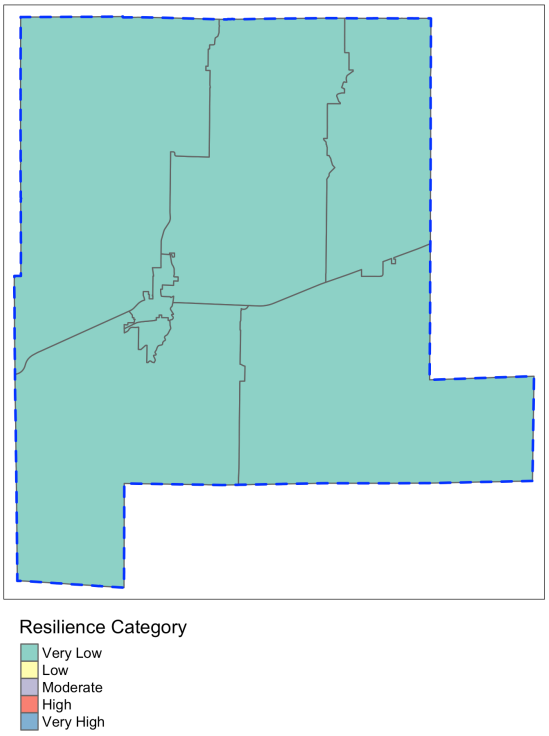
County-Level Risk Assessment: Fayette

Census Tracts within Fayette



Basic Statistics

Table 1: Basic Statistics (County level)

Information	Value
Population	21418 persons
Area sq. miles	717.81 sqm
Gross Density(persons/sq mil)	30 p/sqm
Avg HH Size	2.51 persons
Median HH Income	45634 USD

Count of Tracts in each Category

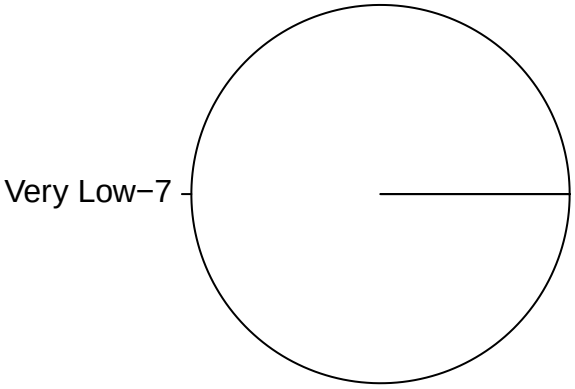


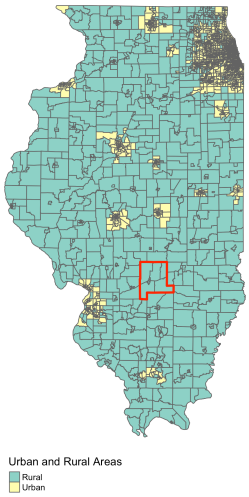
Table 2: Percentage of Census Tracts under each Resilience Category(County level)

Very High	High	Moderate	Low	Very Low
0	0	0	0	100

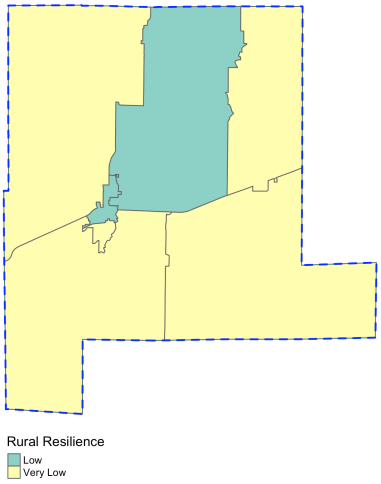
Indicator Group Rankings

Indicator Group	High Risk Areas	Low Risk Areas
Community 	Young percent, Old percent, NotMarried Percent, Recent Immigrants Percent, Elderly growth percent, Percent AssistanceNeed, Physically Unhealthy Days, COVID-19 death rate, Percent Food Insecure, Percent Limited Access to Healthy Foods, Percent rural	Females Percent, PrimeWorkingAge percent, Percent Exercise Access, Percent Vaccinated, Social Association Rate
Economy 	Agro Percent, UnstableEmployment Percent, LowIncome Percent, PT LQ, Agri LQ, Manufacturing LQ, Arts LQ, GINI Index, Percent Children in Poverty, Gender Pay Gap, Percent income required for childcare expenses, CommuteTime, Recreation related business rate	poverty, WorkNearby percent, Service LQ, Sales LQ, construction LQ, Retail LQ, Civic related business rate, Education related business rate, Healthcare related business rate
Housing 	OldHomes, Units SingleFamily, MobileHomes, Overcrowding, Percent Section8	Homewownership, NewHomes, Cost IncomeRatio, Renter MHHI, Segregation Index
Environment 	CO8, Pb3, NO2AM, PM10, std metal prim pop ln, std nonmetal prim pop ln, std sandandgravel prim pop ln, Radon.x, W HG ln, W NO2 ln	ALLNPDESperKM ln
Infrastructure 	Percent PoorCondition Bridges, Percent commuters by transit	Percent BroadbandAccess, Bridges, Percent MediumFairCondition Bridges

Census Tracts within Fayette



Rural Resilience within Fayette



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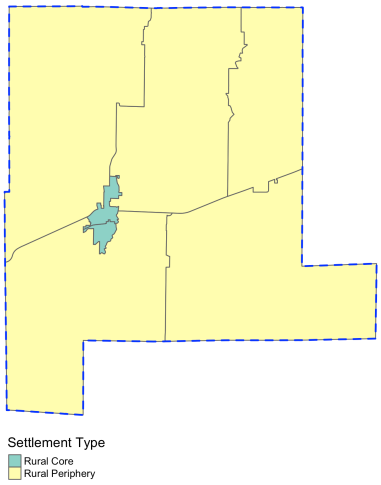
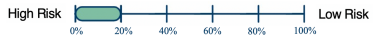
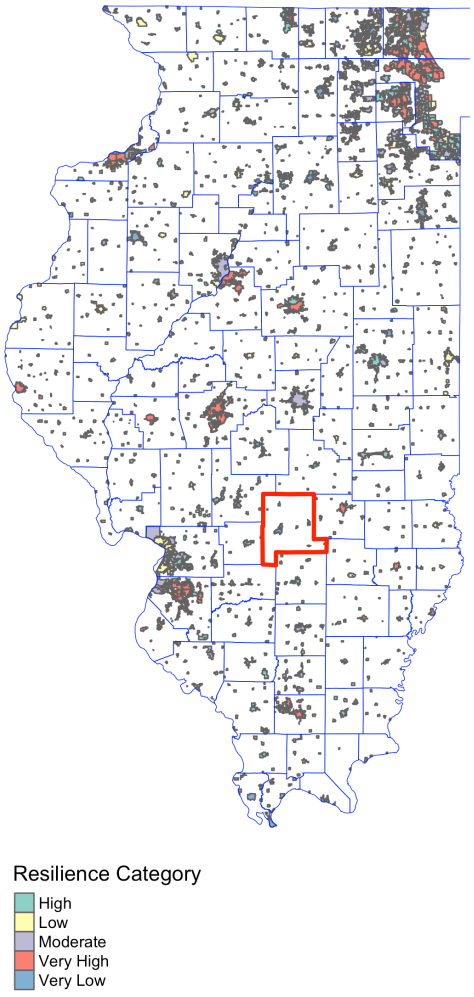
Settlement Types



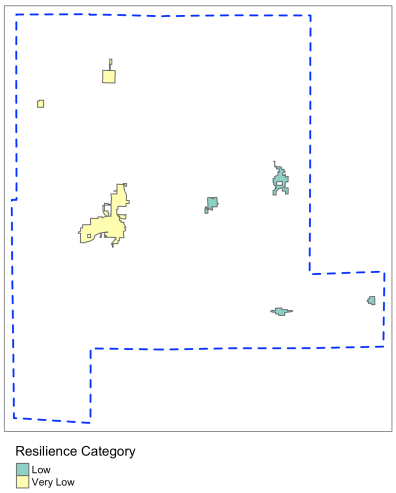
Rural Indicator Rankings

Indicator Group	High Risk Areas	Low Risk Areas
Community 	Young percent, NotMarried Percent, Avg HHsize, Percent AssistanceNeed, Physically Unhealthy Days, COVID-19 death rate, Percent Food Insecure, Percent Limited Access to Healthy Foods, Percent rural	Females Percent, Educated percent, PrimeWorkingAge percent, Food Environment Index, Percent Exercise Access, Percent Vaccinated, Social Association Rate
Economy 	UnstableEmployment Percent, LowIncome Percent, PT LQ, Arts LQ, GINI Index, Percent Children in Poverty, Gender Pay Gap, Percent income required for childcare expenses, CommuteTime, Recreation related business rate	poverty, WorkNearby percent, MBS LQ, construction LQ, Edu LQ, Walkability Score, Civic related business rate, Education related business rate, Healthcare related business rate
Housing 	OldHomes, Units SingleFamily, MobileHomes, Percent HousingProblems, Percent Section8	Homewownership, NewHomes, Renter MHHI, Segregation Index
Environment 	std nonmetal prim pop ln, std sandandgravel prim pop ln, Radon.x, W NO2 ln	ALLNPDESperKM ln
Infrastructure 	Percent PoorCondition Bridges, Percent commuters by transit	Percent BroadbandAccess, Bridges, Percent MediumFairCondition Bridges

State-Level Places Map



Places Map within Fayette County, IL



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Count of Places in each Category

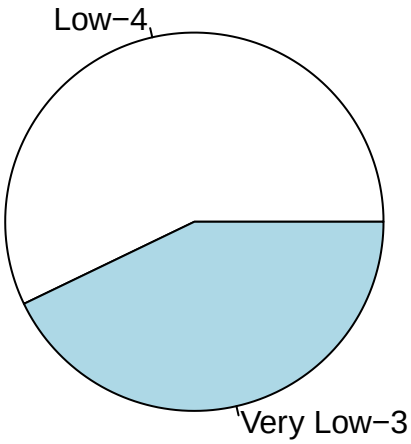
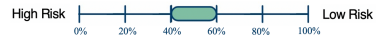


Table 5: Percentage of Census Tracts under each Resilience Category(County level)

Very High	High	Moderate	Low	Very Low
0 %	0 %	0 %	100 %	75 %

Places Indicator Rankings

Indicator Group	High Risk Areas	Low Risk Areas
Community 	Young percent, NotMarried Percent, LargeFam Percent, Physically Unhealthy Days, Inadequate Facilities, COVID-19 death rate, Percent Food Insecure, Percent Limited Access to Healthy Foods, Percent rural	Females Percent, Educated percent, PrimeWorkingAge percent, Food Environment Index, Percent Exercise Access, Percent Vaccinated, Social Association Rate
Economy 	LowIncome Percent, PT LQ, Arts LQ, GINI Index, Percent Children in Poverty, Gender Pay Gap, Percent income required for childcare expenses, CommuteTime, Vice related business rate, Recreation related business rate	MHHI, poverty, Unemployment percent, Service LQ, construction LQ, Management, Others, Walkability Score, Civic related business rate, Education related business rate, Healthcare related business rate
Housing 	OldHomes, Units SingleFamily, Percent HousingProblems, Percent Section8	Homewownership, NewHomes, Renter MHHI, Segregation Index
Environment 	std nonmetal prim pop ln, std sandandgravel prim pop ln, Radon.x, W NO2 ln	ALLNPDESperKM ln
Infrastructure 	Percent PoorCondition Bridges, Percent commuters by transit	Percent BroadbandAccess, Bridges, Percent MediumFairCondition Bridges

Relevant Resources

The following represent key areas of concern (in order of importance) at the county level:
- **Economy**
- **Community**

The resources below have been extracted from the Disaster Planning Library to facilitate planning for high-risk areas observed through the assessment. Please go through the following tools as a starting point for your planning process and feel free to search the Disaster Planning Library for further information, if required. The resources here are included to facilitate the process of hazard mitigation planning, through the Planning for a Purpose Model of Illinois Extension (see Toolkit).

