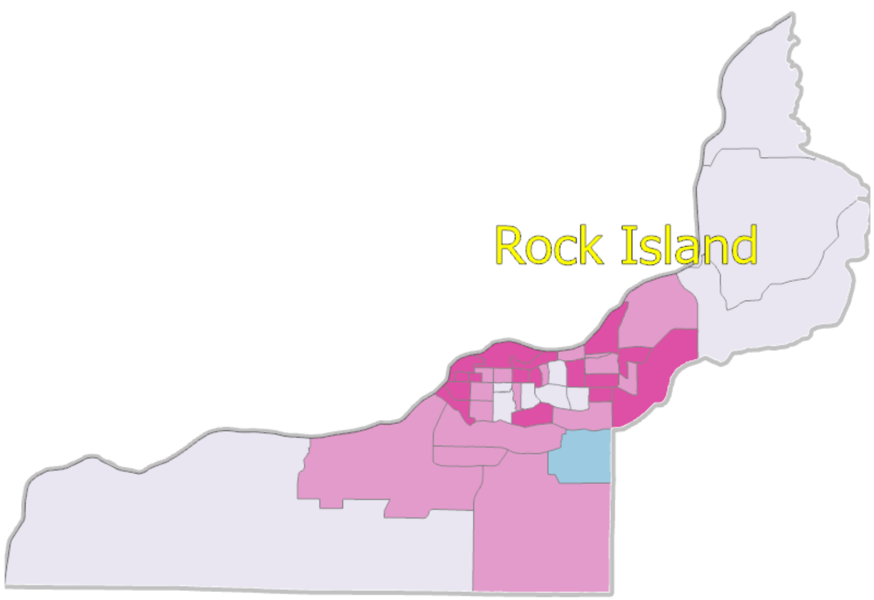
Richland County



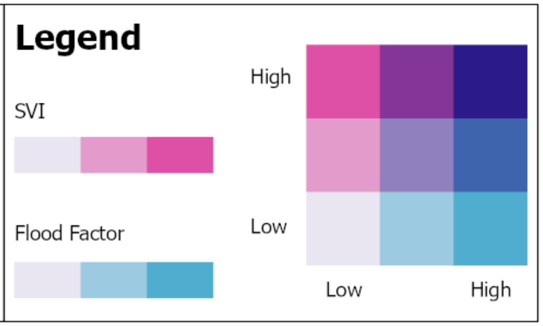


Rock Island County

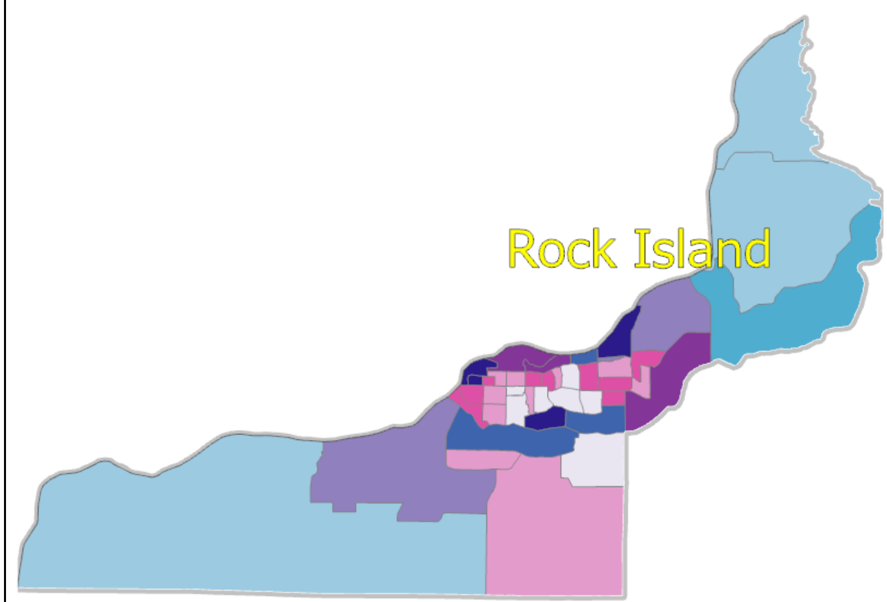
Flash Flood and Social Vulnerability Analysis by Census Tract



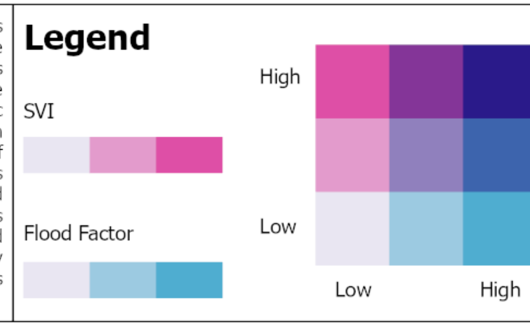
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Riverine Flood and Social Vulnerability Analysis by Census Tract

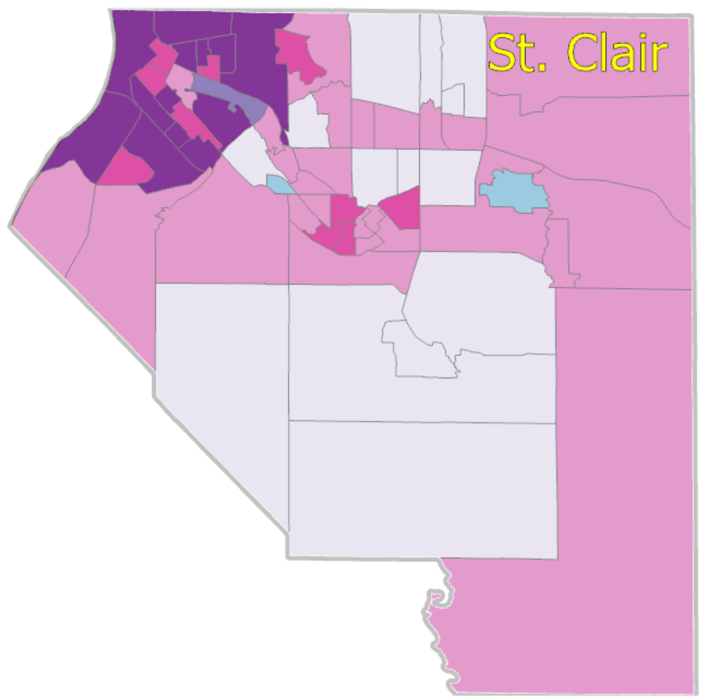


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



St. Clair County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

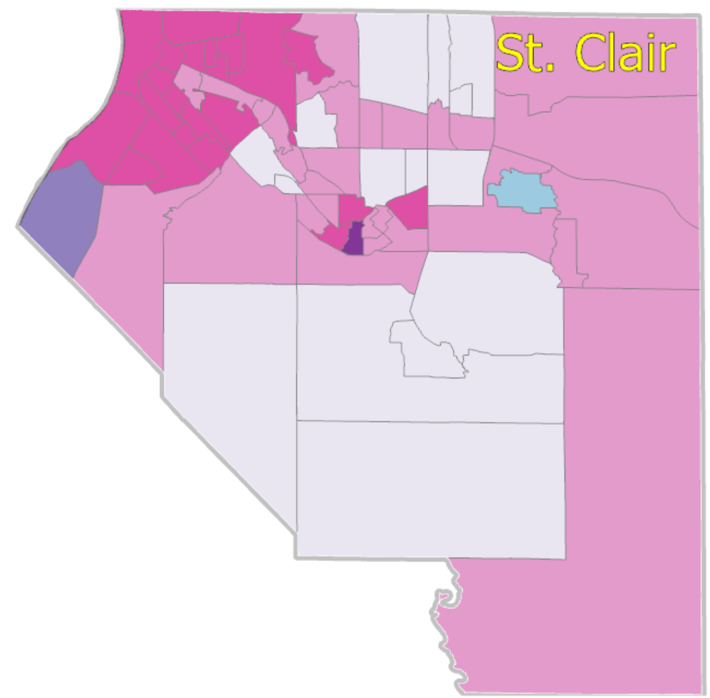
High

Low

Low

High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

High

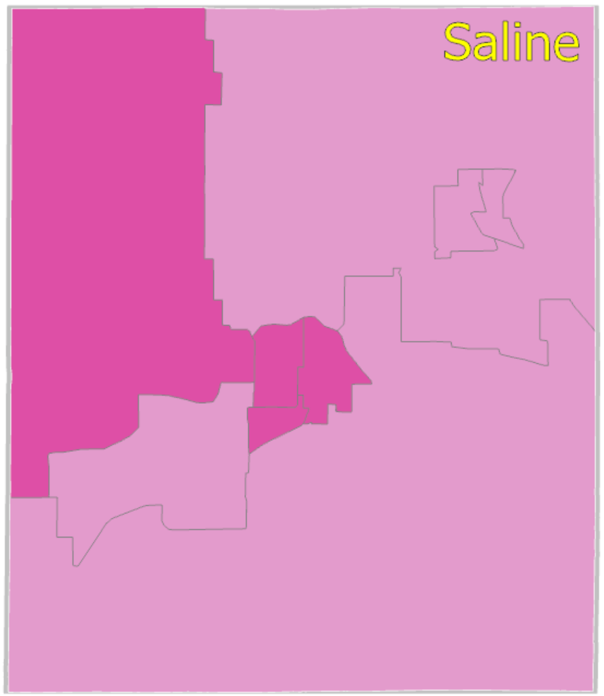
Low

Low

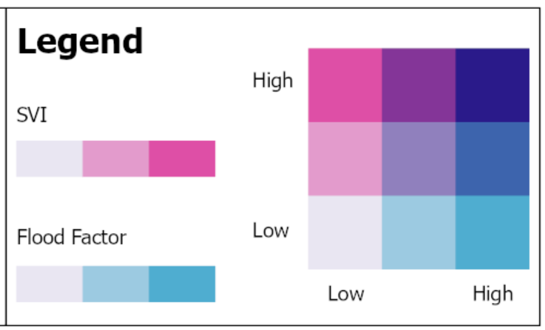
High

Saline County

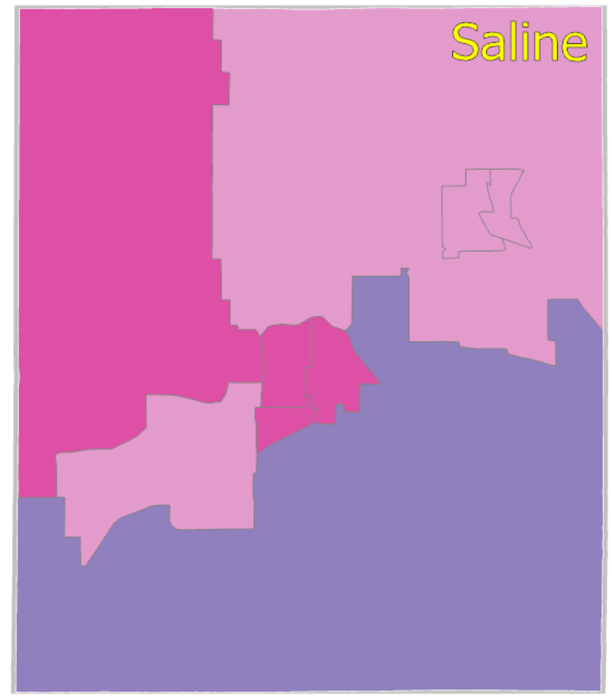
Flash Flood and Social Vulnerability Analysis by Census Tract



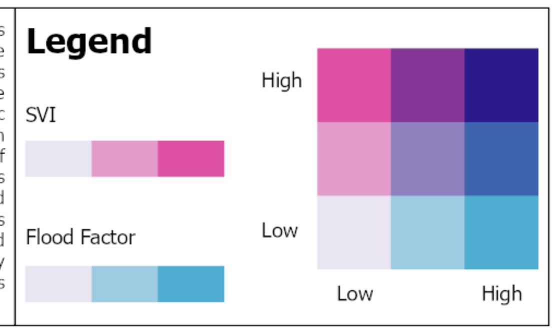
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



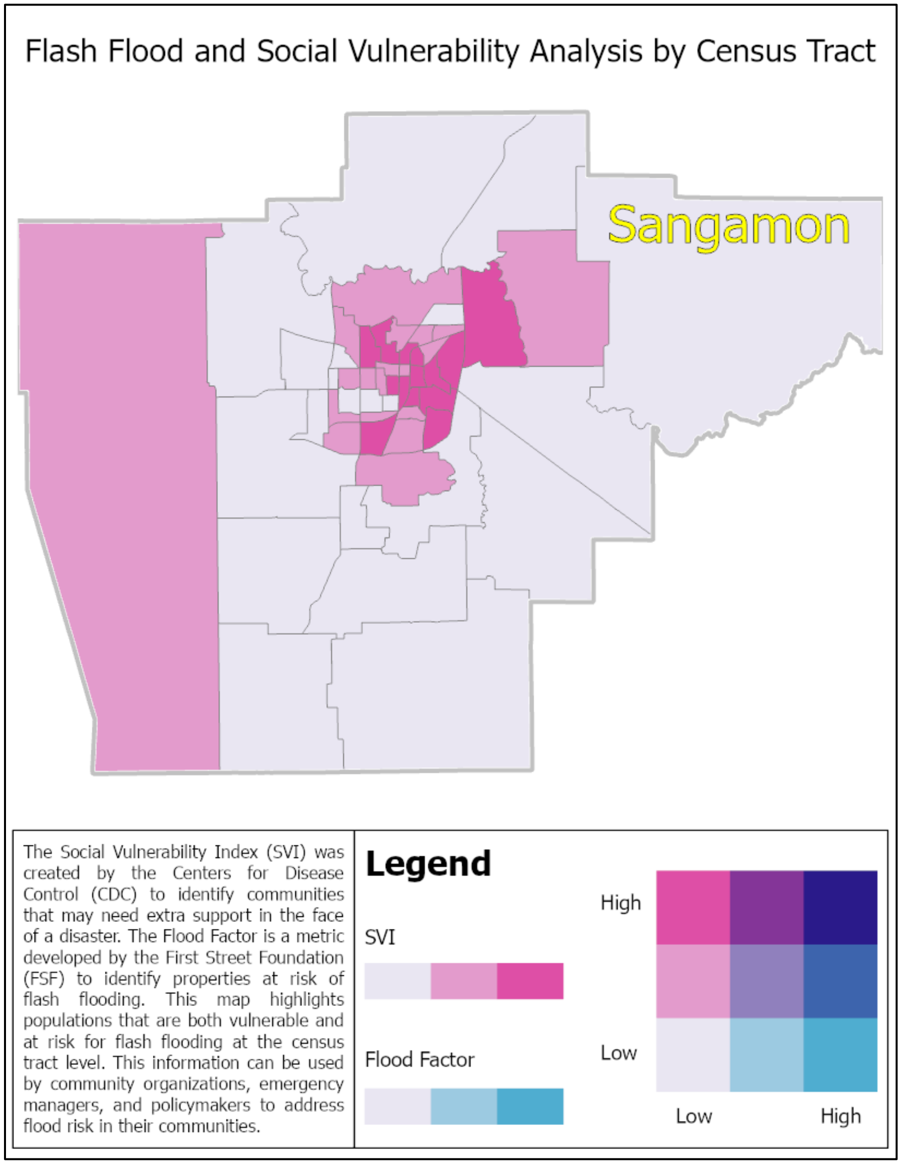
Riverine Flood and Social Vulnerability Analysis by Census Tract

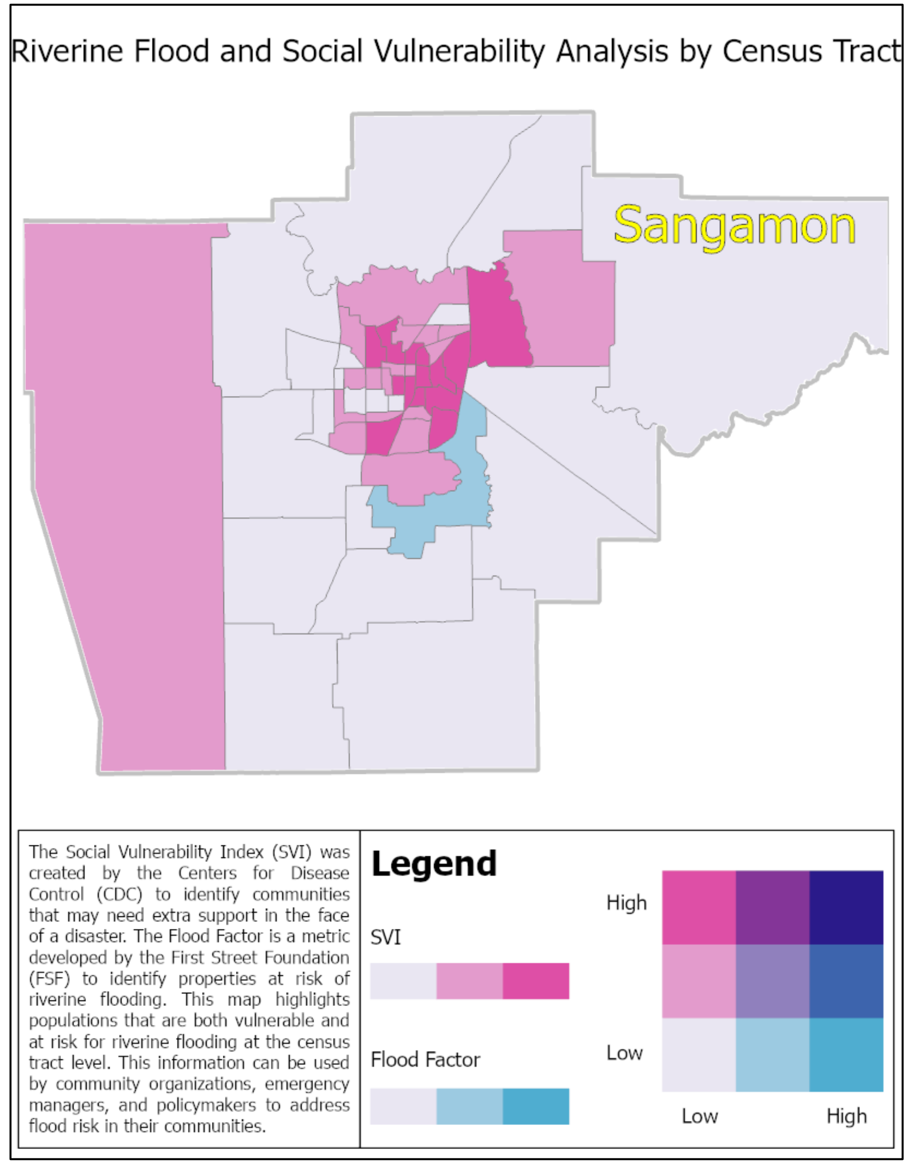


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

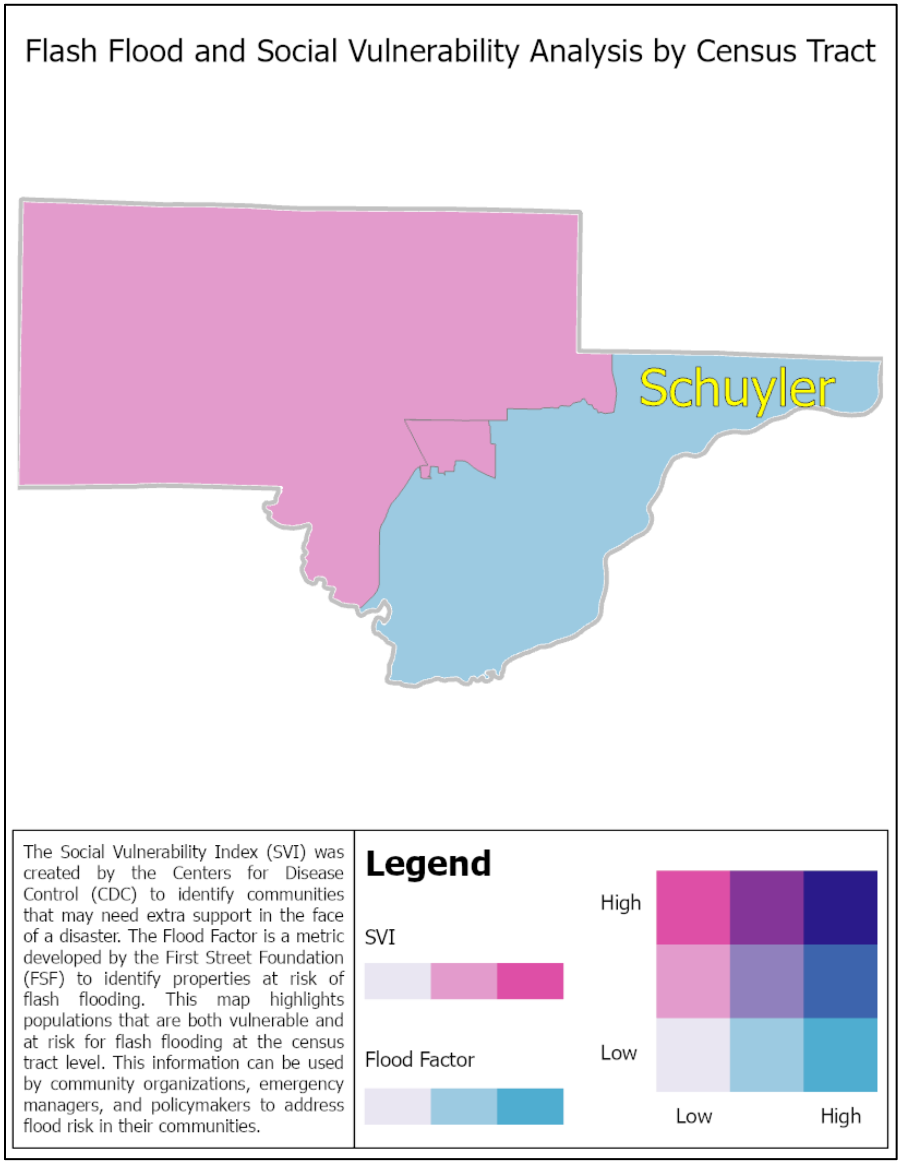


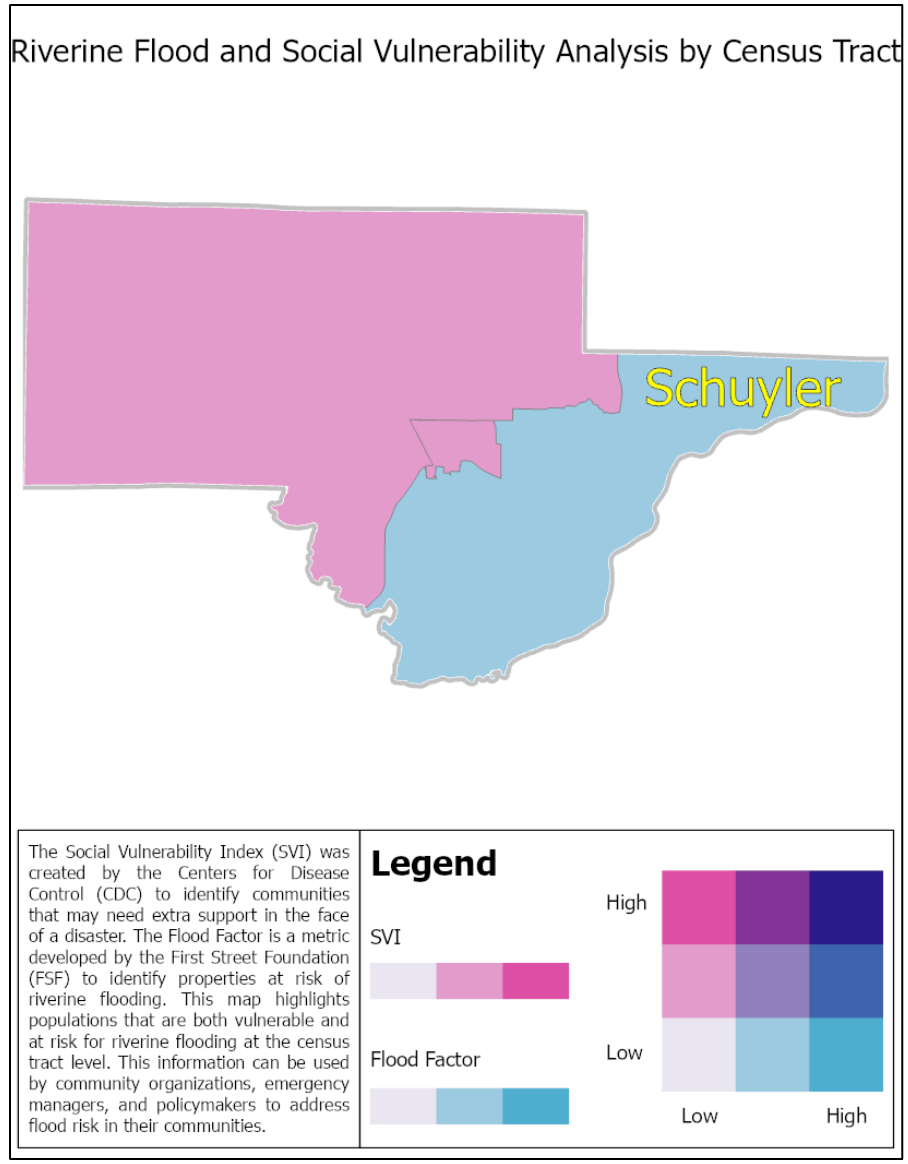
Sangamon County





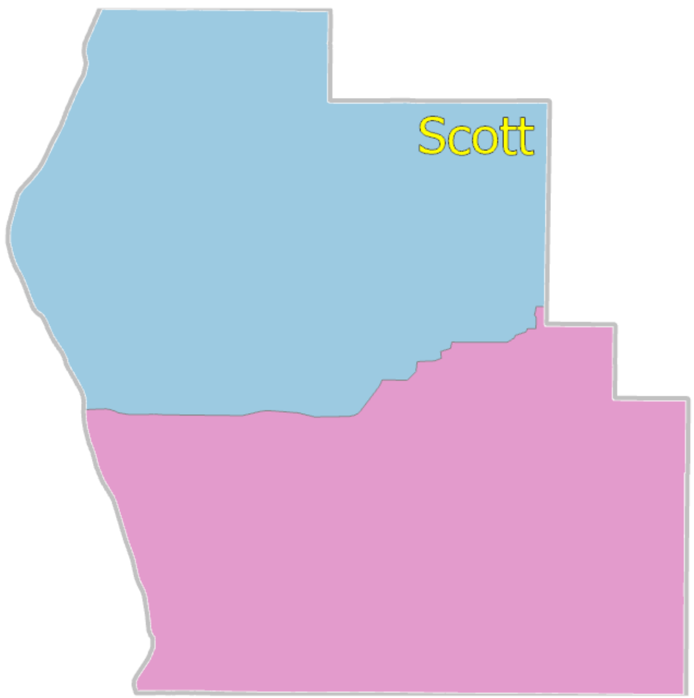
Schuyler County



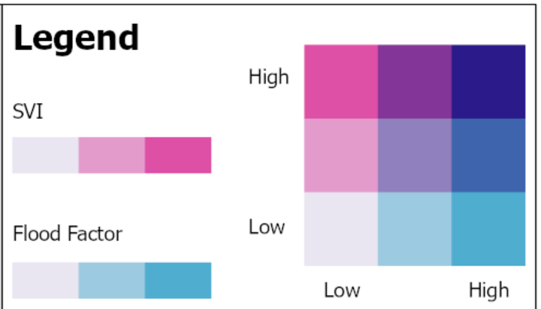


Scott County

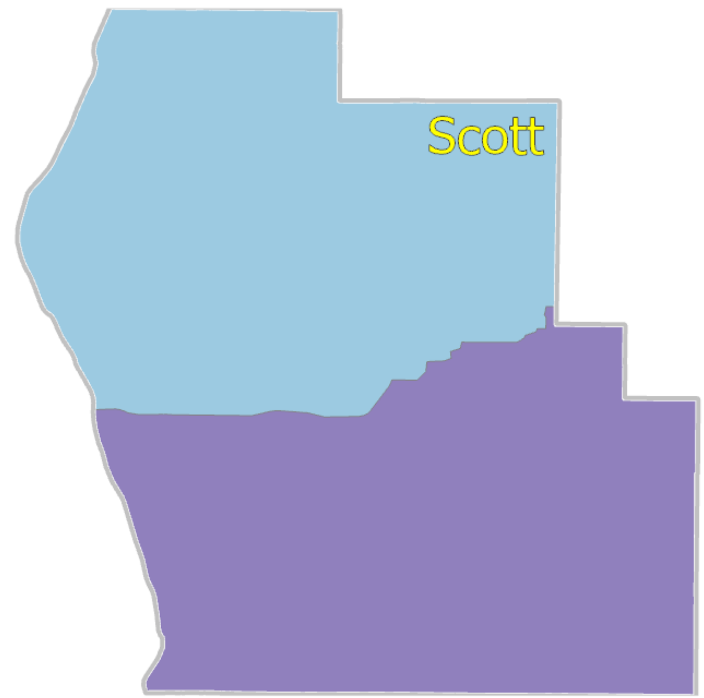
Flash Flood and Social Vulnerability Analysis by Census Tract



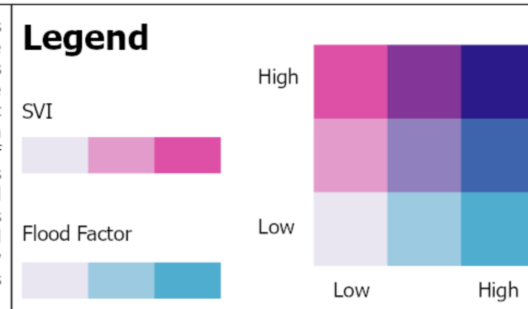
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



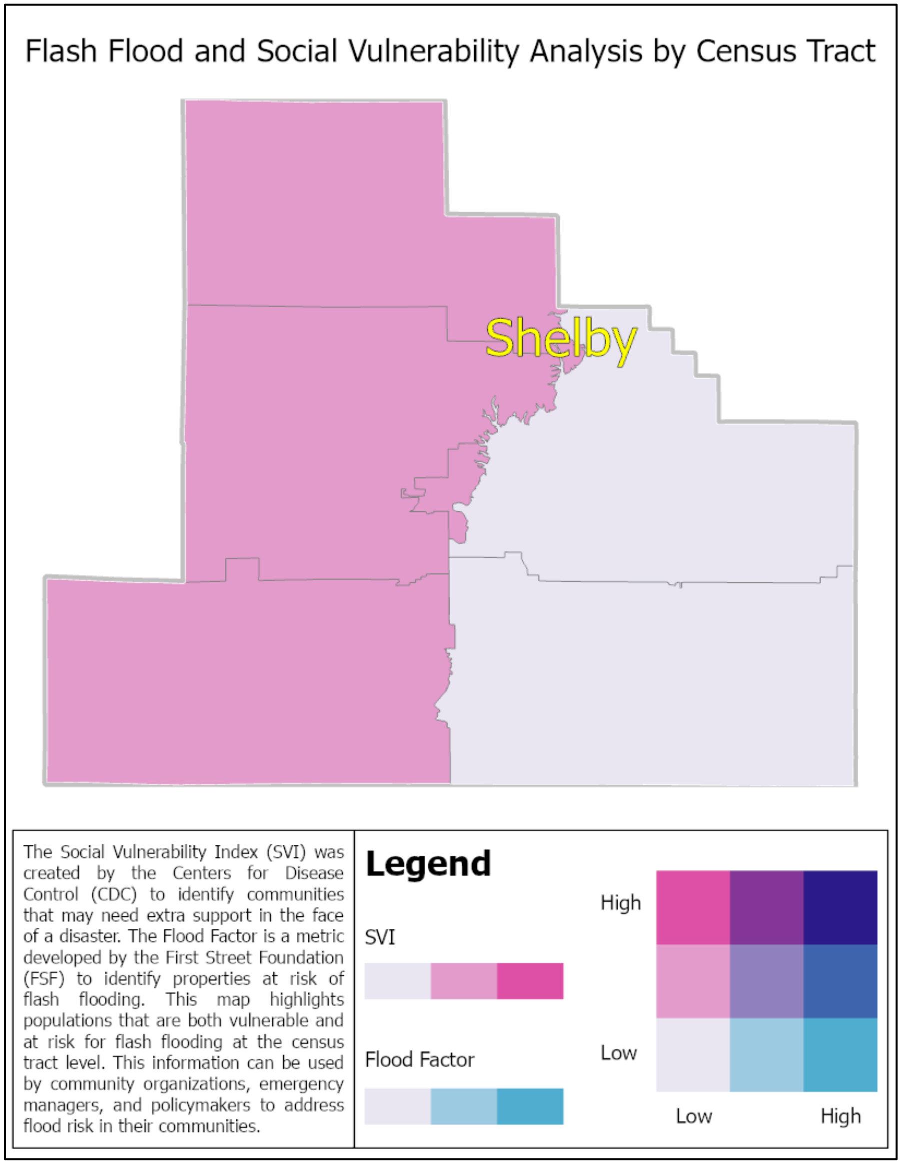
Riverine Flood and Social Vulnerability Analysis by Census Tract