Economy

Agriculture and Rural Economy

- **Branching Out: Agroforestry As A Climate Change Mitigation And Adaptation Tool For Agriculture**
  Organization : Journal of Soil and Water Conservation
  Year : 2012
  Document_type : General Resource/ Foundational Research, Planning Tool
  Disasters : Flood, Drought, Extreme Weather, Man-Made Disasters, Soil Erosion/Landslides, Agricultural Disasters
  Abstract : US and Canadian agricultural lands are being pressed to provide more environmental and economic services, while at the same time their capacity to provide these services under potential climate change (CC) is being questioned (Field et al. 2007; CAST 2011). Producers are already experiencing weather patterns outside of climate norms (e.g., the 2011 droughts in Texas, and flooding along the Missouri River in the United States and
  along the Red River in Canada) that have had significant impacts on production. Predictions of future climate conditions for the US Midwest include longer growing seasons that could potentially increase crop yields but also increase heat waves,
  floods, droughts, and insect and weed issues that may then adversely impact production (USGCRP 2009). Climate change drives many stressors and interacts with many non-climatic stressors. This makes it difficult to forecast outcomes in any general way other than many existing threats to agricultural production, such as erosion and pests, which will most likely be exacerbated under shifting climate (Field et al. 2007; USGCRP 2009). Creating profitable and healthy operations under this unpredictable interplay of factors driven by shifting climate (and, along with it, shifting markets) will be a daunting task.
  It will be essential that farmers, ranchers, and even communities have a variety of land management options to minimize the risks and maximize services under such uncertain conditions.
  Plan_Components : Strategies

- **Disaster Assistance Programs At A Glance**
  Organization : USDA
  Year : 2020
  Document_type : General Resource/ Foundational Research
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides, Agricultural Disasters
  Abstract : A clean easy to read guide to programs that USDA offers for farm production and conservation
  Plan_Components : Funding Mechanisms

- **Soil Health Matrix Decision Tool**
  Organization : North Central Region Water Network

Year : 2022
Document_type : Web-based Resource, Planning Tool
Disasters : Man-Made Disasters, Agricultural Disasters
Abstract : This tool is designed to serve as a 101 tool for producers who are considering implementing new soil health practices on their operation. It is not meant to provide specific metrics on the impact of practice implementation. Instead, it is designed to give producers an overall feel for the soil health benefits of a range of management decisions and help narrow down which practices might be the best fit for their operation. After using this tool, it is critical for producers to work with advisors and educators about the specifics of their operation prior to implementation. The values in this tool are regional in nature.
Plan_Components : Tools

- **Dealing With Flooding**
Organization : Iowa State University Extension and Outreach
Document_type : General Resource/ Foundational Research, Web-based Resource
Disasters : Flood
Abstract : Floods are one of the most common, and most costly, natural disasters. Preparing for flood situations can minimize injury to yourself and your family and speed the recovery process. These resources will help you prepare and recover from flooding situations.
Plan_Components : Tools

- **Dairy And Livestock Farm Disaster Preparedness And Recovery Guide For Maine Farmers**
Organization : University of Maine Cooperative Extension
Year : 2018
Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool, Manual for an Local Organization
Disasters : Flood, Extreme Weather, Wildfires, Man-Made Disasters, Biological Disasters, Agricultural Disasters
Abstract : This fact sheet contains tip sheets and checklists
to help you prepare for and recover from an
on-farm or community disaster, especially if
you are unfamiliar with emergency management
limitations regarding livestock.
Plan_Components : Strategies, Planning Processes, Tools, Information

Economic Recovery, Restoration and Resilience

- **Managed Aquifer Recharge And The U.s. Army Corps Of Engineers: Water Security Through Resilience**
Organization : Institute for water resources
Year : 2020
Document_type : Manual for an Local Organization
Disasters : Flood, Drought, Man-Made Disasters
Abstract : The Institute for Water Resources (IWR) is a U.S. Army Corps of Engineers (USACE) Field Operating Activity with centers located in Alexandria, VA, Davis, CA; New Orleans, LA; Lakewood, CO; and Pittsburgh, PA. IWR was created in 1969 to analyze and anticipate changing water resources management conditions and develop methods and analytical tools to address economic, social, institutional, and environmental needs in water resources. Since its inception, IWR has been a leader in the development of strategies and tools for planning and executing USACE water resources and water management programs.
Plan_Components : Strategies, Funding Mechanisms, Case Studies

- **Mitigation Assistance: Building Resilient Infrastructure And Communities**
  Organization : FEMA
  Year : 2022
  Document_type : Policy
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides
  Abstract : The purpose of this policy is to establish the framework and requirements for BRIC while allowing flexibility to promote continuous program improvement through priorities and criteria set forth in the annual Notice of Funding Opportunity (NOFO). The BRIC program is designed to promote a national culture of preparedness and public safety through encouraging investments to protect the nation's communities and infrastructure and through strengthening national mitigation capabilities to foster resilience.
  Plan_Components : Strategies, Funding Mechanisms

- **Innovative Drought And Flood Mitigation Projects**
  Organization : FEMA
  Year : 2017
  Document_type : General Resource/ Foundational Research
  Disasters : Flood, Drought, Extreme Weather, Soil Erosion/Landslides
  Abstract : FEMA commissioned a report titled FEMA Mitigation Support for Planning and Implementation of Climate Resilient Infrastructure (CDM Smith, 2015a) in February 2015. In this report, over 70 climate resilient project options were identified that may reduce the risk of impacts to people and infrastructure attributed to climate change weather extremes. This list was reduced to 14 project types for further evaluation and analysis of various technical, economic-financial, implementation, and environmental considerations. Of the14 project types 4 of these projects were selected based on their high performance
  related to the aforementioned criteria and their ability to meet basic requirements consistent with HMA Guidance.
  This document evaluates the four project types from the standpoint of HMA program requirements: technical feasibility and effectiveness, cost effectiveness, Environmental and Historic Preservation (EHP) requirements and identifies areas of potential overlap with other Federal Agencies to support FEMA's evaluation of Duplication of Programs (DOP) while also considering areas where Federal agencies could successfully coordinate to fund these project types from multiple Federal programs.
  Plan_Components : Surveys/Assessments, Case Studies

- **Ecosystem Service Benefits In Benefit-Cost Analysis For Fema's Mitigation Programs Policy**
  Organization : FEMA
  Year : 2016
  Document_type : General Resource/ Foundational Research, Policy
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides, Agricultural Disasters
  Abstract : This policy provides guidance for using ecosystem service benefits in the evaluation of the cost-effectiveness of mitigation projects funded under FEMA's Hazard Mitigation programs and rescinds FP-108-024-01 and eliminates the BCR 0.75 requirement, allowing
  consideration of ecosystem service benefits for a project regardless of BCR value. FEMA
  rescinds that policy in recognition that the natural environment is an important component of a community's resilience strategy.
  Plan_Components : Strategies

- **Hazard Mitigation Assistance Guidance**
  Organization : FEMA
  Year : 2015

Document_type : Planning Tool, Manual for an Local Organization
Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides, Agricultural Disasters
Abstract : The U.S. Department of Homeland Security (DHS) FEMA HMA programs present a critical
opportunity to reduce the risk to individuals and property from natural hazards, while
simultaneously reducing reliance on Federal disaster funds. HMA programs provide funding for eligible activities that are consistent with the National Mitigation Framework's Long-Term Vulnerability Reduction capability. HMA programs reduce community vulnerability to disasters and their effects, promote individual and community safety
and resilience and promote community vitality after an incident. Furthermore, HMA programs reduce response and recovery resource requirements in the wake of a disaster or incident, which results in a safer community that is less reliant on external financial assistance.
Plan_Components : Strategies, Planning Processes, Funding Mechanisms

- **Supplemental Guidance For Conducting A Benefit-Cost Analysis (Bca) For A Floodplain And Stream Restoration Project**
  Organization : FEMA
  Year : 2016
  Document_type : General Resource/ Foundational Research, Planning Tool
  Disasters : Flood, Drought, Extreme Weather, Soil Erosion/Landslides
  Abstract : According to the FY2016 Pre-Disaster Mitigation (PDM) program Notice of Funding Opportunity (NOFO), Climate Resilient Mitigation Activities are eligible for PDM funding. The NOFO lists the Floodplain and Stream Restoration (FSR) project type as one of these eligible project types. Because the benefits that could be applicable to an FSR project have not yet been incorporated into the BCA Tool, this document was developed to assist users of FEMA's BCA Tool in performing a benefit cost analysis for an FSR project. The process for conducting a BCA may involve inputting data in existing data fields in the BCA Tool, using a FEMA-created spreadsheet, and/or calculating losses manually and then entering them into new loss category fields in the BCA Tool.
  Plan_Components : Planning Processes, Funding Mechanisms

- **Building Codes Save: A Nationwide Study**
  Organization : FEMA
  Year : 2020
  Document_type : General Resource/ Foundational Research
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The findings of the MAT investigations, the magnitude of recent hazard events,
  and the escalating cost of natural disasters together revealed a compelling need to quantify the value of building codes in reducing damage from natural disasters nationwide.
  Plan_Components : Surveys/Assessments

- **Protecting Communities And Saving Money**
  Organization : FEMA
  Year : 2020
  Document_type : General Resource/ Foundational Research
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : One of the most cost-effective ways to safeguard our communities against natural disasters is to adopt and follow hazard-resistant building codes. Not only are casualties reduced, but the cost of building damage is also reduced during a natural disaster. Building codes also help communities get back on their feet faster by minimizing indirect costs such as business interruptions and lost income. A new FEMA study has made the impact of building codes on sustainability clear. The cost of not adopting building codes is too high.

Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Funding Mechanisms, Case Studies

- **Resilience Toolkit**
  Organization : ICC (International Code Council)
  Year : 2022
  Document_type : Web-based Resource
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : Over the past twenty years communities worldwide have experienced disaster events that have significantly impacted their society, economy, and culture. As populations grow, urban areas expand, and interconnectedness increases, the potential for a disaster event to have deeper and further-reaching consequences also increases. As a result, there is a need to implement measures that increase resilience across the social, organizational, and infrastructural aspects of communities - community resilience.
  Plan_Components : Strategies, Planning Processes

- **Coronavirus State And Local Fiscal Recovery Funds**
  Organization : U.S. DEPARTMENT OF THE TREASURY
  Year : 2022
  Document_type : Others
  Disasters : Flood, Biological Disasters
  Abstract : The Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program, a part of the American Rescue Plan, delivers $350 billion to state, local, and Tribal governments across the country to support their response to and recovery from the COVID-19 public health emergency.
  Plan_Components : Strategies, Funding Mechanisms

- **Community Solutions For Stormwater Management**
  Organization : EPA
  Year : 2016
  Document_type : Planning Tool
  Disasters : Flood, Man-Made Disasters
  Abstract : The purpose of this draft guide is to assist EPA, states and local governments in developing new or improving existing long-term stormwater plans that inform stormwater management implemented by communities on the ground. The document describes how to develop a comprehensive long-term community stormwater plan that integrates stormwater management with communities' broader plans for economic development, infrastructure investment and environmental compliance.
  Plan_Components : Strategies, Planning Processes, Tools, Green Infrastructure

- **Living With Weather**
  Organization : Midwestern Regional Climate Center
  Year : 2022
  Document_type : Web-based Resource, Planning Tool
  Disasters : Tornado, Flood, Drought, Extreme Weather, Wildfires
  Abstract : Weather extremes have occurred, do occur, and will occur and can variously affect your personal health and safety, energy and water availability and usage, home and business structures, agricultural and transportation resources, air and water quality. Information collected primarily from governmental agencies is provided for easier living with extreme weather events (such as heat waves and droughts, thunderstorms, floods and ice storms and snowstorms).
  Resources are outlined for individuals to better plan for their own safety, for communities to help their residents to plan for and cope with weather hazards, and to aid individuals and communities to begin their recovery from weather hazards.
  Plan_Components : Surveys/Assessments, Strategies, Tools, Information

- **Flood Risk Overview For Illinois**
  Organization : Flood Factor
  Document_type : Web-based Resource, Planning Tool
  Disasters : Flood, Extreme Weather
  Abstract : There are 492,334 properties in Illinois that have greater than a 26% chance of being severely affected by flooding over the next 30 years. This represents 10% of all properties in the state. In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Explore the maps below to learn more about the homes, roads, businesses, and services at risk in Illinois.
  Plan_Components : Strategies, Tools, Green Infrastructure, Information

- **Sustainable Land Development Code City Of Greensburg, Kansas**
  Organization : GREENSBURG PLANNING COMMISSION
  Year : 2011
  Document_type : Example Ordinances and Codes
  Disasters : Tornado, Flood, Soil Erosion/Landslides, Agricultural Disasters
  Abstract : City code for Greensburg, Kansas. The small rural town is a unique example in which the entire town was destroyed by a tornado. This gave leeway for a complete reimagination of the town and code, building a sustainable and resilient community from the ground up.
  Plan_Components : Strategies, Tools, Green Infrastructure, Information

- **Forests For Indy Executive Summary: Urban Forest Protection Strategy**
  Organization : Indiana Forest Alliance and The Conservation Fund
  Year : 2021
  Document_type : Specific Plan, Manual for an Local Organization
  Disasters : Flood, water quality, heat, atmospheric CO2
  Abstract : Coordinated by the Indiana Forest Alliance, this data-driven framework fulfills a key directive in the White River Vision Plan: to “identify forests that are not protected, assess their quality and establish priorities for preserving high quality forests and forest cover in general.” Forest preservation also advances the goals of the Thrive Indy plan by equitably expanding green space, improving stormwater infiltration, and building climate resilience — boosting livability for every Indianapolis resident.
  Plan_Components : Surveys/Assessments, Strategies, Funding Mechanisms, Tools, Green Infrastructure