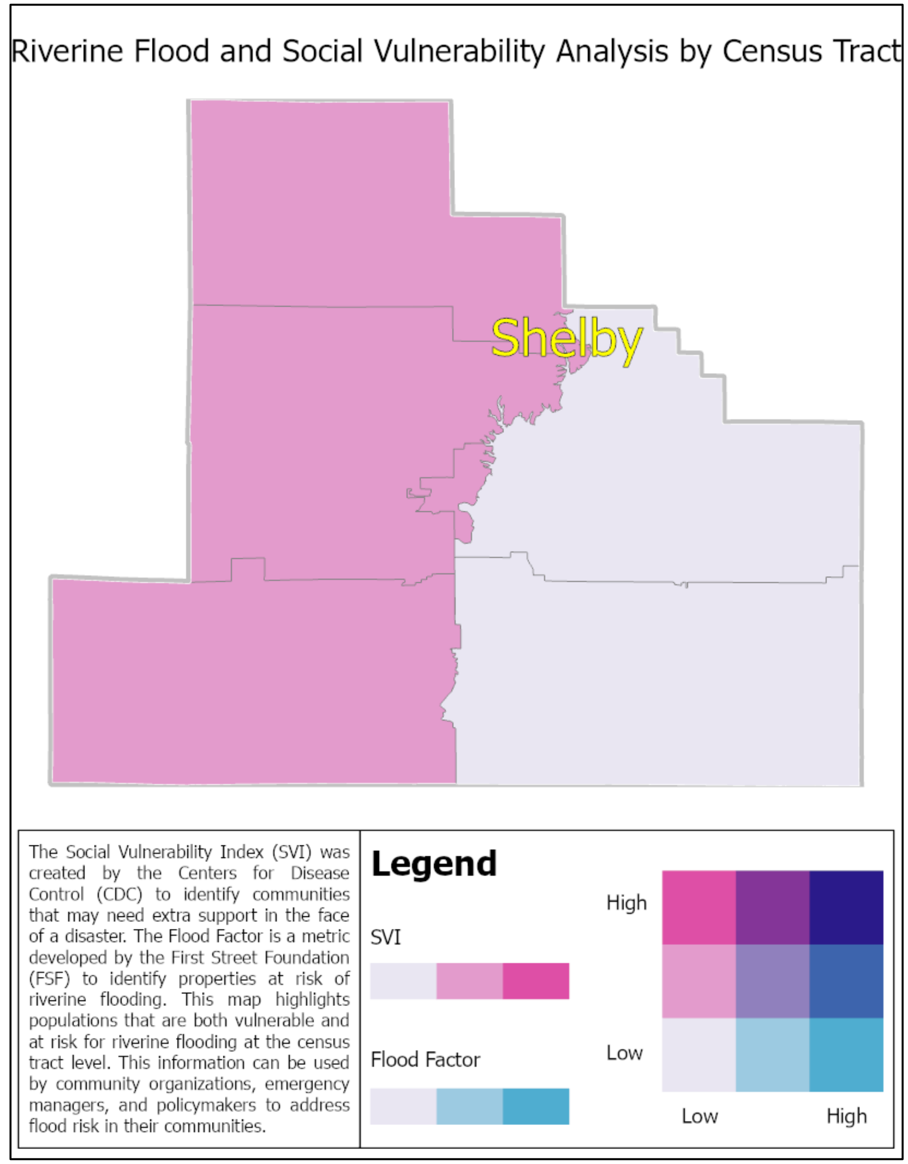


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



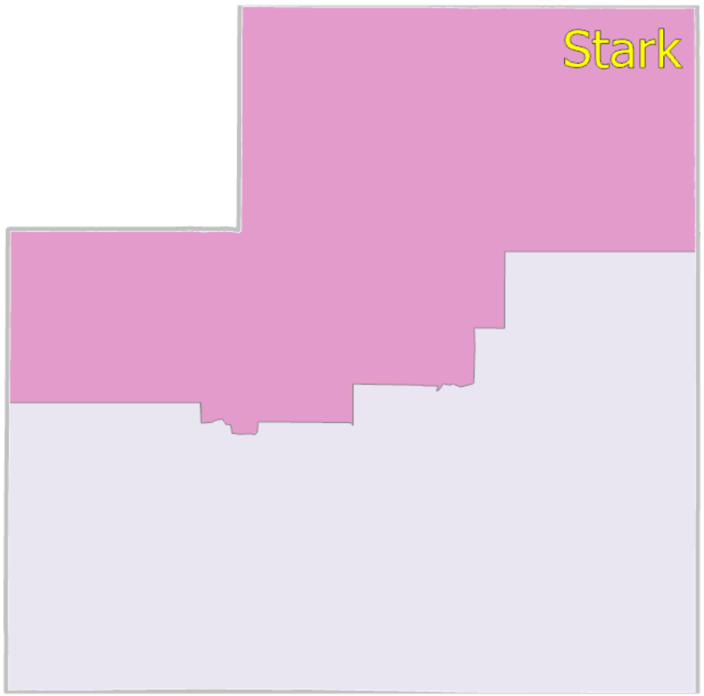
Shelby County



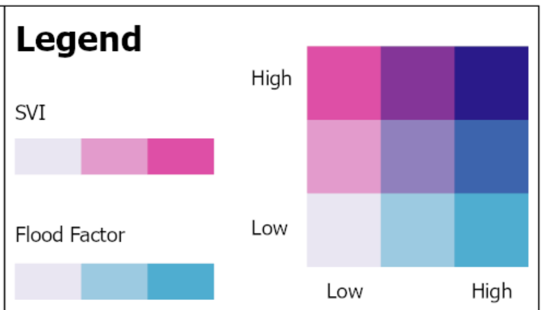


Stark County

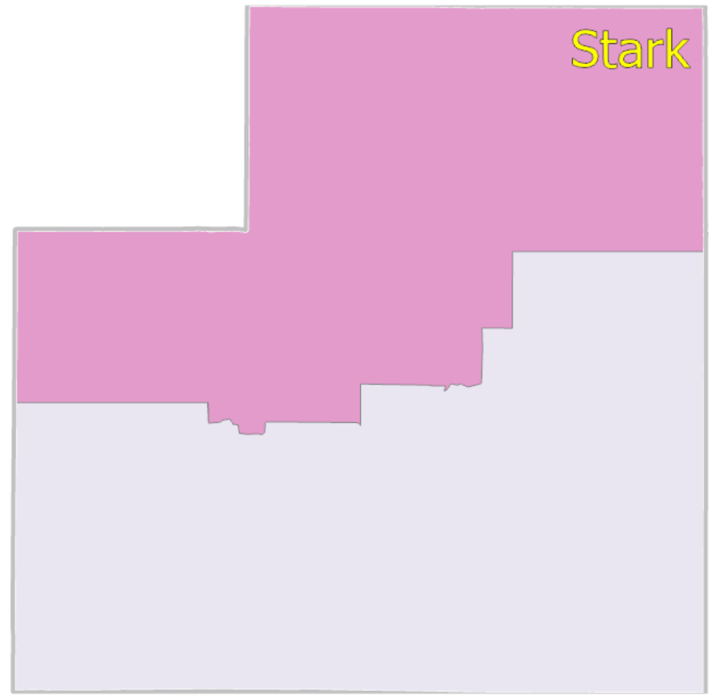
Flash Flood and Social Vulnerability Analysis by Census Tract



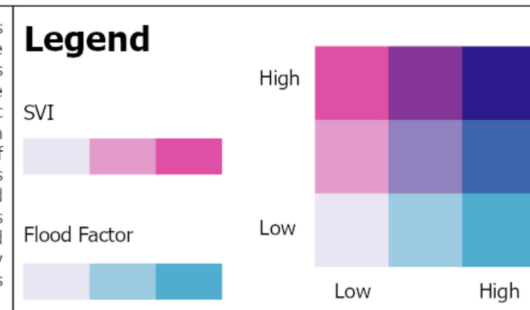
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



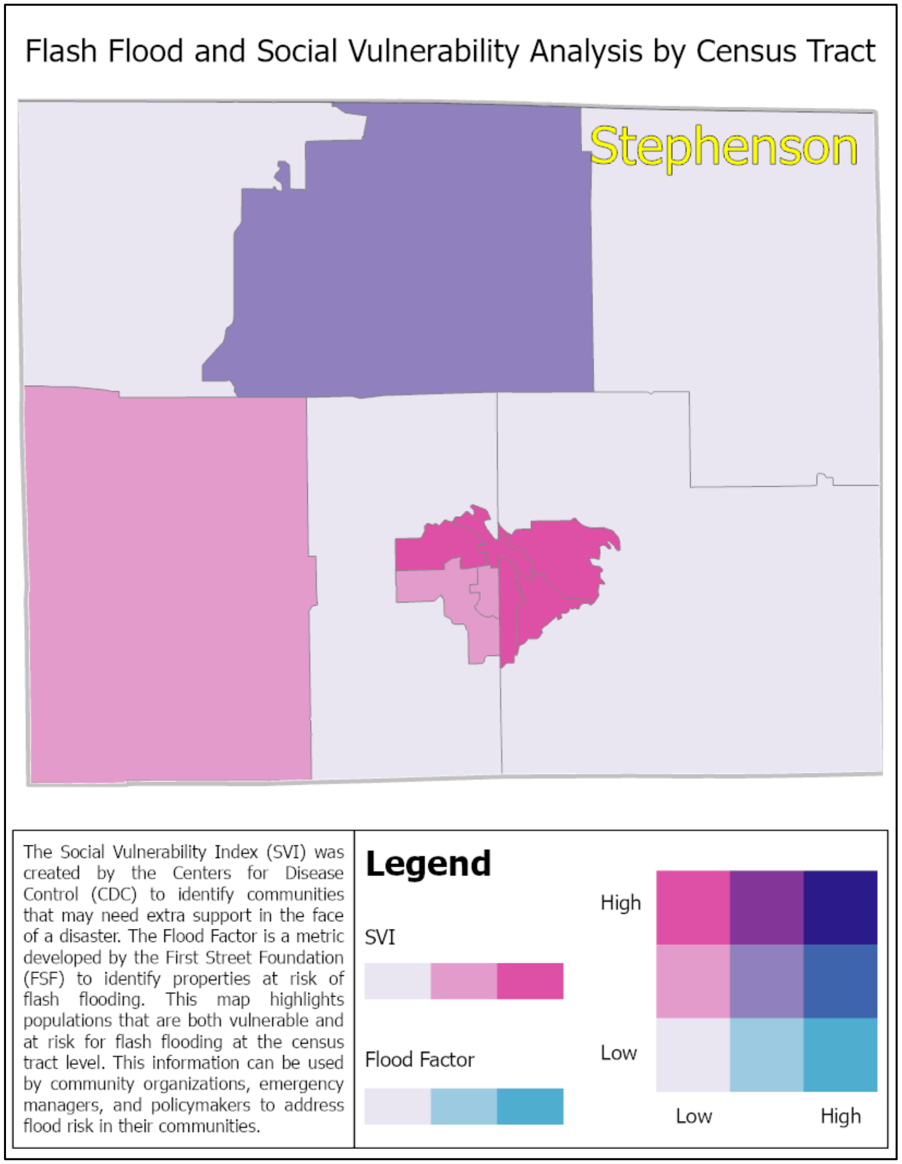
Riverine Flood and Social Vulnerability Analysis by Census Tract

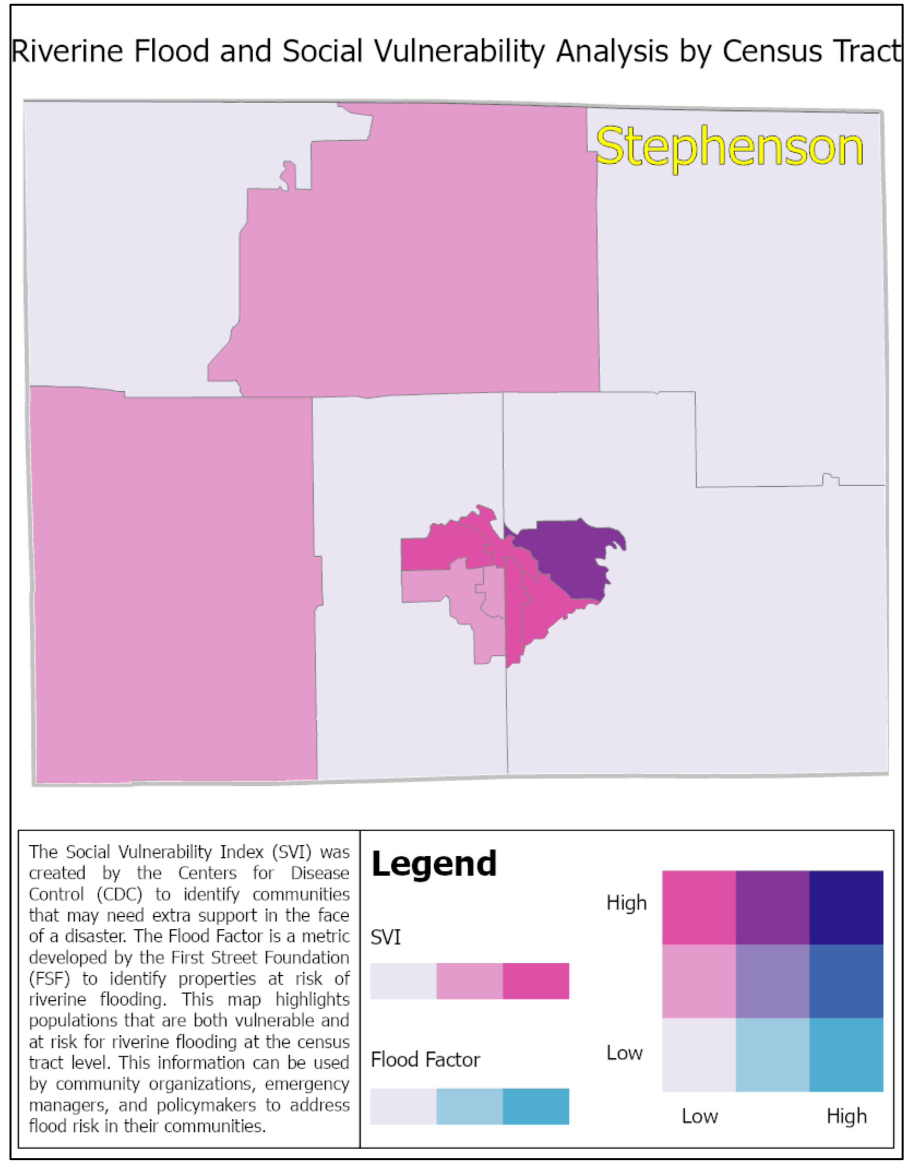


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



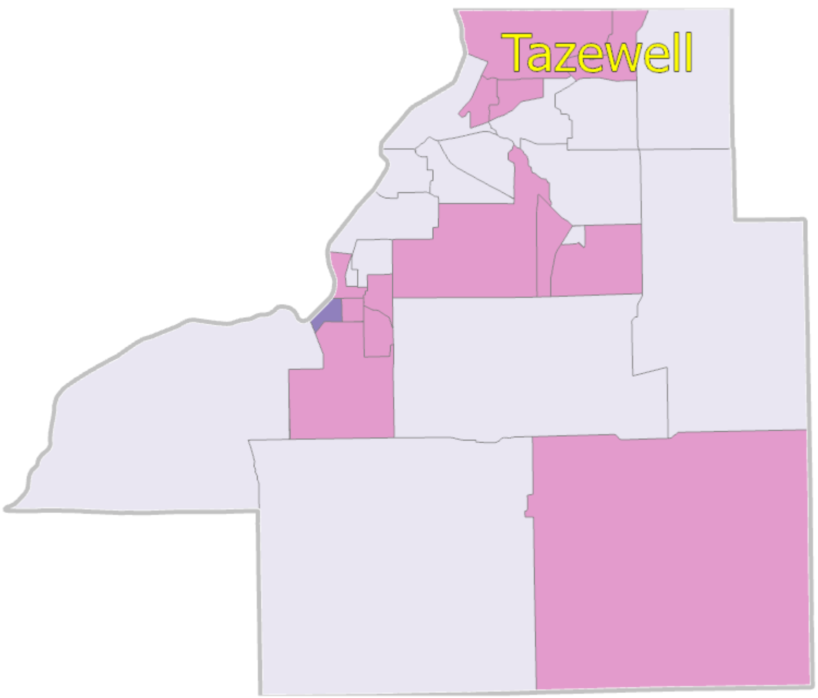
Stephenson County



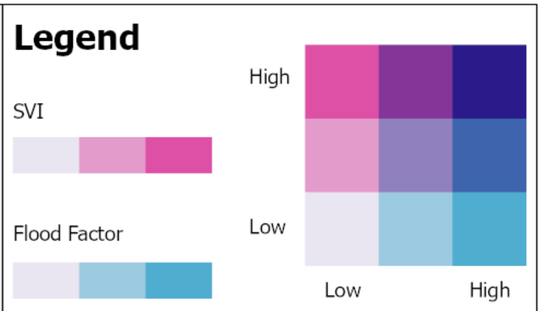


Tazewell County

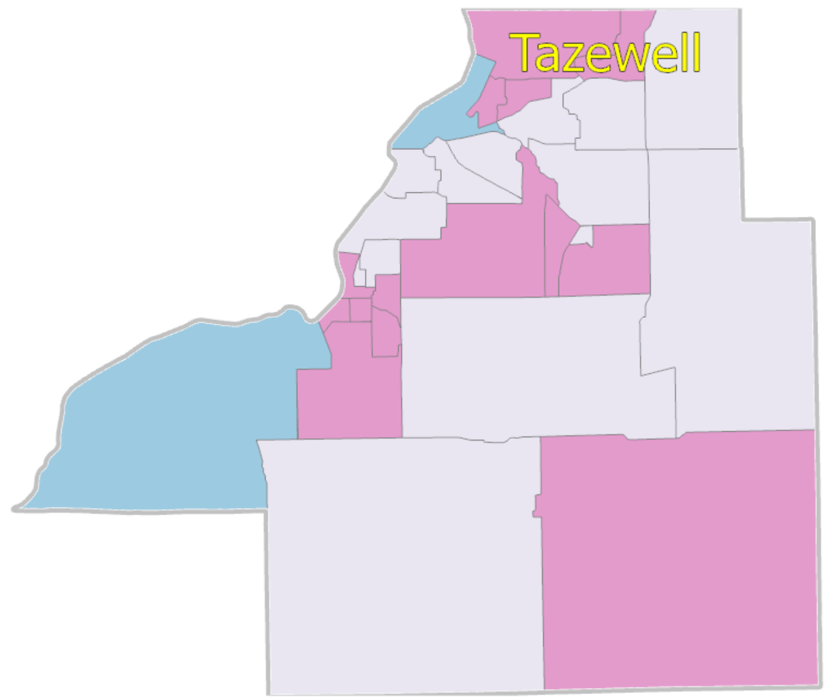
Flash Flood and Social Vulnerability Analysis by Census Tract



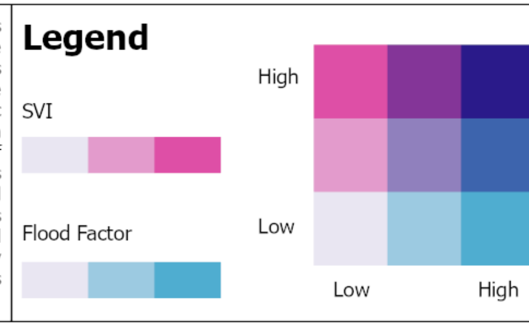
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



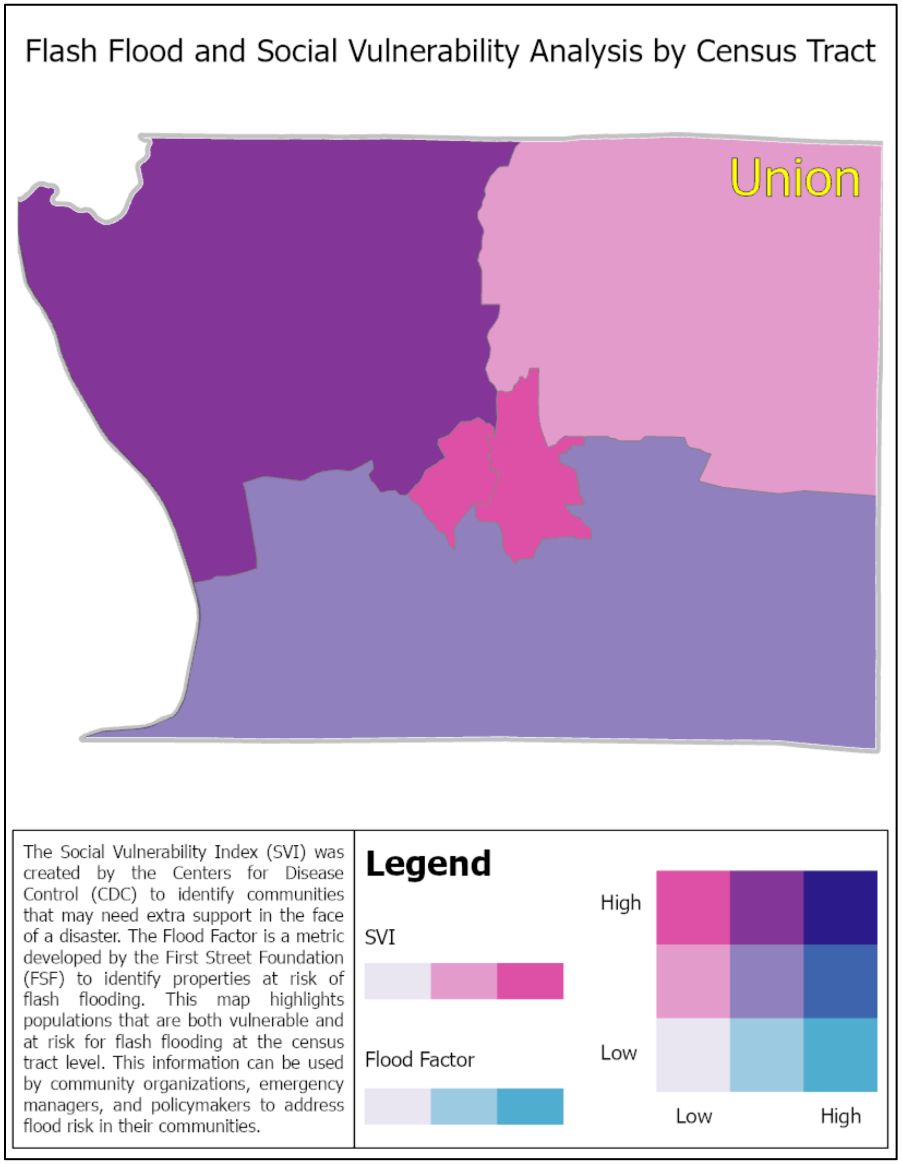
Riverine Flood and Social Vulnerability Analysis by Census Tract

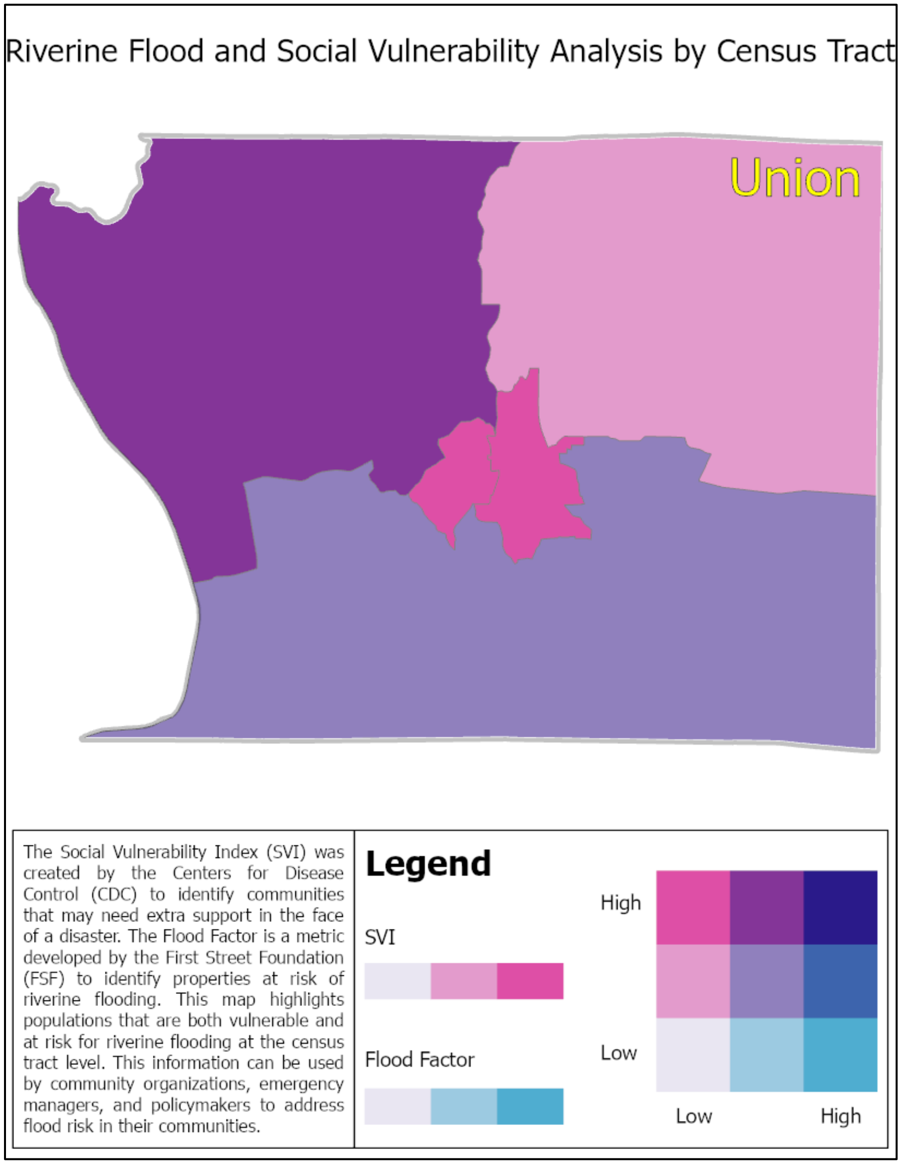


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



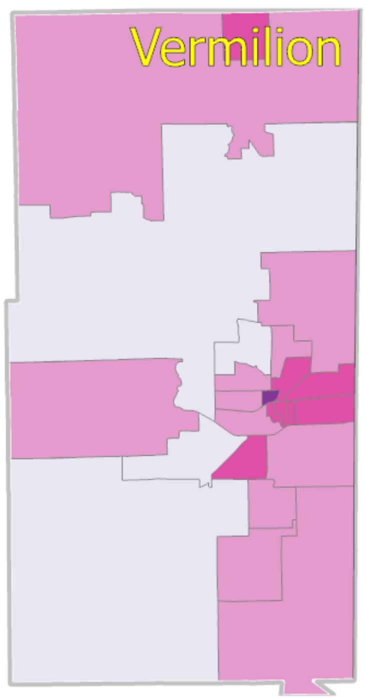
Union County





Vermilion County

Flash Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

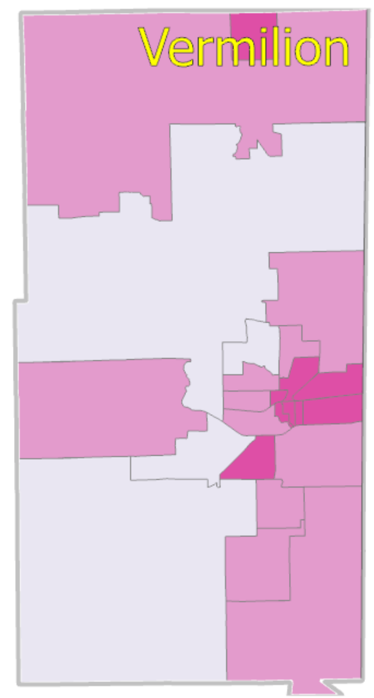
High

Low

Low

High

Riverine Flood and Social Vulnerability Analysis by Census Tract



The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

Legend

SVI

Flood Factor

High

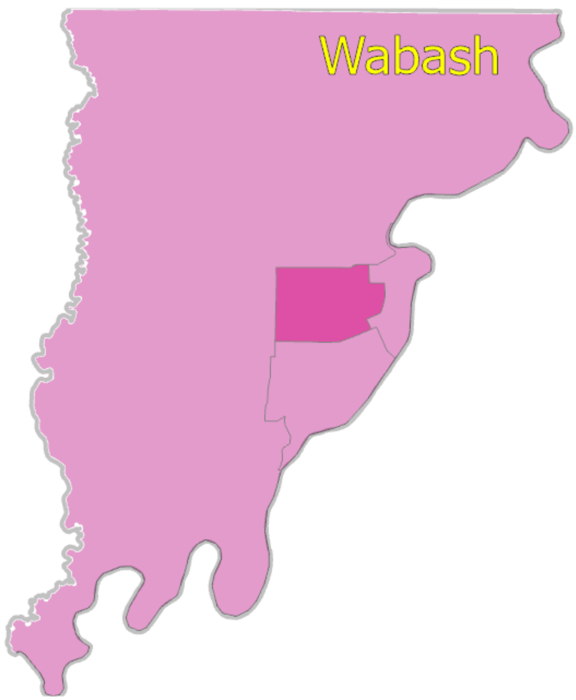
Low

Low

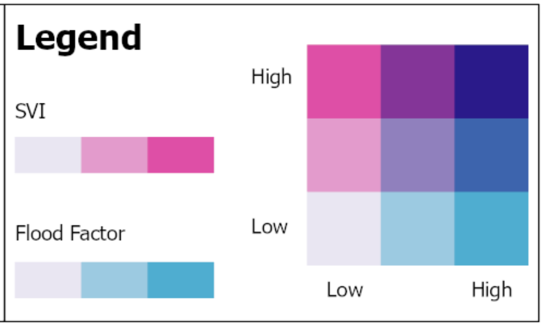
High

Wabash County

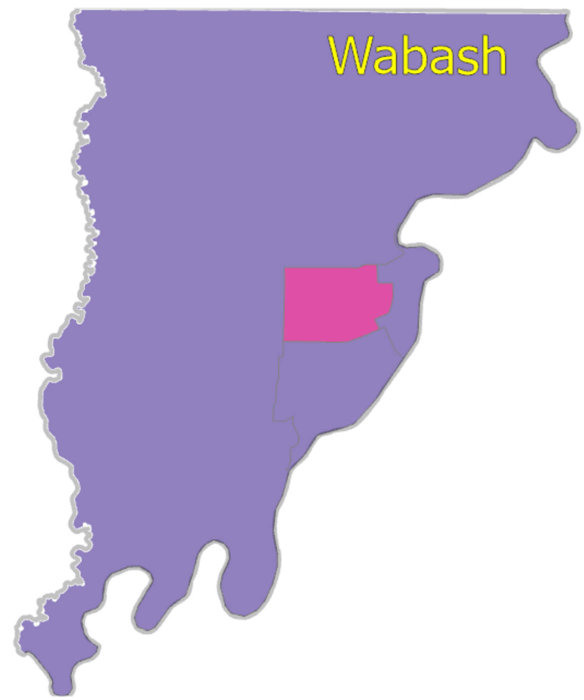
Flash Flood and Social Vulnerability Analysis by Census Tract



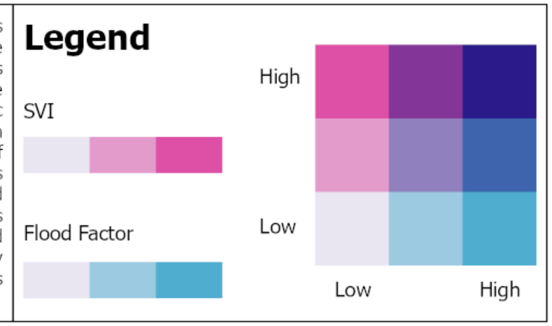
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



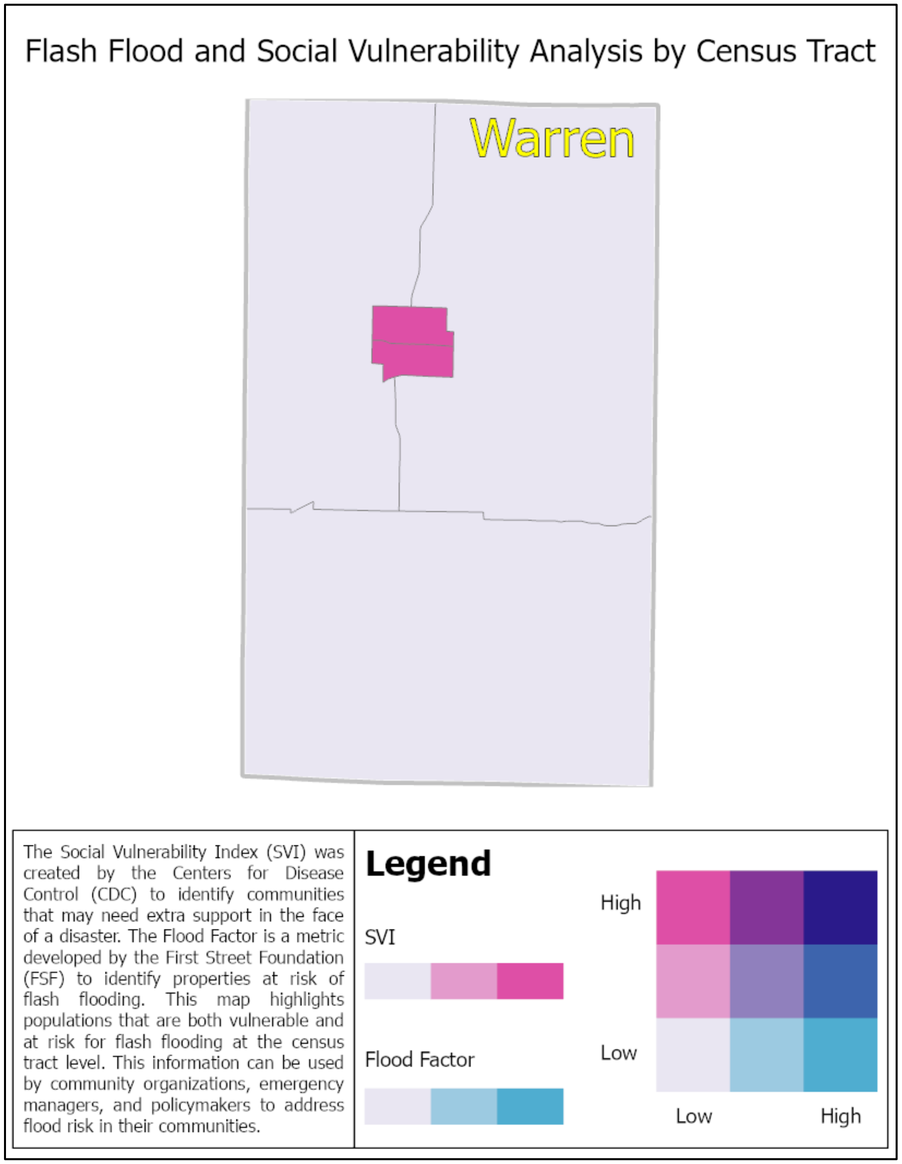
Riverine Flood and Social Vulnerability Analysis by Census Tract