- **Mitigation Ideas A Resource For Reducing Risk To Natural Hazards**
  Organization : FEMA
  Year : 2013
  Document_type : Planning Tool
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The purpose of this document is to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters. The focus of this document is mitigation, which is action taken to reduce or eliminate long-term risk to hazards. Mitigation is different from preparedness, which is action taken to improve emergency response or operational preparedness.
  Plan_Components : Strategies, Green Infrastructure, Information

- **Comprehensive Plan Village Of Savoy**

Organization : Village of Savoy
Year : 2019
Document_type : Specific Plan
Disasters : Tornado, Flood, Wildfires
Abstract : The comprehensive plan is an official statement of a local government that establishes goals, policies, and actions for future development. As
the leading policy document guiding the development of local jurisdictions, the comprehensive plan has an important role to play in meeting local and regional challenges such as economic uncertainty, resource depletion, climate instability, and social disparities.
Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Green Infrastructure

- **Cape Cod Green Infrastructure Guide**
  Organization : Tufts University
  Year : 2015
  Document_type : General Resource/ Foundational Research, Web-based Resource
  Disasters : Flood, Man-Made Disasters, Biological Disasters, Agricultural Disasters
  Abstract : In 2015, this Green Infrastructure Guide was developed by Tufts University graduate students in the Water: Systems, Science & Society program to provide accessible opportunities for stakeholders and the public to learn about green technologies and the unique benefits they offer.
  The group primarily focused on nitrogen mitigation strategies in Cape Cod. Excess nitrogen has led to eutrophication and degraded water habitats, resulting in significant environmental impacts. Nitrogen loading to Cape Cod's watersheds must be reduced in order to restore ecological health and preserve this unique system into the future.
  Plan_Components : Case Studies, Green Infrastructure, Information

- **Community Flood Resilience In Vinton: Engaging Residents Affected By The Floods Of 2008 And 2016**
  Organization : Iowa Watershed Approach, U.S. Department of Housing and Urban Development (HUD)
  Year : 2020
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Flood
  Abstract : Vinton was selected to be included in the Iowa Watershed Approach's
  Flood Resilience Program, which recognizes that social resources are
  often absent or minimally evident when it comes to flood resiliency.
  The program strives to improve the use of social resources in
  watersheds by connecting local partners and stakeholders, enhancing
  the presence of social resources in watershed planning efforts, and
  increasing the awareness and communication about established and
  novel flood resilience initiatives.
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Case Studies

- **Plan Today For Tomorrow's Flood**
  Organization : Purdue University
  Year : 2010
  Document_type : Planning Tool
  Disasters : Flood
  Abstract : This publication raises the awareness of how floodwaters pose risks to both agricultural retailers and their communities. It includes the lessons many retail managers learned from their flooding experiences, and helps retailers examine what they need to do to create a flood preparation plan.
  Plan_Components : Planning Processes, Information

- **Disaster Recovery Resource Fair**

Organization : University of Minnesota Extension
Document_type : Planning Tool, Manual for an Local Organization
Disasters : Disasters in general
Abstract : Holding Disaster Recovery Resource Fairs in the affected community can help reduce many barriers people may encounter as they attempt to access disaster assistance programs and services. A Disaster Recovery Resource Fair is a local, one-stop shop for disaster survivors to access multiple assistance programs at one location. They are held at times when survivors may be available to attend and are offered on more than one occasion. More people participate when the resource fair is held in a familiar place within the affected community and is organized, promoted, and staffed by people familiar to the disaster survivors. A Disaster Recovery Resource Fair might resemble a Community Health Fair, trade show, or Home & Garden Expo where individuals can interact with a variety of resources in one setting.
Plan_Components : Planning Processes, Tools, Information

- **Indiana Coad Guidance Manual**
Organization : Purdue University
Year : 2012
Document_type : Planning Tool, Manual for an Local Organization
Disasters : disasters in general
Abstract : This document was written to help all community organizations and individuals understand how collaborative efforts can prepare communities for disaster. The main goals of these collaborations are to help communities avoid some disasters and recover from other unavoidable disasters.
Plan_Components : Strategies, Planning Processes, Information

Development and Finances

- **Supplemental Guidance For Conducting A Benefit-Cost Analysis (Bca) For A Floodwater Diversion And Storage Project**
Disasters : Flood, Drought
Abstract : According to the FY2016 Pre-Disaster Mitigation (PDM) program Notice of Funding Opportunity (NOFO), Climate Resilient Mitigation Activities are eligible for PDM funding. The NOFO lists the Floodwater Diversion and Storage (FDS) project type as one of these eligible project types. Because the benefits that could be applicable to an FDS project have not yet been incorporated into the BCA Tool, this document was developed to assist users of FEMA's BCA Tool in performing a benefit cost analysis for an FDS project. The process for conducting a BCA may involve inputting data in existing data fields in the BCA Tool, using a FEMA-created spreadsheet, and/or calculating losses manually and then entering them into new loss category fields in the BCA Tool
Plan_Components : Strategies, Planning Processes, Funding Mechanisms

- **Usda Forest Service Urban & Community Forestry 2022 Challenge Cost Share Grant Program**
Organization : USDA, U.S. Forest Service
Year : 2022
Document_type : Web-based Resource, Funding Opportunities
Disasters : Flood, Soil Erosion/Landslides
Abstract : Urban forests are trees for people, where they live, work and play, which includes natural resources on public and private property that contribute to quality of life, supports community development, green infrastructure, and provide a wealth of benefits to cities and towns.
The USDA Forest Service Urban & Community Forestry (U&CF) Program is the only dedicated urban forest program in the federal government. It is a technical, financial, and educational assistance program delivers nature-based solutions to more than 84 percent of Americans. The program works in partnership to restore, sustain, and manage more than 140 million acres of urban and community forest lands for the benefit of communities in the United States. Healthy urban & community forests

and green infrastructure are not only critical to all our nation's forests, but research and studies have also shown that our urban and community forests are essential to the economic, environmental, physical, and mental well-being of our citizens.
Plan_Components : Funding Mechanisms, Tools, Green Infrastructure

- **Equity Guide For Green Stormwater Infrastructure Practitioners**
Organization : Greenprint Partners
Year : 2022
Document_type : General Resource/ Foundational Research, Planning Tool, Manual for an Local Organization, Policy
Disasters : Flood, Drought
Abstract : The Equity Guide for Green Stormwater Infrastructure Practitioners is a resource developed by and for green infrastructure program managers representing local public sector stormwater management organizations across the United States and Canada. It offers an action and evaluation roadmap that defines: our industry's shared long-term equity goals, best practices that will move the needle, and sample metrics that help us track progress toward those goals over time. It also offers a variety of tools to support practitioners in customizing community- informed equity work plans and evaluation plans to local
contexts
Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Tools, Green Infrastructure, Information

- **Hazard Mitigation Assistance Cost Share Guide**
Organization : FEMA
Year : 2016
Document_type : General Resource/ Foundational Research, Manual for an Local Organization, Funding Opportunities
Disasters : Tornado, Flood, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
Abstract : The Federal Emergency Management Agency (FEMA) offers three Hazard Mitigation Assistance (HMA) grant programs: the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) Program, and the Flood Mitigation Assistance (FMA) Program. Each of the HMA programs have specific non-Federal, cost share contribution requirements administered in accordance with the Federal cost-sharing requirements outlined in Title 2 of the Code of Federal Regulations (CFR), Sections 200.29, 200.306, and 200.434 and consistent with Title 44 of the CFR, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, and the National Flood Insurance Act, as amended.
This Guide is intended to provide a brief overview that will be helpful to grant Applicants in making cost share decisions and meeting Federal cost share requirements in the context of HMA grant programs
Plan_Components : Funding Mechanisms, Tools

- **Fema Individual Assistance**
Organization : FEMA
Year : 2021
Document_type : Web-based Resource, Funding Opportunities
Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
Abstract : Individual disaster relief assistance.
Plan_Components : Funding Mechanisms

- **Iema Public Assistance Program**
Organization : IEMA
Year : 2022
Document_type : General Resource/ Foundational Research, Web-based Resource, Funding Oppor-

tunities
Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
Abstract : The Public Assistance (PA) Program provides federal disaster assistance to states, local units of government, and certain private non-profit organizations, for debris removal, emergency protective measures and the permanent restoration or replacement of public facilities as a result of a major disaster or emergency declaration being made by the President.
Plan_Components : Funding Mechanisms, Information

- **Sustainable Communities Extension Program**
  Organization : Purdue University Extension, Illinois-Indiana Sea Grant
  Document_type : General Resource/ Foundational Research, Web-based Resource
  Disasters : Flood, Man-Made Disasters, Soil Erosion/Landslides
  Abstract : The efforts of the Illinois-Indiana Sea Grant and Purdue University Extension Sustainable Communities Extension Program support community planning and sustainable development strategies in communities across Indiana and Great Lakes states.
  Plan_Components : Strategies, Planning Processes, Green Infrastructure

Community

Emergency Preparedness

- **Danr Guide To Disaster Preparedness**
  Organization : University of California, Division of Agriculture and Natural Resources, Veterinary Medicine Extension
  Year : 1999
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Any disaster that may affect domestic animals
  Abstract : This guide is intended to provide useful information about developing a disaster response plan, about disaster preparedness training and resources, and to stimulate your thoughts on how Cooperative Extension can engage in local disaster mitigation activities or become involved in training youth to responsibly support community needs.
  The document has a few things specific to California, but also has good planning resources and checklists that can be applied to anywhere for disasters. It is focused on animal care and preparedness related to disasters.
  Plan_Components : Strategies, Planning Processes

- **Disaster Risk Management Systems Analysis A Guide Book**
  Organization : Food and Agriculture Organization of the United Nations FAO
  Year : 2008
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides, Agricultural Disasters, economic shock
  Abstract : The Disaster Risk Management (DRM) Systems Analysis Guide provides a set of tools and methods to assess existing structures and capacities of national, district and local institutions with responsibilities for Disaster Risk Management (DRM) in order to
  improve their effectiveness and the integration of DRM concerns into development planning, with particular reference to disaster-prone areas, vulnerable sectors and population groups. The strategic use of the Guide is expected to enhance understanding of
  the strengths, weaknesses, opportunities and threats facing existing DRM institutional structures and their implications for on-going institutional change processes. It will also highlight the complex institutional linkages among various actors and sectors at different levels. Finally, it will help identify gaps within the existing DRM institutions and/or systems including sectoral line agencies that are

often responsible for implementing the technical aspects of DRM (e.g. agriculture, water and health sectors).
Plan_Components : Strategies, Planning Processes

- **Emergency Support Function #11**
  Organization : Department of Agriculture
  Year : 2016
  Document_type : General Resource/ Foundational Research
  Disasters : Agricultural Disasters
  Abstract : Emergency Support Function (ESF) #11 – Agriculture and Natural Resources organizes and coordinates Federal support for the protection of the Nation's agricultural and natural and cultural resources during national emergencies. ESF #11 works during
  actual and potential incidents to provide nutrition assistance; respond to animal and agricultural health issues; provide technical expertise, coordination and support of animal and agricultural emergency management; ensure the safety and defense of the
  Nation's supply of meat, poultry, and processed egg products; and ensure the protection of natural and cultural resources and historic properties
  Plan_Components : Strategies

- **Building Codes Save: A Nationwide Study**
  Organization : FEMA
  Year : 2020
  Document_type : General Resource/ Foundational Research
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The findings of the MAT investigations, the magnitude of recent hazard events,
  and the escalating cost of natural disasters together revealed a compelling need to quantify the value of building codes in reducing damage from natural disasters nationwide.
  Plan_Components : Surveys/Assessments

- **Nature-Based Solutions To Disasters**
  Organization : IUCN
  Year : 2017
  Document_type : General Resource/ Foundational Research
  Disasters : Flood, Drought, Extreme Weather, Earthquakes, Soil Erosion/Landslides
  Abstract : A short PDF about nature-based solutions to disasters going over the issues, importance, and what can be done.
  Plan_Components : Strategies

- **Municipal Code Of The Village Of Morton**
  Organization : Village of Morton
  Year : 2018
  Document_type : Manual for an Local Organization, Example ordinances and codes
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters
  Abstract : Example codes and ordinances for a local rural town in Illinois that use disaster codes
  Plan_Components : Strategies

- **All Lands Wildfire Risk Portal**
  Organization : USDA Forest Service
  Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool
  Disasters : Wildfires
  Abstract : This web portal explores the risk of large wildfires in the western US from social and ecological perspectives. The tabs at the top of the page are organized around two objectives: (A) an explanatory narrative; (B) an exploratory analysis of communities and Forest Service lands. To that

end this portal both communicates the nature of potential wildfire risk from surrounding wildlands and prioritizes state and federal assistance to local communities.
Plan_Components : Surveys/Assessments, Strategies, Tools, Information

- **Resilience Strategies For Wildfire**
  Organization : Center for Climate and Energy Solutions
  Year : 2018
  Document_type : Planning Tool, Example Ordinances and Codes
  Disasters : Wildfires
  Abstract : The risk of wildfire is expected to grow across the United States due to reduced precipitation in some regions, and higher temperatures caused by climate change. Wildfire has far-reaching impacts that can ripple through communities, regions, watersheds, and ecosystems. This paper overviews a number of adaptation strategies for areas with a projected increase in wildfire conditions. For each strategy, it will discuss design and operation costs, and primary and co-benefits. The paper includes a community case
  study of Austin, Texas, which has used a number of these strategies, and a list of publications and interactive tools to help communities become more resilient to wildfire
  Plan_Components : Strategies, Planning Processes, Case Studies, Tools, Information

- **Preparing For A Tornado**
  Organization : CDC
  Year : 2022
  Document_type : Web-based Resource, Planning Tool
  Disasters : Tornado
  Abstract : Tornadoes impact locations across the country every year, bringing massive winds and destruction in their paths. Although tornadoes are most common in the Central Plains, the Midwest, and the Southeast, they have been reported in all 50 states. Keep yourself and your loved ones safe by preparing in advance for tornadoes.
  Plan_Components : Strategies, Planning Processes, Information

- **Tornado Risks And Hazards In The Midwest United States**
  Organization : FEMA
  Year : 2007
  Document_type : General Resource/ Foundational Research, Planning Tool
  Disasters : Tornado
  Abstract : The purpose of this Tornado Recovery Advisory (RA) is to summarize facts about the Midwest tornado hazard, specifically the area served by FEMA Region VII. Region VII includes Iowa, Kansas, Missouri, and Nebraska. The general population, specifically homeowners and renters, policy makers, local officials, builders, and building officials know and understand
  that tornado occurrence in the Midwest is not a rare event. In fact, more than half of the 20 states with the highest frequency of tornado occurrence on record, and 4 of the top 5 (Texas, Oklahoma, Kansas, and Nebraska) are located in the Midwest
  Plan_Components : Surveys/Assessments, Strategies, Tools, Information

- **Flood Risk Overview For Illinois**
  Organization : Flood Factor
  Document_type : Web-based Resource, Planning Tool
  Disasters : Flood, Extreme Weather
  Abstract : There are 492,334 properties in Illinois that have greater than a 26% chance of being severely affected by flooding over the next 30 years. This represents 10% of all properties in the state. In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Explore the maps below to learn more about the homes, roads, businesses, and services at risk in Illinois.
  Plan_Components : Strategies, Tools, Green Infrastructure, Information

- **Nature-Based Solutions For Disaster Risk Reduction**
  Organization : UNDRR
  Year : 2021
  Document_type : Specific Plan, Planning Tool, Manual for an Local Organization
  Disasters : Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Soil Erosion/Landslides
  Abstract : This guide aims to give practical, how-to-do information on setting up and implementing nature-based solutions (NbS), especially for disaster risk reduction (DRR), but also for climate change adaptation (CCA). It is designed to help implement the Sendai Framework for Disaster Risk Reduction 2015-2030 (Hereafter referred to as the Sendai Framework). The Sendai Framework recognizes that environmental degradation can
  cause hazards and that disasters also have an impact on the environment. It recognizes that environmental management
  is a key component that can reduce disaster risk and increase
  resilience:
  • Poor land management, unsustainable use of natural
  resources and degrading ecosystems are highlighted
  as underlying drivers of disaster risk
  • Environmental impacts of disasters are recognized
  • Countries are explicitly encouraged to strengthen the
  sustainable use and management of ecosystems for
  building resilience to disasters
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Funding Mechanisms, Case Studies, Tools, Green Infrastructure, Information

- **Hazard Mitigation Assistance Cost Share Guide**
  Organization : FEMA
  Year : 2016
  Document_type : General Resource/ Foundational Research, Manual for an Local Organization, Funding Opportunities
  Disasters : Tornado, Flood, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The Federal Emergency Management Agency (FEMA) offers three Hazard Mitigation Assistance (HMA) grant programs: the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) Program, and the Flood Mitigation Assistance (FMA) Program. Each of the HMA programs have specific non-Federal, cost share contribution requirements administered in accordance with the Federal cost-sharing requirements outlined in Title 2 of the Code of Federal Regulations (CFR), Sections 200.29, 200.306, and 200.434 and consistent with Title 44 of the CFR, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, and the National Flood Insurance Act, as amended.
  This Guide is intended to provide a brief overview that will be helpful to grant Applicants in making cost share decisions and meeting Federal cost share requirements in the context of HMA grant programs
  Plan_Components : Funding Mechanisms, Tools

- **Local Mitigation Planning Handbook**
  Organization : FEMA
  Year : 2013
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The Local Mitigation Planning Handbook is a tool for local governments
  to use in developing or updating a local hazard mitigation plan.
  The purpose of the Handbook is the following:

1. To provide guidance to local governments on developing or updating hazard mitigation plans to meet the requirements of Title 44 Code of Federal Regulations (CFR) §201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs; and

2. To offer practical approaches and examples for how communities can engage in effective planning to reduce long-term risk from natural hazards and disasters.
   Plan_Components : Strategies, Planning Processes, Funding Mechanisms

- **Mitigation Ideas A Resource For Reducing Risk To Natural Hazards**
  Organization : FEMA
  Year : 2013
  Document_type : Planning Tool
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The purpose of this document is to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters. The focus of this document is mitigation, which is action taken to reduce or eliminate long-term risk to hazards. Mitigation is different from preparedness, which is action taken to improve emergency response or operational preparedness.
  Plan_Components : Strategies, Green Infrastructure, Information

- **Iema Public Assistance Program**
  Organization : IEMA
  Year : 2022
  Document_type : General Resource/ Foundational Research, Web-based Resource, Funding Opportunities
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The Public Assistance (PA) Program provides federal disaster assistance to states, local units of government, and certain private non-profit organizations, for debris removal, emergency protective measures and the permanent restoration or replacement of public facilities as a result of a major disaster or emergency declaration being made by the President.
  Plan_Components : Funding Mechanisms, Information

- **Hazard Mitigation Plan, Macon County, Illinois**
  Organization : Macon County, Illinois
  Year : 2013
  Document_type : Specific Plan, Example Ordinances and Codes
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Man-Made Disasters, extreme heat, dam failure
  Abstract : An example hazard mitigation plan and goal setting agenda meeting from Macon County.
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes

- **Code Of Ordinances Village Of Thomasboro, Illinois**
  Organization : Order of the Board of Trustees, Village of Thomasboro
  Document_type : Example Ordinances and Codes
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Man-Made Disasters
  Abstract : Code of Ordinances for a small rural town in Illinois.

Plan_Components : Strategies, Funding Mechanisms, Information

- **He Illinois Technological Hazards Mitigation Plan (Ithmp)**
  Organization : Illinois Emergency Management Agency (IEMA)
  Document_type : Specific Plan
  Disasters : Man-Made Disasters, Biological Disasters
  Abstract : The contents of this Illinois Technological Hazard Mitigation Plan (ITHMP) are intended to provide the framework for technological hazard mitigation not only during the recovery and reconstruction process, but also on a year-round basis to identify current and proposed mitigation projects that will reduce the potential for future losses and decrease the costs to the taxpayers. The overall goals of this plan, and of the four documents comprising the Illinois Multi-Hazard Mitigation Plan (IMHMP), are universal in that they center on the need to protect lives and property, reduce the costs of disaster response, and minimize disruption to the state following a disaster. The IMHMP is comprised of four documents: three planning documents addressing
  natural hazards, technological hazards and human-caused hazards, respectively, along with the Illinois Multi-Hazard Mitigation Strategy (IMHMS) document. The Illinois Natural Hazard Mitigation Plan (INHMP) is the original mitigation plan for the State of Illinois, and is the comprehensive expression of the mitigation processes, programs, projects and strategies employed in the State of Illinois for hazard mitigation planning and plan implementations.
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes

- **The Flood Resilience Action Plan Guidebook For Planners**
  Organization : ASTIG Planning, Iowa Wter Shed Approach, University of Iowa, IIHR UIOWA, Iowa Flood Center,
  Year : 2021
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Flood
  Abstract : Flooding is not simply an environmental issue; it is also a social justice issue. Floods have increased in frequency and magnitude due to climate change across the United States and abroad. This is bad news for everyone. However, socially vulnerable populations generally face greater concentrations of losses and have the least capacity to recover. As we mitigate floods, we also need to account for communities with varying resources. In other words, we must build community resilience in socially vulnerable populations to effectively address flood impacts. For communities where floods are becoming frequent, the need to act immediately is often at odds with acting equitably—which takes time. This is particularly true for rural and small communities, where resources are
  already limited and where existing national resilience frameworks might not take into account a rural context. In this planning guide, we will discuss an approach for implementing a Flood Resilience Action Plan (FRAP) and provide additional examples on how to do so within a context of compounded disasters.
  Compounded disasters occur when communities are faced with multiple threats
  one after the other. The most recent examples include the derecho storm in Iowa during the COVID-19 pandemic or the heavy winter storms and loss of power in Texas that also occurred during the pandemic. Compounded disasters overburden limited resources, especially in small rural communities. This guide aims to help planners build strategies that are innovative, flexible, and engaging to build community resilience during challenging times. After reading this guidebook, planners will have a set of initial tools and, most important, an
  understanding of the conceptual approach necessary to build community resilience to floods in rural communities.
  Plan_Components : Strategies, Planning Processes, Case Studies

- **All Hazards**
  Organization : Iowa State Univesity
  Year : 2018
  Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool

Disasters : Tornado, Flood, Drought, Extreme Weather, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides, Agricultural Disasters
Abstract : The educational materials found on this site are the compilation of many resources currently available on-line. The information has been gathered from federal agencies such as the Centers for Disease Control and Prevention (CDC), Environmental Protection Agency, the Federal Emergency Management System (FEMA), the U.S. Department of Agriculture (USDA), the Food and Drug Administration, and the National Oceanic and Atmospheric Administration (NOAA). Many non-governmental groups, such as the American Red Cross and the National Safety Council, as well as various Cooperative Extension agencies also have resources and information for preparedness that are provided through this website.
Plan_Components : Surveys/Assessments, Planning Processes, Tools, Information

- **Plan Today For Tomorrow's Flood**
  Organization : Purdue University
  Year : 2010
  Document_type : Planning Tool
  Disasters : Flood
  Abstract : This publication raises the awareness of how floodwaters pose risks to both agricultural retailers and their communities. It includes the lessons many retail managers learned from their flooding experiences, and helps retailers examine what they need to do to create a flood preparation plan.
  Plan_Components : Planning Processes, Information

- **Cleaning Up After A Flood**
  Organization : University of Minnesota Extension
  Year : 2018
  Document_type : General Resource/ Foundational Research, Web-based Resource
  Disasters : Flood
  Abstract : Cleaning up from a flood can seem like a daunting task. It's important to prepare and plan for how you're going to deal with the damage. Use the following guidelines to get your home back to livable standards as soon as possible.
  Plan_Components : Strategies, Planning Processes, Information

- **Start An Emergency Fund Before Disaster Strikes**
  Organization : University of Minnesota Extension
  Year : 2020
  Document_type : Web-based Resource, Planning Tool
  Disasters : Disasters in general
  Abstract : It takes discipline and planning to save. Saving means putting off using money today so you have money for future needs. An emergency fund is very useful in getting immediate needs met after a disaster.
  Plan_Components : Strategies, Funding Mechanisms, Information

- **Create A Family Plan Before Disaster Strikes**
  Organization : University of Minnesota Extension
  Year : 2020
  Document_type : Web-based Resource
  Disasters : Disasters in general
  Abstract : Does your family have a plan for what to do in the event of a disaster? A disaster plan takes into account all family members, giving clear guidance for what to do in different disaster situations.
  Plan_Components : Planning Processes

- **Disaster Preparedness Plan**

Organization : American Red Cross
Year : 2022
Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool
Disasters : disasters in general
Abstract : Create and practice an emergency plan so your family will know what to do in a crisis.
Plan_Components : Planning Processes, Tools

- **Preparing For Livestock Emergencies**
  Organization : University of Minnesota Extension
  Year : 2022
  Document_type : Web-based Resource, Planning Tool
  Disasters : Disasters in general
  Abstract : Forms and guides to prepare livestock owners in the presence of a disaster.
  Plan_Components : Planning Processes, Tools

- **Storm Recovery Guide**
  Organization : Louisiana State University, Iowa State University Extension and Outreach
  Year : 2005
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Tornado, Flood, Extreme Weather
  Abstract : A guide focused on recovery from a storm disaster
  Plan_Components : Strategies