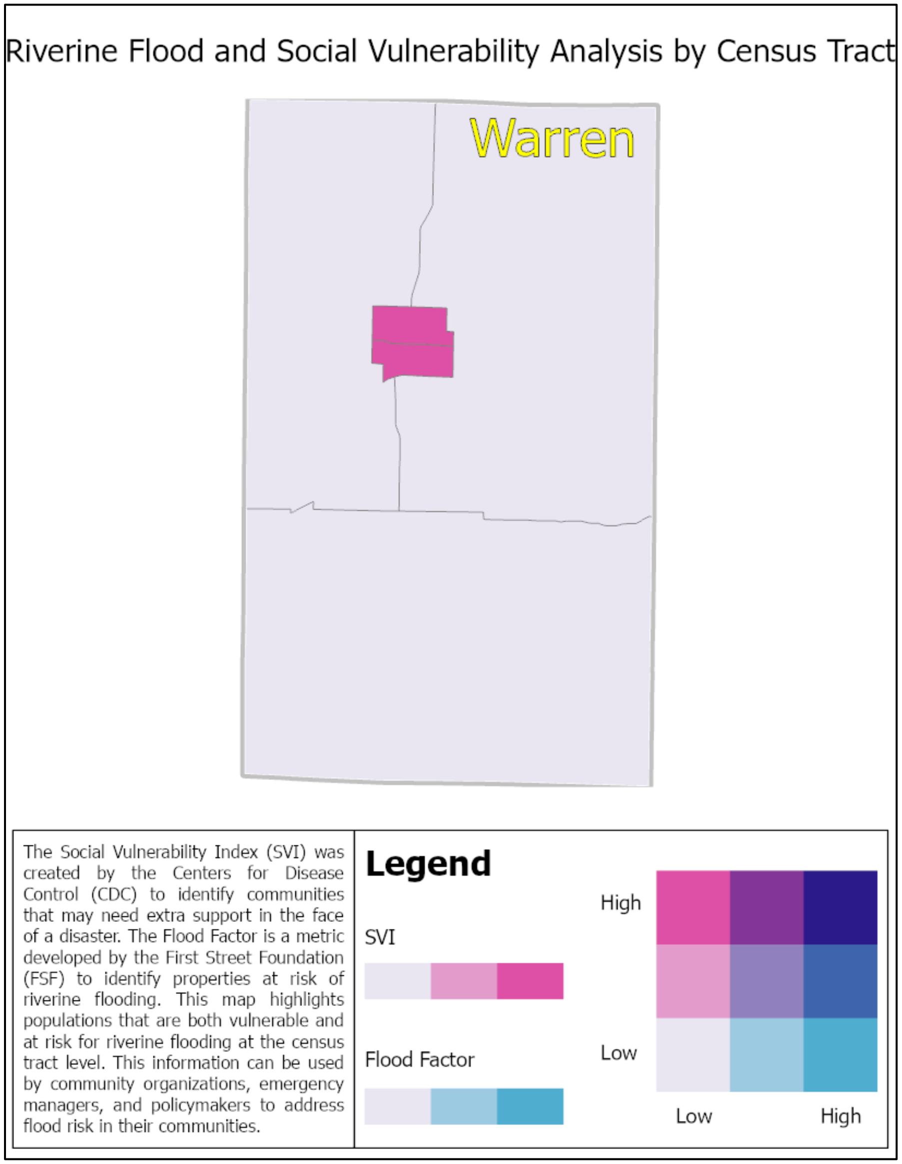


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

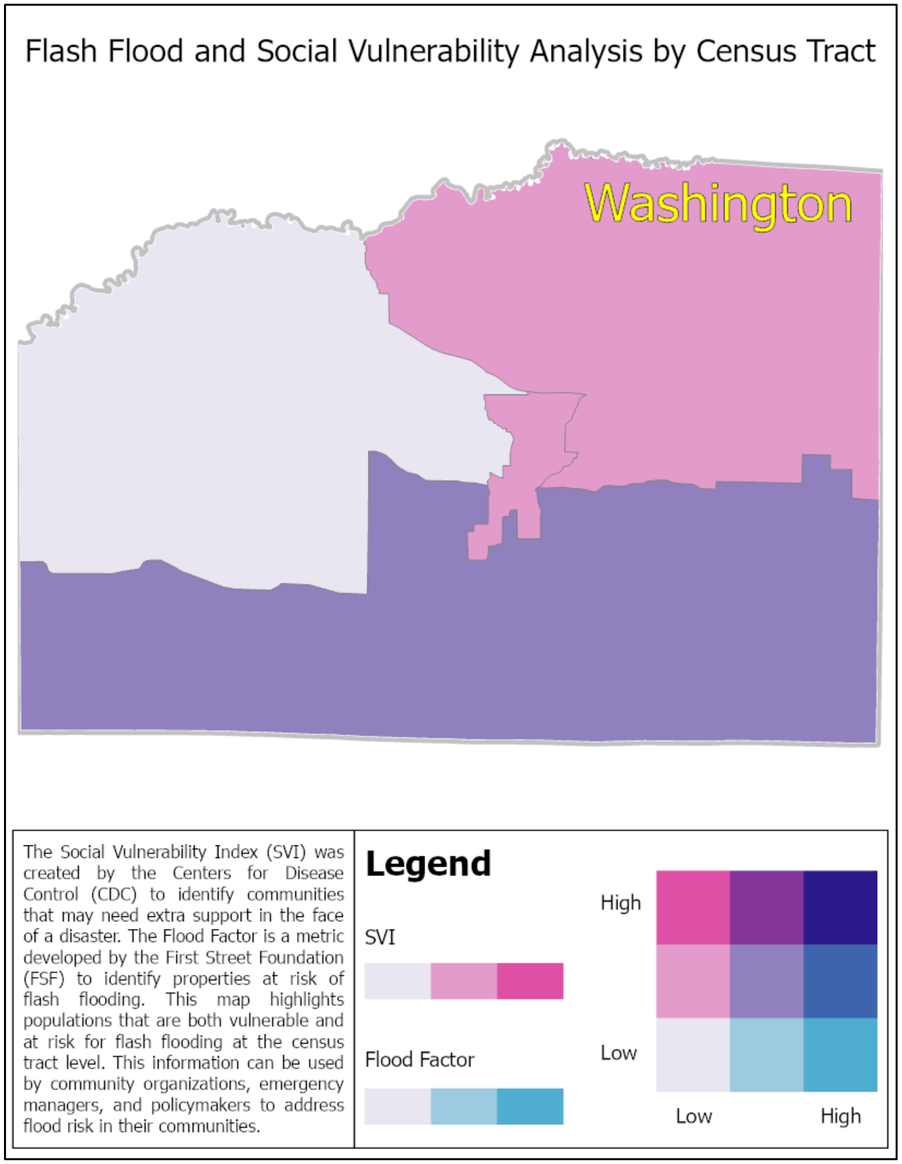


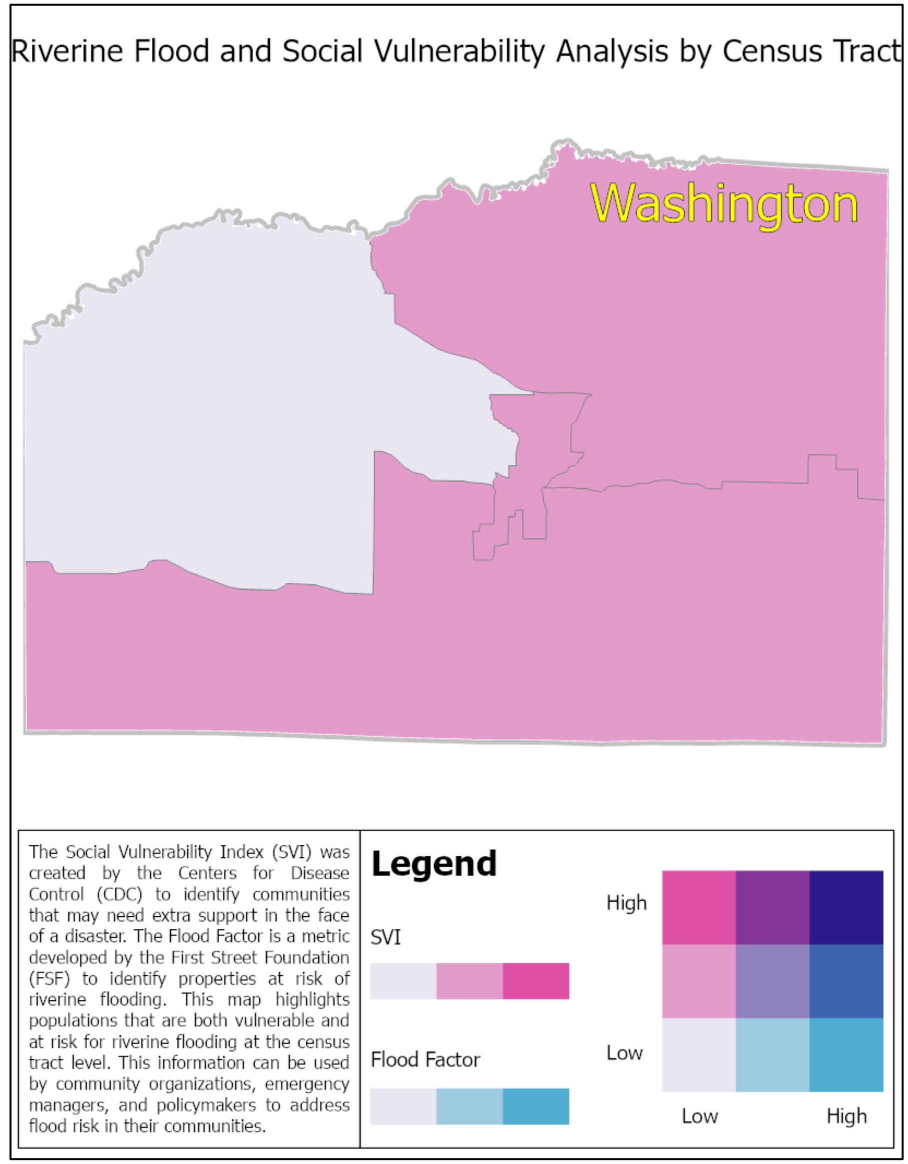
Warren County



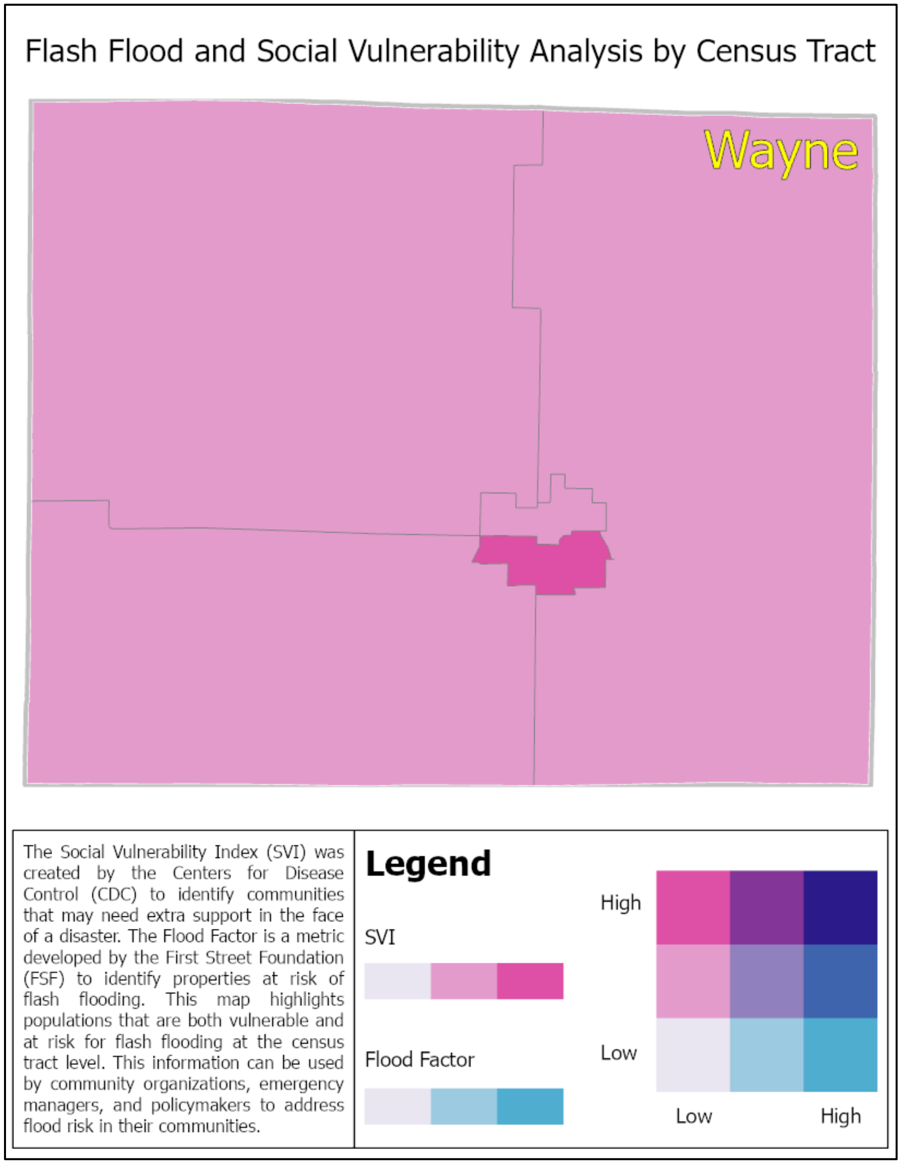


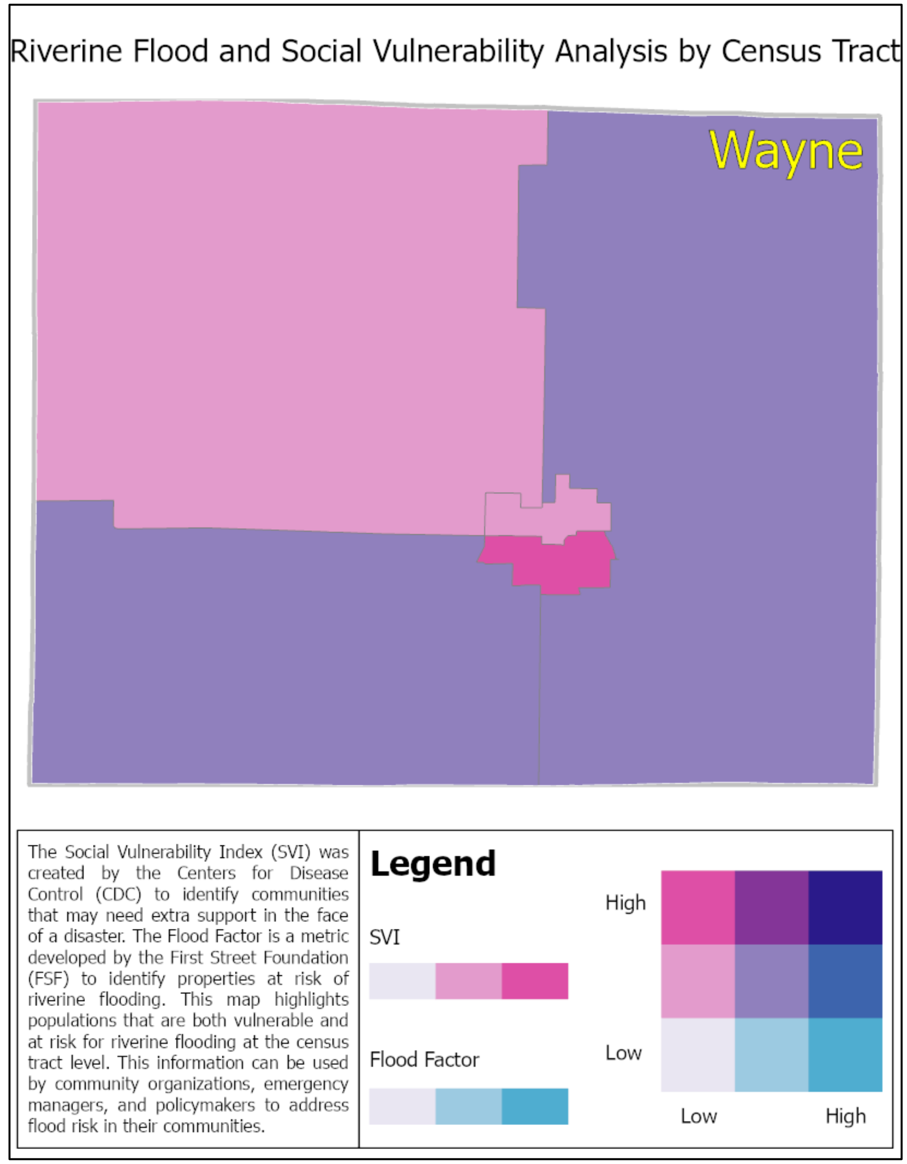
Washington County





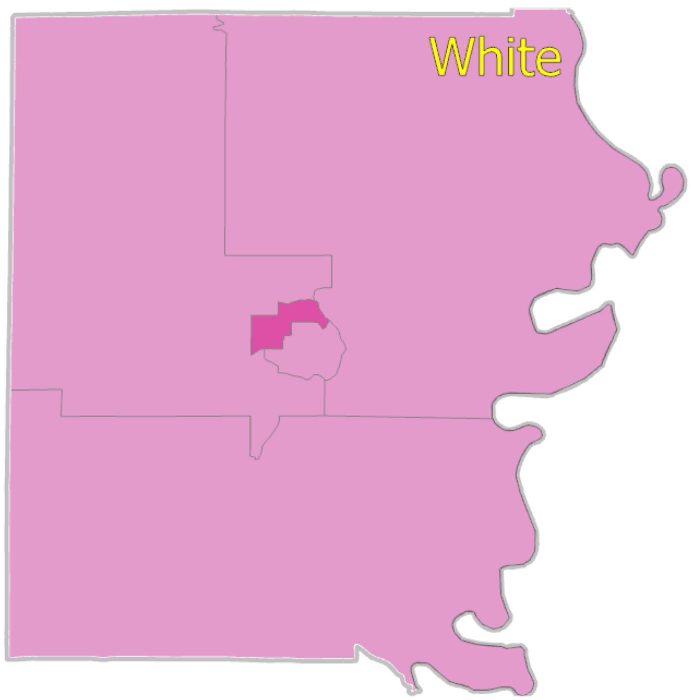
Wayne County



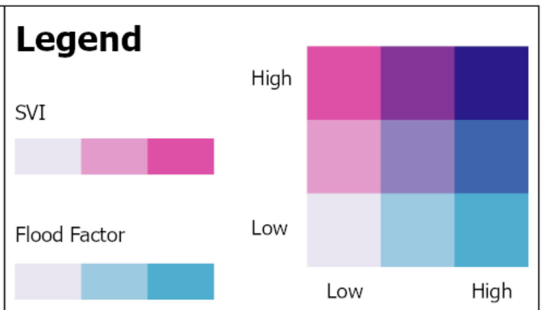


White County

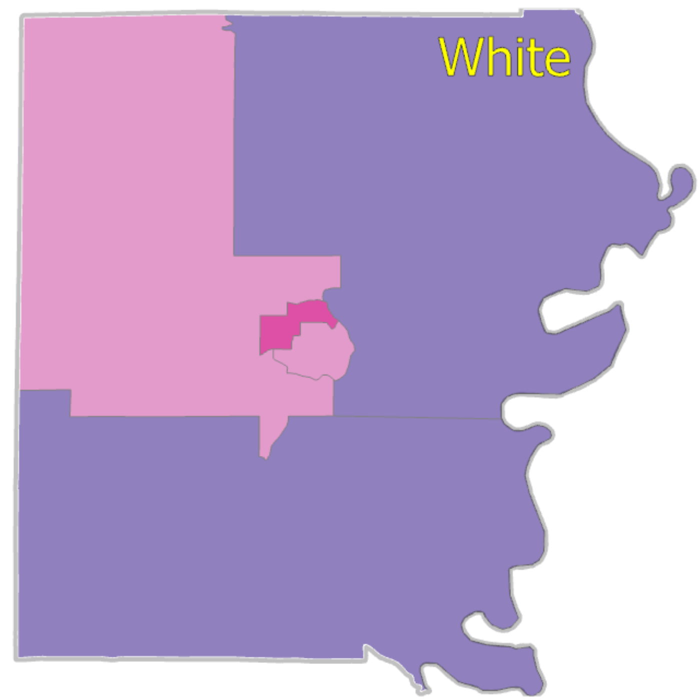
Flash Flood and Social Vulnerability Analysis by Census Tract



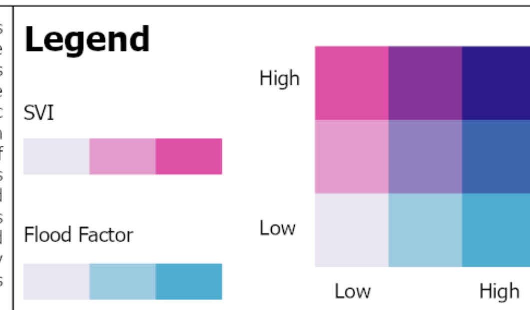
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



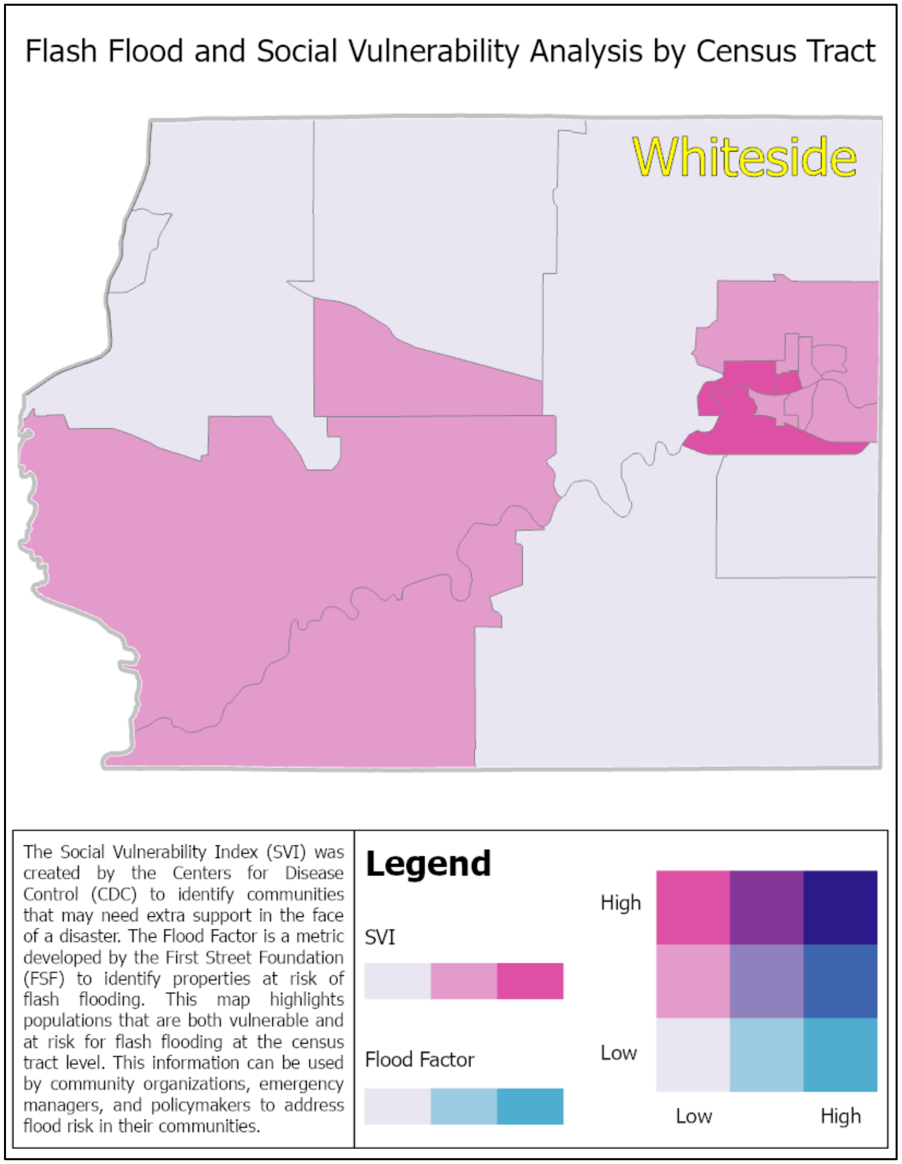
Riverine Flood and Social Vulnerability Analysis by Census Tract

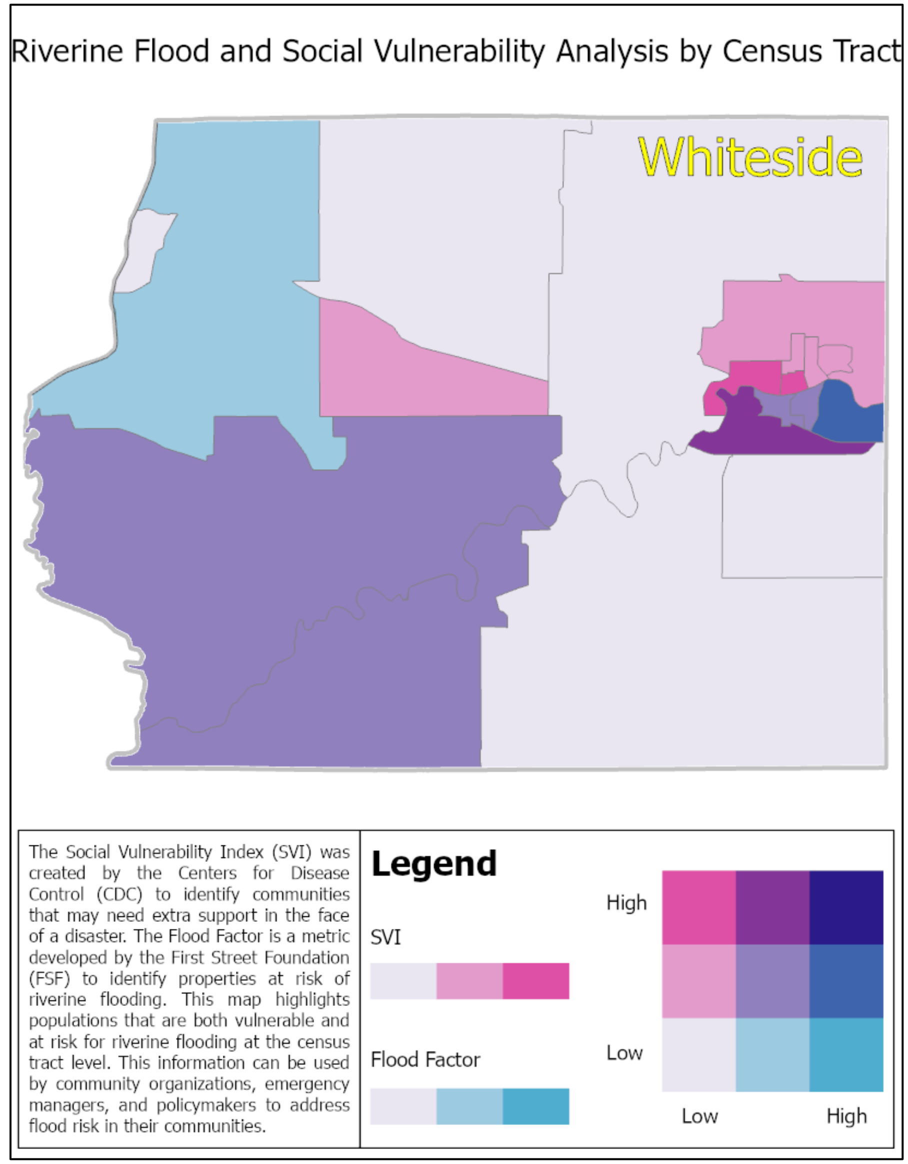


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.

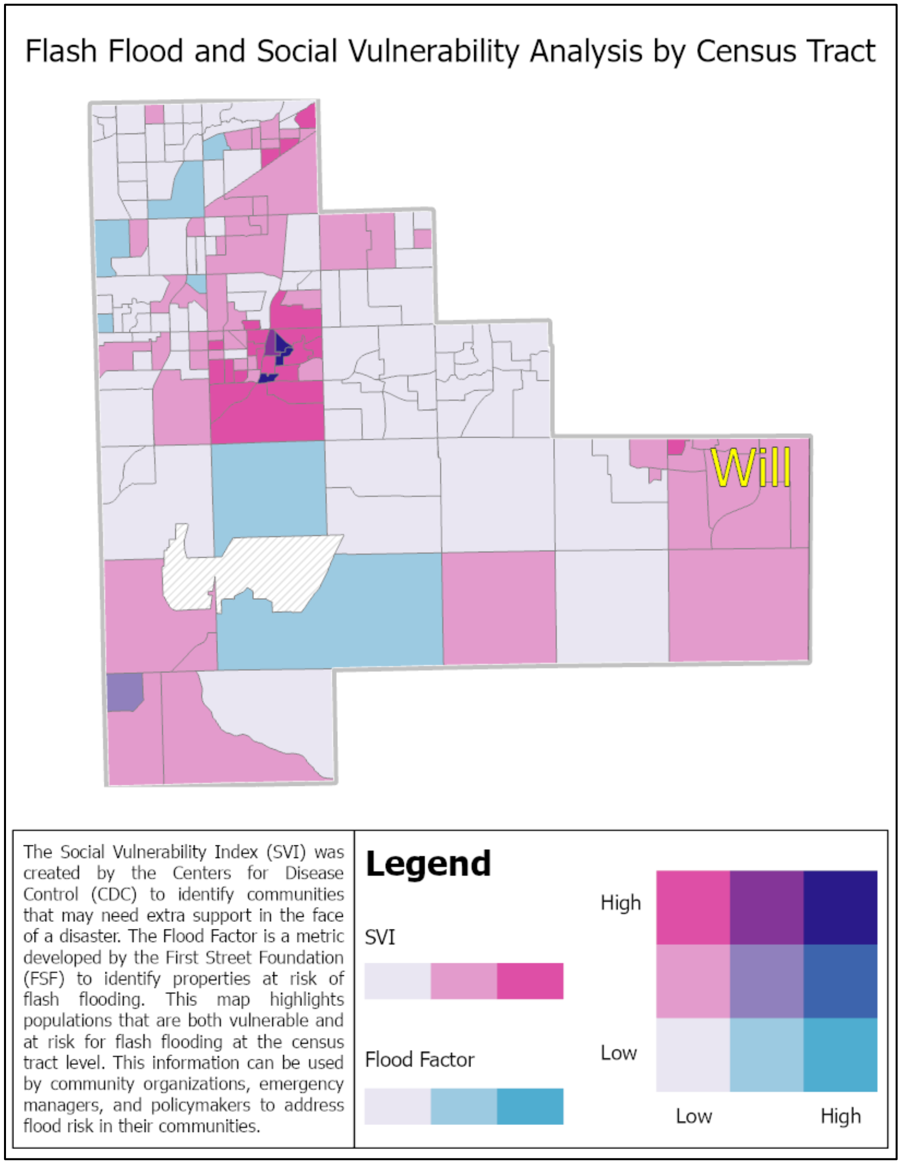


Whiteside County

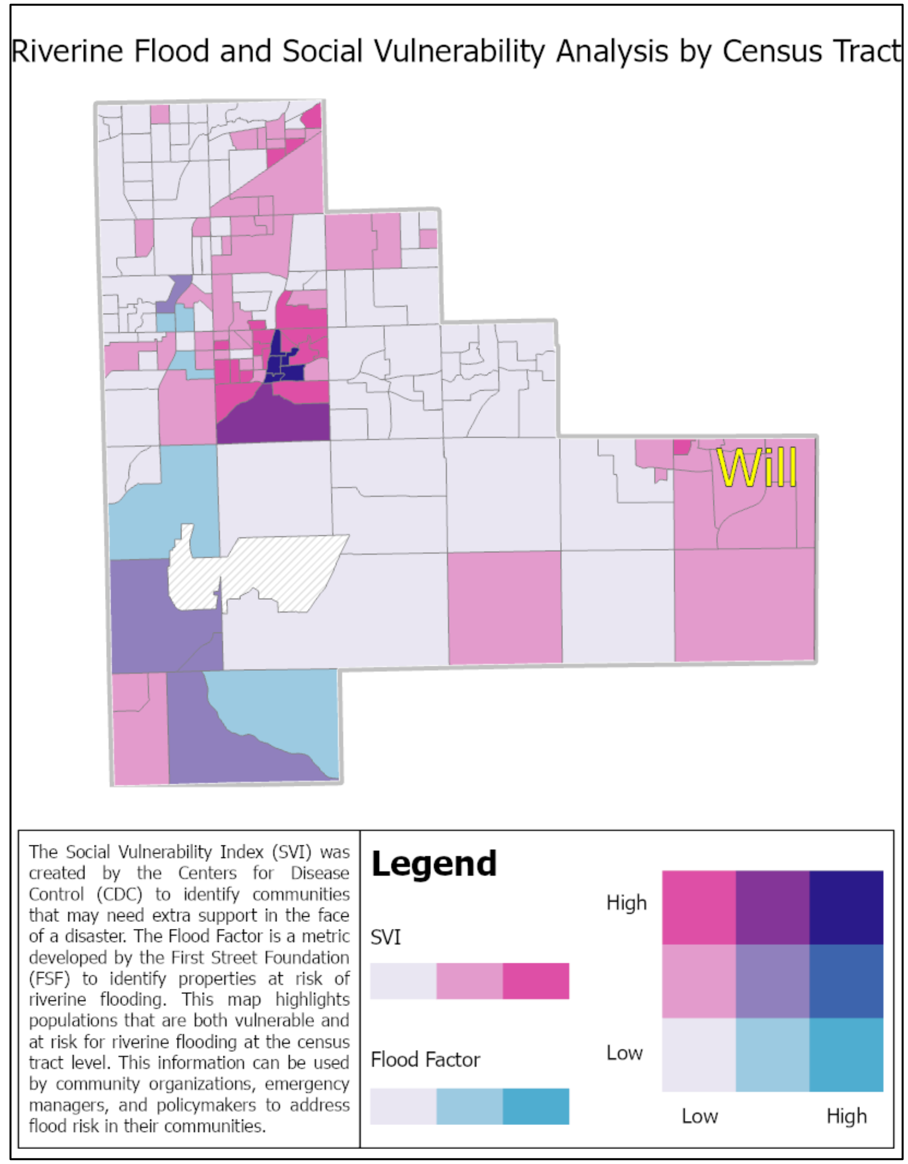




Will County

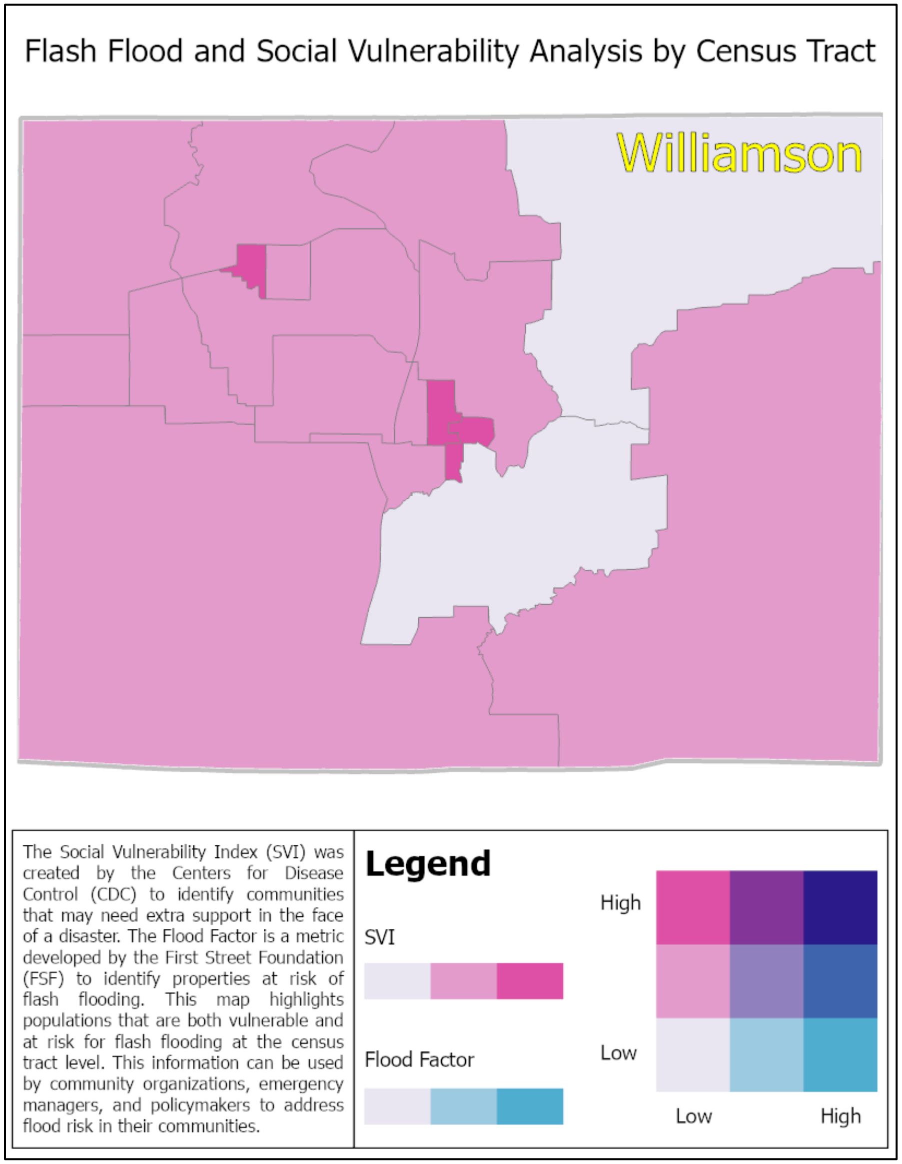


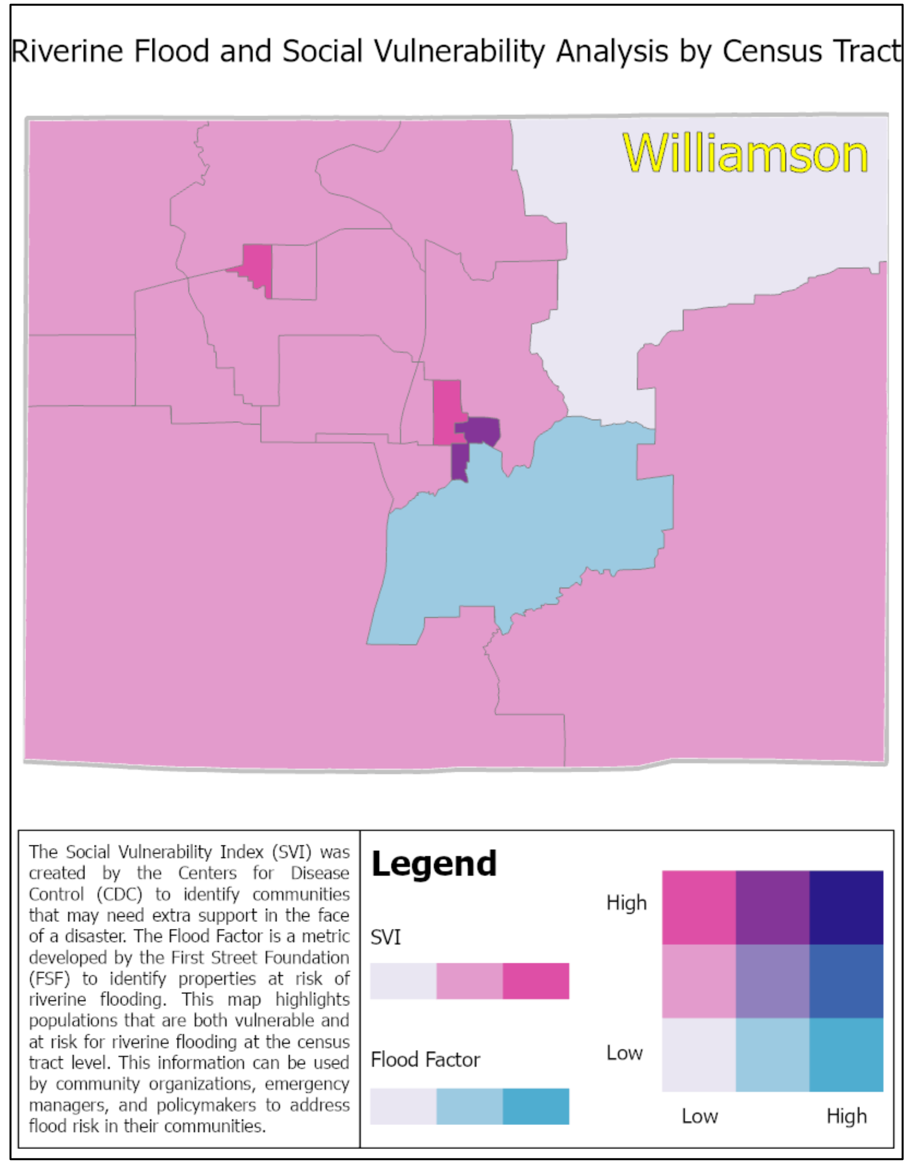
Flash Flood and Social Vulnerability Analysis by Census Tract
Will
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High



Riverine Flood and Social Vulnerability Analysis by Census Tract
Will
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.
Legend
SVI
Flood Factor
High
Low
Low
High

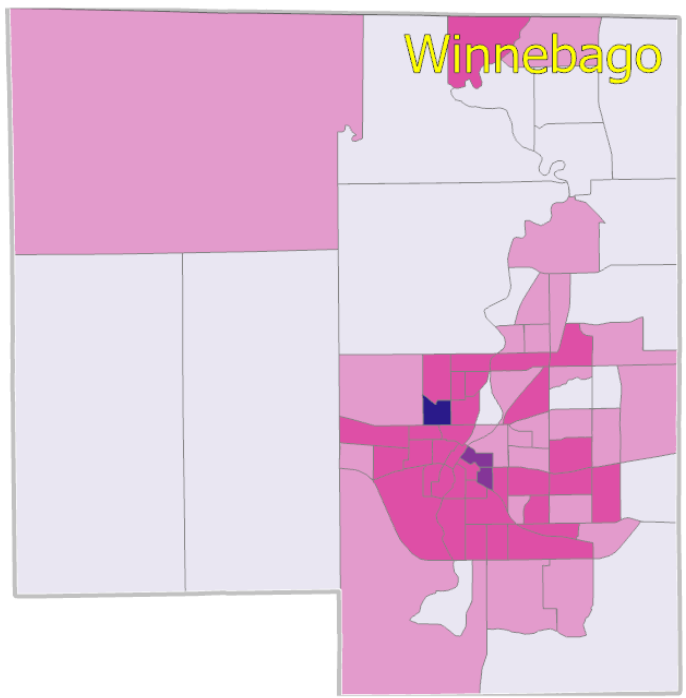
Williamson County



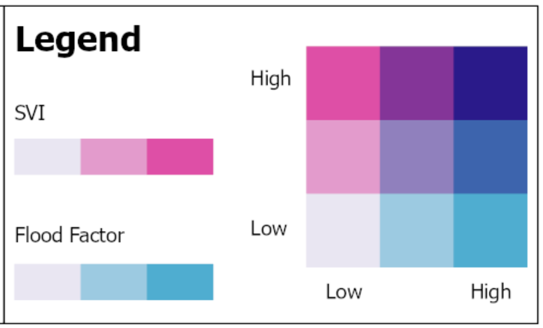


Winnebago County

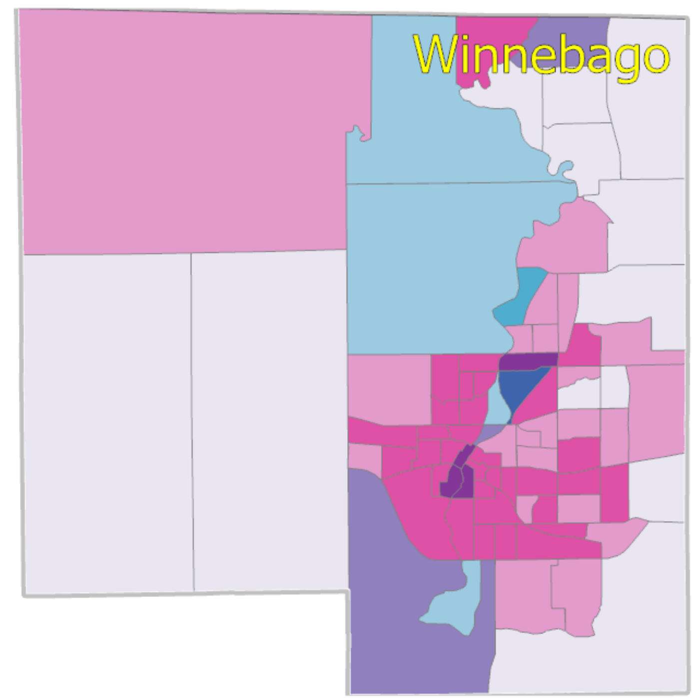
Flash Flood and Social Vulnerability Analysis by Census Tract



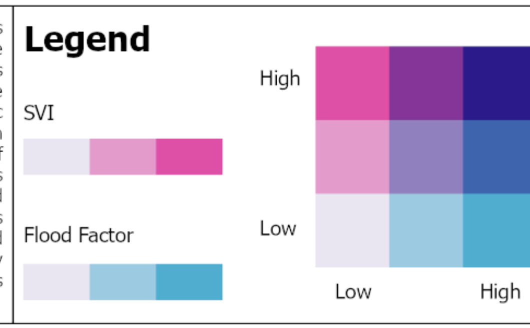
The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of flash flooding. This map highlights populations that are both vulnerable and at risk for flash flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



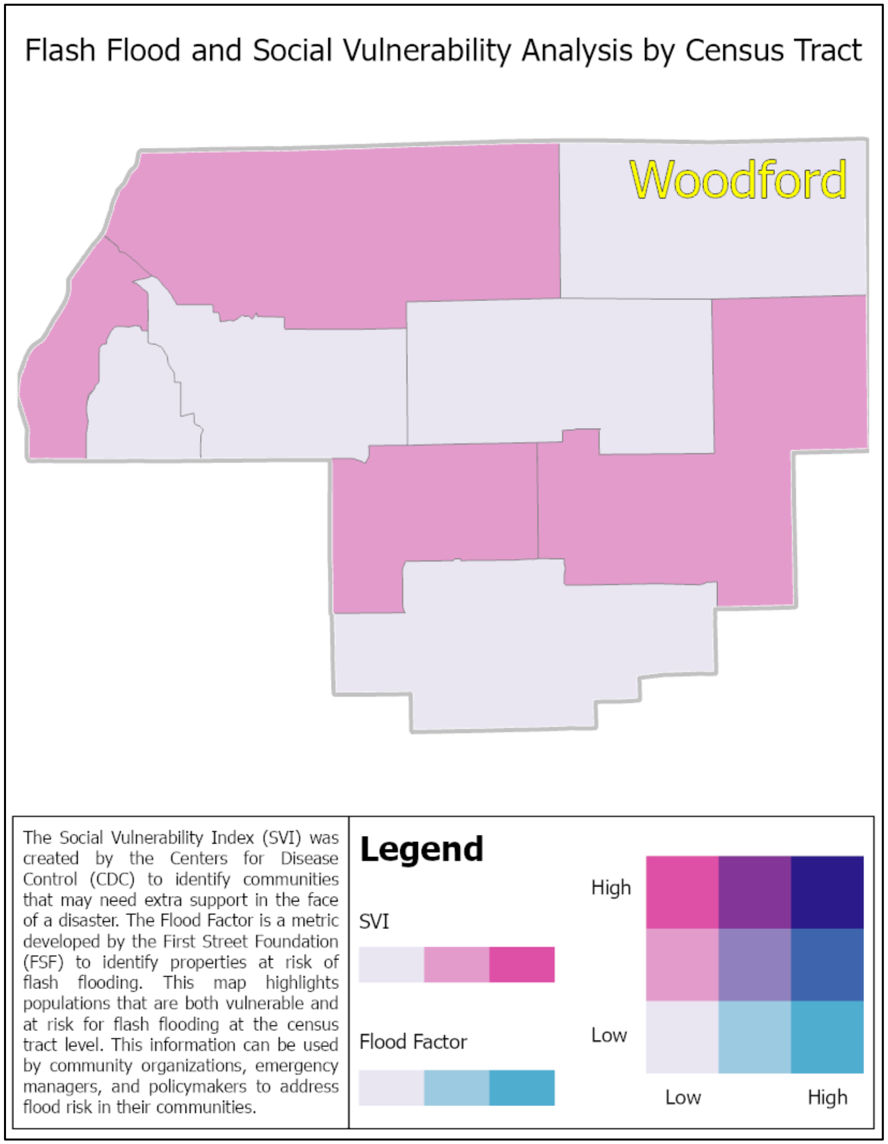
Riverine Flood and Social Vulnerability Analysis by Census Tract

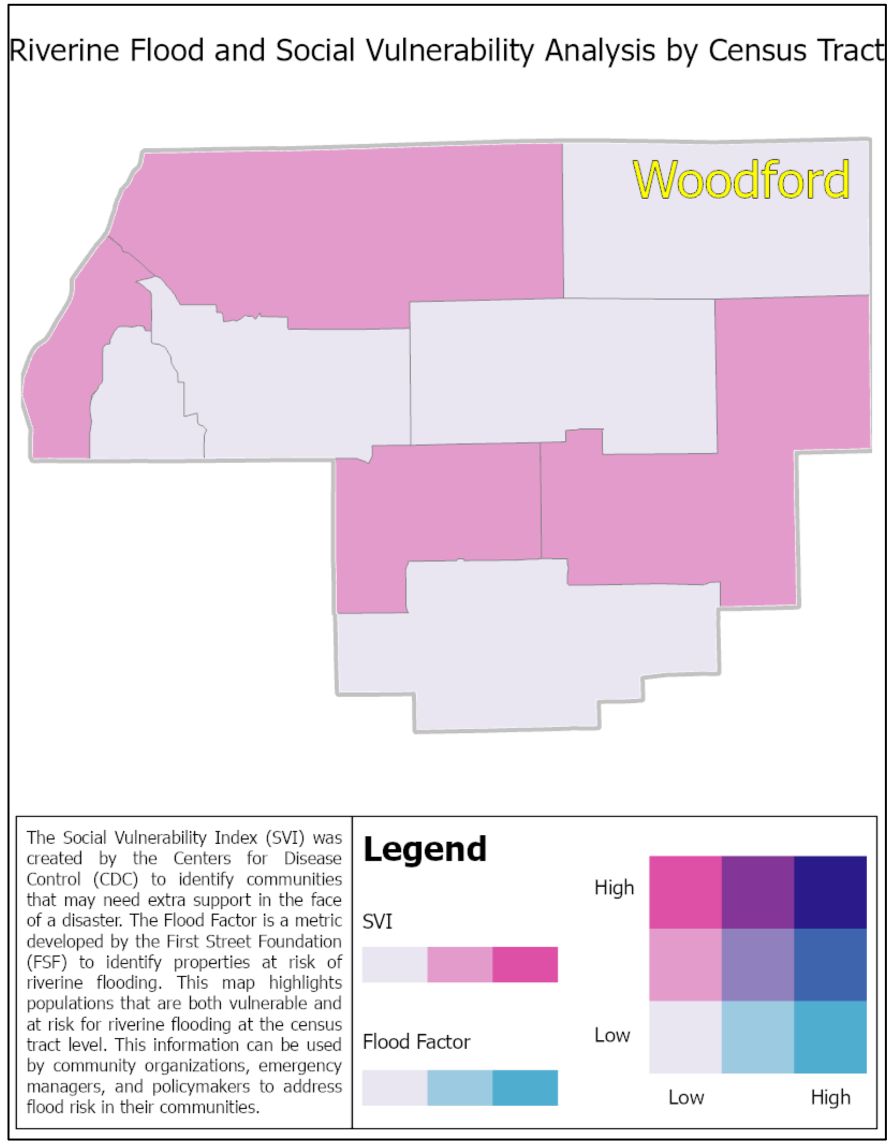


The Social Vulnerability Index (SVI) was created by the Centers for Disease Control (CDC) to identify communities that may need extra support in the face of a disaster. The Flood Factor is a metric developed by the First Street Foundation (FSF) to identify properties at risk of riverine flooding. This map highlights populations that are both vulnerable and at risk for riverine flooding at the census tract level. This information can be used by community organizations, emergency managers, and policymakers to address flood risk in their communities.



Woodford County





SECTION THREE

Appendix 3.1 Administrative Action Items from 2018 Plan

Appendix 3.2 Prioritization Formula and Tool

Appendix 3.3 Capability Assessment Forms

Appendix 3.4 Mitigation Success Stories in Illinois

Appendix 3.5: Narrative Mitigation Success Stories

Appendix 3.1 Administrative Action Items from 2018 Plan

<u>GOALS, OBJECTIVES, and ACTIONS 2018</u>

Administrative Actions for Internal Work Plan

It was determined that several actions included in the 2018 State Mitigation Plan were administrative and internally focused for IEMA-OHS staff and should be moved into a staff work plan. Those objectives and actions are listed below.

The 2018 plan had four levels: goals, strategies, objectives, and actions: there were four goals, 57 strategies, 20 objectives, and 201 actions. For this update, the strategy level was eliminated. There are still four goals and 26 objectives, but the number of actions has been reduced from 201 to 123.

The four goals listed below are from the original goal statements from the 2018 State Mitigation Plan. For the 2023 update, goal statements were re-written to reflect brevity and clarity of goal statement but have remained the same with regard to focus. The numbering system used in the 2023 update was also simplified with the elimination of the strategy level.

GOAL 1 – Maintain and enhance the State of Illinois' capacity to continuously protect the lives, health, and safety of the public in Illinois from the impact and effects of natural hazards, while lessening the State's vulnerability to natural hazards.

<u>OBJECTIVE 1.1 – Institutionalize Hazard Mitigation</u>
ACTIONS:

- Action 1.1.1.1 – Provide high quality in-housing training.
- Action 1.1.1.2 – Encourage professional development and certification through outside continuing education courses.
- Action 1.1.1.3 – Allow staff members to travel and attend relevant conferences.
- Action 1.1.1.4 – When appropriate, provide membership fees for professional organizations.
- 1.1.2.1 – Notify elected officials of grants and success stories in their jurisdictions.
- 1.1.2.2 – Support IDNR/OWR's Flood Mitigation Program.
- Action 1.1.3.1 – Publicize program successes through news media or on the web.

<u>OBJECTIVE 1.2 – Improve organizational efficiency.</u>
ACTIONS:

- 1.2.1.1 – Jointly develop procedures with the Public Assistance Program to maximize the use of Section 406 Mitigation Funding following a declared disaster event.
- 1.2.1.2 – Coordinate with the Public Information Officer (PIO) to publicize success stories.
- 1.2.1.4 – Improve coordination and communication with IEMA Regional Coordinators by consulting them in the application process and notifying them of grant approval.
- 1.2.2.1 – Make regular phone calls and emails to subrecipients to disseminate policies and provide training.
- 1.2.2.2 – Maintain consistency between policies and procedures and create an e-mail group to allow for routine dissemination of policies and procedures.
- 1.2.2.3 – Maintain the same Project Manager for consistency.

- 1.2.2.4 – Maintain a contact log.
- 1.2.3.1 – Maintain a uniform standardized filing system.
- 1.2.3.2 – Assure staff document all contact, visits, etc. with community in a contact log.
- 1.2.3.3 – A POC group will be set up on the e-mail system to facilitate POC's receiving policies promptly. POC's who do not have e-mail will be set up as a group on the fax system and information faxed to them.
- 1.2.3.4 – Minimize paperwork and reporting requirement where possible.
- 1.2.4.1 – Task assignment-use a weekly task assignment sheet and help staff prioritize assignments.
- 1.2.4.2 – Hire additional mitigation staff to assist with mitigation planning and projects.
- 1.2.5.1 – Complete Local Mitigation Plan reviews within two months.
- 1.2.5.2 – Have Local Mitigation Project application ready for submittal within 12 months from the disaster declaration date.

OBJECTIVE 1.3 – Maximize the utilization of best technology.

ACTIONS:

- 1.3.1.1 – Continually upgrade statewide spatial data maintained in-house through multiple data sources.
- 1.3.1.2 – Evaluate emerging technologies and upgrade through hardware/software acquisition and training where appropriate and feasible.
- 1.3.1.3. – Keep GIS staff positions filled with capable personnel.
- 1.3.1.4 – Maintain capability of GIS specialists and technicians through classroom education and distance learning.
- 1.3.1.5 – Make spatial data with viewing and mapping capability available to all staff in hazard mitigation section, creating a scaled section-wide geographic information system.
- 1.3.1.6 – Training current mitigation staff positions in GIS software and application.
- 1.3.3.1 – Use GIS for project identification, application development, and project implementation.
- 1.3.3.2 – Develop a standardized grants management tracking system.

GOAL 2 – Build and support local capacity and commitment to continuously become less vulnerable to natural hazards with a focus on Repetitive and Severe Repetitive Loss Properties.

OBJECTIVE 2.1 – Increase awareness and knowledge of hazard mitigation principles and practice among local public officials.

- 2.1.1.1 – Develop and maintain a variety of adaptable mitigation Powerpoint presentations for local officials upon request.
- 2.1.1.2 – Contact associations for zoning officials to present mitigation ideas to their memberships.
- 2.1.1.3 – Contact township and County highway associations to present mitigation ideas to their membership.
- 2.1.1.4 – Include information regarding mitigation activities for natural hazards on Ready. Illinois. Gov website.
- 2.1.3.1 – Work with State Agency PIOs on writing and distributing articles.

- 2.1.3.2 – Explore using 5% funds to pay for a professional writer to create articles promoting mitigation.
- 2.1.3.3 – Create publications to distribute regarding agency coordinated or funded mitigation projects.
- 2.1.4.1 – Publication of the “Directory of Illinois Building Related Requirements” in electronic format via the Internet (completed).

<u>OBJECTIVE 2.2 – Provide direct technical assistance to local public officials and help communities obtain funding for mitigation planning and project activities.</u>

ACTIONS:

- 2.2.1.1 - Improve the IEMA mitigation website to provide the latest mitigation information on funding sources and planning instructions to the local jurisdictions.
- 2.2.1.2 – Following any major disaster, send a letter to the local jurisdictions explaining the mitigation assistance that is available.
- 2.2.2.1 – Distribute FEMA’s mitigation planning documents (State and Local Mitigation Planning “how-to” guides) to interested jurisdictions.
- 2.2.2.2 – Distribute IEMA’s forms (Illinois Hazard Rating Process, Local Risk Assessment, and Local Mitigation Projects) to any jurisdiction starting a mitigation plan.

<u>OBJECTIVE 2.4 – Improve compliance with State floodplain regulations and encourage participation in the National Flood Insurance Program (NFIP).</u>

ACTIONS:

- 2.4.1.1 – Ensure that Mitigation section staff routinely identify and communicate potential compliance issues.
- 2.4.2.2 – Maintain awareness of new incorporation and encourage participation in the NFIP. (IDNR/OWR)
- 2.4.5.2 – Support and submit information to the IAFSM newsletter for communication.
- 2.4.5.4 – Support annual IAFSM conference. (annually)
- 2.4.5.5 – Ensure IAFSM Board membership participation in the States Hazard Mitigation Planning Meetings. (annually)

<u>OBJECTIVE 2.5 – To assist jurisdictions in developing mitigation projects and identifying funding for cost-beneficial mitigation projects.</u>

ACTIONS:

- 2.5.1.1 – Verify repetitive loss database.
- 2.5.1.2 – Collect digital pictures of repetitive loss properties.
- 2.5.1.3 – Gather GPS latitude/longitude coordinates and first flood elevations of repetitive loss properties.
- 2.5.1.4 – Take field inspection comments on repetitive loss properties.

<u>OBJECTIVE 2.6 – Continuously demonstrate and capitalize upon the connection between hazard mitigation and sustainable development.</u>

ACTIONS:

- 2.6.1.1 – Establish two-way links between the Mitigation Section’s website and those of other State agencies or other groups that promote sustainable development.

- 2.6.2.1 – Identify all non-profit organizations that are responsible for promoting and/or implementing sustainable development or “smart growth” initiatives.
- 2.6.2.2 – Identify specific opportunities for future collaboration and/or partnerships and develop methods to ensure continued coordination.

GOAL 3 – Improve coordination and communication with other relevant entities.

OBJECTIVE 3.1 – Establish and maintain lasting partnerships.
ACTIONS:
- 3.1.1.1 – Plan and host an annual IMAG meeting. (annually)
- 3.1.1.2 – Participate with and use resources such as the Central United States Earthquake Consortium (CUSEC), the Federal Alliance Safe Housing (FLASH), and Institute for Building and Home Safety (IBHS).
- 3.1.2.1 – IEMA mitigation staff will share new publications with others.

OBJECTIVE 3.2 – Streamline policies to eliminate conflicts and duplication of effort.
ACTIONS
- 3.2.1.1 – Continue with IMAG and MCSC

- 3.2.2.1 – Prior to submission of application to FEMA, according to Notice of Funding Opportunity, advising letters will be sent to the consulting agencies.
- 3.2.2.2 – All of the consulting agencies will be called to review all active projects to ensure that they are still in compliance. (annually)

OBJECTIVE 3.4 – Leverage resources and expertise that will further hazard mitigation efforts.
ACTIONS:
- 3.4.1.2 – Keep data on acquired properties up to date.

GOAL 4 – Increase public understanding, support, education, and demand for hazard mitigation planning and projects; to protect public services, utilities, and critical facilities from potential damage from natural hazard events.

OBJECTIVE 4.1 – Identify hazard-specific issues and needs.
ACTIONS:
- 4.1.1.1 – Attend and make presentations at the annual IEMA and IESMA conferences.
- 4.1.1.2 – Hold meetings with key elected officials, as requested.
- 4.1.1.3 – Attend additional professional conferences to make presentations regarding mitigation and funding availability.

OBJECTIVE 4.2 – Heighten public awareness of natural hazards.
ACTIONS:
- 4.2.1.3 – Continue to improve and update the website.
- 4.3.1.1 – Attend public meeting to discuss mitigation programs.

<u>OBJECTIVE 4.4 – Educate the public on the benefits of mitigation measures.</u>

ACTIONS:

- 4.4.1.1 – Continue to develop success stories for the FEMA website. Provide a link from IEMA website.

<u>OBJECTIVE 4.7 – Maximize available post-disaster "windows of opportunity" to implement major mitigation outreach initiatives.</u>

ACTIONS:

- 4.7.2.1 – Coordinate with local officials to collect digital pictures and field reports.
- 4.7.2.2 – Incorporate findings into future volumes of success story documents.
- 4.7.2.3 – Post success story articles on the mitigation website.
- 4.7.2.4 – Present information to the policy makers.

4.7.3.1 – Work toward an enhanced state mitigation plan. (INH

Appendix 3.2 Prioritization Formula and Tool

Appendix: Illinois Prioritization Tool and Calculations for Mitigation Projects

Tool

The tool shown below is an image from a functional spreadsheet that will used to prioritize mitigation projects in an unbiased formula. Final priorities will be set by IMAG using the output from this process as a guide. External factors may alter the exact prioritizations.

1.a. Which grant is this project applying for?

☐ Select from Drop-Down Menu

1.b. Although your grant does not require a BCA calculation from FEMA's BCA toolkit, if your project has the BCA value provide the value below. The BCA calcualtions are required to be submitted to IEMA with this form is a value is provided.

☐ FEMA BCA Value

1.c. What is the total estimated cost for the project? This includes construction, active development, maintenance, decomisioning costs as applicable. Clauclations must be provided to IEMA with the submission of this form.

	Construction/Active Development Cos
	Maintenance Costs
	Decomissioning Costs
$ -	Total

2. Which county does the project take place in? Check all that apply.

☐ Adams	☐ Cook	☐ Greene	☐ Kankakee	☐ Massac	☐ Pike	☐ Stephenson
☐ Alexander	☐ Crawford	☐ Grundy	☐ Kendall	☐ McDonough	☐ Pope	☐ Tazewell
☐ Bond	☐ Cumberland	☐ Hamilton	☐ Knox	☐ McHenry	☐ Pulaski	☐ Union
☐ Boone	☐ De Witt	☐ Hancock	☐ Lake	☐ McLean	☐ Putnam	☐ Vermilion
☐ Brown	☐ DeKalb	☐ Hardin	☐ LaSalle	☐ Menard	☐ Randolph	☐ Wabash
☐ Bureau	☐ Douglas	☐ Henderson	☐ Lawrence	☐ Mercer	☐ Richland	☐ Warren
☐ Calhoun	☐ DuPage	☐ Henry	☐ Lee	☐ Monroe	☐ Rock Island	☐ Washington
☐ Carroll	☐ Edgar	☐ Iroquois	☐ Livingston	☐ Montgomery	☐ Saline	☐ Wayne
☐ Cass	☐ Edwards	☐ Jackson	☐ Logan	☐ Morgan	☐ Sangamon	☐ White
☐ Champaign	☐ Effingham	☐ Jasper	☐ Macon	☐ Moultrie	☐ Schuyler	☐ Whiteside
☐ Christian	☐ Fayette	☐ Jefferson	☐ Macoupin	☐ Ogle	☐ Scott	☐ Will
☐ Clark	☐ Ford	☐ Jersey	☐ Madison	☐ Peoria	☐ Shelby	☐ Williamson
☐ Clay	☐ Franklin	☐ Jo Daviess	☐ Marion	☐ Perry	☐ St. Clair	☐ Winnebago
☐ Clinton	☐ Fulton	☐ Johnson	☐ Marshall	☐ Piatt	☐ Stark	☐ Woodford
☐ Coles	☐ Gallatin	☐ Kane	☐ Mason			

3. Which hazard[s] is this project mitigating against? Check all that apply.

☐ Communicable Diseases	☐ Extreme Temperatures: Heat Wave	☐ Flooding: Riverine Flooding	☐ Landslide	☐ Severe Storms: Lightning	☐ Wildfire
☐ Drought	☐ Flooding: Coastal Flooding	☐ Flooding: Dam/Levee failure	☐ Mine Subsidence	☐ Severe Storms: Wind	☐ Winter Weather: Ice Storms
☐ Earthquake	☐ Flooding: Flash Flooding	☐ HazMat Spill	☐ Severe Storms: Hail	☐ Tornado	☐ Winter Weather: Winter Storms
☐ Extreme Temperatures: Cold Wave					

4.a. Does this project execute mitigation actions already included in an approved Mitigation Plan or a Mitigation Plan in the process of becoming approved?

☐ Select from Drop-Down Menu

4.b. Not Applicable

5.a. Will this project reduce the probability of the hazard occuring in the next 66 years? You will need to provide calculations validating an affirmative response.

Yes Select from Drop-Down Menu

5.b. Are calculations measuring future hazard risk including the negative impacts of climate change?

Select from Drop-Down Menu

Please list by hazard the current probability of hazard occurance over the next 20 years and the new probability of hazard occurance after mitigation project completion. Provide values for all hazards and for each location - as applicable. Such as, if the project reduces the proability of a hazard occurance from a current 20-year storm to a 100-year storm, the probability would change from 100% to 20%. All calculations must be provided to IEMA with the submission of this form.

5.c.

	County	Hazard	Current Probability of Occurance	Probability after Project Completio
1				

6. What is the overall goal of the project? Select all that apply.

- ☐ Natural Resource Protection
- ☐ Critical Facility Protection
- ☐ Conducting Structural Projects
- ☐ Retrofitting Critical Facilities
- ☐ Providing Leadership or Planning/Technical Assistance for Hazard Mitigation Planning
- ☐ Projects Regarding Alert Systems for Hazard Announcements, Warnings, and Evacuation
- ☐ Providing Public Education and Awareness of Personal Mitigatoin Strategies
- ☐ Providing Public Education and Awareness of Hazard Risk
- ☐ Other: ____________________

7.a. Will this project directly mitigate against the loss of human life? You will need to provide calculations validating an affirmative response.

Yes Select from Drop-Down Menu

7.b. Please provide the number of lives directly impacted by your mitigation project, the current fatality probability for each hazard, and the fatality probability following your mitigation project. Calculations provided to IEMA with the submission of this form must include future probability calculations or modeling the after-mitigation action implementation.

	County	Hazard	Number of Lives Directly Impacted	Current Fatality Probability	Probability after Project Completio
1					

8.a. Will this project mitigate against property damage? You will need to provide calculations validating an affirmative response.

Yes Select from Drop-Down Menu

8.b.

Please provide the address[es] of each property impacted by the project, whether this property is deemed a repetative loss property, the value of the property, and the value saved through the mitigation project. Calculations must be provided to IEMA with the submission of this form.

	Address	Repetitive Loss	Property's Current Value	Value Saved
1				

9.a. Is this project directly targeting those considered within vulnerable populations?

Yes Select from Drop-Down Menu

9.b. What is the percentage of those impacted by the project considered within a vulnerable population?

Fill in percentange here

10. Is the project utilizing or promoting natrual or green construction operations?

Select from Drop-Down Menu

11.a. What is the estimated construction time for this project? Construction time is measured from the launch of the project to the completion of construction or active development of the project.

Years	Months

11.b. What is the estimated lifespan of this project? Lifespan is measured from the launch of the project to the decomisioning of the project and its products.

Years	Months

Cost Calculations

The cost and funding source of the projects that address mitigation action goals are important in determining the feasibility of funding. There is a finite amount of financial capital to spend, and these projects need to be conducted across the entire state of Illinois to mitigate against a multitude of hazards. These funds are also separated into different accounts and are not able to be spent for all project types; the assumption of continuous funding over multiple fiscal years cannot be guaranteed based on the funding source, which will influence decision making for long-term and ongoing projects seeking funding. Furthermore, different financial sources have different requirements for projects to receive funding. For example, federally funded projects require a Benefit-Cost Analysis (BCA) to be conducted using FEMA's BCA Toolkit.

Costs need to be forecasted for not only the current fiscal year, but for at least up to 20 years beyond the inception of the project to be able to account for the long-term cost and long-term impact of the project on mitigation goals. To best compare costs of short-term, long-term and ongoing projects, costs need to be compared not only by fiscal year but also over time. Costs are designated at construction or active development costs, maintenance costs, and decommission costs. The sum of these costs over the lifespan of the project results in the value of the total cost of the project. The prioritization methodology for mitigation projects in Illinois will need to compare total costs of the project against other projects competing for the same funding sources alongside the estimated benefits.

Benefit Calculations

The equation used to numerically calculate the benefit of proposed mitigation projects based on the state of Illinois priorities, is as follows:

Where the variables listed are:

The values of the variables are calculated individually as described below. The minimum and maximum values of the variables are based on the prioritization list provided within the Illinois Hazard Mitigation Plan. Since the Hazard Rating for each hazard type by county is already calculated as a value between 13 and 39, this is used as the benchmark to determine the values of the other prioritization dimensions. The greater the priority of the variable, the greater the contribution to the overall benefit value of the project. Questions asked of project applicants are provided in the Sample Questionnaire.

Approved Project Variable, A

To determine whether a project meets the target goal of including mitigation actions listed in an approved mitigation plan or in a developing mitigation plan, applicants are asked to answer the question "Does this project execute mitigation actions already included in an approved Mitigation Plan or a Mitigation Plan in the process of becoming approved?" If the answer is in the affirmative, the applicant will then be prompted to list which mitigation action items the project is executing, and from which plan the mitigation actions have come from. If the applicant does not list the mitigation action items or the plan source, then the project is not considered to meet this target goal despite the applicant stating that is does. If the project proposes to execute mitigation action items from an approved Mitigation Plan or a Mitigation Plan in the process of becoming approved, then the value of variable A is 57, and if not, the value is 0. The minimum value added to the overall benefit value is zero and the maximum value added is 57. There is no potential for retracted overall benefit value.

Loss of Life Variable, L

The target goal of mitigating against the loss of human life as it is written can be broadly interpreted in a myriad of ways. Theoretically, almost all mitigation projects could make the argument that their implementation could mitigate against the loss of human life through direct impacts or indirectly through a chain of events. Setting clear criteria for which projects would meet this target goal is necessary for determining the project benefit and having a functional, comparative tool for prioritization.

For ease of determination, only projects that provide direct impacts on mortality risk will be considered meeting the target goal. To identify if a project does have a direct impact of mitigating against the loss of human life, and to what degree, applicants are first asked '»Does this project directly mitigate against the loss of human life? If yes, attach mortality risk calculations to this form with submittal. » The calculations that need to be provided to the reviewing committee will need to show the current mortality risk without the project's intervention, and the risk calculation for when the project is implemented. For example, if the project proposed is to buy residential properties that are within a repeat loss zone, the calculations may show that for the number of residents currently living within the property have a 5% mortality risk in the instance of a 100-year storm that will be reduced to 0% if the residents are relocated through the execution of the project. The number of residents, in this example, is also important for the calculation. Applicants are also asked if they have considered the negative impacts of climate change in their calculations of mortality risk (more within Climate Change Consideration Variable, C). If the project does not directly reduce the risk of mortality, then the value of variable L is 0, if there is a direct impact, the value of L will be a minimum of 42. The minimum value added to the overall benefit value is zero, and the maximum value is 52. There is no potential for retracted overall benefit value.

Where:

<u>Probability of Hazard Occurrence Variable, H</u>

The target goals of decreasing the probability of future hazardous events to include reducing the negative impacts of climate change is split into two variables for calculating overall benefit of the project to allow for applicants to answer prompted questions. For the target goal of considering the impacts of climate change, please see Climate Change Consideration, C.

Applicants are asked to select all Illinois counties that the project occurs in and which hazard[s] the project is mitigating against. Due to certain projects possibly impacting multiple counties and mitigating against multiple hazards, the reduction in probability of a hazard occurrence due to the execution of the project may have multiple value combinations. Therefore, after applicants are asked '»Does this project reduce the risk of the hazard[s] from occurring? If yes, attach hazard risk calculations to this form with submittal. » they are then asked to list which hazard[s] within which county or counties have their risk of occurrence reduced because of this project.

The probability of the hazard occurring, however, is vague in referencing different types of hazards. Reduction in risk may be determined by the difference in frequency of events total or frequency of the severity of the hazard occurrence. An example for Severe Storms: Wind, the current 20-year storm hazard severity is predicted to become a 50-year storm after the execution of the project. Or, an example for droughts, the number of drought events in the project's location over the last 50 years is 20 (or 40% annual chance), after the completion of this project it is estimated that the likelihood of a drought occurring annually is reduced to 20% (or that there will be about 10 drought events over the next 50 years). IEMA-OHS, when calculating the hazard rating, uses the overall number of instances within its historical hazard occurrence criteria. Therefore, the applicant's responses will need to be converted into the risk of the hazard occurring, at any intensity, over the next 66 years by IMAG and its subcommittees. The reason 66 years is chosen is due to Illinois calculating the hazard rating for hazards includes an input of historical occurrence of the hazard by county over the past 66 years. If the project can reduce the likelihood of hazard occurrence over the next 66 years, it can be predicted that the hazard's rating will likely decrease due to the mitigation project.

If the project does not reduce the probability of the hazard occurring, then the value of H is zero. If the project does reduce the probability of the hazard occurring, then the value of H has a maximum value of 47. Therefore, the minimum value added to the overall benefit value is zero, and the maximum value is 47. There is no potential for retracted overall benefit value.

Where:

Repeat Loss Variable and Property Value Loss Variable

The definition of a repetitive loss property according to FEMA is "any insurable building for which the National Flood Insurance Property (NFIP) paid two or more claims of at least $1,000 over a ten-year period." IEMA-OHS uses a PIVOT Database, which contains all properties that have at least four total insurance claims for flooding, to determine whether a property is a repetitive loss or not. Due to the nature of the definition, mitigation projects relating to only certain hazards that may result in flooding qualify to be considered in reducing repetitive loss.

The property(ies) that the project is impacting have a value based on fair market Illinois tax assessment value prior to damage inflicted by any hazard. To determine if the project meets the target goal of reducing repetitive loss properties and/or significant damage that leads to over 50% of property value loss, the applicants are asked the following question when applying for funding: »Does this project mitigate property damage? If yes, attach estimated property damage calculations to this form with submittal. » If a project is impacting multiple properties, then the applicants must provide calculations for all properties that are being impacted. The information that the applicants must provide when answering in the affirmative is the property's address, whether the property is considered a repetitive loss property, the property's current value (or undamaged value prior to a disaster occurrence), and the value of the property saved by the mitigation project. IMAG and its subcommittees will be able to verify if a property is considered a repetitive loss from the provided address and the PIVOT Database.