- **Food Safety And Storage For Emergency Preparedness**
  Organization : Colorado State University Extension
  Year : 2022
  Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool
  Disasters : Tornado, Flood, Extreme Weather, Biological Disasters, disasters in general
  Abstract : Below are some tips for planning ahead for such emergencies as a tornado, ice storm, flooding, blizzard, power failure, or illness that would prevent you from getting to the store. An emergency may also result from loss of employment, therefore decreasing financial resources available to purchase foods. Whatever the situation, knowledge of food safety and storage is important.
  Plan_Components : Strategies, Information

- **Dairy And Livestock Farm Disaster Preparedness And Recovery Guide For Maine Farmers**
  Organization : University of Maine Cooperative Extension
  Year : 2018
  Document_type : General Resource/ Foundational Research, Web-based Resource, Planning Tool, Manual for an Local Organization
  Disasters : Flood, Extreme Weather, Wildfires, Man-Made Disasters, Biological Disasters, Agricultural Disasters
  Abstract : This fact sheet contains tip sheets and checklists
  to help you prepare for and recover from an
  on-farm or community disaster, especially if
  you are unfamiliar with emergency management
  limitations regarding livestock.
  Plan_Components : Strategies, Planning Processes, Tools, Information

Community and Health

- **Mitigation Assistance: Building Resilient Infrastructure And Communities**
  Organization : FEMA

Year : 2022
Document_type : Policy
Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Man-Made Disasters, Biological Disasters, Soil Erosion/Landslides
Abstract : The purpose of this policy is to establish the framework and requirements for BRIC while allowing flexibility to promote continuous program improvement through priorities and criteria set forth in the annual Notice of Funding Opportunity (NOFO). The BRIC program is designed to promote a national culture of preparedness and public safety through encouraging investments to protect the nation's communities and infrastructure and through strengthening national mitigation capabilities to foster resilience.
Plan_Components : Strategies, Funding Mechanisms

- **Building Codes Toolkit**
  Organization : FEMA
  Year : 2021
  Document_type : Manual for an Local Organization
  Disasters : Tornado, Flood, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : The new FEMA Building Science Branch Building Codes Toolkit offers basic guidance and tools to help building owners and occupants learn about building codes and the process of making a building stronger against natural hazards.
  Plan_Components : Strategies, Planning Processes, Funding Mechanisms

- **Protecting Communities And Saving Money**
  Organization : FEMA
  Year : 2020
  Document_type : General Resource/ Foundational Research
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : One of the most cost-effective ways to safeguard our communities against natural disasters is to adopt and follow hazard-resistant building codes. Not only are casualties reduced, but the cost of building damage is also reduced during a natural disaster. Building codes also help communities get back on their feet faster by minimizing indirect costs such as business interruptions and lost income. A new FEMA study has made the impact of building codes on sustainability clear. The cost of not adopting building codes is too high.
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Funding Mechanisms, Case Studies

- **Resilience Toolkit**
  Organization : ICC (International Code Council)
  Year : 2022
  Document_type : Web-based Resource
  Disasters : Tornado, Flood, Drought, Extreme Weather, Earthquakes, Wildfires, Soil Erosion/Landslides
  Abstract : Over the past twenty years communities worldwide have experienced disaster events that have significantly impacted their society, economy, and culture. As populations grow, urban areas expand, and interconnectedness increases, the potential for a disaster event to have deeper and further-reaching consequences also increases. As a result, there is a need to implement measures that increase resilience across the social, organizational, and infrastructural aspects of communities - community resilience.
  Plan_Components : Strategies, Planning Processes

- **Building American Wildfire Resiliency**
  Organization : Bipartisan Policy Center

Year : 2021
Document_type : Planning Tool, Policy, Funding Opportunities
Disasters : Wildfires
Abstract : Last year marked one of the worst wildfire seasons in United States history. More than 10 million acres burned across the country, forcing hundreds of thousands of Americans from their homes and costing the nation $16.5 billion in damages. Climate change contributed to a historically dry period for the Southwest U.S. in recent decades, making devastating wildfire seasons longer and more frequent. Since 2000, wildfires have burned an average of 7 million acres per year, more than double the average annual acres burned in the 1990s. Images of burnt orange skies spanning the Western U.S. are increasingly commonplace, and the costs of catastrophic yearly wildfires are becoming unbearable. While the impact of wildfires is mostly visible—burnt forests and communities, unhealthy air, and mass evacuations—they also have a less obvious effect: carbon dioxide emissions.
Plan_Components : Strategies, Funding Mechanisms, Information

- **Fire Safety Program Toolkit**
  Organization : HHS, CDC, DHS, FEMA, US Fire Administration, Fire is Everyone's Fight
  Document_type : Planning Tool, Manual for an Local Organization, Funding Opportunities
  Disasters : Wildfires
  Abstract : This toolkit was designed with fire safety education personnel in mind and aims to provide free tools and materials to assist in the development of educational programs. The toolkit breaks down the program development process into five basic steps to create or enhance a fire safety education program for your community. Additionally, a "Beyond the Basics" in each section has even more resources, strategies, and tools. This overview gives you a snapshot of the process for developing a successful program
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Funding Mechanisms, Tools, Information

- **Soil Health Matrix Decision Tool**
  Organization : North Central Region Water Network
  Year : 2022
  Document_type : Web-based Resource, Planning Tool
  Disasters : Man-Made Disasters, Agricultural Disasters
  Abstract : This tool is designed to serve as a 101 tool for producers who are considering implementing new soil health practices on their operation. It is not meant to provide specific metrics on the impact of practice implementation. Instead, it is designed to give producers an overall feel for the soil health benefits of a range of management decisions and help narrow down which practices might be the best fit for their operation. After using this tool, it is critical for producers to work with advisors and educators about the specifics of their operation prior to implementation. The values in this tool are regional in nature.
  Plan_Components : Tools

- **Equity Guide For Green Stormwater Infrastructure Practitioners**
  Organization : Greenprint Partners
  Year : 2022
  Document_type : General Resource/ Foundational Research, Planning Tool, Manual for an Local Organization, Policy
  Disasters : Flood, Drought
  Abstract : The Equity Guide for Green Stormwater Infrastructure Practitioners is a resource developed by and for green infrastructure program managers representing local public sector stormwater management organizations across the United States and Canada. It offers an action and evaluation roadmap that defines: our industry's shared long-term equity goals, best practices that will move the needle, and sample metrics that help us track progress toward those goals over time. It also offers a variety of tools to support practitioners in customizing community- informed equity work plans and

evaluation plans to local
contexts
Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Tools, Green Infrastructure, Information

- **Community Flood Resilience In Vinton: Engaging Residents Affected By The Floods Of 2008 And 2016**
  Organization : Iowa Watershed Approach, U.S. Department of Housing and Urban Development (HUD)
  Year : 2020
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : Flood
  Abstract : Vinton was selected to be included in the Iowa Watershed Approach's Flood Resilience Program, which recognizes that social resources are often absent or minimally evident when it comes to flood resiliency. The program strives to improve the use of social resources in watersheds by connecting local partners and stakeholders, enhancing the presence of social resources in watershed planning efforts, and increasing the awareness and communication about established and novel flood resilience initiatives.
  Plan_Components : Surveys/Assessments, Strategies, Planning Processes, Case Studies

- **Indiana Coad Guidance Manual**
  Organization : Purdue University
  Year : 2012
  Document_type : Planning Tool, Manual for an Local Organization
  Disasters : disasters in general
  Abstract : This document was written to help all community organizations and individuals understand how collaborative efforts can prepare communities for disaster. The main goals of these collaborations are to help communities avoid some disasters and recover from other unavoidable disasters.
  Plan_Components : Strategies, Planning Processes, Information

- **Sustainable Communities Extension Program**
  Organization : Purdue University Extension, Illinois-Indiana Sea Grant
  Document_type : General Resource/ Foundational Research, Web-based Resource
  Disasters : Flood, Man-Made Disasters, Soil Erosion/Landslides
  Abstract : The efforts of the Illinois-Indiana Sea Grant and Purdue University Extension Sustainable Communities Extension Program support community planning and sustainable development strategies in communities across Indiana and Great Lakes states.
  Plan_Components : Strategies, Planning Processes, Green Infrastructure

- **The Green Infrastructure Guide Planning For A Healthy Urban And Community Forest**
  Organization : The Regional Planning Partnership
  Year : 2001
  Document_type : General Resource/ Foundational Research, Planning Tool, Manual for an Local Organization
  Disasters : Flood, Drought, Biological Disasters, Soil Erosion/Landslides
  Abstract : This handbook builds the case for the value of green infrastructure and provides suggestions about how to integrate green infrastructure planning with planning for development.
  Plan_Components : Planning Processes, Tools, Green Infrastructure, Information

- **Individual Residence Wastewater Wetland Construction In Indiana**
  Organization : Purdue University and the Indiana State Department of Health
  Year : 1999

Document_type : Specific Plan, Planning Tool, Manual for an Local Organization
Disasters : Flood, Drought, Soil Erosion/Landslides, Agricultural Disasters
Abstract : This publication describes general procedures for developing a constructed wetland for a single family residence. This guide is designed to be used with the diagrams included. It is intended for use by homeowners, regulatory personnel and installers of residential on-site systems.
Plan_Components : Strategies, Planning Processes, Green Infrastructure, Information

Appendix A

Interpretation of High Risk and Low Risk Areas at County Level

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Agri	Percentage Employed in Agricultural Occupations	A lower percentage of workers in the agricultural sector indicates a greater economic diversity, lower dependence on weather conditions, higher resilience and lower risk	Agricultural sector is most directly affected by natural disasters and extreme weather events such that their productivity goes down drastically. Therefore a predominantly agrarian economy represents lower economic resilience and greater disaster risk	High
Agri LQ	Location Quotient of Agricultural Occupations	A lower LQ for the Agricultural Sector indicates a low risk	A higher LQ for Agricultural Businesses indicates a higher risk	High
Agro Percent	Percentage Employment in Agriculture and related Sectors	A lower percentage of workers in the agricultural sector indicates a greater economic diversity, lower dependence on weather conditions, higher resilience and lower risk	Agricultural sector is most directly affected by natural disasters and extreme weather events such that their productivity goes down drastically. Therefore a predominantly agrarian economy represents lower economic resilience and greater disaster risk	High
Airports	Non-Commercial -Civil Public Use Airports and Seaplane base	A higher value is associated is low risk	It indicates access to communication and transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
ALLNPDESperKMln	All NPDES permits per 1000 km of stream, as permits per 1000km stream length, log transformed	A Lower value is associated with low risk	It indicates pollution of water resources. A higher value is associated with high risk	Very Low
Arts	Percentage Employed in Arts Occupations	A lower employment in the arts sector could indicate higher resilience to economic shocks and higher incomes and is therefore associated with lower risk	Although a higher proportionof artists could signal a greater economic diversity, arts occupations are highly susceptible to natural disasters. Therefore a greater employment in arts industries could signal a higher disaster risk.	Moderate
Arts LQ	Location Quotient of Arts Occupations	A low LQ in the arts sector is associated with low risk	A high LQ in the arts sector is associated with higher risk	Very High
Avg HHsize	Average Household Size	A smaller average household size indicates a greater proportion ofhousehold resources available to every individual in the household and is therefore a lower risk	Household sizes relate with the distribution of resources among individuals with the household. A greater average household size indicates a lesser proprotion of resources available to individuals and is therefore interpreted as a high risk	Very High
Avg temp	Average Temperature	A lower average temperature is associated with lower risk	A higher average temperate is associated with a higher risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Bridges	Number of Bridges	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high riskA lower value is associated with high risk	Very Low
Business establishments	Number of business establishments	A higher value is associated is low risk	It represents access to resources , and economic vilatity. A lower value is associated with high risk	Moderate
CaAve ln	Calcium (Ca) precipitation weighted mean in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
Civic related business rate	Rate of civic-related business per county	A higher value is associated is low risk	Civic-related businesses indicate a strong, built-environment and development industry. A lower value is associated with high risk	Moderate
CO8	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	Very High
Commuters withinCounty	Number of resident workers who commute within county	A higher value is associated is low risk	A lower commute time is assocatied with a health local economy. A lower value is associated with high risk	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
CommuteTime	Time it takes from home to go to work in minutes	A Lower value is associated with low risk	Time spent in commute is associated with lack of productivity and extra expenses. A lower commute time is assocatied with a health local economy. A higher value is associated with high risk	Moderate
construction	Percentage Employed in Construction Occupations	Construction and allied industries represent possibilities for robust economic growth and government investment. A greater employment in the construction industry also signals potential for development of local infrastrcuture. A higher employment in this sector is therefore a low risk	Lower employment in the construction sector indicates lower investment in built environment and infrastructure and high disaster risks	Moderate
construction LQ	Location Quotient of Construction Occupations	A higher LQ for the construction industry indicates a low disaster risk	A lower LQ for the construction industry indictes a high disaster risk	Low
Cost IncomeRatio	Ratio of Housing Cost to Household Income	A lower cost to income ratio indicates that households are successfully able to meet their financial demands and are more resilient to disasters. It is therefore a low risk.	A higher cost to income ratio indicates that households are unable to meet their financial needs and are more likely to suffer adversely during disasters. It is therefore associated with high risk.	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
COVID-19 death rate	All deaths occurring between January 1, 2020 and December 31, 2020 due to COVID-19, per 100,000 population (age-adjusted).	A Lower value is associated with low risk	A greater number of deaths owing to Covid-19 indicates pre-existing health conditions and comorbidities within the community. A higher value is associated with high risk	Very High
D303 Percent ln	% of stream length impaired in county, log-transfored	A Lower value is associated with low risk	It indicates pollution of water resources. A higher value is associated with high risk	Moderate
Disabled Percent	Percentage of Disabled Persons	A lower percentage of disabled individuals in the community indicates a lower risk owing to reduced requirements for preparation, disaster and accessibility planning	A higher percentage of disabled individuals is associated with a high risk. They are disproportionately affected owing to inaccessible evacuation, response and recovery efforts and could often be left behind.	Very High
Docks	Total Docks	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	Very High
Edu	Percentage Employed in Education-related Occupations	A higher employment in the education sector signals a more skilled economy, which is typically more resilient to natural disasters. It is therefore a low risk	A lower employment in the education sector signals a less resilient, less skilled economy, and is therefore associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Edu LQ	Location Quotient of Education-related Occupations	A high LQ in the education sector signals a higher economic resilience and low risk	A lower LQ in education sector signals a lower economic resilience and high risk	Very High
Educated percent	Percentage of Educated Persons	A greater person of educated individuals is interpreted as low disaster risk	Lack of education is associated with social marginalization, lack of preparation and disaster planning. Therefore a lower percentage of educated individuals is interpreted as high risk.	Very High
Education related business rate	Rate of education-related business per county	A higher value is associated is low risk	Education-related businesses enable a community to obtain access to education and child development resources. A lower value is associated with high risk	Low
Elderly growth percent	Growth Percent of Elderly Population	A lower percentage of older adults represents a lower disaster risk.	Older adults are more vulnerable to dosaster risks owing to functional problems, health and medication concerns. A greater percentage of older adults represents a higher risk.	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
FemaleHeaded HHs Percent	Percentage of Households with Female Householder	A lower percentage of female headed households indicates a lower disaster risk, a more stable family and household structure, greater social integration and family support, and higher socio-economic status at the community level	A higher percentage of female headed households could indicate a higher disaster risk owing to greater chances of poverty, and particular risk from housing shocks and stresses, hunger and food insecurity owing to gender discrimination	Very High
FemaleLaborforce percent	Percentage of Labor Force constituted by Women	A higher particpation of females in the workforce indicates increased incomes, and lowers or leads to sharing of unpaid care-work with other members of the family, leading to a more economically resilient community. Thus a higher female workforce particpation indicates a low disaster risk	A lower particpation of women in the labour force is associated with lower household incomes and poverty. Therefore a lower female workforce particpation means a higher disaster risk owing to lower economic support.	Moderate
Females Percent	Percentage of Females	A good percentage of women represent a stable sex ratio for the area and is therefore a positive indicator	A low percentage of women could indicate an unstable sex ratio, thereby showing that there are fewer opportunities for women in the area. This could have negative consequences during a disaster	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Finance	Percentage Employed in Finance Occupations	Finance, realestate, etc. jobs are positively correlated with high incomes, job security and high economic resilience during disasters. Therefore a greater employment ins uch industries poses a low risk and indicates a diverse economic base. A higher employment in such industries is associated with a low risk	A lower employment in finance, real estate etc. signals lower incomes and less resilient jobs. Therefore, a lower employment in this sector is associated with high risk	Moderate
Finance LQ	Location Quotient of Finance Occupations	A high LQ in finance, real estate, etc. signals a low risk	A low LQ in finance, real estate, etc. signals a high risk	Moderate
Food Environment Index	Index of factors that contribute to a healthy food environment, from 0 (worst) to 10 (best).	A higher value is associated is low risk	A poor food environment reduces the physical and mental vitality of a community. A lower value is associated with high risk.	Very High
Freight railroad miles	Route miles of freight railroad	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
fungicide ln	Fungicides applied in pounds, log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	High
Gender Pay Gap	A ratio of women's median earnings to men's median earnings for all full-time, year-round workers, presented as "cents on the dollar."	A Lower value is associated with low risk	Gender inequality determines a society's ability to develop economically and equitably. A higher value is associated with high risk	High
GINI Index	GINI Index for Inequality Determination	A lower GINI Index depicts lesser inequality in the industry and is associated with low risk	A higher inequality represents differential distribution of resources, greater poverty and lack of accessibility. A higher GINI Index is associated with high risk.	High
GroupQuarters	Percentage of GroupQuarters as part of Total Housing Stock	A lower concentration of group quarter residents is a low risk owing to greater access to recovery resources and social support	Group quarters consist of unrelated persons sharing a living space, either in institutionalized or non-institutionalized settings. Thus they lack the social support of a family and a high percentage of group quarter population is associated with high risk	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Healthcare related business rate	Rate of healthcare-related businesses per county	A higher value is associated is low risk	Availability of health care businesses indicate access to medical resources during disasters. A lower value is associated with high risk	High
HelperPool	Percentage of Helpers in a time of crisis	A higher proportion of helpers indicates a lower risk, since a greater number of persons will be available for disaster recovery and mitigation efforts.	A goood number of participants in the helper pool could indicate greater support and emergency management in the community. A lower percentage of helpers represents a high risk.	Moderate
herbicide ln	Herbicides applied in pounds, log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	High
Homewownership	Perecentage Homewowners	A higher percentage of homeownership is associated with greater income and family stability and greater access to relief during a disaster. It is therefore a low risk	A lower percentage of homeownership signals lower incomes and support during disasters. It is therefore a higher risk.	Low
Inadequate Facilities	Percentage of households with inadequate infrastructure within their housing unit	A Lower value is associated with low risk	Inadequate infrastructure within the household lowers quality of life and residents' health. A higher value is associated with high risk	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Info	Percentage Employed in Information-based Occupations	Information industries are positively associated with mitigation planning and have the ability to shift to remote working during a disaster. Therefore, such a higher employment in such industries poses a low risk	A lower employment in infirmation industries signals a less diverse economic base and a higher susceptibility to natural disasters. It is therefore associated with higher disaster risks	High
Info LQ	Location Quotient of Information-based Occupations	A lower LQ in the information sector signals a low risk	A lower LQ in information sector signals a high risk	High
insecticide ln	Insecticide applied in pounds, log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	Moderate
Kave ln	Potassium (K) precipitation weighted mean in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
LargeFam Percent	Percentage of Large Families as part of all Families	In case of smaller family sizes, a greater investment of the family's resources is possible leading to greater achievements. Therefore a smaller proportion of big families is a reduced social vulnerability during disasters	In case of large families, the same limited resources are shared by a large group of individuals owing to less investment per person. This can result in differential academic achievements and occupational performance. Thus prevalence of a bigger family size would indicate a higher disaster risk.	Moderate
LowIncome Percent	Percentage Low Income Population	A lower proportion of low income families indicates a greater access to resources for preparation and recovery from disasters and is hence a low disaster risk	A higher proportion of low income households lack of adequate access to resources to prepare for and recover from disasters, contingency funds, personal vehicles and abilities to arrange for alternate housing arrangements during disasters. It is therefore a high risk.	Very High
Management	Percentage Employed in Management Occupations	Management, Business and Science jobs are invariably correlated with greater incomes, social mobility and lower dependence on place-based work. Therefore they are more resilient during disasters and higher employment in these sector represent lower risks	A lower proportion of employees in Management, Business and Science professions indicates lower incomes and a low skill economy and is therefore indicative of higher disaster risks	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Management LQ	Location Quotient of Management Occupations	A higher LQ in management, business, or science indicates a low risk	A lower LQ in Management, business or science indicates a high risk	Moderate
Manufacturing	Percentage Employed in Manufacturing Occupations	A lower concentration of manufacturing industries/employment indicates lower chances of disruption during disasters. It is therefore an area of low risk	Manufacturing industries are directly affected by natural disasters. Extreme events cause great damage to the manufacturing units and their associated supply chains. A higher concentration of Manufacturing Industries is associated with high risk	Low
Manufacturing LQ	Location Quotient of Manufacturing Occupations	A lower LQ for manufacturing industries indicates a low risk	A higher LQ for manufacturing industries indicates a high risk	Moderate
Marinas	Total Marinas	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	NA
Max temp	Maximum Temperature	A lower maximum temperature is associated with lower risk	A higher maximum temperature is associated with a higher risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
MBS	Percentage Employed in Management, Business and Science Occupations	Management, Business and Science jobs are invariably correlated with greater incomes, social mobility and lower dependence on place-based work. Therefore they are more resilient during disasters and higher employment in these sector represent lower risks	A lower proportion of employees in Management, Business and Science professions indicates lower incomes and a low skill economy and is therefore indicative of higher disaster risks	High
MBS LQ	Location Quaotient of Managemnt, Business and Science Occupations	A high Location Quotient for Management, Business and Science professions indicates a more specialized, high income economy. It is indicative of low disaster risk	A low LQ for Management, Business and Science professions indicates a less specialized economy and is therefore indicative of lower economic diversity, lower incomes and high risk	Very High
MedianHomeValue	Median Home Value	A higher home value indicates higher incomes, higher accessibility to funds during disaster and is therefore associated with low risk	A lower home value indicates lower incomes and is therefore associated with high risk	High
MentalHealth Provider Rate	Ratio of population to mental health providers.	A higher value is associated is low risk	A lower proportion of physicians indicates that community members may not have access to mental health resources during disasters. A lower value is associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
MHHI	Median Household Income	A higher income indicates greater avaiability of resources to cope with disasters as well as to prevent them. Therefore it is a low risk	Low income HHs tend to locate or concentrate in areas prone to natural disasters sich as floodplains, because the land is cheaper. Moreover they face resource deficiencies when a disaster strikes. A lower Median Household Income is associated with a higher disaster risk.	Very High
Min temp	Minimum Temperature	A higher minimum temperature is associated with lower risk	A lower minimum temperature is associated with a higher risk	High
MobileHomes	Percentage of Mobile Homes as part of Total Housing Stock	A lower proportion of mobile homes indicates greater structural resilience of the housing sector and more stable economy	A greater proportion of mobile homes is associated with greater risk owing to structural problems and lower incomes.	Very High
NewHomes	Percentage of New Homes as part of Total Housing Stock	A higher proprotion of new homes indicates a greater structural resilience to natural disasters and is associated with a low risk	A lower porportion of new homes indicates the possibility of greater structural damage during disasters. It is therefore associated with a high risk	Moderate
NO21	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	High
NO2AM	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
NO3Ave.x	Nitrate (NO3) precipitation weighted mean in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
NonWhite Percent	Percentage of Non-White Popula-tion**Minority Populations, add Hispanic Population	A lower population of ethnic minorities might indicate a less diverse population. However, in case of disaster vulnerability, a lower population of racial minorities has been represented as a lower vulnerability, owing to its correlations with poverty and health care outcomes.	Race and ethnicity are highly correlated with poverty and thus often with health outcomes. Owing to historical, systemic and structural barriers, racial minorities are often more susceptible to disasters and often lack the support mechanisms required to cope. As a result, a higher population of racial or ethnic minorities might (in conjunction with income, poverty, employment, education and other indicators) represent a greater vulnerability.	Moderate
NotMarried Percent	Percentage of Unmarried Persons	A lower percentage of unmarried individuals could indicate a lower vulnerability to disasters owing to the availability of social support that comes with having a family	A higher percentage of unmarried individuals could indicate lack of family and social support.	Moderate
O3	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Old percent	Percentage of Elders**	A lower percentage population of elders indicates a lower vulnerability.	A higher percentage of elder population indicates a greater vulnerability, owing to physical infirmities, functional limitations and care needs.	Moderate
OldHomes	Percentage of Old Homes as part of Total Housing Stock	A lower proportion of old homes signals new construction that is more structurally resilient to natural disasters. It is therefore associated with low disaster risk	A higher proportion of houses that are built more than 30 years ago signals an old housing stock in need of repair and reconstruction. It is therefore associated with high disaster risk.	Moderate
Other county workers	Number of workers from other counties who commute to work in the county	A Lower value is associated with low risk	Asmaller commute time is assocatied with a health local economy. A higher value is associated with high risk	Moderate
Others	Percentage Employed in Other Occupations	Employment across other sectors represents diversification of the economic base and is therefore positively correlated with economic resilience. It is therefore a low risk	A lower employment in other sectors represents a less diverse and creative economy. It is therefore associated with high risks	High
Others LQ	Location Quotient of Other Occupations	A higher LQ in other industries is associated with low risk	A lower LQ in other industries is associated with high risk	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Overcrowding	Percentage of Overcrowded Homes as part of Total Housing Stock	A lower proportion of vercrowded units signals higher incomes and well-maintained, structurally sound housing units which are resilient to disasters. It is therefore associated with low risk	In an overcrowded housing unit, available resources are distributed among a higher than average number of individuals which could lead to familial, socio-economic and structural inadequacies over a period of time. It is therefore associated with high risk.	Very High
Passenger railroad miles	Route miles of passenger railroad and rail transit	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	Low
Pb3	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	Very High
pct au ln	Animal Units, animal units per county acres , log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
pct disease acres ln	Chemicals used to control Diseases in crops and orchards, acres applied per county acres , log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	Moderate
pct harvested acres ln	Harvested acres, acres harvested per county acres , log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	Low
PCT IRRIGATED ACRES ln	Irrigated acres, acres irrigated per county acres, log-transformed	A higher value is associated is low risk	A lower value is associated with high risk, since poor irrigation can lead to agricultural failure	High
pct manure acres ln	Manure, acres applied per county acres , log-transformed	A Lower value is associated with low risk	It indicates soil quality and environmental pollution. During disasters, pollutants from the soil can contaminate the environment. A higher value is associated with high risk	High
Per PSWithSW.x	Percent of Public Supply Population which is on Surface Water	A Lower value is associated with high risk	It indicates access to water resources. A higher value is associated with low risk	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Per TotPopSS.x	Percent of Population on Self Supply	A Lower value is associated with high risk	It indicates access to water resources. A higher value is associated with low risk	High
Percent Medium-FairCondition Bridges	% of Medium to Fair Condition Bridges	A higher value is associated is low risk	It indicates access to transportation infrastructure which is essential in times of disasters. A lower value is associated with high risk	Moderate
Percent AssistanceNeed	Percentage of Population with Assisstance Need	A lower percentage of people withfood assistance indicates higher incomes and economic resilience, and is therefore a low risk area	A high proportion of persons with assistance needs indicates poverty and lack of socio-economic resilience. Therefore it is interpreted as a high risk.	Moderate
Percent BachelorsDegree	Percentage of Population with Bachelors' Degree	A greater proportion of persons with bachelors' degree indicates a greater likelihood of being employed by a variety of employers, along with a higher concentration of high skilled high income positions. Therefore it is interpreted as a lowrisk	A lower porportion of persons with a bachelor's degree indicates a lower number of persons with skills for career advancement. It indicates lack of skilled labour in the workforce and tehrefore lower incomes and social mobility. Therefore it is interpreted as a high risk factor	Very High
Percent Children in Poverty	Percentage of people under age 18 in poverty.	A Lower value is associated with low risk	Children living in poverty indicate inadquate resources available for growth, education and development. A higher value is associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Percent Commuters	Percentage of Population who Commute to work regularly	A lower percentage of commuters indicates that most workers live near where they work and can continue their jobs irrespective of transportation network disruptions. Therefore it is an area of low risk	Natural disasters invariably affect transportation routes and make it difficult for persons requiring commutes to their workplace to continue their employment. Therefore a greater proportion of commuters indicates a disaster risk	Moderate
Percent commuters by transit	Percent of resident workers who commute by transit	A Lower value is associated with low risk	A lower commute time is assocatied with a health local economy. A higher value is associated with high risk	High
Percent Disconnected Youth	Percentage of teens and young adults ages 16-19 who are neither working nor in school.	A Lower value is associated with low risk	Teens and young adults need to either be in school, or part of the workforce, to be able to cultivate a healthy, self-sufficient lifestyle, involved hopeful and forward looking endeavours. Disconnected youth have been positively associated with poverty, unempoyment and crime. A higher value is associated with high risk	High
Percent Exercise Access	Percentage of population with adequate access to locations for physical activity.	A higher value is associated is low risk	Lower physical exercise increases health risks with age. A lower value is associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Percent Food Insecure	Percentage of population who lack adequate access to food.	A Lower value is associated with low risk	Access to food indicates community health. A higher value is associated with high risk	Very High
Percent HousingProblems	Percentage of households with at least 1 of 4 housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities.	A Lower value is associated with low risk	Unavailability of housing infrastructure adversely affects residents' health.A higher value is associated with high risk	Moderate
Percent income required for childcare expenses	Childcare costs for a household with two children as a percent of median household income	A Lower value is associated with low risk	A high burden of childcare costs indicates that a family may not be able to provide for its other necessary expenditures. A higher value is associated with high risk	Very High
Percent LanguageBarrier	Percentage of Population facing Language Barrier	A lower proportion of persons with language problems indicates greater accessibility to disaster relief efforts and is therefore an area of lowe risk	A higher proportion of persons with language barriers could indicate a higher percentage of people suffering due to communication problems, interpretation of instructions and emergency rescue operations. Therefore it is interpreted as a high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Percent Limited Access to Healthy Foods	Percentage of population who are low-income and do not live close to a grocery store.	A Lower value is associated with low risk	Persons who are low income lack access to healthy food, especially if they live away from grocery stores and lack transportation. A higher value is associated with high risk	Very High
Percent NoHealthIns	Percentage of Population without Health Insurance	Greater health insurance coverage is correlated with better health conditions and higher economic productivity. Therefore a higher number of persons with health insurance is a low risk	Lack of health insurance coverage has negative impacts on health as patients are less likely to receive preventive health care, or affordable medical care during a disaster. A greater proportion of persons without health insurance indicates a higher disaster risk.	Very High
Percent PoorCondition Bridges	% of Poor Condition Bridges	A Lower value is associated with low risk	It indicates access to quality transportation infrastructure which is essential in times of disasters. A higher value is associated with high risk	Moderate
Percent rural	Percentage of population living in rural areas	A Lower value is associated with low risk	Rural areas often lack access to resources and are geogrpahically isolated. A higher value is associated with high risk	High
Percent Section8	Rate of low-rent + section-eight units in county	A Lower value is associated with low risk	Greater proportion of low income housing indicates poverty and declining housing quality. A higher value is associated with high risk	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Percent Vaccinated	Percentage of Households vaccinated against Covid-19 and other diseases	A higher value is associated is low risk	A high proportion of vaccination indicates that the community is safe against the Covid-19 pandemic. A lower value is associated with high risk	High
Percent work at home	Resident workers who work at home	A higher value is associated is low risk	A lower commute time is assocatied with a health local economy. A lower value is associated with high risk	High
Physically Unhealthy Days	Average number of physically unhealthy days per year for the population	A Lower value is associated with low risk	A higher value is associated with high risk because people are more prone to being affected by disaster risks	Very High
PM10	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	Very High
PM2.5	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	High
PM2Point5	Concentration of Pollutant	A lower concentration indicates less pollution and is associated with lower risk	A higher concentration indicates more pollution and is associated with higher risk	High
Population	Total Population	A small number of people will be affected by a disaster	A large number of persons will be affected by the disaster	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
poverty	Percentage Below Poverty Line	A lower poverty indicates less exposure to disaster risks and greater accessibility to exigency funds. It is therefore a low risk	Poverty can be both a cause and consequence of disaster risk. A greater poverty is associated with a higher risk	Low
Precipitation	Precipitation	A lower precipitation is associated with a lower risk	A higher precipitation is associated with higher risk	High
PrimaryCare Physicians Rate	Ratio of population to primary care physicians.	A higher value is associated is low risk	A lower proportion of physicians indicates that community members may not have access to medical help during disasters and have to rely on external support. A lower value is associated with high risk	Very High
PrimeWorkingAge percent	Percentage of population in Prime Working Age	A greater number of persons of working age indicates a greater labour pool available for the local economy. Therefore a higher ratio indicates a lower risk.	A lower number of persons of working age represents a greater number of dependents on the existing workfore and is hence a high risk.	Low
PT	Percentage Employed in Production and Transportation Occupations	A lower concentration of production and transportation industries indicates a lower dependence of the economic base on land, location and natural resources. It is therefore more economically resilient and a low risk	Both production and transportation industries are dependent on avaibality of local natural resources and are therefore more susceptible to natural disasters. A higher employment in such industries signals greater disater risk.	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
PT LQ	Location Quotient of Production and Transportation Occupations	A lower concentration of the production and transportation idnustry indicates a low risk	A higher LQ for the Production and Transportation Industry indicates a high risk	Moderate
Radon.x	Radon zone, ordinal value	A Lower value is associated with low risk	It indicates environmental quality and stability. A higher value is associated with high risk	Very High
Recent Immigrants Percent	Percentage of Recent Immigrant Individuals	A lower percentage of immigrants represents a lower disaster risk owing to more equitable access to local and regional resources within the community and lack of communication barriers	A higher percentage of immigrants represents a greater disaster risk owing to their immigration status, lack of English proficiency and lack of direct access to resources in comparison with native citizens	Very High
Recreation related business rate	Rate of recreation-related businesses per county	A lower value is associated with low risk	Greater proportion of recreation-related business indicate hightened economic instability during disasters. A higher value is associated with high risk	Moderate
Rental CostBurden below20000	Housing Cost Burden on renters whose incomes are below 20,000 USD	A lower proportion of cost-burdened low income households indicates greater economic resilience among low-income renters. This is an asset during natural disasters and is a low risk area	A higher proportion of low income rental households who are housing cost burdened signals a higher concentration of highly vulnerable households in the community. This is an area of high risk, structurally, financially and socially	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Rental Overcrowding	Percentage of Rental Units that are Overcrowded	A lower proportion of overcrowded rental units indicates a more affordable rental housing stock, and a more resilient rental population. It is a low risk	A higher proportion of rental units which are overcrowded signals lower incomes, structural and maintenance issues associated with the rental housing stock. It indicates that the rental stock is inadequate and unaffordable and is therefore associated with high risk	High
Rented	Percentage Renters	A lower proportion of renters signals greater homeownership, higher incomes and access to resources. This is therefore an area of low risk	Renters are associated with higher vulnerability during disasters owing to lower incomes, and lesser accessibility to disaster relief. A high proportion of renters is therefore associated with a higher risk	Very Low
Renter MHHI	Monthly Household Income of Renters	A higher income indicates greater capacity to cope with disasters. It is therefore associated with low risk.	A lower income indicates a lower capacity to cope with disasters and is associated with high risk	Very High
Renters Cost IncomeRatio	Ratio of Renter Housing Cost to Household Income	A lower cost to income ratio for renters indicates that rental households are successfully able to meet their financial demands and are more resilient to disasters. It is therefore a low risk.	A higher cost to income ratio for renters indicates that rental households are unable to meet their financial needs and are more likely to suffer adversely during disasters. It is therefore associated with high risk.	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Resident Workers	Number of resident workers	A higher value is associated is low risk	Greater number of workers represent greater economic participation. A lower value is associated with high risk	Moderate
Retail	Percentage Employed in Retail Occupations	Although prone to natural disasters, retail industries generally show a higher resilience to natural disasters than wholesale industries. This is because they are less likely to be low mitigators and often associated with having a plan unlike wholesale industries. Thus a higher employment in retail industries is associated with low risk.	A lower employment in retail industries signals lower economic resilience and is associated with higher risk	Moderate
Retail LQ	Location Quotient of Retail Occupations	A higher LQ in retail industries is associated with low risk	A lower LQ in retail industries is associated with high risk	Very Low
Sales	Percentage Employed in Sales Occupations	Employment in sales is associated with higher pay greater skills and organizational support. It signals greater economic resilience and low risk	A lower employment in sales industries could indicate a less entrepreneurial economy, lower resilience and therefore higher disaster risk	Moderate
Sales LQ	Location Quotient of Service Occupations	A higher LQ for the service sector indicates a low risk	A lower LQ for sales industries is associated with high risk	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Segregation Index	Index of dissimilarity where higher values indicate greater residential segregation between non-white and white county residents.	A Lower value is associated with low risk	Dissimilarity or segregation indicates social inequality and differential access to resources. A higher value is associated with high risk	Moderate
Service	Percentage Employed in Service	Service sector is a huge contributor to the economic productivity and bolsters the primary and secondary economic sectors as well and provides a huge source of employment. A higher employment in the service sector signals greater economic resilience and lower risk.	A lower proportion of workers in the service sector indicates a less developed and resilient economy with greater dependence on place-based work. It is therefore an area of high risk.	Moderate
Service LQ	Location Quotient of Service Occupations	A higher LQ for the service sector indicates a high risk	A lower LQ for the service sector indicates a lower resilience and higher risk	Low
SingleParent Percent	Percentage of Single Parent Households	A lower proportion of single parent households indicates a lower disaster vulnerability, owing to lesser probability of financial, academic and behavioural problems which have been correlated with single parent households.	Children living in single-parent households have greater risks to their physical and social health and wellbeing compared with other family structures such as two parent or grandparent headed households. Thus, a greater proprotion of single parent households represents a higher disaster risk	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Skilled Percent	Percentage of Skilled Persons	A higher number of skilled individuals represents a lower disaster risk	Lack of occupational skill is associated with lower incomes and employment benefits and therefore less resources for disaster recovery. Therefore, a lower percentage of skilled workers indicates a greater disaster risk.	Very High
SO4Ave ln	Sulfate (SO4) precipitation weighted mean in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	High
Social Association Rate	Number of membership associations per 10,000 population.	A higher value is associated is low risk	A high rate of social associations indicates healthy relationships and community life. A lower value is associated with high risk	Low
std coal prim pop ln	Primarily coal mines, mines per county population, as proportion	A Lower value is associated with low risk	It indicates mining activities and environmental stability. A higher value is associated with high risk	Moderate
std metal prim pop ln	Primarily metal mines, mines per county population, as proportion	A Lower value is associated with low risk	It indicates mining activities and environmental stability. A higher value is associated with high risk	Very High
std nonmetal prim pop ln	Primarily nonmetal mines, mines per county population, as proportion	A Lower value is associated with low risk	It indicates mining activities and environmental stability. A higher value is associated with high risk	Very High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
std sandandgravel prim pop ln	Primarily sand and gravel mines, mines per county population, as proportion	A Lower value is associated with low risk	It indicates mining activities and environmental stability. A higher value is associated with high risk	Very High
std stone prim pop ln	Primarily stone mines, mines per county population, as proportion	A Lower value is associated with low risk	It indicates mining activities and environmental stability. A higher value is associated with high risk	Moderate
Total	Total Housing Stock	A lower number of housing units indicates less damage during a disaster and is associated with low risk	A higher number of housing units indicates the possibility of greater risk during disasters	Moderate
Transport	Percentage Employed in Transportation Occupations	Like retail, transportation businesses are often associated with having business plans, more structurally sound and meets standards. Thus a higher employment in transportation indicates a low risk	A lower employment in transportation business could mean that the businesses are not widely spread out and less economically resilient. It is interpreted as a high risk.	High
Transport LQ	Location Quotient of Transportation Occupations	A higher LQ in transportation industries is associated with low risk	A lower LQ in transportation industries associated with high risk	High
Unemployment percent	Percentage of Unemployed Persons	A lower rate of unemployment indicates a more stable and resilient economic environment and is therefore associated with lower disaster risks	A high rate of unemployment could indicate a range of socio-economic vulnerabilities and political struggles. It indicates lower economic resilience during disasters and is therefore associated with high risk	Moderate