Like the calculations required for the Probability of Hazard Occurrence Variable, H, the value of the property saved by the mitigation project will be calculated in terms of the difference in predicted monetary value of insurance claims over the next 66 years for the instance of the mitigation project occurring or not occurring. For example, if a mitigation project intends to purchase a residential property with the intent of rezoning the property to an uninhabitable zone – such as parks and open space – to mitigate against a flood hazard, the applicant would need to know the current value of that property, the predicted cost of paid insurance claims over the next 66 years if no action is taken using historical event data and future hazard intensity model predictions, and if the property is considered a repetitive loss. For this type of project, the insurance payments after the mitigation project should be 0 for the next 66 years, so the total amount saved by the project is the total predicted cost of insurance payments over the next 66 years if no action is taken. Other project types may result in some savings but not result in total elimination of the threat of damage due to a disaster, such as retrofitting. In this instance, the total amount saved by the project is the total predicted cost of insurance payments over the next 66 years is no action is taken subtracting the total predicted cost of insurance payments over the next 66 years if the mitigation project occurs. The applicants are also asked if they have considered the negative impacts of climate change in their calculations for property damage (more within Climate Change Consideration Variable, C).

The ratio between the total amount saved because of the project and the value of the property is what determines the damage mitigated based on the percentage of the property value. Such as, if the project predicts $50,000 in insurance payment savings over the next 66 years for a property worth $100,000, then the damage mitigated against is 50%. In instances where the total insurance payouts over 66 years are greater than the current property's value, then the damage mitigated against is 100%. For projects with multiple properties impacted, for purposes of calculating the Property Value Loss Variable, , then the property with the highest damage mitigated against percentage will be used. The applicants, however, still must provide calculations for all properties impacted that claim savings in property damage. If the property impacted by the mitigation project is deemed a repetitive loss – or if any of the properties the project impacts if the project impacts multiple properties – then the Repeat Loss Variable, , is 21; if not, the value is zero. If the project does not mitigate against property damage, then the Property Value Loss Variable, , is zero if the project does mitigate property damage, then the maximum value of is 21. Therefore, the minimum value added to the overall benefit is zero, and the maximum value is 42. There is no potential for retracted overall benefit value.

Where:

Climate Change Consideration, C

In accordance with FEMA guidance, mitigation measures for hazards need to withstand the climate hazard risks of today and those anticipated for the future. For calculating future risk of hazard occurrence, mortality, and property damage, applicants are asked if they considered the impacts of climate change. Climate change is a force multiplier for most hazard types that threaten Illinois residents, therefore predictive models that only rely on historical probabilities are not accurate. With an affirmative response for any of these calculations, applicants are asked to provide the calculations with their application. If the project considers climate change in its reduction of hazard occurrence, mortality, or property damage risk, then the maximum value of variable C is 36 with intervals of 12 for each risk type, and if not, the value is 0. The minimum value added to the overall benefit value is zero and the maximum value added is 36. There is no potential for retracted overall benefit value.

Where:

Vulnerable Populations Variable, V

IMAG defines vulnerable populations as populations of people greatly susceptible to the negative impacts of a disaster based on increased dependance to property, industry, resources, ecosystems, or historical buildings and artefacts. To determine whether a project meets the target goal of uplifting underserved communities and protecting socially vulnerable populations, applicants are asked to answer the question »Is the project located within a Community Disaster Resilience Zone as indicated by the State of Illinois? » Community Disaster Resilience Zones are communities that FEMA has identified as disadvantaged and most vulnerable to natural hazards throughout the state of Illinois. The determination of the Community Disaster Resilience Zones is developed through expected annual loss due to hazard occurrence, social vulnerability, and community resilience at the census tract level by hazard. FEMA determines social vulnerability through the Social Vulnerability Index (SVI) generated by the Centers for Disease Control and Prevention (CDC) and Agency for Toxic Substances and Disease Registry (ATSDR). The SVI is measured at the census trac level and is valued from 0 to 1 with 0 being the least vulnerable and 1 being the most. IMAG and its subcommittees need to confirm the applicant's response of whether the project will be in a Community Disaster Resilience Zone and determine the SVI of the project location at the census trac level. If the project overlaps more than one census trac, the census trac with the higher SVI value will be used. If the project is in a Community Disaster Resilience Zone, the minimum value of V will be 21 with a maximum value of 31 when incorporating SVI. If the project is not within a Community Disaster Resilience Zone, the maximum value of V is 10. Therefore, the minimum value added to the overall benefit value is 0 and the maximum value is 31. There is no potential for retracted overall benefit value.

Where :

Where:

Hazard Rating Variable, R

The Hazard Rating is measured for each county across the state of Illinois using the risk components of current population, historic hazard occurrence, population exposure, population growth, severity of impact, and social vulnerability to determine the hazard risk ranking (for more details on this process, refer to Chapter 2.2. of the Illinois Hazard Mitigation Plan). Every hazard by county has a Hazard Rating calculated by IEMA-OHS. The minimum Hazard Rating value is 13 and the maximum value is 39. The Hazard Rating Variable, R, is the Hazard Rating for the hazard the project is impacting and the county the project is located in. For projects that impact multiple hazards and/or are located in multiple counties, the highest value of the Hazard Rating will be chosen. Hazard Ratings by hazard and county are located in the Illinois Hazard Mitigation Plan Section 2.

Nature-Based Solutions Variable, N

According to FEMA, “nature-based solutions are sustainable planning, design, environmental management and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience” (https://www.fema.gov/emergency-managers/risk-management/nature-based-solutions). There are multiple terms that are also interchangeable to nature-based solutions: such as, green infrastructure, natural infrastructure, and natural solutions. To determine whether a project intends to meet this target goal, applicants are asked, »Is the project using and/or promoting nature-based solutions? » The question is intended to be answered as a yes or no. The project description in its proposal will have to correspond with an applicant’s affirmative response when being reviewed by IMAG and its subcommittees to verify that it does meet the target goal of promoting and utilizing nature-based solutions. If the project proposes to use or promote nature-based solutions, then the value of the Nature-Based Solutions Variable, N, is 21, and if not, the value is 0. The minimum value added to the overall benefit value is zero and the maximum value added is 21. There is no potential for retracted overall benefit value.

Project Goal Variable, G

The ranking of importance of different project goals is listed in the prioritization of mitigation action items in Chapter 3.2 of the Illinois Hazard Mitigation Plan; however, the goals are broad and can encompass many project types, hazards, and, therefore, can overlap with one another. Because of this, applicants are asked ‘What is the overall goal of the project? Select all that apply.’ The options being what is listed within IEMA-OHS’s target goals of:

- natural resource protection,
- critical facility protection,
- conducting structural projects,
- retrofitting critical facilities,
- providing leadership or planning/technical assistance for hazard mitigation planning,
- impacting alert systems for hazard announcements, warning, and evacuations,
- providing public education and awareness of personal mitigation strategies,
- providing public education and awareness of hazard risk, and
- other (with a fill-in option for the applicant to complete).

The value of the Project Goal Variable, G, is based on the applicant’s selection. Since there is an order of importance for the project goals, the difference in the project goals’ impact on the overall benefit value needs to be expressed by a dependent value of where i=1-8. For the different project goal values, there is a corresponding value of G. In the cases where the project has multiple goals, the highest value of G will be utilized to calculate the overall benefit. For a selection of ‘Other’ IEMA-OHS and its subcommittees will need to evaluate if the project goal should fall under one of the provided options before identifying the project as not meeting one of the goals. If the project does not meet the goals after IEMA-OHS and its subcommittee’s evaluation of the applicant’s ‘Other’ selection, then the value of G is zero. For other selections, the maximum value of G is 16. The minimum value added to the overall benefit value is zero, and the maximum value is 16. This is no potential for retracted overall benefit value.

Where:

Benefit Cost Analysis Variable, B

The Benefit-Cost Analysis (BCA) is metric developed by FEMA to measure the cost effectiveness of a mitigation project. The BCA is measured utilizing a toolkit that has categories including the location of the project, hazard type, mitigation project type, property type, project cost, maintenance cost, project useful life, loss values regarding property damage and income, displacement figures, and more dependent on the type of hazard mitigation project. The toolkit is free to download onto Microsoft Excel as an add-in from FEMA's website (the toolkit may be found here: https://www.fema.gov/grants/tools/benefit-cost-analysis#toolkit). For most types of projects that are applying for federal funding, a BCA is required to be calculated and submitted with their application for funding.

Since not all funding sources or project types require a BCA to be calculated and/or are able to calculate a BCA, this is not a required variable to be reviewed for prioritization by IMAG and its subcommittees. The applicant will be asked directly if their mitigation project requires the calculation of a BCA. IMAG and its subcommittee when reviewing the applications will need to confirm a negative response by reviewing Hazard Mitigation Assistance Program and Policy Guide, most recently published March 23, 2023 under Federal Enterprise Architecture (FEA) Number: FP-206-21-0001 list of exemptions alongside the proposed mitigation project type. Even if the mitigation project does not require a BCA calculated value based on the funding source, the applicant will be allowed to submit their calculated BCA to their application for the purposes of strengthening their application's change of receiving prioritized funding. If a BCA value is provided, mandated or not, the BCA calculations from the toolkit will need to be submitted with the application. If a BCA is not provided and was required by the funding source and does not meet exemptions listed within FEMA's Hazard Mitigation Assistance Program and Policy Guide, the project is disqualified from funding and will not be prioritized by IEMA-OHS. If a BCA is not provided by is not required to submit a BCA calculated value, the Benefit Cost Analysis Variable, B, will be zero. If the applicant provides a BCA for their application, regardless of whether it is mandatory or not, and the BCA is less than 0.5, B will also be zero. The maximum value of B based on the BCA is 11. There is no potential for retracted overall benefit value.

Where:

BCA = the value calculated from the FEMA BCA toolkit

Time Variable, T

IEMA includes the quickest completion of the project as an area of importance for mitigation project's target goals; however, only considering the time a project is within the construction or development phases dismisses the longevity of project's useful life. Therefore, the Time variable, T, that is included in measuring the project's overall benefit, includes both a Construction Time variable, , and Effective Time variable, . measures the benefit based on the rapidity of a project's execution from the date of funding if received, and measures the benefit based on the project's useful life. Applicants are prompted to provide the estimated construction or active development time and the lifespan for the project applying for funding.

Based on meetings between IEMA and stakeholders, three years is the threshold for a project to be in construction or active development within a desirable timeframe. This timeframe is utilized in developing the formula measuring . The benefit value added for projects that are completed with their construction or development before 36 months provide a positive value added to the overall benefit, with a maximum value of three for variable . Furthermore, projects that have an estimated construction or development time greater than 36 months will have a negative value for variable . The maximum negative value of is three.

For the formula measuring , the mitigation project's construction or development timeframe needs to be compared to the project's useful life to measure the project's effective lifespan. Proposed mitigation projects with a greater difference between its useful life and its construction/development timeframe, the greater the overall benefit. is designed to balance out for projects that are not within the desired construction or development timeframe but have an effective lifespan that is proportionally optimal. The minimum value of is zero and the maximum value is six. Therefore, for variable T, the minimum value added to the overall benefit value is zero, and the maximum value is nine. The minimum retractable value deducted from the overall benefit value is zero, and the maximum value is three.

Where:

Where:

Where:

Project Prioritization Calculations Using Measured Cost and Benefit

Each project submitting a request for funding to the State will now have a numerical value for its total cost and its benefit. All the projects will be segregated by funding source and grant type so only the project competing for the same funding source are being compared to one another. Once the refined list of projects is given, the optimization formulation proposed below will be completed on the list.

Subject to:

This optimization formulation selects the combination of proposed projects that will maximize the total benefit value without going over the financial resource budget. The concluding combination is the priority project selection that the State will advance consideration of funding towards.

For projects whose total costs exceed the budgets set by annual funding, they may be considered for funding by adjusting how and when projects are prioritized utilizing the optimization formulation. If there are projects applying for funding that exceed the quarter of annual funding constraint set by the optimization formula, those projects will be placed in a separate list with their total cost and benefit value provided. All other proposed projects that applied for funding that are within the financial constraints will be ranked through the optimization formula proposed above. If the list of projects to be prioritized determined through the optimization formula has a collective greater benefit than any of the projects that exceed the one-quarter of the financial constraints, then the list of projects that was determined through the optimization formula will be priority for funding. If not, all the projects and that quarter's funding will roll over into the next quarter with no projects advancing in priority – such as, now half of the annual budget will be available for the optimization formula to rank projects that have previously applied and will apply that next quarter. If a project exceeds the total annual budget or the remaining annual budget for that fiscal year but still has a greater benefit value than the prioritized list generated from the optimization formula, then IMAG and its subcommittees will need to determine if they want and are able to provide the project partial funding from the current fiscal year's annual budget and funding from the next year's budget or prioritize the list of projects determined from the optimization formula. In this instance, IEMA-OHS may propose the project receive partial funding from other sources if it qualifies.

Sample Questionnaire

The following is a sample questionnaire mitigation project proposals will need to complete for Illinois Mitigation Advisory Group (IMAG) and its subcommittees to review for funding recommendation based on prioritization methodology.

Title of the mitigation project:

____

Point of contact for questions regarding this form:

2.a. Name:	____ _______		
	Last,	First	Middle Initial

2.b. Phone Number: ____

2.c. Email Address: ____

Which grant or funding source is being applied for?

____

3.a. If the grant or funding source requires a Federal Emergency Management Agency (FEMA) Benefit Cost Analysis (BCA), or if your project calculated a BCA value despite not being required, provide that value below. Attach BCA calculations to this form with submittal.

For information regarding whether or not your project requires the FEMA BCA calculations, please refer to the grant or funding source application requirements, as well as, the Hazard Mitigation Assistance Program and Policy Guide, most recently published March 23, 2023 under Federal Enterprise Architecture (FEA) Number: FP-206-21-0001 (found at https://www.fema.gov/grants/mitigation/hazard-mitigation-assistance-guidance). To download the FEMA BCA toolkit to complete the BCA calculations, visit https://www.fema.gov/grants/tools/benefit-cost-analysis#toolkit for instructions.

FEMA BCA value: ____

Are the BCA calculations attached to this application?

Yes	No (your application will not be able to be considered for funding if FEMA BCA is required)

What is the total estimated cost for the project? This includes construction, active development, maintenance, decommissioning costs as applicable. Full calculations must be provided to IEMA-OHS with the submission of this form.

$	Construction/Active Development Costs
$	Maintenance Costs
$	Decommissioning Costs
$	Total

Are the total cost calculations attached to this application?

Yes	No (your application may not be considered for funding if not provided)

What is the location of the project?

5.a. Provide the address[es], zip code[s], city/town/village name, or the encompassing grid coordinates as applicable:

____

5.b. Which county or counties does the project take place in? Check all that apply.

☐	Adams	☐	Cook	☐	Greene	☐	Kankakee	☐	Massac	☐	Pike	☐	Stephenson
☐	Alexander	☐	Crawford	☐	Grundy	☐	Kendall	☐	McDonough	☐	Pope	☐	Tazewell
☐	Bond	☐	Cumberland	☐	Hamilton	☐	Knox	☐	McHenry	☐	Pulaski	☐	Union
☐	Boone	☐	De Witt	☐	Hancock	☐	Lake	☐	McLean	☐	Putnam	☐	Vermilion
☐	Brown	☐	DeKalb	☐	Hardin	☐	LaSalle	☐	Menard	☐	Randolph	☐	Wabash
☐	Bureau	☐	Douglas	☐	Henderson	☐	Lawrence	☐	Mercer	☐	Richland	☐	Warren
☐	Calhoun	☐	DuPage	☐	Henry	☐	Lee	☐	Monroe	☐	Rock Island	☐	Washington
☐	Carroll	☐	Edgar	☐	Iroquois	☐	Livingston	☐	Montgomery	☐	Saline	☐	Wayne
☐	Cass	☐	Edwards	☐	Jackson	☐	Logan	☐	Morgan	☐	Sangamon	☐	White

☐ Champaign	☐ Effingham	☐ Jasper	☐ Macon	☐ Moultrie	☐ Schuyler	☐ Whiteside
☐ Christian	☐ Fayette	☐ Jefferson	☐ Macoupin	☐ Ogle	☐ Scott	☐ Will
☐ Clark	☐ Ford	☐ Jersey	☐ Madison	☐ Peoria	☐ Shelby	☐ Williamson
☐ Clay	☐ Franklin	☐ Jo Daviess	☐ Marion	☐ Perry	☐ St. Clair	☐ Winnebago
☐ Clinton	☐ Fulton	☐ Johnson	☐ Marshall	☐ Piatt	☐ Stark	☐ Woodford
☐ Coles	☐ Gallatin	☐ Kane	☐ Mason			

5.c. Is the project located within a Community Disaster Resilience Zone as indicated by the State of Illinois?

For more information regarding Community Disaster Resilience Zones, please refer to FEMA guidance located at https://www.fema.gov/flood-maps/products-tools/national-risk-index/community-disaster-resilience-zones.

Yes	No

How many individuals are directly impacted by this project?

____

Which hazard[s] is this project mitigating against? Check all that apply.

☐ Drought	☐ Flooding: Riverine Flooding	☐ Severe Storms: Lightning
☐ Earthquake	☐ Flooding: Dam/Levee Failure	☐ Severe Storms: Wind
☐ Extreme Temperatures: Cold Wave	☐ Landslide	☐ Tornado
☐ Extreme Temperatures: Heat Wave	☐ Mine Subsidence	☐ Wildfire
☐ Flooding: Coastal Flooding	☐ Pandemic	☐ Winter Weather: Ice Storms
☐ Flooding: Flash Flooding	☐ Severe Storms: Hail	☐ Winter Weather: Winter Storms

Does this project execute mitigation actions already included in an approved Mitigation Plan or a Mitigation Plan in the process of becoming approved?

Yes (must complete question 7.a.)	No

8.a. If yes, please list which mitigation action item[s] within which mitigation plan are being executed.

For projects executing mitigation action items within the Illinois State Hazard Mitigation Plan, item numbers can be found in Chapter 3 Mitigation Strategy.

____

____

____

____

____

Does this project reduce the risk of the hazard[s] indicated in Question 7 from occurring? If yes, attach hazard risk calculations to this form with submittal.

Reduction in risk may be determined by the difference in frequency of events total or frequency of the severity of the hazard occurrence. An example for Severe Storms: Wind, the current 20-year storm hazard severity is predicted to become a 50-year storm after the execution of the project. Or, an example for droughts, the number of drought events in the project's location over the last 50 years is 20 (or 40% annual chance), after the completion of this project it is estimated that the likelihood of a drought occurring annually is reduced to 20% (or that there will be about 10 drought events over the next 50 years).

Yes (must complete question 9.a. and 9.b.)	No

9.a. List which hazard[s] from Question 7 within which county or counties from Question 5.b. have their risk of occurrence reduced because of this project. Does not need to be all hazards and counties indicated in Questions 5.b. and 7.

____

____

____

____

____

9.b. Do the calculations measuring future hazard risk include the negative impacts of climate change?

Yes (indicate within attached hazard risk calculations)	No

What is the overall goal of the project? Select all that apply.

☐	Natural Resource Protection	☐	Providing Leadership or Planning/Technical Assistance for Hazard Mitigation Planning
☐	Critical Facility Protection	☐	Impacting Alert Systems for Hazard Announcements, Warnings, and Evacuations
☐	Conducting Structural Projects	☐	Providing Public Education and Awareness of Personal Mitigation Strategies
☐	Retrofitting Critical Facilities	☐	Providing Public Education and Awareness of Hazard Risk
☐	Other: ____		

Does this project directly mitigate against the loss of human life? If yes, attach mortality risk calculations to this form with submittal.

Mitigating against the loss of human life may be measured by the difference in risk of from the hazard[s] occurrence in Question 7 between now and after the execution of the project.

Yes (must complete question 11.a. and 11.b.)	No

11.a. Provide a summary of the mortality risk calculations below. Include all counties and hazards from Questions 5.b. and 7 as applicable.

County	Hazard	Number of Lives Directly Impacted by the Project (#)	Current Mortality Risk from Hazard Occurrence (%)	Mortality Risk Following Project Execution (%)

11.b. Do the calculations measuring future mortality risk include the negative impacts of climate change?

Yes (indicate within attached mortality risk calculations)	No

Does this project mitigate property damage? If yes, attach estimated property damage calculations to this form with submittal.

Mitigating against property damage may be measured by the difference between historical losses over the past 50 years from the hazard[s] occurrence in Question 7 and future calculated property damage predictions after the execution of the project.

Yes (must complete question 12.a. and 12.b.)	No

12.a. Provide a summary of the estimated property damage calculations below. Include all addresses and hazards from Question 6 as applicable.

The definition of a repetitive loss property according to FEMA is "any insurable building for which the National Flood Insurance Property (NFIP) paid two or more claims of at least $1,000 over a ten-year period." IEMA-OHS utilizes a PIVOT Database, which contains all properties that have at least four total insurance claims for flooding, to determine whether a property is a repetitive loss or not. Due to the nature of the definition, mitigation projects relating to only certain hazards that may result in flooding qualify to be considered in reducing repetitive loss.

Hazard	Property Address	Current Property Value from Illinois Tax Assessment ($)	Historical Property Damage Cost Over Past 66 Years ($)	Estimated Value Saved through Execution of the Project over next 66 Years ($)	Is The Property Considered a Repetitive Loss Property by the State of Illinois? (Yes/No)

12.b. Do the calculations measuring future property damage savings include the negative impacts of climate change?

Yes (indicate within attached property damage calculations)	No

Is the project utilizing and/or promoting nature-based solutions?

According to FEMA, "nature-based solutions are sustainable planning, design, environmental management and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience." There are multiple terms that are also interchangeable to nature-based solutions: such as, green infrastructure, natural infrastructure, and natural or nature-based solutions. For more information to understand if the proposed project is utilizing or promoting nature-based solutions, refer to https://www.fema.gov/emergency-managers/risk-management/nature-based-solutions.

Yes	No

What is the estimated construction or active development time for this project? Construction time is measured from the launch of the project to the completion of construction or active development of the project. Please provide a response in terms of number of months.

____

What is the estimated lifespan of this project? Lifespan is measured from the launch of the project to the decommissioning of the project and its products. Please provide a response in terms of number of months.

____

Appendix 3.3 Capability Assessment Forms

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **Illinois Department of Natural Resources (IDNR)**

POINT OF CONTACT: **Stuart Fraser**
One Natural Resources Way, Illinois, 62702-1271

Phone Number **217-557-0657**

E-mail Address
Stuart.Fraser@illinois.gov

AGENCY MISSION/ FUNCTION:

Provide description of agency mission/function.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
Flood Hazard Mitigation Program		X		Provides funding and planning assistance for the purchase of floodprone properties. Land purchased must remain in open space in perpetuity. Program can act alone or in conjunction with IEMA-OHS/FEMA. (POC = Ron Davis, 217-524-7200).
Local Floodplain Management	X			Oversees compliance with local floodplain regulations. Works with communities to prepares and adopt local floodplain ordinances. Investigates and resolves floodplain violations. Provides technical floodplain management assistance. (POC = Erin Conley, 217-782-4428).
National Flood Insurance Program (NFIP)	X			Coordinates the National Flood Insurance Program in Illinois. Provide assistance and training to insurance agents and lenders. Tracks repetitive loss properties. Resolve flood insurance complaints. Coordinate CRS & ICC Projects (POC = Erin Conley, 217-782-4428).
State Floodway Permitting Program	X			Program is responsible for review of proposed

				development and issuing/denying permits for construction in the floodway of streams. Also regulates development activities in and along public bodies of water. (POC = Bill Milner, 217-524-1458).
Dam Safety	X			Oversees the construction, operation, & maintenance of dams which existed prior to 9-2-80. Dams are classified by size and hazard potential. (POC = Paul Mauer, 217-782-4427)
OSLAD	X			Open Space Lands Acquisition and Development Program provides funding assistance to local governments for the acquisition and/or development of land for public parks and open space. (POC = Jennifer Weisenberger, 217-782-7607 and Ann Fletcher, 217-557-7815).
Mines & Minerals	X			Program provides information on location of underground mines in 73 IL counties. This information could be useful in determining risk as it relates to earthquakes. (POC Bill Patterson, Bill.patterson@illinois.gov 618-439-9111 ext 235)
Law Enforcement	X	X		Provides Law Enforcement activities in emergency situations related to natural disasters. (POC = Stuart Fraser, 217-557-0657)
Flood Surveillance Program		X		Monitor flood stages throughout state and provide technical assistance to IEMA-OHS concerning flood stages, flood forecasting and damages to urban & rural areas. (POC = Terra McParland, 217-524-9113)
Planning Studies (Flood-Control) Flood Control Act of 1945	X			Complete watershed and flood risk studies to develop structural & non-structural measures to reduce flooding and reduce or eliminate the number of damaged structures. (POC = Rick Pohlman, 217-782-4732)
Floodplain Mapping	X			Coordinate State's floodplain maps and studies. (POC = Glenn Heistand, Illinois State Water Survey – Prairie Research Institute).
Contaminant/Spills *	X			

				Natural Resource impacts other than fish (Beth Whetsell, 217-557-7816), Natural Resource impacts to fish (Kevin Irons, 217-557-0719)

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **Illinois Commerce Commission (ICC)**

POINT OF CONTACT: **Jim Zolnierek**
527 E. Capitol Avenue
Springfield, Illinois 62701

Phone Number: **(217) 785-5278** E-mail Address: **jim.zolnierek@illinois.gov**

AGENCY MISSION/ FUNCTION:

The ICC's mission is to pursue an appropriate balance between the interests of consumers and existing and emerging service providers to ensure the provision of adequate, efficient, reliable, safe and least-cost public utility services.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
(220 ILCS 30/) Electric Supplier Act	X			This Act declared it to be in the public interest that, in order to avoid duplication of facilities and to minimize disputes between electric suppliers which may result in inconvenience and diminished efficiency in electric service to the public, any 2 or more electric suppliers may contract, subject to the approval of the Illinois Commerce Commission, as to the respective areas in which each supplier is to provide service.
Energy Engineering	X			Reviews: utility plant additions and “used and useful” issues in electric and gas rate cases; infrastructure construction certificates including electric transmission lines (need and route); ARES, ABC, MSP and AGS certification applications; ESA complaints; PGA and FAC reconciliations; electric distribution reliability reports; electric and gas meter calibration facilities; technical issues in consumer

				complaints; electric and gas accident reports; liquid petroleum pipeline facility certifications (need and route); and mercury rules compliance verifications.
Natural Gas Pipeline Safety	X			Inspects natural gas pipeline facilities to assure compliance with all Federal and State safety rules and regulations pertaining to the design, construction, operation and maintenance of those facilities, and incidents involving natural gas resulting in injury requiring hospitalization, fatalities or significant property damage.
Reliability Assessment	X			Provides analysis and policy advice regarding electric utility reliability reviews, power delivery infrastructure and distributed and renewable generation. Monitors investigations of power delivery infrastructure and environmental disclosure requirements. Provides representation on state and regional industry entities; and summaries and analyses as required on other issues as requested by the Division Director, the Executive Director and the Commission.
Water Engineering	X			Reviews tariffs and other filings by public water and sewer utilities; provides expert testimony in litigated cases; performs field reviews and inspections of plant, facilities and operations; and reviews and recommends Commission policies on state and national-level water and sewer issues. IEPA addresses water safety.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **Illinois Law Enforcement Alarm System**

POINT OF CONTACT: **David Fellows**
1071 East Main Street, Urbana, IL 61802

Phone Number **(618-806-5200**

E-mail Address
defellows@ileas.org

AGENCY MISSION/ FUNCTION:

Provide description of agency mission/function. (See attached)

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments

What Does Membership in ILEAS Offer to Local Law Enforcement Agencies

ILEAS is the largest and most effective law enforcement mutual aid organization in the United States. Over 900 cities, counties and other units of local government have joined ILEAS. ILEAS member agencies employ over 95% of the law enforcement officers in Illinois. ***ILEAS' motto is "Strength Through Cooperation."*** Its continuing mission is to reduce costs and increase effectiveness of local law enforcement through the combining and sharing of resources and statewide coordination of mutual aid. ILEAS has been recognized by state and federal authorities as having one of the most robust law enforcement mutual aid capabilities in the United States.

Statewide Mutual Aid

When joining ILEAS, every city, county and agency with law enforcement authority adopts a standard Law Enforcement Mutual Aid Agreement. This agreement **does two things**: 1) provides the ability to request or to deploy law enforcement resources both regionally and across the State of Illinois at no cost, and 2) creates the organization called **ILEAS** to coordinate those mutual aid requests 24 hours a day, 365 days a year. Examples of deployments include the historic Southern Illinois flooding (2011) and the tornadoes that struck Harrisburg (2012), Washington (2013), Coal City (2015) and Rochelle (2015). Those affected chiefs of police and sheriffs made one call to ILEAS which assisted in the coordination of resources statewide. Hundreds of local law enforcement officers responded to those calls for help – **at no cost to the requesting agencies.** If a disaster is declared and public assistance is authorized, ILEAS assists the responding and requesting agencies in applying for cost reimbursements from the state or federal government. Additionally, the ILEAS mutual aid agreement provides an understanding of liability with regard to insurance coverage and worker's compensation.

Specialized Teams of Local Officers and Deputies

ILEAS has created regional, multi-jurisdictional specialized teams drawn from participating agencies which are capable of responding throughout the State when necessary. These teams include Weapons of Mass Destruction Special Response Teams (WMD/SRT) and Mobile Field Force (MFF) teams. The WMD/SRT teams are regionally based SWAT teams of 25 to 35 officers who have received hundreds of hours of federally-approved training and are equipped with the highest quality equipment available. The WMD/SRT teams can provide basic SWAT services across the State and are also trained to manage tactical problems in a chemically contaminated or potentially contaminated environment.

The MFF teams are regionally based and each consists of approximately 60 highly trained and equipped officers from participating agencies. Member officers are specially trained to deal with civil unrest and crowd control while respecting the First Amendment rights of all event participants. The MFF teams are also trained to provide Law Enforcement Patrol Team services to areas of assignment after a disaster strikes. They are, in essence, a portable police department that can be moved anywhere in the State to assist stricken jurisdictions. Additionally, ILEAS provides funding and support for nine local Bomb Teams in Illinois.

Disaster Assistance

When a disaster strikes that requires more law enforcement resources than a city, town, village or county has available, ILEAS will notify other member agencies in the region and coordinate as many officers and types of equipment as requested. At least one ILEAS employee with many years of law enforcement field experience will respond to offer planning support and resource coordination for the affected chief or sheriff. ILEAS can be the liaison between the Illinois State Police, the Illinois Emergency Management Agency and other

state and regional resources to ensure a coordinated response, providing tools for the stricken agency to effectively and efficiently manage the situation. ILEAS does NOT take over or manage the incident. That responsibility and authority remains with the local law enforcement executives and civil authorities. ILEAS provides support in terms of resource acquisition and planning advice based on experience. Go to the media tab of the ILEAS web page at www.ileas.org for video testimonials regarding previous responses to local disasters.

STRENGTH THROUGH COOPERATION

ILEAS is not a State of Illinois department. It is a public agency that is formed by other public agencies which have come together by intergovernmental agreement for the mutual benefit of all of the signatories. ILEAS exists to provide operational support and services to local law enforcement by harnessing and cultivating the power of collaboration and cooperation!

History of ILEAS – How It Started and How It Grew!

ILEAS represents over 900 local law enforcement agencies established pursuant to the Constitution of the State of Illinois (Ill. Const. Art. VII, sec. 10), the Illinois Intergovernmental Cooperation Act (5 ILCS 220/1 et seq.), the Local Governmental and Governmental Employees Tort Immunity Act (745 ILCS 10/1-101 et seq.) and the Illinois Municipal Code (65 ILCS 5/11-1-2.1). ILEAS was created as a public agency when, after September 11th, the Illinois Association of Chiefs of Police, the Illinois Sheriffs' Association, the Illinois Emergency Management Agency and the Illinois State Police worked together to create a statewide law enforcement mutual aid organization.

ILEAS is based on the same principles that govern the Mutual Aid Box Alarm System (MABAS), the mutual aid system for fire services statewide. Based on the decades-long success of MABAS, ILEAS emulated MABAS' agreement and structure and expanded the concept statewide. In 2003, member agencies from local jurisdictions started adopting the mutual aid agreement and the first Governing Board was elected – ILEAS was in business!

Establishing Mutual Aid

ILEAS' first order of business was collecting a database of all resources possessed by its member agencies and contracting with Northwest Central Dispatch in Arlington Heights and the City of Peoria for dispatch support. ILEAS maintains the database which includes a comprehensive accounting of all personnel and equipment assets across the entire State of Illinois. ILEAS makes this continuously updated database available to the dispatch centers for reference during requests for services. When a member agency is in need, it simply calls the dispatch center and makes its resource requests. The dispatch center queries the database to determine the closest agency with that resource. That agency is then called and a request is made for them to respond to aid the stricken jurisdiction. Responding agencies understand that providing aid is voluntary and they do so with no expectation of reimbursement from the requesting jurisdiction. The premise being, ***"I will come to your aid today, because tomorrow, I may need assistance from you."***

ILEAS' first official request for mutual aid was the tornado in Utica on April 20, 2004. That activation was so successful that word quickly spread throughout Illinois prompting hundreds of agencies to join ILEAS. From that first successful mutual aid activation in Utica, ILEAS grew rapidly and is now capable of handling virtually any size mutual aid request, both in- and out-of-state. ILEAS coordinated the deployment of 287 special team officers to assist the Chicago Police during the NATO Summit in May of 2012. 300 officers, deputies and troopers were sent to Katrina in August of 2005, and local officers accompanied the Illinois State Police to New Jersey after Super Storm Sandy in November of 2012.

Improvements Along the Way

While ILEAS has been very successful operationally, we are always looking for ways to improve. ILEAS has fine-tuned its special team training, exercising, validation and deployment process. ILEAS engages the services of experienced retired senior law enforcement commanders and executives to provide planning and operational support services in the field directly to member agencies through our

RPC (Regional Planning Coordinator) program. When funds are available, ILEAS has provided millions of dollars of equipment in the form of ruggedized laptops, radiation detectors, respirators (one for each officer in the State) and mobile command post vehicles. Recently, ILEAS was awarded a grant from the Illinois Department of Public Health to provide Narcan to officers in targeted counties in an effort to address the opioid overdose epidemic. ILEAS has also been tasked with the creation of Technology Support Teams which will be based regionally throughout the state and will respond to significant field deployments or disasters to establish and maintain information technology networks and communications systems as needed. ILEAS represents the homeland security needs and interests of its members to the Illinois Terrorism Task Force and to federal agencies when necessary.

The Next Step

ILEAS is becoming a leader in the public safety technology arena. ILEAS funds 2,500 StarCom21 radios used by teams and in caches throughout the State. With the development of the Technology Support Teams, ILEAS' expert personnel will oversee the deployment of advanced field communications and network technology during major mutual aid events.

ILEAS is utilizing its online Learning Management System (LMS) to provide training for the StarCom21 system as well as other cross-discipline public safety issues. ILEAS was awarded the FirstNet planning grant for Illinois. FirstNet is a federally-developed national public safety broadband wireless network project. The planners and technologists for Illinois are ILEAS employees.

ILEAS exists to reduce costs and increase effectiveness of local law enforcement through the combining and sharing of resources and statewide coordination of mutual aid. We work with all of our public safety partners to improve field responses, share information, save money and improve performance throughout the State. ILEAS is the true embodiment of its motto, "Strength Through Cooperation."

To learn more about Law Enforcement Mutual Aid and ILEAS, contact us at: www.ileas.org or 217-328-3800.

STRENGTH THROUGH COOPERATION

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: U.S. Army Corps of Engineers

POINT OF CONTACT: Shawn Sullivan
1222 Spruce Street
St. Louis, MO 63103

Phone Number (314) 303-4778

E-mail Address
Shawn.f.sullivan@usace.army.mil

AGENCY MISSION/ FUNCTION: USACE partners with eligible non-Federal interests throughout the state to investigate water resources and related land problems and opportunities and, if warranted, develops projects that would otherwise be beyond the sole capability of the non-Federal interest.

Provide description of agency mission/function.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
Planning Assistance to States	X	X		Comprehensive planning activities through the PAS program are cost-shared (50% USACE, 50% non-Federal partner) with eligible entities.
Floodplain Management Services Special Studies	X	X		Provides a full range of information, technical services, and planning guidance and assistance on floods and floodplain issues that is needed to support effective floodplain management at 100 percent federal cost.
Interagency Nonstructural Silver Jackets program	X	X		Interagency work promotes USACE staff participation in engineering and planning efforts undertaken in conjunction with other partners to achieve flood risk management benefits that could not be achieved by any one entity alone.
Continuing Authorities Program			X	Enables study and construction for certain project types (i.e. flooding or bank erosion) under a total project cost threshold that is cost shared.
Public Law 84-99 (PL 84-99) authorized by the Flood Control and Coastal Emergency Act	X	X	X	Disaster Preparedness, Emergency Operations during flood and storm-related disasters, Rehabilitation Program for the inspection and rehabilitation of Federal and non-Federal flood risk management projects damaged or destroyed by floods.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **ILLINOIS STATE GEOLOGICAL SURVEY (ISGS)**

POINT OF CONTACT: **Robert A. Bauer, Andrew Anderson - Engineering Geologists**
615 E. Peabody Drive, Champaign, Illinois 61820

Phone Numbers: **(217) 244-2394**
(217) 244-0995

E-mail Addresses: mailto:**rabauer@illinois.edu**
acandrsn@illinois.edu

AGENCY MISSION/FUNCTION:

Providing the citizens and institutions of Illinois with a geoscience basis for environmental and economic decision making through relevant research, modern geologic mapping, targeted technical assistance, expanded education and outreach, and extensive databases and collections.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
CUSEC State Geologists' soil amplification and liquefaction susceptibility maps of 8 central U.S. States and some towns.	X	X		Maps that are produced for inclusion into HAZUS earthquake loss estimation. Eight states and Carbondale, Illinois
Detailed mapping of geology in 3 dimensions in multiple higher populated areas of state – quadrangle mapping.	X	X		Mapping results used as base for other derived maps: earthquake amplification, liquefaction, and groundwater availability and contamination potential
Groundwater contamination potential maps	X	X		Maps showing degrees of potential to contaminate groundwater in the State. State wide map and various areas where quadrangle mapping has/is occurring.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **Illinois Environmental Protection Agency (IEPA)**

POINT OF CONTACT: **Tony Falconio**
1021 North Grand Ave. East, Springfield, Illinois 62794

Phone Number: **(217) 558-1673** E-mail Address: **Tony.Falconio@illinois.gov**

AGENCY MISSION/ FUNCTION:

The mission of the Illinois Environmental Protection Agency (IEPA) is to safeguard environmental quality, consistent with the social and economic needs of the State, so as to protect health, welfare, property and the quality of life.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
Green Infrastructure for Clean Water Act	X			Public Act 96-26, the Green Infrastructure for Clean Water Act, requires the Illinois EPA to assess and evaluate using green infrastructure to help manage stormwater in Illinois. Illinois EPA is currently working with the University of Illinois – Chicago to undertake research to assess effective best management practices, green infrastructure standards and institutional and policy frameworks to support the development of a Green Infrastructure Plan for Illinois.
Clean Water Act Amendments of 1987	X			The Act established the NPDES storm water program. The act called for implementation in two phases; Phase I addressed the most significant sources of pollution in storm water runoff. Phase II addresses other sources to protect water quality, including modernizing wastewater treatment plants to meet water quality standards, replacing aging water mains and sewers and updating drinking water treatment facilities.
Office of Emergency Response (OER)	X			Protect the health and safety of the citizens of Illinois during emergency incidents involving the release of oil, hazardous materials or other contaminants, while stabilizing, minimizing or

Hazardous Waste Program Title 35 Ill. Adm. Code, Parts 700-739	X			eliminating the environmental consequences to the land, air or waters of the state. The intent of the hazardous waste program is to provide a cradle-to-grave management scheme for hazardous wastes to ensure that these wastes are not mismanaged in a manner that will impact human health or the environment. At Illinois EPA, the Bureau of Land Permit Section is responsible for implementing the hazardous waste program.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: Illinois Department of Labor (Agency) **IL – OSHA (Division)**

POINT OF CONTACT: **Harry Hap Hileman**
Outreach and Marketing Coordinator
524 S. 2nd Street
Suite 400
Springfield, IL 62702

Erik Kambarian
IL OSHA Division Chief

Phone Number **217-782-9397 (Hap)**

217- 720-8079 (Erik)

E-mail Address
Harry.hileman@illinois.gov
erik.kambarian@illinois.gov

AGENCY MISSION/ FUNCTION:

It is the mission of Illinois OSHA to ensure safe and healthy working conditions by setting and enforcing standards and providing training, outreach, education, and assistance to employers and employees throughout Illinois.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
OSHA Enforcement, CFR 1910/1926/1917 50% funded from feds.				In an emergency has the ability to conduct Respirator Fit testing, provide safety oversite. Numerous individuals are NIMS and HazMat Awareness certified.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **Illinois Department of Transportation (IDOT)**

POINT OF CONTACT: **Brandon Keller**
2300 South Dirksen Pkwy.
Springfield, IL

Phone Number **217.725.3242**

E-mail Address
Brandon.Keller@illinois.gov

AGENCY MISSION/ FUNCTION:

The mission of the Illinois Department of Transportation is to provide safe, cost effective, transportation for Illinois roadways, which enhance quality of life, promote economic prosperity, and demonstrate respect for our environment.

Bureau of Design and Environment

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
Roadway crowns are required to be 3 feet over 50 year flood event highwater elevation.	X			This can reduce damage by preventing a design flood event from overtopping roadways.
Low beams of structures are required to be 2 feet above 50 year flood event highwater elevation.	X			This helps limit damage by preventing accumulation of debris which exacerbates flooding during design flood events.
Establishment of compensatory storage is required when regulatory floodplains are filled during the course of a project.	X			This helps prevent exacerbation of damage during flood events.

A Hydraulic Report is required for every structure rehabilitation or replacement project.	X			This helps to prevent damage by assuring adequate bridge opening to minimize flooding.
Drainage studies are required on all but the simplest projects, and explicitly address any flood hazards to users and adjoining properties.	X			This helps prevent damage by identifying and correcting any potential drainage problems during design.
Existing structures in seismically sensitive areas are studied for possible retrofits if the replacement is not indicated.	X			This helps limit damage in a seismic event.
New or reconstructed structures in seismic-cally sensitive areas are analyzed and designed to withstand seismic design loadings.	X			This helps limit damage in a seismic event.
Designers are required to coordinate with emergency services entities to assure accommodation throughout the project duration and beyond.	X			This will help limit damage by assuring the best practicable emergency response in the case of an event.

Interstate projects are coordinated with Department of Defense for the Strategic Highway Network(STRAH-NET) needs, particularly with respect to vertical clearances to structures.		X		This will help facilitate response in instances of domestic or foreign terrorism or other events requiring military capabilities.
The potential for geologic hazards such as mine subsidence, landslides and seismic activity is investigated and addressed on projects.	X			This can help to limit damages by identifying and avoiding or mitigating such hazards.
Crossing a flood plain with a new highway alignment is avoided unless there is no practical alternative, as directed by the U.S. Army Corps of Engineers	X			This can limit damages by avoiding areas where flooding may be prevalent.
Policy against crossing floodplains	X			Army Corps of Engineers to prevent flooding.
Minimize induced head for structures	X			Prevents structures from backing up streams and rivers.
Three feet freeboard on structures	X			Prevents accumulation of debris to help prevent flooding.
Pier placement in streams and rivers		X		Try to not place piers in the center of streams to

				hinder the flow of the streams.
Drainage studies	X			To make sure adequate drainage is on the project.

Bureau of Operations – Transportation Infrastructure Security Unit

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	Facilitate	Hinder	Comments
Information Systems	X			Unit experienced in processing "Emergency Affidavits", Public Assistance Grants and Federal Highway Administration Grants to pay for emergency/disaster related response.
Bridge Recovery Program	X			Continue to implement the Bridge Recovery Program. This is the first in the nation. It established plans for structural evaluations and emergency response contracts to restore bridges to service as soon as possible following a natural or manmade disaster.
Bridge Security Program		X		Installation of over $12 million in surveillance equipment in Chicago, East St. Louis, LaSalle/Peru and other major Interstates. This equipment is used to secure bridges and highways from unauthorized access to critical infrastructure. Lighting, cameras, CCTV, fiber optics and fencing have been installed on 45 critical bridges in the State of Illinois.
		X		Installation completed on 42 manual gate systems on the inbound ramps on the Chicago expressway system. The gate system is to allow uninterrupted flow of emergency response vehicles into the City of Chicago while easing the burden of inbound traffic. Eighty locations have been selected for this program.

Bridge Recovery/ Evacuation Planning (USGS ShakeCast)	X			System supports bridge inspections and emergency response routes
Evacuation Planning	X			The ITTF Transportation Committee in conjunction with the Illinois Terrorism Task Force prepared and tested evacuation plans for Chicago, Rockford, Peoria, Springfield and East St. Louis. Approximately $8 million in traffic management equipment has been provided to install traffic management equipment along streets and highways to insure free traffic flow from danger zones.
	X			The Transportation Committee Evacuation Implementation Group developed a Traffic Management Evacuation Plan for the City of Chicago Expressway. Priority routes have been selected to assist the evacuation planning of the Chicago Central Business District. Developing a Traffic Management Evacuation plan for the East St. Louis Metro area in coordination with SIU-E.
Communication Center Operations	X			Participation in user groups to study all types of operations to include winter operations (Multi-state runs meeting)
		X		Staffed 24-hours a day to receive calls from Law Enforcement and other responder agencies to coordinate IDOT involvement and assistance for #1 safety events on IDOT highways -Incident reports -Maintain IDOT 800# for travelers alerting them of severe road conditions and closures on interstates.
		X		Communication Center "Liaisons" on call 24-hour, to respond to emergency disasters and

				SEOC activities.
	X			Communication center updates - winter road conditions map and road closure list as displayed on IDOT web page.
	X	X		Provide 800# for Motorist to report events and complaints.
	X			Contract funding for statewide weather forecasting provides warnings and forecasts to IDOT areas as well as selected pavement temperature forecasts.
	X			Refined study of equipment and their evaluation; yields enhanced equipment, better to respond in severe weather events. Experienced staff have pressed for more current fleet (truck) additions to ensure effective response to adverse events.
	X			Statewide radio systems and towers provide links between districts, trucks individually and control communications center.
CompassCOM	X			System used to monitor, track daily operations and personnel for safety issues.
Flood Operations	X			Mitigation controls for local and state jurisdictions

Bureau of Operations – Maintenance Section

Programs, Plans, Policies, Regulations,	Effect on Loss Reduction (X) Support Facilitate Hinder	Comments

Funding or Practices				
Information Systems		X		Computer system support staff maintains road condition map as displayed on the internet.
		X		The MMIS Coordinator's for the Information System tracks dollars associated w/storm clean up.
	X			Roadway Weather Information System provides real-time pavement and atmosphere data at 56 locations statewide. (RWIS)
	X			A variety of performance and cost reports and salt reports to assist managers and budget staff.

Bureau of Bridges and Structures

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X)			Comments
	Support	Facilitate	Hinder	
Bridges over waterways are evaluated for their scour potential.		X		This process identifies bridges with critical scour potential and initiates mitigation through installation of countermeasures or justification for structure replacement.
Bridges with Critical Scour ratings are inspected after large storm events that produce high water condition.	X			Provides inspectors and structural engineers with necessary data to determine if a structure is suitable to remain open to traffic.
Bridges in seismically sensitive areas are inspected immediately after a significant earthquake event in accordance with the	X			Provides inspectors and structural engineers with necessary data to determine if a structure is suitable to remain open to traffic.

Earthquake Preparedness Plan.				
Bridges in seismically sensitive areas have been prioritized by their susceptibility to damage or collapse from seismic forces.		X		Provides Department planners with justification data in order to budget for repair, rehabilitation, or replacement of structures in seismic areas.
Bridges with substructure elements in navigable waterways have been assessed for their susceptibility to barge collision and the condition of their protection devices.		X		Provides the Department with assurances that bridges with substructure elements in navigation channels are adequately protected from barge collision and justification for repair or replacement of damaged protection devices.

ILLINOIS CAPABILITY ASSESSMENT

NAME OF AGENCY: **NATIONAL WEATHER SERVICE (NWS)**

POINT OF CONTACT: **Ed Shimon, Warning Coordination Meteorologist**
1362 State Route 10, Lincoln, IL 62656

Phone Number: **(217) 732-3089** E-mail Address: edward.shimon@noaa.gov

AGENCY MISSION/FUNCTION:

The mission of the National Weather Service (NWS) is to provide weather, water and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy for all of the United States, its Territories, adjacent waters, and ocean areas.

Programs, Plans, Policies, Regulations, Funding or Practices	Effect on Loss Reduction (X) Support	 Facilitate	 Hinder	Comments
Storm Ready Program	X			The NWS Storm Ready program recognizes those communities that are prepared for natural disasters. The inspection process, prior to recognition, verifies that communities have the resources to receive weather information and warnings, the means to disseminate warnings to critical facilities, and that community preparedness activities have been accomplished and are on-going. StormReady recognition rewards local hazardous weather mitigation programs, helps emergency managers justify costs to support mitigation programs, provides a means of acquiring 25 Community Rating System points assigned by the National Flood Insurance Program (NFIP), and provides an "image incentive" to communities.
Public Outreach		X		The NWS offices across the state of Illinois conduct numerous public outreach presentations at home shows, fairs, and for civic, religious, school and business groups. The main topics highlighted during this outreach are:

Weather Ready Nation Ambassador Program	X	X		- Hazardous weather safety & preparedness campaigns - The importance of NOAA Weather Radio and other weather sources - Hazard mitigation projects for home owners, such as wind resistant construction and tornado safe rooms Seasonal preparedness campaigns are held across the state, in conjunction with the IEMA-OHS's Ready Illinois program. The Weather-Ready Nation (WRN) Ambassador™ initiative is the NWS' effort to formally recognize partners who are improving the nation's readiness, responsiveness, and overall resilience against extreme weather, water, and climate events. As a WRN Ambassador, partners commit to working with the NWS and other Ambassadors to strengthen national resilience against extreme weather. In effect, the WRN Ambassador initiative helps unify the efforts across government, non-profits, academia, and private industry toward making the nation more ready, responsive, and resilient against extreme environmental hazards. WRN Ambassadors must commit to: ▪ Promoting Weather-Ready Nation messages and themes to their stakeholders; ▪ Engaging with NWS personnel on potential collaboration opportunities; ▪ Sharing their success stories of preparedness and resiliency; ▪ Serving as an example by educating employees on workplace preparedness The NWS Event Ready Program is a system of web-based tools and guidance for safety officials who are planning and conducting outdoor events. The program provides methodologies for preparing for and responding to any hazardous weather that may affect an outdoor event. The program ensures a Weather Liaison is designated by the core partner for each event. They are a key component to the successful

Event Ready Program				usage of the Event Ready program. The Sheltering and Evacuation Tool is also a vital component of the program. The tool helps safety officials plan the amount of time it would take to mobilize staff and notify the patrons of the need to take action. The second part has them identify how long it would take to get those patrons safely sheltered or evacuated. The combination of those times, as well as a 25% safety factor, is used to determine a decision point for core partners to take action toward the patrons safety when hazardous weather is expected to impact an outdoor event. The Event Ready Program is vital part of how the NWS carries out its mission to provide Impact-Based Decision Support Services (IDSS) to core partners and safety officials across Illinois.

Appendix 3.4 Mitigation Success Stories in Illinois

Project	Agency	Theme	Description	Reduced risk	
Floodplain Mitigation Partnership Between IEMA-OHS and IDNR	IEMA-OHS and IDNR	Property Acquisition	Property acquisition and structure demolition/relocation/elevation to mitigate risk in hazard-prone areas.	Mitigation of 4200-4500 structures and parcels of land	1993-2023
Bridge Scour Monitoring System	IDOT	Monitoring Scouring risk	Evaluating scouring risk with a monitoring system to prevent structural damage at bridges over waterways	The system is monitored 24 hours a day and it allows for the agency to continually analyze the scouring risk to mitigate the impact of the scouring if required.	
Illinois Department of Natural Resources/Office of Water Resources Matching Funds	IDNR/OWR	Property acquisition	The OWR accomplished early flood mitigation buyouts in some of the state's most flood prone areas. In the subsequent years, dozens of floods have taken place at these mitigation project sites.	The program has paid for itself many times over in loss avoidance.	1993-
Community Rating System	State of Illinois	Community rating system	provides incentives in the form of premium discounts for communities that go above and beyond minimum floodplain management standards	Illinois leads the nation in participation for non-coastal states and is ranked 5thoverall in the United States with 64 CRS communities. Illinois also has 13 communities that have achieved a Class 5 rating, resulting in a 25% reduction in flood insurance premiums. This distinction ranks Illinois 4thin the nation and 1st for non-coastal communities. The citizens of Illinois will realize nearly $1.5 million in annual savings due to CRS. Based strictly on Illinois' state regulations, every community in the state could achieve a 10%	

				reduction in flood premiums simply by joining CRS.	
Business Emergency Operation Center	Private sector with State Emergency Management Personnel		Private sectors collaborate with State Emergency Management Personnel agriculture and food; retail; energy; information technology; postal and shipping; bank and finance; communications, transportation systems; chemical; manufacturing; healthcare and public health, water; security; small business; and service industry.	This partnership improves response and recovery efforts for major disasters and has built that connection to develop mitigation strategies to enhance the resiliency of the private sector, ultimately strengthening the State's mitigation efforts.	
Illinois Flood Plain Summary	IDNR/OWR	Information resource	created an Illinois Flood Plain Summary document to highlight the continuing floodplain efforts including flood mitigation for the State of Illinois. This document provides information for not only state agencies but the public regarding floodplain related mitigation efforts in Illinois and the success of its programs.	Illinois is ranked 5thin the nation for total number of participating communities in the National Flood Insurance Program.	
Illinois State Water Survey	The Prairie Research Institute and the IDNR Office of Water Resources	Information resource	The Structure-Based Flood Risk Assessment analyzes flood risk for thousands of properties within Peoria County and the City of Ottawa in LaSalle County. All the information collected for this project will be hosted on a web application that with continued support will eventually include flood risk information for the entire State of Illinois.	The flood risk assessment provides information for mitigation planners at the local, county, and state level to identify the structures that are likely to experience the mostly costly damages due to flooding and plan accordingly, as well as helping owners to understand the importance and value of flood insurance.	

Illinois Drought Preparedness and Response Plan	ISWS	Response plan	assist community and state officials and the public with information and tools that promote better decision-making in water supply planning and reduce drought-related impacts, water competition, and conflicts of use.		
Illinois Association for Floodplain and Stormwater Management	IAFSM	Promotion and collaboration	Promote the common interest in floodplain and stormwater management. Enhance cooperation among various local, state, and federal agencies. Encourage effective and innovative approaches to managing the State's floodplain and stormwater management systems.	The IAFSM has become one of the best sources to promote flood awareness and provide outreach on flood programs.	1986
HAZUS-MH Reports for Individual Counties	IEMA-OHS	Risk assessment	Hazard Mitigation Grant Program funds were utilized to conduct a statewide Level 1.5 HAZUS analysis to develop a risk assessment focused on defining the potential flood exposure throughout the 102 counties in Illinois. A report was created to identify critical facilities within the 100-year floodplain, and a vulnerability report for the 102 counties was created.	The report reviewed previous occurrences of flooding in the county, identified the FEMA mapped floodplains, summarize the flood-exposure modeling results, and identified any critical facilities susceptible to flooding. Copies of these county reports were distributed to the individual counties to assist with their future mitigation planning efforts.	
IDOC Earthquake Response and Preparedness Plan	IDOC	Response plan	This plan identifies specific correctional institutions within the State of Illinois that are located near major known fault zones. IDOC has created institution specific plans that assess proper preparation to establish communication links, to provide rapid response, to provide quick assessment of damages, and to provide security to all affected	The 2017 Interim Report released by the National Institute of Building Sciences (NIBS) demonstrates that investing in hazard mitigation measures to exceed select requirements of the 2015 International Codes (I-Codes), the model building codes	2017

			institutions following a significant earthquake.	developed by the International Code Council (ICC), can save the nation $4 for every $1 spent.	
State Threat Hazard Identification Risk Assessment	IEMA-OHS	Risk assessment	The State of Illinois completed a FEMA approved Statewide Threat Hazard Identification Risk Assessment (THIRA) that was consistent with the CPG-201 and expanded on nationally accepted emergency management standards, which have long required using risk assessments, such as HIRAs, as the basis for planning across the mission areas.	The continuous cycle of assessing the State's capabilities, plans, and programs while incorporating these results into future THIRAs will allow the State to mitigate the impact to potential identified risks, while providing the means to educate and update individuals, families, businesses, organizations, community leaders, and senior officials on the risks facing a community in an effort to provide an avenue for building required capabilities and creating a secure and resilient community.	
Fire Stopper	ARC	Education	The program offers simple steps that individuals can take to protect their home and family from fire. provides education and hands-on community fire prevention activities to make the communities more resilient by conducting in-home visits and safety fairs.	The ARC reaches thousands of households annually and conduct hundreds of household visits to mitigate these house fires.	

Keep Cool/Keep Warm Illinois	IDPH and DCEO	Education and financial resource accessibility	Through the Keep Cool Illinois and Keep Warm Illinois websites and hotlines, IDPH and DCEO have made available tips for keeping temperatures comfortable, guidelines for safe and responsible outdoor activities during extreme temperature events, and resources for assisting individuals with utility bills and finding emergency cooling or heating centers. The Department of Commerce and Economic Opportunity, through Low Income Home Energy Assistance Program (LIHEAP), continues to provide financial support to individuals requiring assistance with heating and cooling bills.		
Southern Illinois University (SIU) PDM Planning Grant	Southern Illinois University (SIU) PDM Planning Grant	Risk assessment	These plans use a variety of geographic information system (GIS)modeling programs to accurately portray the risks to the geographic area. The data collected during the planning process has given each participating jurisdiction a wealth of information that will continue to help them prepare for, respond to, and mitigate the effects of natural disasters. These plans use a variety of geographic information system (GIS)modeling programs to accurately portray the risks to the geographic area.	The plans developed from this PDM Grant continue to serve these southern counties and have led to several mitigation projects and applications, with one of the most significant being the approval of an application for the acquisition of 167 properties and 4 structure elevations in Alexander County.	2013-2017
Public Outreach Campaign	IEMA-OHS	Awareness campaign	The public awareness campaigns have expanded over the past three years with the addition of monthly campaigns dealing with hazard specific mitigation and preparedness for the public.		

City of Rockford Buy-Out	City of Rockford	Property acquisition	The City of Rockford was experiencing frequent urban residential flooding because of decades of shifting land use and development. The City of Rockford applied for and received $2,603,088in Hazard Mitigation Grant Program federal funds that were utilized to purchase 38 homes in the Keith Creek floodplain.	The benefit/cost for this project was 1.287, using the same methodology as the approved FEMA 1681 project. The 38 homes were demolished with deed restrictions applied to the land.	2016
Lake County Stormwater Management Program	Lake County	Standards	he Lake County Watershed regulations established minimum countywide standards for stormwater management, including floodplains, detention, soil erosion/sediment control, water quality treatment, and wetlands.		1990-
City of Streator Stream Bank Stabilization and Property Acquisition		Property acquisition	The City of Streator was provided Hazard Mitigation Grant Program federal funds in the amount of $565,600 to be used toward steam bank stabilization work and property acquisition because of a 2007 landside. The stabilization work entailed removal of material from the Vermilion River, re-grading of the current riverbank and installation of Gabion baskets to provide protection from future erosion. One structure was successfully purchased. Unfortunately, due to environmental concerns, the second structure could not be purchased until clean-up was completed. The project was closed in May 2017.		2017

Creal Springs School District Code Plus Construction		Structure Construction	Upon utilizing $433,989 in federal funds under the Hazard Mitigation Grant Program, the project included seismic enhancements to the structural, architectural, mechanical, electrical, fire protection, hydronic, and plumbing component of the school as well as the construction of a safe room and addition of an emergency generator.		
Rend Lake Water Bypass	Rend Lake Conservancy District	Structure Construction	Rend Lake Conservancy District received a grant of $1,864,680 toward a total cost of $2,362,005 to build a water bypass. The lake is located in between the New Madrid and Wabash Valley fault lines and is very vulnerable to an earthquake. If the line were to be damaged, the quickest solution would be to build a bypass; trying to access and repair the pipe at the bottom of the lake would take even longer leaving 50,000 people without water.	This project built a bypass to the existing water pipe to provide redundancy in case of an earthquake or another type of break. If the bypass would suffer from a break because it is not under a lake, the repairs could be made within a day.	
Carol Stream Property Acquisitions	The City of Carol Stream	Property acquisition	Four homes were purchased with federal funds in the amount of $758,000 as they were classified as repetitive loss properties on the Klein Creek		2016
Machesney Park Acquisitions		Property acquisition	Machesney Park was awarded $2.5 million dollars from the HMGP program and acquired 26 flood-prone structures on the Rock River and converted the property into open space.		2016

Keithsburg Acquisitions		Property acquisition	Keithsburg was one of the first major buyouts in Illinois after the 1993 flood. The city also received a grant from FEMA to relocate Central School.	If the school were still located in its old location, it would have received several million dollars in damages and several hundred students would have been displaced. During the 2013 flood to avoid future damages, City Zoning insisted on elevating the back-up generator. Without this proactive measure, the generator would have been lost and the damages would have been in the millions. Total loss avoided - $7,575,000	1993-2014
Jersey County Army Corps Sites		Structure demolition	Through the concerted efforts of the State Floodplain Manager the local floodplain manager, the 230 structures were declared substantially damaged and were either torn down or elevated.	At this point virtually all these repetitive loss properties have been mitigated	
Ottawa Acquisitions	IDNR/OCW, IEMA-OHS	Property acquisition	The City of Ottawa has a strong program for buying structures that have been flood damaged which has significantly reduced the community's exposure to this natural hazard. A significant number of structures were purchased after the 1996 flood, with the first purchase recorded in 1997. Additional structure buyouts occurred between 1998 and 2001, and again in 2012 and 2013.	Cumulative losses avoided between 1998 and 2018 are estimated to be over $9.5 million, whereas the acquisition cost was just over $4.8 million. The total losses avoided between 1998 and 2018 based solely on physical damages are $9,679,000 divided by $4,938,000= Return on Investment (ROI) of 196%. Total loss avoided - $20,898,000	2013

Tunnel and ReservoirPlan	MWRD	Structure Construction	The Tunnel and Reservoir Plan (TARP), also known as "Deep Tunnel, "is a system of deep, large diameter tunnels and vast reservoirs designed to reduce flooding, improve water quality in Chicago area waterways and protect Lake Michigan from pollution caused by combined sewer overflows (CSO).		
Thornton Composite Reservoir	MWRD	Structure Construction	The first stage, a temporary flood control reservoir called the Thornton Transitional Reservoir, was completed in March 2003 in the West Lobe of the Thornton Quarry. The Thornton Composite Reservoir provides 7.9 billion gallons of storage. In accordance with an agreement executed in 1998, a local mining company completed the Thornton Composite Reservoir excavation in 2013.	This stored water is pumped from TARP to water reclamation plants (WRPs) after the storm to be cleaned before being released to waterways. The four TARP tunnel systems are designed to flow to three huge reservoirs, and the system will have a capacity of 17.5 billion gallons when completed	
McCook Reservoir	MWRD	Structure Construction	The USACE is responsible for designing and constructing the reservoir features, and the MWRD is responsible for providing the massive hole for the reservoir. The reservoir is planned to be completed in two stages.	This reservoir provides overbank flood relief for nine communities and has captured 37 billion gallons of flood water during 58 fill events. The Thornton Composite Reservoir was estimated to provide $40 million per year in benefits to 556,000 people in 14 communities. Since it became operational, the Thornton Composite Reservoir has captured more than 17 billion gallons of combined sewage.	Stage 1- 2017, Stage 2 - 2029
Stormwater Management Phase 1 Projects	MWRD	Structure Construction	Capital improvement projects that are identified in the Detailed Watershed Plans and designed to address overbank flooding and streambank	The McCook Reservoir will provide $143million per year in benefits to 3.1 million people in 37 communities.	

			erosion issues along regional waterways.		
Heritage Park Flood Control Facility	MWRD	Structure Construction	Floodplain storage for the U.S. Army Corps' Levee 37 project on the Des Plaines River that protects more than 600 homes and businesses in Mount Prospect and Prospect Heights. The end product is six stormwater storage areas with a total capacity of more than 49 million gallons, as well as recreational improvements to Heritage Park, including new walkways, a pavilion, a band shell, soccer fields and a baseball complex.		2016
Elmwood Park Floodwall and Pump Station	MWRD	Structure Construction	The Elmwood Park Floodwall and Pump Station project was a partnership with the Village of Elmwood Park that included an equalization basin, a pump station, a force main, and a floodwall. The equalization basin will take runoff from portions of northwest and southwest Elmwood Park and temporarily store it before a new pump station directs it to the Des Plaines River. The equalization basin and floodwall, averaging 3.5 feet in height, will help address flooding by preventing the Des Plaines River floodwaters from entering Elmwood Park.		2015
Streambank Stabilization Project for I&M Canal Tributary D	MWRD	Structure Construction	The project addressed public safety risks by protecting infrastructure and structures from possible failure due to active streambank erosion and protects more than 20 homes and businesses.		2015

Streambank Stabilization Project for Higgins Creek and Stream bank Stabilization Project for McDonald Creek	MWRD	Structure Construction	The project involved the construction of three streambank stabilization projects, which are located in the Lower Des Plaines River Watershed and addressed critical erosion to buildings, roads and utilities in the area.		2015
Flood Control Project for Upper Salt Creek	MWRD	Structure Construction	The Flood Control Project for Upper Salt Creek in Palatine reduces flood damage. The project included approximately 1,100 linear feet of storm sewer, an engineered berm and backflow preventers.	The project alleviates public health and safety concerns by reducing overbank flooding to approximately 18 structures within Palatine.	2016
Flood Control/Streambank Stabilization Project on Tinley Creek in Crestwood, IL (TICR-3, TICR-SE1)	MWRD	Structure Construction	The Flood Control/Streambank Stabilization Project on Tinley Creek in Crestwood increased the conveyance capacity of Tinley Creek, downstream of Central Avenue, and stabilized approximately 1,000 linear feet of Tinley Creek, downstream of the conveyance improvements.	This project provides protection from the 100-year flood event for approximately 173 structures, and it protects an existing bike path, a commercial building, pedestrian bridges, and potable water infrastructure from failure due to erosion of the streambank.	2015-Current
Albany Park Diversion Tunnel (MS-07)	MWRD	Structure Construction	The Chicago Department of Transportation constructed a large-diameter tunnel that would divert a portion of flood flows in the North Branch of the Chicago River from an inlet structure near Foster Avenue and Springfield Avenue to an outlet on the North Shore Channel near Foster Avenue and Virginia Avenue.	The stormwater diversion tunnel addresses public safety concerns and reduce overbank flooding affecting 336 structures in Albany Park.	2018
Streambank Stabilization Project on Tinley Creek (TICR-5)	MWRD	Structure Construction	The Streambank Stabilization Project on Tinley Creek in Orland Hills protects against erosion along a segment of Tinley Creek and reduces the risk of overtopping of the Lake Lorin outlet structure.	The project provides naturalized channel stabilization and flood control on Tinley Creek, from Lake Lorin to 88th.	2017

Streambank Stabilization Project for the West Fork of the North Branch of the Chicago River (WF-03)	MWRD	Structure Construction	The Streambank Stabilization Project for the West Fork of the North Branch of the Chicago River in Northbrook addresses public safety and protects two residential property structures and utilities in imminent danger of failure due to active streambank erosion.	The project stabilized the eastern streambank along the West Fork of the North Branch of the Chicago River through construction of a 155-foot gravity retaining wall.	2017
Glenwood 3 and 6, Glenwood Relief Sewer	MWRD	Structure Construction	The Glenwood Flood Control Relief Sewer Project constructed a relief sewer to Thorn Creek and raise the 187th Street roadway.	The project alleviated residential and roadway flooding around 187th Street and Main Street at Thorn Creek.	2016
Flood Control Project on the East Branch Cherry Creek in Flossmoor, IL (CHEB-G3)	MWRD	Structure Construction	The Flood Control Project on the East Branch Cherry Creek in Flossmoor included the construction of an overflow channel on Homewood-Flossmoor High School's property, west of Governors Highway. It also replaced two collapsed culverts and created shelf storage on Cherry Creek.	The project provides flood relief for 16 residential structures.	2018
Centerpoint Preserve Riparian Area Restoration (ADCR-7B)	MWRD	Structure Construction	The Centerpoint Preserve Riparian Area Restoration Project stabilized Addison Creek between Wolf Road and Palmer Avenue in Northlake.	The project alleviates public safety risks by protecting infrastructure from the danger of failure due to active streambank erosion	2018
Glenview 1	MWRD	Structure Construction	project included the installation of two backflow preventers on storm sewer pipes, which lead to the river; two pumping stations with backup generators and new storm sewer piping.	The East of Harms Storm Relief Project benefits an estimated 1,100 single-family homes, indirectly, and 650 homes, directly, east of Harms Road in Glenview that have been stricken by repeated flooding due to the low-lying location in relation to the main stem (middle fork) of the North Branch of the Chicago River, just west of the	2015

				Cook County Forest Preserve.	
Westchester 1	MWRD	Structure Construction	Initially placed into service in 1977, the Mayfair Reservoir was designed to accommodate a 100-year storm, but due to the unexpected frequency of these devastating storms, the MWRD chose to designate its property for the expansion and provide additional sewer improvements.	The Mayfair Reservoir Expansion Project in Westchester provides direct flood reduction benefits to an estimated 60 residential structures and reduces storm-related impacts for approximately 120 homeowners	2015
Des Plaines 12	MWRD	Structure Construction	The Des Plaines Storm Sewer Relief Project along Fargo Avenue, Jarvis Avenue and Des Plaines River Road consists of new 36-inch to 60-inch storm sewers that was connected to an existing outfall on the Des Plaines River.	The project provides direct flood reduction benefits to an estimated 56 residential structures in the project area.	2015
Winnetka 4	MWRD	Structure Construction	The Winnetka Storm Sewers and Berms Project consisted of capacity improvements to storm sewers contributing to an existing detention pond with excess capacity for 100-year protection. The project included collecting runoff from low areas that are subject to frequent flooding	The project provides direct flood reduction benefits to an estimated 27 residential structures in the project area.	2015

Hoffman Estates 1	MWRD	Structure Construction	The Jones Road/Highland Boulevard Storm Sewer Improvements Project in Hoffman Estates included a new 48-inch storm sewer, asphalt pavement patching and resurfacing, new curb and gutter, sidewalk and driveway removal and replacement, utility structure adjustments, water main adjustment, restoration, and related improvements.	The new storm sewers provide direct flood reduction benefits to an estimated seven residential structures and reduce storm related access impacts for approximately 50 homeowners in the project area.	2015
Lansing 1	MWRD	Structure Construction	The project addressed local flooding caused by the Stony Island ditch exceeding its banks in the vicinity of 181st Street and Stony Island Avenue, where flooding impacted area roadways and the Lansing Manor Subdivision.	The Village of Lansing's design provides flood reduction benefits to an estimated 67 residential structures.	2016
Northbrook 2 and 5	MWRD	Structure Construction	The Shermer Road overflow sewer constructed approximately 1,800 linear feet of 72-inch storm relief sewer that extends from the intersection of Shermer Road and Woodlawn Road and outfall to the West Fork.	The project directly benefits 22 properties and 17 structures up to the 50-year frequency storm event and indirectly benefits other properties and structures, as it is interconnected.	2016
CCDTH 2	MWRD	Structure Construction	The Cook County Department of Transportation and Highways installed approximately 1900 feet of new 36" to 60" new storm sewer in Roberts Road to provide in line detention and future corridor improvements.	This project provides direct flood reduction benefits to an estimated 30 commercial and residential structures and reduces storm related access impacts along the roadway.	2016
Franklin Park 5	MWRD	Structure Construction	Channel improvements on Silver Creek occurred from Riverside Drive to Scott Street and included the daylighting of several hundred feed of encapsulated stream channel, four new culverts, water main relocation, sanitary sewer	The Silver Creek Channel Improvements Project alleviates the flooding of approximately 76 structures in Franklin Park, where numerous structures along the creek have flooded	2016

			relocation and storm sewer relocation	during past extreme storms.	
Willow Springs 1	MWRD	Structure Construction	The Willow Springs Stormwater Improvements Project provides a new storm sewer and ditch and outfall improvements to alleviate flooding in the Ravine Avenue Watershed.	These improvements provide direct flood reduction benefits to 20 residential structures in the project area.	2015
Niles 1	MWRD	Structure Construction	The Cleveland Street Relief Sewer Construction Project in Niles provides capacity to convey surface water away from these areas into the North Branch of the Chicago River in order to minimize surface water flood damages and reduce the amount of surface water discharging to the existing combined sewer system in this area.	The project consists of approximately 10,600 feet of new storm sewer to provide relief to roughly 140 residential structures from surface water flooding	2017
Brookfield 1	MWRD	Structure Construction	The Prairie/Washington Pumping Station Project in Brookfield installed a new pumping station and back-up generator near the Washington Avenue/Forest Avenue intersection,		2016
Elk Grove Village 1	MWRD	Structure Construction	The modification consisted of replacing a fixed concrete barrier with a pair of hinged gates. The gates are used to regulate water levels in the reservoir before and during storm events that affect Salt Creek levels, minimizing the impacts of flooding on nearby roadways and properties	flood relief to over 1-million people living and working along the Salt Creek watershed	2016