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Units SingleFamily	Percentage of Single Family Units	A lower porportion of single family units signals greater housing mix, affordability and greater housing resilience. It is therefore associated with low risk	A greater proportion of single family homes signals lesser housing diversity and therefore higher risks for low income populations. It is associated with higher risk	Moderate
UnstableEmployment Percent	Percentage Population with Unstable Employment	A lower proportion of workers with unstable employment indicates greater economic stability and resilience, higher incomes and greater access to disaster recovery resources. It is therefore a low risk	Unstable employment is correlated with lower incomes, health problems, negative familial effects and other challenges lowering economic resilience post disaster. A greater proportion of workers with unstable employment indicates a higher risk	Moderate
Vacancy	Percentage Vacant Units	A lower proportion of vacant units signals greater utilization of available built environment resources, greater maintenance and lower probability of structural damage. It is therefore associated with low risk	A high proportion of vacant units signals a weak economic base and possibilities of blight and structural damage. It is therefore associated with a high risk	High
Vice related business rate	Rate of vice-related businesses per county as proportion of total businesses	A Lower value is associated with low risk	Greater proportion of vice-related business indicate hightened economic instability during disasters. A higher value is associated with high risk	Very Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Violent Crime Rate	Number of reported violent crime offenses per 100,000 population.	A Lower value is associated with low risk	A high of crimes indicates safety issues within the community. A higher value is associated with high risk	Low
W As ln	Arsenic in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W Ba ln	Barium in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W Cd ln	Cadmium in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W CN ln	Cyanide in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W Cr ln	Chromium (total) in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W FL ln	Fluoride in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Low
W HG ln	Mercury (inorganic) in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Very High
W NO2 ln	Nitrite (as N) in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	Very High
W NO3 ln	Nitrate (as N) in mg/L, log transformed	A Lower value is associated with low risk	It is a pollutant. A higher value is associated with high risk	High