IDOT 11	MWRD	Structure Construction	The MWRD/IDOT 11 Project provides drainage improvements and storm sewer repair along Illinois Route 62 from west of Arbor Drive to east of magnolia Drive. The project also provides a new 2 acre-feet detention in the infield area of Illinois Route 53 northbound ramp to Illinois 62.	The overall project reduces traffic impacts related to flooding at this location.	2016
Lemont 1	MWRD	Structure Construction	The construction and culvert improvements addressed flooding during heavy rains in industrial areas due to the previous culverts being undersized.	public benefit of reducing flooding in the general area.	2017
Glencoe 4 & 6	MWRD	Structure Construction	The Glencoe Stormwater Projects includes upgrades at Terrace Court and Skokie Ridge drainage basins that increased the capacity of its storm sewers at critical locations to reduce the frequency of flooding for homes and roadways during moderate and heavy rainfall.		2017

Flood Control Project in the Washington St. Area of Blue Island, IL (Blue Island 1)	MWRD	Structure Construction	Installed six rain gardens and two permeable pavement parking lots in the Washington St. area of Blue Island to resolve frequent flooding in low lying area.		2015
Glenview Flood Prone Acquisition	MWRD	Property acquisition	The Village of Glenview purchased 17 flood prone homes along the West Fork to reduce the flood hazard risk in the community.		2017
Des Plaines Flood Prone Acquisition		Property acquisition	The City of Des Plaines is purchasing 13 flood prone homes along the Des Plaines River that will reduce the flood hazard risk in the community.		2016
Riverside Lawn Flood Prone Acquisition		Property acquisition	The Riverside Lawn Flood Prone Acquisition Project involves the acquisition of 39 flood prone properties along the Des Plaines River in unincorporated Cook County in Lyons Township.		2016
Des Plaines Flood Prone Acquisition		Property acquisition	The City of Des Plaines is purchasing 13 flood prone homes along the Des Plaines River that will reduce the flood hazard risk in the community.		2017
Northlake Flood Prone Acquisition		Property acquisition	MWRD is providing funding assistance to the village towards 7 flood prone homes along Addison Creek to reduce the flood hazard risk in the community.		2016
Blue Island		Structure Construction	As part of the Blue Island Green Infrastructure Project, the MWRD installed six rain gardens, two permeable parking lots and bioswales in flood prone areas bound by Western Avenue, 119th Street, Vincennes Avenue and 121st Street.	The project captures 150,809 gallons of stormwater per rain event and assists in mitigating flooding damages.	2015

Leland Elementary School, Morrill Math and Science Academy, Schmidt Elementary School and Grissom Elementary School		Structure Construction, Education	MWRD participated in the Space to Grow program to install green infrastructure technologies at playgrounds at four Chicago Public Schools, including Leland Elementary School	The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These four schools capture 731,004 gallons of stormwater per rain event.	2014
Orozco Community Academy and Willa Cather Elementary School		Structure Construction, Education	MWRD participated in the Space to Grow program to install green infrastructure technologies at playgrounds at two Chicago Public Schools, including Orozco Community Academy	The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These two schools capture 364,504 gallons of stormwater per rain event.	2015
Gunsaulus Scholastic Academy, Corkery Elementary School and Wadsworth Elementary School		Structure Construction, Education	MWRD has committed to continue to participate in the Space to Grow program transforming 30 more schools using green infrastructure technologies	The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These three schools capture388,648 gallons of stormwater per rain event.	
Space to Grow		Structure Construction, Education	Space to Grow transforms Chicago school yards into community spaces for physical activity, outdoor learning, environmental literacy and engagement with art, while addressing neighborhood flooding issues.	The projects will reduce flooding, reduce the load on the combined sewer system, and educate students and neighbors about green infrastructure techniques and purpose.	2016
Evanston Civic Center Parking Lot		Structure Construction	The civic center parking lot features three different porous pavement materials that will be evaluated to determine for stormwater infiltration and durability, and the impact of snow and ice removal.	The project provides 167,278 gallons of retention.	2015
Wescott Park Stormwater Reuse		Structure Construction	The Wescott Park Stormwater Reuse Project in Northbrook called for the construction of a 7.5-million-gallon stormwater	The project provides 162,926 gallons of retention.	2016

			storage vault under Wescott Park.		
Wilmette Green Alleys		Structure Construction	The Wilmette Green Alleys Project included the installation of five permeable alleys instead of conventional asphalt to reduce flooding and reduce flow to sewer system	The project provides 74,667 gallons of retention.	2015
Kenilworth		Structure Construction	The Kenilworth Green Infrastructure Project consisted of installing permeable pavement in streets in flood prone areas of Kenilworth	The Village identified 105 homes that directly benefit from this project. This number does not include the significant number of structures downstream of the project that also receive a direct benefit because of reduced pressure on the system. The project provides 1,319,827 gallons of stormwater storage.	2016
Berwyn		Structure Construction	MWRD partnered with Berwyn to construct 20 green alleys and install permeable pavements to help alleviate localized flooding as well as reducing the flow of stormwater into the local combined sewer system.	This project captures 679,122 gallons of detention per rain event.	2017
Niles		Structure Construction, Education	The Niles Green Infrastructure Project included bioswale and permeable pavement parking lots.	This project reduces localized flooding, reduces the flow of stormwater into the local combines sewer system and provides educational and volunteer opportunities for the community. This project captures 53,811 gallons per rain event	2016

Skokie		Structure Construction, Education	The Skokie Green Infrastructure Project was a partnership between the MWRD and the Village to construct a 7,800-square-foot rain garden located at Devonshire Park and detention pond improvements at the Skokie police station.	This project captures 46,424 gallons per rain event.	2018
Parjana			MWRD is currently monitoring the park to determine if the technology is allowing to drain the fields after a rain event better than before. It promotes drainage and reduces runoff by inserting patters of long tubes into the ground.		2017
Egan Water Reclamation District Parking Lot			The MWRD replaced an old parking lot at the Egan Water Reclamation Plant in Schaumburg with anew permeable parking lot with a bioretention area.	This project captures 360,855 gallons per rain event.	2017

ILLINOIS MITIGATION PROJECTS

A History of Success

MITIGATION SUCCESS STORIES IN ILLINOIS

Mitigation efforts have been underway in Illinois for a very long time. As the science and research base improves, new weather predictions and technologies emerge. This provides the opportunity to develop and implement new mitigation ideas and techniques become available.

The following narratives provide highlights of some of the successful mitigation projects or efforts that have occurred within the State of Illinois in the last 20 years. These mitigation actions are vital in the success of reducing or eliminating the impacts of the hazards that affect the State of Illinois and its population.

The projects below are listed by type of project, until the final section, which highlights the wide range of mitigation projects completed by the Metropolitan Water Reclamation District of Greater Chicago. This section is not intended to be a comprehensive list, but rather a sampling of the scope and breadth of mitigation successes in Illinois.

Structural Mitigation Projects

City of Rockford Buy-Out The City of Rockford was experiencing frequent urban residential flooding as a result of decades of shifting land use and development. Ultimately it became clear that a comprehensive flood mitigation plan was needed, which included the acquisition and demolition of the most flood prone structures and major upgrades to drainage systems in the affected areas. The City of Rockford applied for and received $2,603,088 in Hazard Mitigation Grant Program federal funds that were utilized to purchase 38 homes in the Keith Creek floodplain. The project was successfully closed in January 2016. The benefit/cost for this project was 1.287, using the same methodology as the approved FEMA 1681 project. The 38 homes were demolished with deed restrictions applied to the land.

City of Streator Stream Bank Stabilization and Property Acquisition The City of Streator was provided Hazard Mitigation Grant Program federal funds in the amount of $565,600 to be used toward steam bank stabilization work and property acquisition as a result of a 2007 landside. A portion of the Vermilion Riverbank collapsed causing a massive landslide. The landslide affected two buildings in Streator and caused fear of future landslides. The stabilization work entailed removal of material from the Vermilion River, re-grading of the current riverbank and installation of Gabion baskets to provide protection from future erosion. One structure was successfully purchased. Unfortunately, due to environmental concerns, the second structure could not be purchased until clean-up was completed. The project was closed in May 2017.

Creal Springs School District Code Plus Construction The Marion Community Unit School District No. 2 completed an enhancement of its Pre-Kindergarten through 8th Grade school near the community of Creal Springs utilizing $433,989 in federal funds under the Hazard Mitigation Grant Program. The project included seismic enhancements to the structural, architectural, mechanical, electrical, fire protection, hydronic, and plumbing component of the school as well as the construction of a safe room and addition of an emergency generator. Throughout the school, seismic steel frame columns and beams were installed. The acoustic panel ceilings included addition of galvanized steel support channels and hangers sized and suited for seismic sizing. The electrical system was upgraded to include seismic connections for lights and conduits that included inertia bases, conduit transverse bracing, conduit longitudinal bracing, and seismic fixture clips. The fire protection and hydronic system upgrades included seismic support and flexible connections for piping as well as flexible connections at the fire protection entrance. Additionally, the hydronic system was upgraded to include seismic support and flexible connections for water piping, a flexible connection at the water entrance, and seismic bracing form plumbing equipment.

Rend Lake Water Bypass Rend Lake Conservancy District received a grant of $1,864,680 toward a total cost of $2,362,005 to build a water bypass. The current water pipe serves the City of Mt. Vernon and several smaller jurisdictions, a total of more than 50,000 people. When Rend Lake was created an error in design allowed the lake to expand past the originally designed location. This resulted in the water pipe being submerged under the lake. The lake is located in between the New Madrid and Wabash Valley fault lines and is very vulnerable to an earthquake. If the line was to be damaged, the quickest solution would be to build a bypass; trying to access and repair the pipe at the bottom of the lake would take even longer. Until the post-earthquake bypass would be built, the 50,000 customers including several major employers and hospitals would be without water. This project built a bypass to the existing water pipe to provide redundancy in case of an earthquake or another type of break. If the bypass would suffer from a break, because it is not under a lake, the repairs could be made within a day.

Carol Stream Property Acquisitions The City of Carol Stream applied to IEMA for HMGP mitigation funds to acquire four properties that were classified as repetitive loss properties on the Klein Creek. Four homes were purchased with federal funds in the amount of $758,000. The homes were demolished with deed restrictions applied to the land and the project was closed in May 2016.

Machesney Park Acquisitions Machesney Park was awarded $2.5 million ~~dollars~~ from the HMGP program and acquired 26 flood-prone structures on the Rock River, and converted the property into open space. Twenty-six homes were demolished with deed restrictions applied to the land. The Village had over 90 homeowners that requested buyouts immediately following a flood event. The project was successfully closed in May 2016.

Keithsburg Acquisitions Keithsburg was one of the first major buyouts in Illinois after the 1993 flood. Federal funds purchased 111 properties for just over $2 million. In the early 2000s, the City approached IEMA about re-using the acquired properties to build a new manufacturing plant. They were turned down. In 2008 at Keithsburg, the Mississippi River exceeded its previous record in 1993 and there were 111 fewer properties to be impacted. The City also received a grant from FEMA to relocate Central School. If the school was still located in its old location, it would have received several million dollars in damages and several hundred students would have been displaced. Additionally, the City rebuilt its sewer plant five years ago. During the 2013 flood to avoid future damages, City Zoning insisted on elevating the back-up generator. Without this proactive measure, the generator would have been lost and the damages would have been in the millions.

The Illinois Department of Commerce and Economic Opportunity (DCEO) provided funds for buyouts after the 2008 flood, with residents receiving payouts in 2012 through 2014. Losses are estimated by calculating percent damage to each structure based on the depth of flooding. That damage is then estimated in dollars. Two different methods were used to estimate the value of the structures. One option used is the RSMeans construction cost value per square foot; the other method uses pre-flood appraised values of the structures. The return on mitigation investment is calculated as the Total Losses Avoided/Project Investment * 100 = % Return on Investment (ROI). The result is shown in the table below in 2018 U.S. dollars.
City of Keithsburg, IL

Cost Value	Total Losses Avoided	Project Investment	ROI
RSMeans	$7,575,000	$4,640,000	163%
Appraised	$1,773,000	$4,640,000	38%

(Source: City of Keithsburg, Illinois: A Case Study - Prepared by the Illinois State Water Survey May 2018 - Summary of the study included in Appendix A)

Ottawa Acquisitions The City of Ottawa has a strong program for buying structures that have been flood damaged which has significantly reduced the community's exposure to this natural hazard. A significant number of structures were purchased after the 1996 flood, with the first purchase recorded in 1997. Additional structure buyouts occurred between 1998 and 2001, and again in 2012 and 2013. Funding for these buyouts was provided through grant programs from multiple sources, including the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR), the Illinois Emergency Management Agency (IEMA managed funds from FEMA) and, from the City of Ottawa itself. Cumulative losses avoided between 1998 and 2018 are estimated to be over $9.5 million, whereas the acquisition cost was just over $4.8 million. Some of these structures would have flooded repeatedly. Losses are estimated by calculating percent damage to each structure based on the depth of flooding. That damage is then estimated in dollars. Two different methods were used to estimate the value of the structures. One option used is the RSMeans construction cost value per square foot; the other method uses pre-flood appraised values of the structures.

The return on mitigation investment can be calculated as the Total Losses Avoided/Project Investment * 100 = % Return on Investment. The total losses avoided between 1998 and 2018 based solely on physical damages are $9,679,000 divided by $4,938,000 = Return on Investment (ROI) of 196%. The result is shown in the table below in 2018 U.S. Dollars.

City of Ottawa, IL

Cost Value	Total Losses Avoided	Project Investment	ROI
RS Means	$20,898,000	$4,938,000	423%
Appraised	$9,679,000	$4,938,000	196%

(Source: City of Ottawa, Illinois: A Case Study - Prepared by the Illinois State Water Survey May 2018 - Summary of the study included in Appendix A)

Jersey County Army Corps Sites The U.S. Army Corps of Engineers controls land on the river side of levees and leases sites to private individuals to build structures on them. These structures are extremely vulnerable because of their location and there has always been an issue in enforcing floodplain regulations on the property. The Army Corps said that home owners cannot purchase flood insurance, but that it was FEMA's job to enforce the rule. FEMA disagreed saying the Army Corps had to enforce it. Local jurisdictions did not think it was their responsibility to enforce the National Flood Insurance Program (NFIP) rules because it was Army Corps land. As a result, there were more than 230 structures on Army Corps land that were listed on the State's rep loss list. This was almost 90% of the rep loss properties in the state and the average structure had made six NFIP claims. About two thirds of these properties were located in Jersey County.

The State worked toward a solution for more than 15 years. Attempts to purchase the properties were ruled ineligible because they were on federally-owned land. Finally, through the concerted efforts of the State Floodplain Manager the local floodplain manager, the structures were declared substantially damaged and were either torn down or elevated. At this point virtually all of these repetitive loss properties have been mitigated

Bull Creek Mitigation and Ravine Slope Stabilization, Lake County Severe erosion was occurring in the Bull Creek Bluff/Ravine System near Marguerite Lane. A partnership between Lake County Stormwater Management Commission, the Village of Beach Park, and IDOT received 2017 PDM funding to mitigate the issue. By July of 2021, the completed project has allowed vegetation to emerge at the bottom of the ravine, completing the project. Funds were awarded in 2017 and the Project was completed in June of 2021. Construction Cost: $1,235,850.32.

Planning Projects

Southern Illinois University (SIU) PDM Planning Grant A Pre-Disaster Mitigation Grant totaling nearly $600,000 was awarded to Southern Illinois University in the development of a Multi-Jurisdictional Hazard Mitigation Plan for 21 counties between 2013 and 2017. These plans use a variety of geographic information system (GIS) modeling programs to accurately portray the risks to the geographic area. The data collected during the planning process has given each participating jurisdiction a wealth of information that will continue to help them prepare for, respond to, and mitigate the effects of natural disasters. The plans developed from this PDM Grant continue to serve these southern counties and have led to a number of mitigation projects and applications, with one of the most significant being the approval of an application for the acquisition of 167 properties and 4 structure elevations in Alexander County.

Lake County Stormwater Management Program The first County Comprehensive Stormwater Management Plan was adopted in 1990. The Lake County Stormwater Management Commission (SMC) also developed a number of watershed-based plans for four major watersheds in the county. These detailed plans have incorporated a variety zoning ordinances, building codes and watershed regulations to provide successful mitigation efforts. The Lake County Watershed regulations established minimum countywide standards for stormwater management, including floodplains, detention, soil erosion/sediment control, water quality treatment, and wetlands. A number of municipalities in Lake County have incorporated floodplain development restrictions into their zoning ordinances.

Illinois Drought Preparedness and Response Plan (ISWS) Adopted by the State Water Plan Task Force (SWPTF), the goal of Illinois' Drought Preparedness and Response Plan is to assist community and state officials and the public with information and tools that promote better decision-making in water supply planning and reduce drought-related impacts, water competition, and conflicts of use. Drought is a common natural phenomenon that can lead to a natural disaster. There are still public health concerns with drought, primarily associated with water quality and proper disinfection as well as the effects of prolonged heat waves that commonly occur during severe drought periods. There are also serious economic impacts of drought with damages to crops or damages resulting from an interruption in available water supply. Every drought is different in its intensity, duration, timing, and impacts.

IDOC Earthquake Response and Preparedness Plan (IDOC) This plan identifies specific correctional institutions within the State of Illinois that are located near major known fault zones. IDOC has created institution specific plans that assess proper preparation to establish communication links, to provide rapid response, to provide quick assessment of damages, and to provide security to all affected institutions following a significant earthquake. These plans have been developed to limit the impact of an earthquake on those housed and work in these facilities. The 2017 Interim Report released by the National Institute of Building Sciences (NIBS) demonstrates that investing in hazard mitigation measures to exceed select requirements of the 2015 International Codes (I-Codes), the model building codes developed by the International Code Council (ICC), can save the nation $4 for every $1 spent. (Source: https://content.govdelivery.com/accounts/USDHSFEMA/bulletins/1dc5fb1

Floodplain Mitigation Partnership Between IEMA and IDNR With flooding causing the greatest financial impacts within the State, it is important to continually attempt to mitigate this hazard and limit these costly impacts. The State of Illinois flood mitigation efforts have and continue to be very proactive and successful. IEMA, with the cooperation of the Illinois Department of Natural Resources (IDNR), has been involved with the mitigation of approximately 4200-4500 structures and parcels of land since 1993 through the following efforts:

A. Property Acquisition and Structure Demolition – The voluntary acquisition of an existing at-risk structure and, typically, the underlying land, and conversion of the land to open space through the demolition of the structure. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions.

B. Property Acquisition and Structure Relocation – The voluntary physical relocation of an existing structure to an area outside of a hazard-prone area, such as the Special Flood Hazard Area (SFHA) or a regulatory erosion zone and, typically, the acquisition of the underlying land. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions.

C. Structure Elevation – Physically raising an existing structure to the Base Flood Elevation (BFE) or higher if required by FEMA or local ordinance. Structure elevation may be achieved through a variety of methods, including elevating on continuous foundation walls; elevating on open foundations, such as piles, piers, posts, or columns; and elevating on fill. Foundations must be designed to properly address all loads and be appropriately connected to the floor structure above, and utilities must be properly elevated as well. These flood mitigation efforts continue to grow in success with the new addition of the Department of Commerce and Economic Opportunity as a mitigation partner. The success of these efforts is seen with the continual decline of the State's repetitive flood insurance claims. In 1995, Illinois was ranked #5 in the nation for repetitive flood insurance claims. In 2017, Illinois had dropped to #12 in the nation.

Educational/Informational Efforts

Fire Stopper (ARC) One of the major functions carried out by the American Red Cross is assisting disaster victims recover after home fires. In an effort to mitigate some of these devastating fires, the ARC has developed the "Team Fire Stopper" program. The program offers simple steps that individuals can take to protect their home and family from fire. This program focuses on previous occurrences within communities that are disproportionately affected by fires, and provides education and hands-on community fire prevention activities to make the communities more resilient by conducting in-home visits and safety fairs. The ARC reaches thousands of households annually and conduct hundreds of household visits to mitigate these house fires.

Keep Cool/Keep Warm Illinois (IDPH and DCEO) The Illinois Department of Public Health has launched outreach campaigns intended to help residents safely weather severe temperatures. Through the Keep Cool Illinois and Keep Warm Illinois websites and hotlines, IDPH and DCEO have made available tips for keeping temperatures comfortable, guidelines for safe and responsible outdoor activities during extreme temperature events, and resources for assisting individuals with utility bills and finding emergency cooling or heating centers. IDPH continues to supply and update this material on an annual basis. The Department of Commerce and Economic Opportunity, through Low Income Home Energy Assistance Program (LIHEAP), continues to provide financial support to individuals requiring assistance with heating and cooling bills.

Public Outreach Campaign (IEMA) The public awareness campaigns have expanded over the past three years with the addition of monthly campaigns dealing with hazard specific mitigation and preparedness for the general public. These month long campaigns include: Hazard Mitigation, Earthquake Preparedness, Severe Weather Preparedness, Heat Safety and Winter Storm Preparedness. These monthly campaigns are run during the appropriate time periods associated with the specific hazard information on the "Ready Illinois" webpage. http://www.illinois.gov/ready/Preparedness/Pages/default.aspx

Illinois Flood Plain Summary The Illinois Department of Natural Resources Office of Water Resources created an Illinois Flood Plain Summary document to highlight the continuing floodplain efforts including flood mitigation for the State of Illinois. This document provides information for not only state agencies but the general public in regards to floodplain related mitigation efforts in Illinois and the success of its programs. Nearly 4.4 million acres, or 12%, of the entire land area of Illinois is mapped as floodplain. Illinois is ranked 5th in the nation for total number of participating communities in the National Flood Insurance Program.

Data Projects

HAZUS-MH Reports for Individual Counties (IEMA) Hazard Mitigation Grant Program funds were utilized to conduct a statewide Level 1.5 HAZUS analysis to develop a risk assessment focused on defining the potential flood exposure throughout the 102 counties in Illinois. This project identified critical and essential facilities located within the 100-year floodplain. A flood vulnerability report for each of the 102 Illinois counties was generated by Southern Illinois University, Carbondale. The report reviewed previous occurrences of flooding in the county, identified the FEMA mapped floodplains, summarized the flood-exposure modeling results and identified any critical facilities susceptible to flooding. Copies of these county reports were distributed to the individual counties to assist with their future mitigation planning efforts.

Illinois State Water Survey (ISWS) The Prairie Research Institute and the IDNR Office of Water Resources was funded with the conclusion of DCEO IKE funds for three projects including Light Detection and Ranging (LiDAR) Data Acquisition and Processing, Structural Flood Risk Assessment Studies, and a Rainfall Frequency Atlas. The Structure-Based Flood Risk Assessment analyzes flood risk for thousands of properties within Peoria County and the City of Ottawa in LaSalle County. Elevations for at-risk structures were collected by licensed surveyors and include detailed structural information about each property to help estimate flood risk. Elevation data was also collected for thousands of properties in Rock Island County. All of the information collected for this project will be hosted on a web application that with continued support will eventually include flood risk information for the entire State of Illinois. This information will allow for strategic prioritization of building acquisitions and identification appropriate mitigation options. The flood risk assessment provides information for mitigation planners at the local, county, and state level to identify the structures that are likely to experience the mostly costly damages due to flooding and plan accordingly, as well as helping owners to understand the importance and value of flood insurance.

State Threat Hazard Identification Risk Assessment (IEMA) The State of Illinois completed a FEMA approved Statewide Threat Hazard Identification Risk Assessment (THIRA) that was consistent with the CPG-201 and expanded on nationally accepted emergency management standards, which have long required using risk assessments, such as HIRAs, as the basis for planning across the mission areas. IEMA's Strategic Planning Cell reviewed the risk of hazards within the State of Illinois. During the THIRA process, numerous plans and studies were reviewed to ensure consistency and accuracy of the information provided in the document. Some of the plans reviewed included the State Natural Hazard Mitigation Plan, State Natural Hazard Risk Assessment, State Technological Hazards Mitigation Plan, State Human Caused Hazards Mitigation Plan, State Emergency Operation Plan, State Recovery Plan, State Mass Fatalities Plan, National Climate Data Center documents, past incident response situation reports and public assistance documents. The continuous cycle of assessing the State's capabilities, plans, and programs while incorporating these results into future THIRAs will allow the State to mitigate the impact to potential identified risks, while providing the means to educate and update individuals, families, businesses, organizations, community leaders, and senior officials on the risks facing a community in an effort to provide an avenue for building required capabilities and creating a secure and resilient community.

Incentive Programs

Illinois Department of Natural Resources/Office of Water Resources Matching Funds The Illinois Department of Natural Resources/Office of Water Resources (OWR) has a long history of flood mitigation. Starting in the 1970s, the OWR accomplished early flood mitigation buyouts in some of the state's most flood prone areas. Buyouts took place in Thebes, Kampsville, Peoria Heights, and Peoria County. In the subsequent years, dozens of floods have taken place at these mitigation project sites. The program has paid for itself many times over in loss avoidance. These early buyouts set the stage for later programs. After the 1993 flood, the OWR program was used largely as the local cost share match for FEMA's 75%/25% funding. The availability of state matching funds has made the FEMA program much more widely accepted by local communities. More recently, OWR has taken on larger projects (such as Alexander County) to make available "global match" funds to match FEMA mitigation funding.

Community Rating System The Community Rating System (CRS) is a voluntary program, which provides incentives in the form of premium discounts for communities that go above and beyond minimum floodplain management standards. The State of Illinois is very proud of the way communities have embrace the Community Rating System (CRS). Illinois leads the nation in participation for non-coastal states and is ranked 5th overall in the United States with 64 CRS communities. Illinois also has 13 communities that have achieved a Class 5 rating, resulting in a 25% reduction in flood insurance premiums. This distinction ranks Illinois 4th in the nation and 1st for non-coastal communities. Not only does Illinois have the largest number of CRS communities among inland states, the state is also a national leader when it comes to floodplain management. The citizens of Illinois will realize nearly $1.5 million in annual savings due to

CRS. Based strictly on Illinois' state regulations, every community in the state could achieve a 10% reduction in flood premiums simply by joining CRS. (Source: Lou Ann Patellaro – CRS Specialist 2017)

The Metropolitan Water Reclamation District of Greater Chicago (MWRD)

MWRD has provided several flood mitigation success stories. The following is a brief description of all the projects:

Tunnel and Reservoir Plan: The Tunnel and Reservoir Plan (TARP), also known as "Deep Tunnel," is a system of deep, large diameter tunnels and vast reservoirs designed to reduce flooding, improve water quality in Chicago area waterways and protect Lake Michigan from pollution caused by combined sewer overflows (CSO). TARP captures and stores combined stormwater and sewage that would otherwise overflow from sewers into waterways in rainy weather. This stored water is pumped from TARP to water reclamation plants (WRPs) after the storm to be cleaned before being released to waterways. The four TARP tunnel systems are designed to flow to three huge reservoirs, and the system will have a capacity of 17.5 billion gallons when completed.

Thornton Composite Reservoir: The Thornton Reservoir was constructed in two stages. The first stage, a temporary flood control reservoir called the Thornton Transitional Reservoir, was completed in March 2003 in the West Lobe of the Thornton Quarry. This reservoir provides overbank flood relief for nine communities, and has captured 37 billion gallons of flood water during 58 fill events. The second stage is a permanent combined NRCS/CUP reservoir, called the Thornton Composite Reservoir, constructed in the North Lobe of the Thornton Quarry. The Thornton Composite Reservoir provides 7.9 billion gallons of storage. In accordance with an agreement executed in 1998, a local mining company completed the Thornton Composite Reservoir excavation in 2013. Construction continued and the composite reservoir became operational at the end of 2015. The transitional reservoir in the West Lobe will continue to be used to hold Thorn Creek water during storms until the end of 2020, when the West Lobe will be returned to an active quarry. At that time, the Thorn Creek flood water will be diverted to the composite reservoir. The Thornton Composite Reservoir was estimated to provide $40 million per year in benefits to 556,000 people in 14 communities. Since it became operational, the Thornton Composite Reservoir has captured more than 17 billion gallons of combined sewage. Construction Cost: $418,000,000.

McCook Reservoir: The MWRD owns the land for the McCook Reservoir, which is being built within the Lawndale Avenue Solids Management Area (LASMA). An agreement was signed with the U.S. Army Corps Engineers (USACE) in 1999. The USACE is responsible for designing and constructing the reservoir features, and the MWRD is responsible for providing the massive hole for the reservoir. The reservoir is planned to be completed in two stages. The first stage provides 3.5 billion gallons of storage and was recently placed in operation. The second stage has been expanded to 6.5 billion gallons and replaces the previously planned third stage. The McCook Reservoir will provide $143 million per year in benefits to 3.1 million people in 37 communities. In October 2003, the MWRD signed an agreement with a local mining company to mine out the limestone to the limits of the McCook Reservoir. The MWRD completed several contracts to connect the quarry to the reservoir site and procure and construct required mining equipment to crush and convey the rock to the quarry for processing. Overburden removal was completed in 2015. Full production mining at the site began in March 2008 and will take approximately twenty years. Mining of Stage 1 was completed in 2016, and Stage 2 is approximately 20% complete. Stage 1 of McCook

Reservoir became operational at the end of 2017. Stage 2 is planned to become operational in 2029. Construction Cost: $1,030,000,000.

Stormwater Management Phase 1 Projects: Capital improvement projects that are identified in the Detailed Watershed Plans and designed to address overbank flooding and streambank erosion issues along regional waterways.

Heritage Park Flood Control Facility: The Heritage Park Flood Control Facility, a partnership between the MWRD, the Village of Wheeling and Wheeling Park District, will provide compensatory floodplain storage for the U.S. Army Corps' Levee 37 project on the Des Plaines River that protects more than 600 homes and businesses in Mount Prospect and Prospect Heights. It also provides Wheeling with increased stormwater detention at Heritage Park. The end product is six stormwater storage areas with a total capacity of more than 49 million gallons, as well as recreational improvements to Heritage Park, including new walkways, a pavilion, a band shell, soccer fields and a baseball complex. The project started in May 2012 and was completed in May 2016. Construction Cost: $29,475,000.

Elmwood Park Floodwall and Pump Station
The Elmwood Park Floodwall and Pump Station project was a partnership with the Village of Elmwood Park that included an equalization basin, a pump station, a force main, and a floodwall. The equalization basin will take runoff from portions of northwest and southwest Elmwood Park and temporarily store it before a new pump station directs it to the Des Plaines River. The equalization basin and floodwall, averaging 3.5 feet in height, will help address flooding by preventing the Des Plaines River floodwaters from entering Elmwood Park. Funds were awarded in June 2014 and the project was completed in June 2015. Construction Cost: $9,508,000.

Streambank Stabilization Project for I&M Canal Tributary D The Streambank Stabilization Project for the Illinois and Michigan Canal Tributary D in Willow Springs stabilized approximately 1,000 linear feet of the I&M Canal Tributary D, north of Archer Avenue and west of Poston Road. The project addressed public safety risks by protecting infrastructure and structures from possible failure due to active streambank erosion and protects more than 20 homes and businesses. A hybrid design of concrete armor units and native plantings were used to stabilize the eroded channel. Funds were awarded in October 2014 and the project was completed in October 2015. Construction Cost: $1,124,000.

Streambank Stabilization Project for Higgins Creek and Streambank Stabilization Project for McDonald Creek The Streambank Stabilization Project for Higgins Creek and McDonald Creek addressed critical erosion to buildings, roads and utilities in Des Plaines, Mount Prospect and part of unincorporated Cook County in Elk Grove Township. The project involved the construction of three streambank stabilization projects, which are located in the Lower Des Plaines River Watershed. The work was performed on Higgins Creek in Des Plaines, Higgins Creek in incorporated Elk Grove Township and McDonald Creek in Mount Prospect. Funds were awarded in October 2014 and the project was completed in November 2015. Construction Cost: $2,445,787.

Flood Control Project for Upper Salt Creek
The Flood Control Project for Upper Salt Creek in Palatine reduces flood damage by bypassing flow from an inundated area south of Dundee Road to an outfall into Upper Salt Creek, which is located south of Cherry Brook Village. The project included approximately 1,100 linear feet of storm sewer, an engineered berm and backflow preventers. The project alleviates public health and safety concerns by reducing

overbank flooding to approximately 18 structures within Palatine. Funds were awarded in September 2015 and the project was completed in September 2016. Construction Cost: $1,349,940.

Flood Control/Streambank Stabilization Project on Tinley Creek in Crestwood, IL (TICR- 3, TICR-SE1) The Flood Control/Streambank Stabilization Project on Tinley Creek in Crestwood increased the conveyance capacity of Tinley Creek, downstream of Central Avenue, and stabilized approximately 1,000 linear feet of Tinley Creek, downstream of the conveyance improvements. This project provides protection from the 100-year flood event for approximately 173 structures, and it protects an existing bike path, a commercial building, pedestrian bridges and potable water infrastructure from failure due to erosion of the streambank. Funds were awarded in September 2015. The project is still ongoing. Construction Cost: $7,222,220.

Albany Park Diversion Tunnel (MS-07) The Albany Park Diversion Tunnel Project along the North Branch of the Chicago River alleviates overland flooding in the Albany Park neighborhood on the Northwest Side of Chicago. The Chicago Department of Transportation constructed a large-diameter tunnel that would divert a portion of flood flows in the North Branch of the Chicago River from an inlet structure near Foster Avenue and Springfield Avenue to an outlet on the North Shore Channel near Foster Avenue and Virginia Avenue. The project included an inlet shaft with inlet facilities, approximately 5,800 feet of 18-foot diameter rock tunnel and outlet shaft with outlet facilities. The stormwater diversion tunnel addresses public safety concerns and reduce overbank flooding affecting 336 structures in Albany Park. Funds were awarded in April 2016 and project was completed in April 2018. Construction Cost: $62,585,320.

Streambank Stabilization Project on Tinley Creek (TICR-5)
The Streambank Stabilization Project on Tinley Creek in Orland Hills protects against erosion along a segment of Tinley Creek and reduces the risk of overtopping of the Lake Lorin outlet structure. The project provides naturalized channel stabilization and flood control on Tinley Creek, from Lake Lorin to 88^{th}. Funds were awarded in April 2016 and the project was completed in April 2017. Construction Cost: $664,000.

Streambank Stabilization Project for the West Fork of the North Branch of the Chicago River (WF-03)
The Streambank Stabilization Project for the West Fork of the North Branch of the Chicago River in Northbrook addresses public safety and protects two residential property structures and utilities in imminent danger of failure due to active streambank erosion. The project stabilized the eastern streambank along the West Fork of the North Branch of the Chicago River through construction of a 155-foot gravity retaining wall. Funds were awarded in April 2016 and the project was completed in April 2017. Construction Cost: $413,000.

Glenwood 3 and 6, Glenwood Relief Sewer
The Glenwood Flood Control Relief Sewer Project constructed a relief sewer to Thorn Creek and raise the 187th Street roadway. The project alleviated residential and roadway flooding in the area of 187th Street and Main Street at Thorn Creek. Funds were awarded in April 2016 and the project was completed in November 2016. Construction Cost: $1,589,734.

Flood Control Project on the East Branch Cherry Creek in Flossmoor, IL (CHEB-G3)
The Flood Control Project on the East Branch Cherry Creek in Flossmoor included the construction of an overflow channel on Homewood-Flossmoor High School's property, west of Governors Highway. It also replaced two collapsed culverts and created shelf storage on Cherry Creek. The project provides flood

relief for 16 residential structures. Funds were awarded in March 2017 and the project was completed in March 2018. Construction Cost: $3,304,500.

Centerpoint Preserve Riparian Area Restoration (ADCR-7B) The Centerpoint Preserve Riparian Area Restoration Project stabilized Addison Creek between Wolf Road and Palmer Avenue in Northlake. The project alleviates public safety risks by protecting infrastructure from the danger of failure due to active streambank erosion. Work also included habitat restoration. Funds were awarded in May 2017 and the project was completed in June 2018. Construction Cost: $3,813,871.

Glenview 1 The East of Harms Storm Relief Project benefits an estimated 1,100 single-family homes, indirectly, and 650 homes, directly, east of Harms Road in Glenview that have been stricken by repeated flooding due to the low-lying location in relation to the main stem (middle fork) of the North Branch of the Chicago River, just west of the Cook County Forest Preserve. To prevent the North Branch from backing into neighborhood storm sewers, the project included the installation of two backflow preventers on storm sewer pipes, which lead to the river; two pumping stations with backup generators and new storm sewer piping. One pump station was provided at the Glenview Road and Harms Road area to support the local sewer system, and the other pump station was installed at Cunliff Park. Additionally, new 84-inch storm sewers were constructed under Harms Road to provide for storm water conveyance and detention. The pump station construction also allowed the Glenview Park District to undertake improvements at Cunliff Park, including fieldhouse renovation, new bathrooms and a new playground. Funds were awarded in August 2014 and the project was completed in August 2015. Construction Cost: $10,981,850.

Westchester 1 The Mayfair Reservoir Expansion Project in Westchester provides direct flood reduction benefits to an estimated 60 residential structures and reduces storm-related impacts for approximately 120 homeowners. Initially placed into service in 1977, the Mayfair Reservoir was designed to accommodate a 100-year storm, but due to the unexpected frequency of these devastating storms, the MWRD chose to designate its property for the expansion and provide additional sewer improvements. Working with the Village of Westchester, MWRD is minimizing the impact of future storms and improving the quality of life for homeowners. Funds were awarded in September 2014 and the project was completed in December 2015. Construction Cost: $2,221,436.

Des Plaines 12
The Des Plaines Storm Sewer Relief Project along Fargo Avenue, Jarvis Avenue and Des Plaines River Road consists of new 36-inch to 60-inch storm sewers that was connected to an existing outfall on the Des Plaines River. The project provides direct flood reduction benefits to an estimated 56 residential structures in the project area. Funds were awarded in November 2014 and the project was completed in November 2015. Construction Cost: $2,000,000.

Winnetka 4 The Winnetka Storm Sewers and Berms Project consisted of capacity improvements to storm sewers contributing to an existing detention pond with excess capacity for 100-year protection. The project included collecting runoff from low areas that are subject to frequent flooding. The project provides direct flood reduction benefits to an estimated 27 residential structures in the project area. Funds were awarded in November 2014 and the project was completed in November 2015. Construction Cost: $6,176,615.

Hoffman Estates 1 The Jones Road/Highland Boulevard Storm Sewer Improvements Project in Hoffman Estates included a new 48-inch storm sewer, asphalt pavement patching and resurfacing, new curb and gutter, sidewalk and driveway removal and replacement, utility structure adjustments, water main adjustment, restoration and related improvements. The project length is 1,830 feet (0.37 miles) commencing at the intersection of Jones Road and Highland Boulevard and ending at the intersection of Heather Lane and Hillcrest Boulevard. The new storm sewers provide direct flood reduction benefits to an estimated seven residential structures and reduce storm related access impacts for approximately 50 home owners in the project area. Funds were awarded in March 2015 and the project was completed in May 2015. Construction Cost: $1,088,016.

Lansing 1 The Stony Island Ditch and Lansing Manor Detention Basin and Pumping Station Modifications Project involved conveyance improvements along the Stony Island Avenue Ditch along with pump station and basin improvements. The project addressed local flooding caused by the Stony Island ditch exceeding its banks in the vicinity of 181st Street and Stony Island Avenue, where flooding impacted area roadways and the Lansing Manor Subdivision. The Village of Lansing's design provides flood reduction benefits to an estimated 67 residential structures. Funds were awarded in February 2015 and the project was completed in May 2016. Construction Cost: $717,022.

Northbrook 2 and 5 The Northbrook Storm Sewer Improvements created an overflow sewer, a new relief sewer, additional inlets along Shermer Road and Cherry Lane, and new outlets to the West Fork of the North Branch of the Chicago River, reducing flooding impacts in problem drainage areas. The Shermer Road overflow sewer constructed approximately 1,800 linear feet of 72-inch storm relief sewer that extends from the intersection of Shermer Road and Woodlawn Road and outfall to the West Fork. The project directly benefits 22 properties and 17 structures up to the 50-year frequency storm event and indirectly benefits other properties and structures, as it is interconnected. The Cherry Lane Underpass construction of approximately 700 linear feet of 36-inch and 100 linear feet of 24-inch storm relief sewer that outfall to the West Fork. This project reduces flooding impacts at the Cherry Lane Underpass and for 30 properties and one structure up to the 10-year frequency storm event. Funds were awarded in March 2015 and the project was completed in May 2016. Construction Cost: $2,100,000.

CCDTH 2 The Roberts Road Trunk Sewer and Drainage Improvements Project extends from 79th to 86th streets in the Villages of Justice and Bridgeview. The Cook County Department of Transportation and Highways installed approximately 1900 feet of new 36" to 60" new storm sewer in Roberts Road to provide in line detention and future corridor improvements. This project provides direct flood reduction benefits to an estimated 30 commercial and residential structures and reduces storm related access impacts along the roadway. Funds were awarded in May 2015 and the project was completed in March 2016. Construction Cost: $2,385,294.

Franklin Park 5 The Silver Creek Channel Improvements Project alleviates the flooding of approximately 76 structures in Franklin Park, where numerous structures along the creek have flooded during past extreme storms. Channel improvements on Silver Creek occurred from Riverside Drive to Scott Street and included the daylighting of several hundred feed of encapsulated stream channel, four new culverts, water main relocation, sanitary sewer relocation and storm sewer relocation. The village was responsible for the design, construction, operations and maintenance. Funds were awarded in June 2015 and the project was completed in December 2016. Construction Cost: $4,175,771.

Willow Springs 1 The Willow Springs Stormwater Improvements Project provides a new storm sewer and ditch and outfall improvements to alleviate flooding in the Ravine Avenue Watershed. These improvements provide direct flood reduction benefits to 20 residential structures in the project area. Funds were awarded in August 2015 and the project was completed in December 2015. Construction Cost: $146,455.

Niles 1 The Cleveland Street Relief Sewer Construction Project in Niles provides capacity to convey surface water away from these areas into the North Branch of the Chicago River in order to minimize surface water flood damages and reduce the amount of surface water discharging to the existing combined sewer system in this area. The project consists of approximately 10,600 feet of new storm sewer to provide relief to roughly 140 residential structures from surface water flooding for the area generally bounded by Main Street to the north, Harlem Avenue to the east, Monroe Street to the south, and Oketo Avenue to the west. The Village of Niles was responsible for the design, construction, operation and maintenance. Funds were awarded in June 2016 and the project was completed in March 2017. Construction Cost: $8,676,309.

Brookfield 1 The Prairie/Washington Pumping Station Project in Brookfield installed a new pumping station and back-up generator near the Washington Avenue/Forest Avenue intersection, a box culvert under Forest Avenue, a new detention pond west of Forest Avenue and other miscellaneous storm sewer improvements for the public benefit of reducing flooding in the general area. The project addressed roadway and residential flooding that occurred when storm sewers backed up due to Salt Creek water levels. The village was responsible for the design, construction, operation and maintenance. Funds were awarded in June 2016 and the project was completed in December 2016. Construction Cost: $1,853,711.

Elk Grove Village 1 Construction on the Busse Woods Reservoir South Dam Modification Project in Elk Grove Village, brought Cook and DuPage counties together with the MWRD to bring flood relief to over 1-million people living and working along the Salt Creek watershed. The modification consisted of replacing a fixed concrete barrier with a pair of hinged gates. The gates are used to regulate water levels in the reservoir before and during storm events that affect Salt Creek levels, minimizing the impacts of flooding on nearby roadways and properties. Flooding from Salt Creek has cost the region millions of dollars in property damage, and disruptions from flooding caused closures of critical intersections leaving people unable to access their homes, schools and places of work. Funds were awarded in July 2015 and the project was completed in February 2016. Construction Cost: $2,736,750.

IDOT 11 The MWRD/IDOT 11 Project provides drainage improvements and storm sewer repair along Illinois Route 62 from west of Arbor Drive to east of magnolia Drive. The project also provides a new 2 acre-feet detention in the infield area of Illinois Route 53 northbound ramp to Illinois 62. The overall project reduces traffic impacts related to flooding at this location. Funds were awarded in June 2016 and the project was completed in November 2016. Construction Cost: $610,386.

Lemont 1 The Illinois and Michigan Canal Culvert Project in Lemont replaced existing twin culverts between the canal and the Chicago Sanitary and Ship Canal for the public benefit of reducing flooding in the general area. The construction and culvert improvements addressed flooding during heavy rains in industrial areas due to the previous culverts being undersized. The Village of Lemont was responsible for the design, construction, operation and maintenance. Funds were awarded in August 2016 and project completed in February 2017. Construction Cost: $394,889.

Glencoe 4 & 6 The Glencoe Stormwater Projects includes upgrades at Terrace Court and Skokie Ridge drainage basins that increased the capacity of its storm sewers at critical locations to reduce the frequency of flooding for homes and roadways during moderate and heavy rainfall. The storm sewer upgrade at Terrace Court included 2,200 feet of new storm sewer pipe to address insufficient storm sewer capacity and inadequate overland flow routes and significantly reduced private property structural flooding and blocked street access that impacted 30 homes. The storm sewer upgrades at Skokie Ridge included 3,500 feet of new storm sewer pipe which addressed insufficient storm sewer capacity and the challenges presented by the neighborhood's steep topography. Funds were awarded in April 2016 and the project was completed in February 2017. Construction Cost: $3,041,317.

Flood Control Project in the Washington St. Area of Blue Island, IL (Blue Island 1)
Installed six rain gardens and two permeable pavement parking lots in the Washington St. area of Blue Island to resolve frequent flooding in low lying area. Funds were awarded in May 2015 and the project was completed in December 2015. Construction Cost: $697,000.

Glenview Flood Prone Acquisition The Glenview Flood Prone Acquisition Project involved the acquisition of flood prone property along the West Fork of the North Branch of the Chicago River in Glenview. The Village of Glenview purchased 17 flood prone homes along the West Fork to reduce the flood hazard risk in the community. This project allowed homeowners from Glenview to voluntarily participate in the buyout of their flood-prone residences through contributions from the MWRD and FEMA. The project was completed in January 2017. Construction Cost: $11,735,000.

Des Plaines Flood Prone Acquisition The Des Plaines Flood Prone Acquisition Project involves the acquisition of flood prone property along the Des Plaines River in Des Plaines. The City of Des Plaines is purchasing 13 flood prone homes along the Des Plaines River that will reduce the flood hazard risk in the community. This project allows homeowners from Des Plaines to voluntarily participate in the buyout of their flood-prone residences through contributions from the MWRD and FEMA. The homes in the Big Bend neighborhood of Des Plaines, situated just west of the Des Plaines River, flooded several times since the 1980s, and floods in 2008 and 2013 caused first floor damage and completely destroyed basements and all contents. Executed IGA in February 2016 and the project is in progress. Estimated Construction Cost: $4,000,000.

Riverside Lawn Flood Prone Acquisition The Riverside Lawn Flood Prone Acquisition Project involves the acquisition of 39 flood prone properties along the Des Plaines River in unincorporated Cook County in Lyons Township. The Riverside Lawn community is a FEMA designated flood hazard area consisting of approximately 45 homes that have experienced significant flooding in recent years. Riverside Lawn, part of unincorporated Cook County, resembles a peninsula, surrounded by the Des Plaines River to the west, north and east and 39th Street to the south. A rain event in 2013 was so devastating that residents had to be evacuated by boat. To combat this flooding, the MWRD, along with Cook County and Riverside Township, examined several alternative solutions, including a voluntary home acquisition program. This project will allow homeowners from Riverside Lawn to voluntarily participate in the buyout of their flood-prone residences through contributions from the MWRD and HUD. Executed IGA in July 2016 and the status is in progress. Estimated Construction Cost: $12,000,000.

Des Plaines Flood Prone Acquisition The Des Plaines Flood Prone Acquisition Project involves the acquisition of flood prone property along the Des Plaines River in Des Plaines. MWRD is providing funding assistance to the City towards purchasing up to 47 flood prone homes along the Des Plaines River that will reduce the flood hazard risk in the community. This project allows homeowners from Des Plaines to voluntarily participate in the buyout of their flood-prone residences through contributions from the MWRD and FEMA. The homes in the Big Bend neighborhood of Des Plaines, situated just west of the Des Plaines River, flooded several times since the 1980s, and floods in 2008 and 2013 caused first floor damage and completely destroyed basements and all contents. Executed IGA in February 2017 and the status is in progress. Estimated Construction Cost: $15,730,281.

Northlake Flood Prone Acquisition The Northlake Flood Prone Acquisition Project involves the acquisition of flood prone property along Addison Creek in Northlake. MWRD is providing funding assistance to the village towards 7 flood prone homes along Addison Creek to reduce the flood hazard risk in the community. This project allows homeowners from Northlake to voluntarily participate in the buyout of their flood-prone residences through contributions from MWRD. Executed IGA in November 2016 and the Status is in progress. Estimated Construction Cost: $1,184,018.

Blue Island As part of the Blue Island Green Infrastructure Project, the MWRD installed six rain gardens, two permeable parking lots and bioswales in flood prone areas bound by Western Avenue, 119th Street, Vincennes Avenue and 121st Street. The project captures 150,809 gallons of stormwater per rain event and assists in mitigating flooding damages. Funds were awarded in July 2015 and the project was completed in October 2015. Construction Cost: $697,030.

Leland Elementary School, Morrill Math and Science Academy, Schmid Elementary School and Grissom Elementary School
In 2014, the MWRD participated in the Space to Grow program to install green infrastructure technologies at playgrounds at four Chicago Public Schools, including Leland Elementary School in the Austin neighborhood on the Far West Side, Morrill Math and Science Academy in the Chicago Lawn neighborhood on the Southwest Side, Schmid Elementary School in the Pullman neighborhood on the Far South Side, and Grissom Elementary School in the Hegewisch neighborhood on the Far Southeast Side. The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These four schools capture 731,004 gallons of stormwater per rain event. Funds were awarded in July 2014 and the project was completed in 2014. Construction Cost: $6,120,299.

Orozco Community Academy and Willa Cather Elementary School In 2015, the MWRD participated in the Space to Grow program to install green infrastructure technologies at playgrounds at two Chicago Public Schools, including Orozco Community Academy in the Heart of Chicago neighborhood on the Southwest Side, and Willa Cather Elementary School in the East Garfield Park on the West Side. The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These two schools capture 364,504 gallons of stormwater per rain event. Funds were awarded in April 2015 and the project was completed in October 2015. Construction Cost: $3,000,000.

Gunsaulus Scholastic Academy, Corkery Elementary School and Wadsworth Elementary School
The MWRD has committed to continue to participate in the Space to Grow program transforming 30 more schools using green infrastructure technologies. In 2016 the MWRD transformed three more playgrounds at Chicago Public Schools, including Wadsworth Elementary School in the Woodlawn neighborhood on the South Side, Gunsaulus Scholastic Academy in the Brighton Park neighborhood on the Southwest Side, Corkery Elementary School in the Little Village neighborhood on the Southwest Side. The new infrastructure will reduce flooding and reduce flows to the combined sewer system. These three schools capture 388,648 gallons of stormwater per rain event.

Space to Grow A joint venture operated through the financial support of the MWRD, Space to Grow is managed by the Healthy Schools Campaign and Openlands organizations. Space to Grow transforms Chicago school yards into community spaces for physical activity, outdoor learning, environmental literacy and engagement with art, while addressing neighborhood flooding issues. In addition to providing community members in low-income neighborhoods with safe outdoor spaces to play and stay active, Space to Grow schoolyards help Chicago Public Schools meet daily recess and physical education requirements for elementary schools. The MWRD, the Chicago Department of Water Management, and the Chicago Public Schools are partnering to design and install the new playgrounds utilizing green infrastructure. The projects will reduce flooding, reduce the load on the combined sewer system, and educate students and neighbors about green infrastructure techniques and purpose. No schools were built in 2017, but six more will be constructed in 2018. Funds were awarded in April 2016 and the project was completed in October 2016. Estimated Construction Cost $4,500,000.

Evanston Civic Center Parking Lot The MWRD partnered with the city of Evanston to rehabilitate the Morton Civic Center parking lot. Evanston's first city-owned sustainable public parking lot uses various permeable pavements, rain gardens and native plantings to substantially reduce stormwater runoff. The civic center parking lot features three different porous pavement materials that will be evaluated to determine for stormwater infiltration and durability, and the impact of snow and ice removal. The permeable pavement will improve water quality, ground water recharge and delayed stormwater discharge. The project provides 167,278 gallons of retention. Funds were awarded in June 2015 and project was completed in October 2015. Construction Cost: $1,519,000.

Wescott Park Stormwater Reuse The Wescott Park Stormwater Reuse Project in Northbrook called for the construction of a 7.5-million-gallon stormwater storage vault under Wescott Park. The MWRD funded green infrastructure improvements that included an electronic control system and irrigation system to allow the reuse of the stormwater and keep it out of the North Branch of the Chicago River. The project provides 162,926 gallons of retention. Funds were awarded in March 2016, and the project was completed in November 2016. Construction Cost: $10,775,000.

Wilmette Green Alleys The Wilmette Green Alleys Project included the installation of five permeable alleys instead of conventional asphalt to reduce flooding and reduce flow to sewer system. The MWRD partnered with Wilmette to enhance urban sustainability by encouraging stormwater to infiltrate into the soil, instead of collecting on hard surfaces and draining into the sewer system. The project provides 74,667 gallons of retention. Funds were awarded in July 2015 and the project was completed in October 2015. Construction Cost: $836,561.

Kenilworth The Kenilworth Green Infrastructure Project consisted of installing permeable pavement in streets in flood prone areas of Kenilworth that include Cumberland Avenue, Roslyn Road and Melrose Avenue. The MWRD partnered with the Village to install permeable asphalt pavement and native landscaping to help reduce flooding in the combined sewer area of Kenilworth. The Village identified 105 homes that directly benefit from this project. This number does not include the significant amount of structures downstream of the project that also receive a direct benefit as a result of reduced pressure on the system. The project provides 1,319,827 gallons of stormwater storage. Funds were awarded in May 2016 and the project was completed in August 2016. Construction Cost: $8,100,000.

Berwyn The Berwyn Green Infrastructure Project installed green alleys and permeable pavement in local streets. MWRD partnered with Berwyn to construct 20 green alleys and install permeable pavement on Oak Park Avenue from 31st Street to 32nd Street, Stanley Avenue from Clinton Avenue to Wesley Avenue, Windsor Avenue from Harlem Avenue to Wesley Avenue, and Grove Avenue from 32nd Street to 34th Street to help alleviate localized flooding as well as reducing the flow of stormwater into the local combined sewer system. This project captures 679,122 gallons of detention per rain event. Funds were awarded in February 2017 and the project was completed in June 2017. Construction Cost: $2,555,164.

Niles The Niles Green Infrastructure Project included bioswale and permeable pavement parking lots. The MWRD partnered with Niles to construct a bioswale and permeable pavement parking lot at Oak Park, which is a park centrally located in Niles. This project reduces localized flooding, reduces the flow of stormwater into the local combines sewer system and provides educational and volunteer opportunities for the community. This project captures 53,811 gallons per rain event. Funds were awarded in August 2016. The project was completed in November 2016. Construction Cost: $400,000.

Skokie The Skokie Green Infrastructure Project was a partnership between the MWRD and the Village to construct a 7,800-square-foot rain garden located at Devonshire Park and detention pond improvements at the Skokie police station. This project addressed localized flooding at the intersection of Greenwood Street and Kenneth Terrace. The rain garden's location at a public park serves to further the MWRD's goal of informing the public of the value of green infrastructure. This project captures 46,424 gallons per rain event. Funds were awarded in October 2017 and the project was completed in May 2018. Construction Cost: $500,000.

Parjana Parjana is a new technology installed at Chicago Park District softball fields in Mount Greenwood Park. MWRD is currently monitoring the park to determine if the technology is allowing to drain the fields after a rain event better than before. It promotes drainage and reduces runoff by inserting patters of long tubes into the ground. The tubes are said to open up strata layers below the ground, allowing standing water to drain quicker than normal. Funds were awarded in March 2017 and the project was completed in May 2017. Construction Cost: $80,000.

Egan Water Reclamation District Parking Lot
The MWRD replaced an old parking lot at the Egan Water Reclamation Plant in Schaumburg with a new permeable parking lot with a bioretention area. This project captures 360,855 gallons per rain event. Funds were awarded in the summer of 2017 and the project was completed in 2017. Construction Cost: $1,519,004.

SECTION FOUR

Appendix 4.1 Technical Assistance Checklist

Appendix 4.2 Local Mitigation Planning Status Chart

Appendix 4.1 Technical Assistance Checklist

Locations in Plan (Section)	Technical Assistance Provided
2.7 3.1 – Goal 1, Objective 2; Goal 3 3.3.2 3.3.3	<u>Building Codes</u> Information about the status of building codes in Illinois and the procedures for implementing and enforcing these codes. Education about the importance of adequate building codes based on natural risk factors and local vulnerabilities. Website providing informational resources about building codes administered in Illinois.
1.4 3.1 – Goal 3, Objective 1 3.2.1 4.3 4.3.1	<u>Guides and Applications</u> Pre-application and sub-application forms for jurisdictions. Tools to assist in completing pre-application and sub-application forms. Available tools include grant information, application guides, application criteria checklists, fact sheets, online tools, and contact information for additional questions. Screening form reviewed by IMAG to determine eligibility for funding prior to completion of sub-application based on proposed mitigation activity. Presentation about hazard resistant construction and funding availability to Park District Associations. Reviewing local mitigation plans to assess compliance with required criteria and to identify strengths and areas for improvement.
3.1 – Goal 1, Goal 2, Goal 3, Goal 4	<u>Workshops and Webinars</u> Webinars and multi-day workshops to assist development of project grant applications by helping jurisdictions understand, identify, and apply mitigation concepts and actions. Specialized workshops or meetings with jurisdictions following declared disasters to provide guidance and promote the need for Local Hazard Mitigation Plans. Answer specific jurisdictional questions. Webinars on new and specialized mitigation actions. Webinars are conducted live and recordings available on FEMA website.
4.3.1	<u>Emails</u> Respond to questions from local jurisdictions about grant application and local mitigation plan development.

	Personalized feedback and recommendations for future improvements for grant applications and local mitigation plans.
1.4 4.1	<u>IEMA-OHS Website</u> Information and assistance resources for jurisdictions involved in the grant application process for Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), and Hazard Mitigation Grant Program (HMGP). Information and assistance resources for jurisdictions to create and gain approval of local hazard mitigation plans. Resources include planning guides, maps, Illinois Hazard Rating Process, Local Risk Assessment tools, approved local plans, local mitigation projects, and hazard specific data.
1.4 4.3 4.3.1	<u>Other IEMA-OHS Resources</u> Presentations and regular engagement at annual IEMA-OHS Conference and other conferences. This exposes a greater percentage of individuals to the benefits of mitigation. Office hours held for jurisdictions during application period. IEMA-OHS reviews local hazard mitigation plans before submission to FEMA to assess compliance and make them more likely to be approved.
1.4 4.3.1	<u>IEMA-OHS Monitoring</u> Continuous monitoring of grant-awarded projects through jurisdiction submission of progress reports to IEMA-OHS. Local Mitigation Action Item Database tracks local mitigation plans actions and associated projects. Assistance in completing progress reports available by email request. Consulting agencies annually review all active projects to ensure that they are still in compliance. Maintain and improve the “Local Mitigation Action Item Database” to track local mitigation plan actions and associated projects.
1.3 1.4 2.4 3.1 – Goal 2, Objective 4;	<u>Flood Mitigation</u> CAP-SSSE grant funds the provision of technical assistance to NFIP communities. FMA grants fund the development of flood mitigation plans, the implementation of flood loss reduction measures in NFIP communities, and the provision of technical assistance to NFIP communities.

Goal 3, Objective 6 3.3.2 3.3.4	IEMA-OHS and IDNR/OWN conduct floodplain management and flood mitigation workshops. IDNR tool to assist communities after flooding occurs. Reward communities for taking steps toward flood mitigation and providing outreach to eligible communities through the Community Rating System program. Promote flood insurance and NFIP Program.
2.2 3.1 – Goal 2, Objective 3; Goal 3, Objective 2; Goal 3, Objective 3; Goal 3, Objective 5	<u>Local Hazard Risk Assessment</u> Training provided to local jurisdictions to use HAZUS MH. Provide instructional and training opportunities for local code officials to enable them to conduct pre-disaster assessments of structural safety of facilities for disaster resilience. Provide workshops on wind refuge areas for local ESDA/EMA staff, CMS building managers and university safety officers.

Appendix 4.2 Local Mitigation Planning Status Chart

Illinois Population Covered by HMP: 78.9%							
Plan Status Data as of 4/6/2023							
COUNTY NAME	PLAN TITLE	PLAN STATUS	PLAN APPROVAL DATE	EXPIRATION DATE	MONTHS TILL EXPIRED	PLANNING GRANT	GRANT POP
Adams	Adams County Hazard Mitigation Plan	Expired	9/26/2008	9/26/2013	0	PDM19	9/22/23
Alexander	Alexander County HMP Update	Approved	10/14/2020	10/13/2025	30		
Bond	Bond County HMP	Expired	4/8/2011	4/8/2016	0	DR4461	6/18/24
Boone	Boone County Update	Approved	8/30/2022	8/29/2027	52		
Bureau	Bureau County HMP Update	Approved	10/27/2020	10/26/2025	30		
Calhoun	Calhoun County HMP Update	Approved	10/14/2020	10/13/2025	30		
Carroll	Carroll County Plan Update	Approved	1/12/2021	1/11/2026	33		
Cass	Cass County HMP	Expired	3/29/2013	3/29/2018	0	DR4461	6/18/24
Champaign	Champaign County HMP Update	Approved	12/9/2020	12/8/2025	32		
Christian	Christian County Plan Update	Approved	1/12/2021	1/11/2026	33		
Clark	Clark County HMP	Approved	5/2/2018	5/1/2023	1	DR4489	5/2/26
Clay	Clay County HMP	Approved	1/28/2021	1/27/2026	33		
Clinton	Clinton County HMP	Expired	3/26/2018	3/25/2023	0	DR4489	5/2/26
Coles	Coles County HMP	Expired	3/26/2018	3/25/2023	0	DR4461	6/18/24
Cook	Cook County HMP Update	Approved	9/26/2019	9/25/2024	17	Grant Application Submitted	
Crawford	Crawford County HMP	Approved	4/30/2018	4/29/2023	0	DR4489	5/2/26
Cumberland	Cumberland County HMP Update	Approved	4/5/2023	4/4/2028	60	DR4461	6/18/24
Dekalb	DeKalb County HMP Update	Approved	3/9/2021	3/8/2026	35		
De Witt	DeWitt County HMP	Approved	9/11/2019	9/10/2024	17	DR4489	5/2/26
Douglas	Douglas County HMP Update	Approved	9/11/2019	9/10/2024	17	DR4489	5/2/26

DuPage	DuPage County HMP Plan	Approved	7/23/2018	7/22/2023	3	DR4489	5/2/26
Edgar	Edgar County MJ-AHMP Update	Approved	9/21/2022	9/20/2027	53	DR4461	6/18/24
Edwards	Edwards County HMP	Approved	6/11/2018	6/10/2023	2	DR4489	5/2/26
Effingham	Effingham County HMP	Approved	3/9/2021	3/8/2026	35		
Fayette	Fayette County HMP	Approved	4/26/2021	4/25/2026	36		
Franklin	Franklin County HMP Update	Approved	4/6/2023	4/5/2028	60	PDM19	9/22/23
Fulton	Fulton County	Expired	11/20/2012	11/20/2017	0	DR4489	5/2/26
Gallatin	Gallatin County HMP Update	Approved	10/31/2019	10/30/2024	19		
Greene	Greene County HMP Update	Approved	9/11/2019	9/10/2024	17	DR4489	5/2/26
Grundy	Grundy County HMP Update	Approved	4/14/2021	4/13/2026	36		
Hamilton	Hamilton County HMP	Approved	4/14/2021	4/13/2026	36		
Hancock	Hancock County	Expired	1/31/2018	1/30/2023	0	DR4489	5/2/26
Henderson	Henderson County Plan Update	Approved	12/22/2020	12/21/2025	32		
Henry	Henry County	Expired	1/30/2014	1/30/2019	0	PDM19	9/22/23
Iroquois	City of Watseka HMP	Approved	11/2/2020	11/1/2025	31		
Iroquois	Iroquois County	Expired	4/6/2011	4/6/2016	0	DR4489	5/2/26
Jackson	Jackson County HMP Update	Approved	4/6/2023	4/5/2028	60	PDM19	9/22/23
Jasper	Jasper County HMP Update	Approved	6/15/2021	6/14/2026	38		
Jefferson	Jefferson County HMP Update	Approvable Pending Adoption				PDM19	9/22/23
Jersey	Jersey County HMP Update	Approved	5/11/2021	5/10/2026	37		
Jo Daviess	JoDaviess HMP Update	Approved	1/12/2021	1/11/2026	33		
Johnson	Johnson HMP Update	Approved	12/4/2020	12/3/2025	32		
Kane	Kane County	Expired	12/23/2015	12/23/2020	0	DR4489	5/2/26
Kankakee	Kankakee County HMP	Expired	11/20/2013	11/20/2018	0	DR4461	6/18/24
Kendall	Kendall County	Expired	5/22/2012	5/22/2017	0	DR4489	5/2/26
Knox	Knox County AHMP Update	Approved	3/23/2023	3/22/2028	59	DR4461	6/18/24

Lake	Lake County	Expired	11/8/2017	11/8/2022	0	DR4461	6/18/24
Lasalle	LaSalle County HMP Update	Approved	11/5/2020	11/4/2025	31		
Lawrence	Lawrence County Multi-Hazard Mitigation Plan	Expired	11/7/2017	11/7/2022	0	DR4489	5/2/26
Lee	Lee County HMP Update	Approved	8/25/2020	8/24/2025	28		
Livingston	Livingston County Plan	Approved	1/14/2021	1/13/2026	33		
Logan	Logan County HMP Update	Approved	1/12/2021	1/11/2026	33		
Macon	Macon County	Expired	3/14/2014	3/14/2019	0	DR4461	6/18/24
Macoupin	Macoupin County HMP Update	Approved	12/23/2019	12/22/2024	20	Grant Application Submitted	
Madison	Madison County HMP Update	Approved	10/14/2020	10/13/2025	30	Grant Application Submitted	
Marshall	Marshall-Putnam County NHMP	Approved	8/30/2022	8/29/2027	52	DR4461	6/18/24
Mason	Mason County NHMP Update	Approved	10/13/2022	10/12/2027	54	PDM19	9/22/23
Massac	Massac County HMP Update	Approved	1/28/2021	1/27/2026	33		
Mcdonough	McDonough County Update	Approved	9/21/2022	9/20/2027	53	PDM19	9/22/23
Mchenry	McHenry County HM Plan	Expired	9/25/2017	9/25/2022	0	DR4461	6/18/24
Mclean	Illinois State University HMP	Approved	4/5/2019	4/4/2024	12	DR4489	5/2/26
Mclean	McLean HMP	Approved	10/11/2022	10/10/2027	54	PDM19	9/22/23
Menard	Menard County HMP Update	Approved	8/19/2019	8/18/2024	16		
Mercer	Mercer County	Expired	4/17/2017	4/17/2022	0	DR4489	5/2/26
Monroe	Monroe County HMP Update	Approved	11/1/2021	10/31/2026	43		
Montgomery	Montgomery County	Expired	2/24/2017	2/24/2022	0	DR4489	5/2/26
Morgan	Morgan County HMP Update	Approved	2/8/2021	2/7/2026	34		
Moultrie	Moultrie County Multi-Hazard Mitigation Plan	Expired	5/22/2017	5/22/2022	0	DR4461	6/18/24
Ogle	Ogle County HMP update	Approved	6/18/2020	6/17/2025	26		
Peoria	Peoria County HM Plan - 2018	Approved	10/11/2018	10/10/2023	6		

Peoria	Tri-County HMP Update (Peoria City, Tazwell Co., Woodford Co.)	Approved	10/23/2019	10/22/2024	18	DR4489	5/2/26
Perry	Perry County HMP Update	Approved	4/4/2023	4/3/2028	59	PDM19	9/22/23
Piatt	Piatt County HMP Update	Approved	2/23/2023	2/22/2028	58	DR4461	6/18/24
Pike	Pike County	Expired	6/30/2011	6/30/2016	0	PDM19	9/22/23
Pulaski	Pulaski County HMP Update	Approved	10/14/2020	10/13/2025	30		
Putnam	Marshall-Putnam County NHMP	Approved	8/30/2022	8/29/2027	52	DR4461	6/18/24
Randolph	Randolph County Plan Update	Approved	12/4/2020	12/3/2025	32		
Richland	Richland County	Expired	1/31/2013	1/31/2018	0	PDM19	9/22/23
Rock Island	Rock Island County	Approved	1/14/2022	1/13/2027	45		
Saline	Saline County HMP Update	Approved	11/1/2021	10/31/2026	43		
Sangamon	Sangamon County Multi-Jurisdictional NHMP Update	Approvable Pending Adoption				DR4461	6/18/24
Schuyler	Schuyler County HMP Update	Approved	6/17/2020	6/16/2025	26		
Scott	Scott County HMP Update	Approved	2/8/2021	2/7/2026	34		
Shelby	Shelby County Multi-Jurisdictional HM Plan	Expired	3/26/2018	3/25/2023	0	DR4461	6/18/24
St. Clair	St. Clair County HMP Update	Approved	5/21/2019	5/20/2024	13	DR4489	5/2/26
Stephenson	Stephenson County HMP Update	Approved	1/16/2023	1/15/2028	57	PDM19	9/22/23
Tazewell	Tri-County HMP Update (Peoria City, Tazwell Co., Woodford Co.)	Approved	10/23/2019	10/22/2024	18	DR4489	5/2/26
Union	Union HMP Update	Approved	1/4/2021	1/3/2026	33		
Vermilion	Vermillion County Multi-Hazard Mitigation Plan	Expired	12/12/2014	12/12/2019	0	DR4489	5/2/26
Wabash	Wabash County HM Plan	Expired	12/20/2017	12/19/2022	0	DR4489	5/2/26
Warren	Warren County HMP	Approved	4/4/2023	4/3/2028	60	DR4461	6/18/24
Wayne	Wayne County HM Plan	Expired	1/5/2018	1/4/2023	0	DR4489	5/2/26
White	White County	Expired	7/31/2017	7/30/2022	0	DR4489	5/2/26
Whiteside	Whiteside County MJ-AHMP Update	Approved	11/28/2022	11/27/2027	55	PDM19	9/22/23
Will	Will County HMP Update	Approved	11/1/2021	10/31/2026	43		

Williamson	Williamson County HMP	Expired	11/5/2015	11/5/2020	0	PDM19	9/22/23
Woodford	Tri-County HMP Update (Peoria City, Tazwell Co., Woodford Co.)	Approved	10/23/2019	10/22/2024	18	DR4489	5/2/26
	State of Illinois	Approved	10/4/2018	10/3/2023	6	BRIC20	12/20/24