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
Walkability Score	Walkability score (ordinal)	A higher value is associated is low risk	High walkability scores indicate greater community vitality and economic accessibility. A lower value is associated with high risk	Very High
Wholesale	Percentage Employed in Wholesale Trade	A lower employment in wholesale businesses signals a greater economic resilience and low risk	Wholesale and retail businesses are more vulnerable to natural disasters and are more likely to close after disasters. They are also more likely to be low mitigators. A higher proportion of employment in the wholesale industry signals a high disaster risk	Low
Wholesale LQ	Location Quotient of Wholesale Trade Occupations	A lower LQ in wholesale industries is associated with low risk	A higher LQ is wholesale industries is associated with high risk	Low
Workers to OtherCounties	Number of resident workers who commute to work in other counties	A Lower value is associated with low risk	A lower commute time is assocatied with a health local economy. A higher value is associated with high risk	Moderate
Working Nonworking ratio	Ratio of Working to Non-working Population	A high ratio indicates lower risk	This ratio indocates the amount of labor resources available in the market, and signals unemployment, income and other economic factors. A low ratio indicates a lower economic resilience to market shocks and is therefore high risk.	Low

(continued)

Indicator	Definition	Low Risk Interpretation	High Risk Interpretation	Risk Level
WorkNearby percent	Percentage Workers who live near their place of work	A greater proportion of persons who live near their place of work indicates a lower dependence on commute and transportation networks and a more robust resilient economy. Therefore it is a low risk	A lower proprotion of persons who live near their place of work indicates a high dependence on transportation networks for economic activities and a greater risk of disruption during disasters. It is therefore a high risk	Low
Young percent	Percentage of Young Persons	A small percentage of children would mean less vulnerability to disasters	A large percentage of children would indicate a greater vulnerability to disasters	Low

Appendix B

High Risk and Low Risk Areas at Rural, Urban and Census Place Levels

Indicator	Risk Level (Rural)	Risk Level (Places)
Agri	High	High
Agri LQ	High	High
Agro Percent	High	High
Airports	High	High
ALLNPDESperKM ln	Very Low	Very Low
Arts	Low	Very High
Arts LQ	Very High	Very High
Avg HHsize	Very High	Very High
Avg Temp	Low	Low
Bridges	Very Low	Very Low
Business establishments	Moderate	Moderate
CaAve ln	Low	Low
Civic related business rate	Moderate	Moderate
CO8	High	High
Commuters withinCounty	Moderate	Moderate
CommuteTime	Moderate	Moderate
construction	High	Low
construction LQ	Moderate	Low
Cost IncomeRatio	Very Low	Moderate
COVID-19 death rate	Very High	Very High
D303 Percent ln	Moderate	Moderate
Disabled Percent	Low	Low
Docks	Very High	Very High
Edu	Very High	Moderate
Edu LQ	Very High	High
Educated percent	Very High	Very High
Education related business rate	Low	Low
Elderly growth percent	High	High
FemaleHeaded HHs Percent	Very High	High
FemaleLaborforce percent	High	High

(continued)

Indicator	Risk Level (Rural)	Risk Level (Places)
Females Percent	Very High	Moderate
Finance	High	Moderate
Finance LQ	High	High
Food Environment Index	Very High	Very High
Freight railroad miles	Moderate	Moderate
fungicide ln	High	High
Gender Pay Gap	High	High
GINI Index	Very High	Moderate
GroupQuarters	High	High
Healthcare related business rate	High	High
HelperPool	Very High	High
herbicide ln	High	High
Homewownership	Low	Very Low
Inadequate Facilities	Moderate	Moderate
Info	High	Low
Info LQ	High	Very Low
insecticide ln	Moderate	Moderate
Kave ln	Low	Low
LargeFam Percent	Moderate	High
LowIncome Percent	Very High	Very High
Management	Moderate	Low
Management LQ	Very Low	Very Low
Manufacturing	Moderate	Moderate
Manufacturing LQ	Moderate	High
Max Temp	Low	Low
MBS	Very High	Moderate
MBS LQ	High	High
MedianHomeValue	High	High
MentalHealth Provider Rate	High	High
MHHI	Very High	High
Min Temp	Low	Low

(continued)

Indicator	Risk Level (Rural)	Risk Level (Places)
MobileHomes	Very High	High
NewHomes	Moderate	High
NO21	High	High
NO2AM	High	High
NO3Ave.x	Low	Low
NonWhite Percent	Very Low	Very Low
NotMarried Percent	Moderate	Very High
NoVehicle Pop	High	Low
O3	High	High
Old percent	Low	Low
OldHomes	Moderate	High
Other county workers	Moderate	Moderate
Others	Moderate	Very Low
Others LQ	Low	Very Low
Overcrowding	Very High	High
Passenger railroad miles	Low	Low
Pb3	High	High
pct au ln	High	High
pct disease acres ln	Moderate	Moderate
pct harvested acres ln	Low	Low
PCT IRRIGATED ACRES ln	High	High
pct manure acres ln	High	High
Per PSWithSW.x	Low	Low
Per TotPopSS.x	High	High
Percent MediumFairCondition Bridges	Moderate	Moderate
Percent AssistanceNeed	High	High
Percent BachelorsDegree	Very High	High
Percent BroadbandAccess	High	High
Percent Children in Poverty	High	High
Percent Commuters	High	High
Percent commuters by transit	High	High
Percent Disconnected Youth	Moderate	Moderate

(continued)

Indicator	Risk Level (Rural)	Risk Level (Places)
Percent Exercise Access	High	High
Percent Food Insecure	Very High	Very High
Percent HousingProblems	Moderate	Moderate
Percent income required for childcare expenses	Very High	Very High
Percent LanguageBarrier	High	High
Percent Limited Access to Healthy Foods	Very High	Very High
Percent NoHealthIns	Very High	Very High
Percent PoorCondition Bridges	Moderate	Moderate
Percent rural	High	High
Percent Section8	Very High	Very High
Percent Vaccinated	High	High
Percent work at home	High	High
Physically Unhealthy Days	Very High	Very High
PM10	High	High
PM2.5	High	High
PM2Point5	High	High
Population	Low	NA
poverty	Very Low	Very Low
Precipitation	High	High
PrimaryCare Physicians Rate	Very High	Very High
PrimeWorkingAge percent	Low	Moderate
PT	Moderate	High
PT LQ	High	High
Radon.x	Very High	Very High
Recent Immigrants Percent	High	High
Recreation related business rate	Moderate	Moderate
Rental CostBurden below	Very High	NA
Rental CostBurden below20000	NA	Very Low
Rental Overcrowding	Very High	High
Rented	Very Low	Very Low

(continued)

Indicator	Risk Level (Rural)	Risk Level (Places)
Renter MHHI	High	High
Renters Cost IncomeRatio	High	High
Resident Workers	Moderate	Moderate
Retail	High	Moderate
Retail LQ	Very Low	Very Low
Sales	Moderate	Moderate
Sales LQ	Very Low	High
Segregation Index	Moderate	Moderate
Service	High	Low
Service LQ	Very Low	Low
SingleParent Percent	Moderate	High
Skilled Percent	Very High	High
SO21	High	High
SO4Ave ln	High	High
Social Association Rate	Low	Low
std coal prim pop ln	Moderate	Moderate
std metal prim pop ln	High	High
std nonmetal prim pop ln	Very High	Very High
std sandandgravel prim pop ln	Very High	Very High
std stone prim pop ln	Moderate	Moderate
Total	Very Low	High
Transport	High	High
Transport LQ	High	Very High
Unemployment percent	Moderate	Very Low
Units SingleFamily	Moderate	Moderate
UnstableEmployment Percent	High	High
Vacancy	High	High
Vice related business rate	Very Low	Very Low
Violent Crime Rate	Low	Low
W As ln	Low	Low
W Ba ln	Low	Low
W Cd ln	Low	Low

(continued)

Indicator	Risk Level (Rural)	Risk Level (Places)
W CN ln	Low	Low
W Cr ln	Low	Low
W FL ln	Low	Low
W HG ln	High	High
W NO2 ln	Very High	Very High
W NO3 ln	High	High
Walkability Score	Very High	Very High
Wholesale	Low	Moderate
Wholesale LQ	Moderate	High
Workers to OtherCounties	Moderate	Moderate
Working Nonworking ratio	Very High	High
WorkNearby percent	Low	High
Young percent	Moderate	High