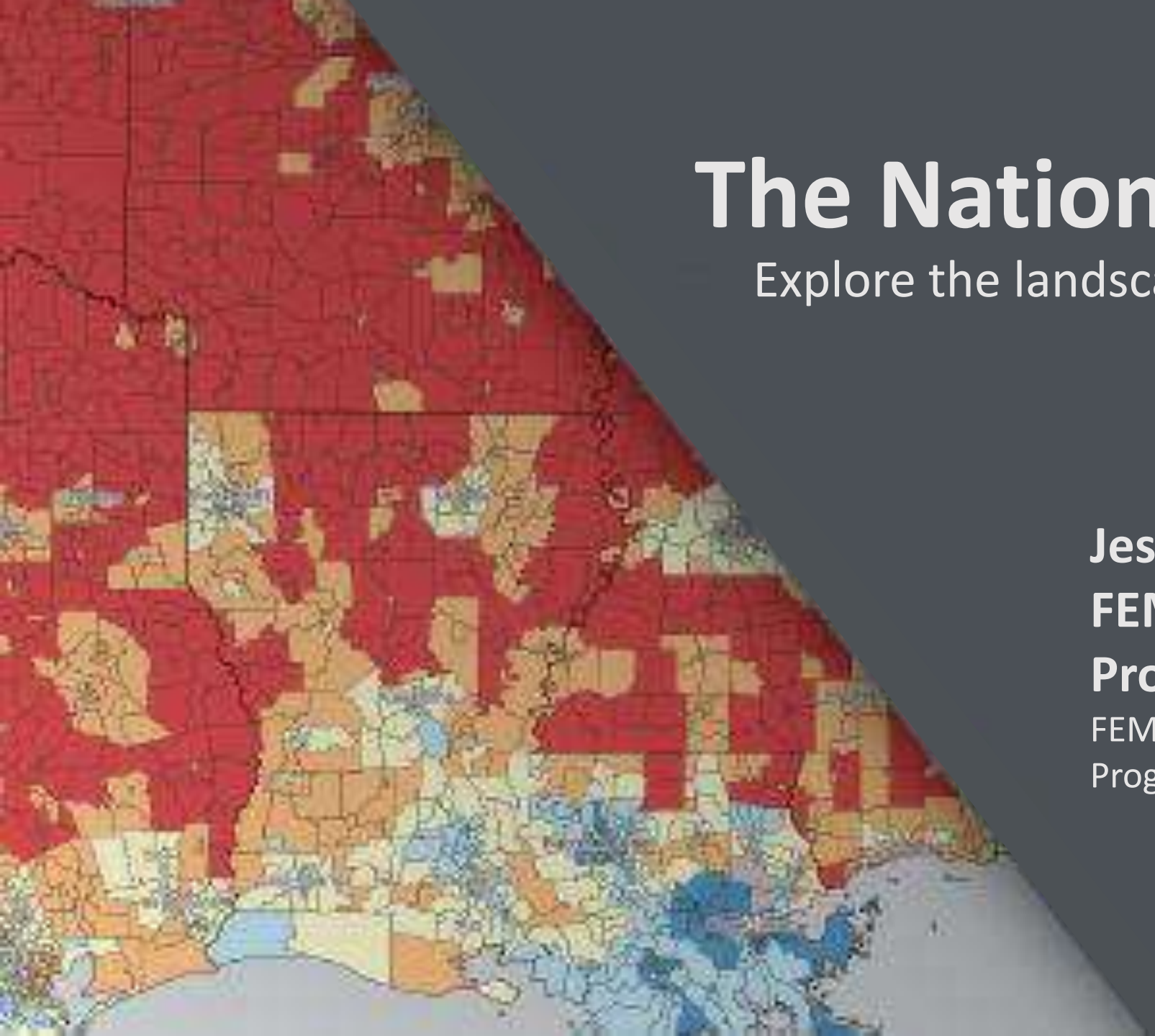


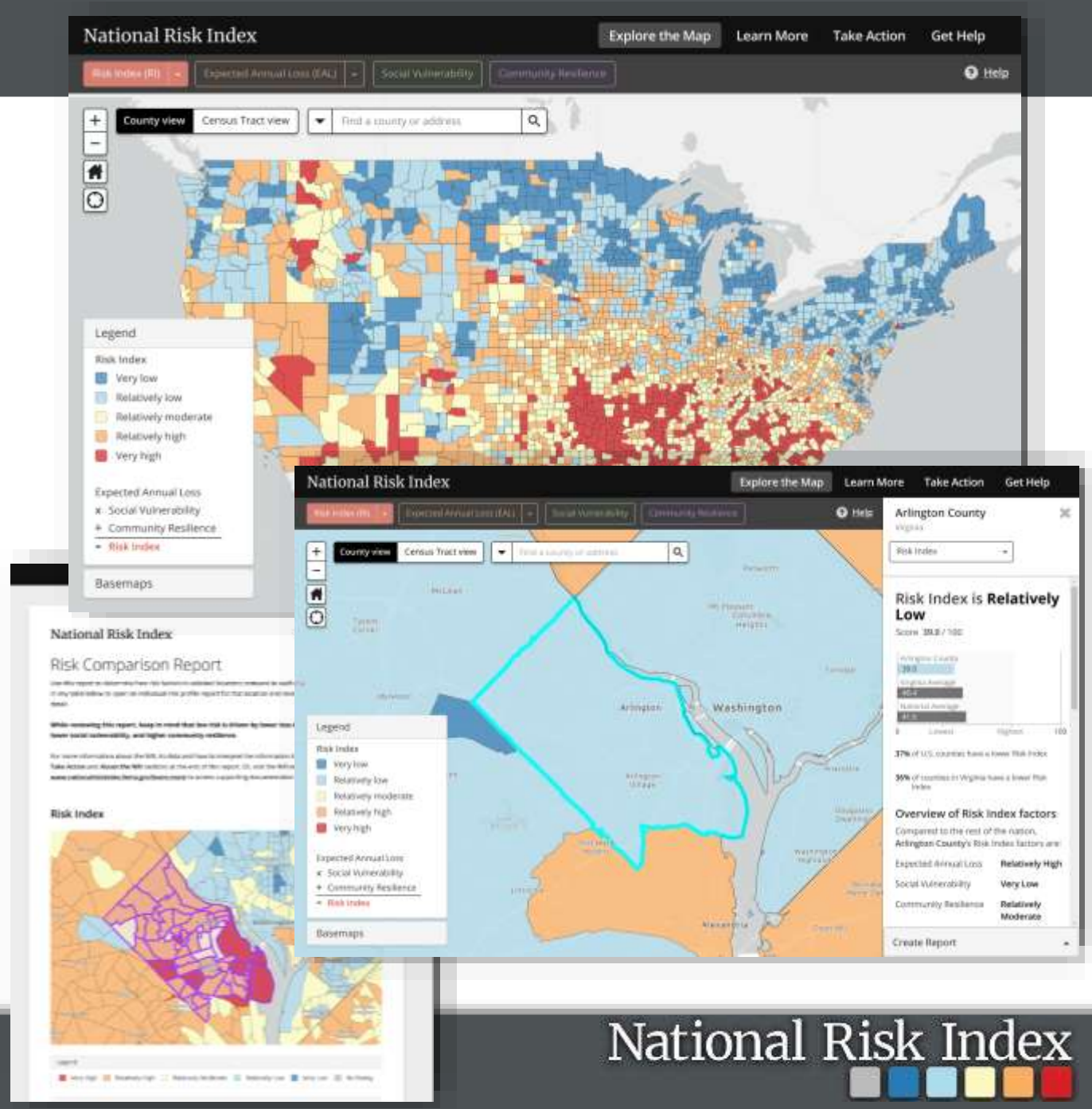
The National Risk Index

Explore the landscape of Natural Hazard Risk

Jesse Rozelle, GISP
FEMA HQ
Program Manager
FEMA Natural Hazards Risk Assessment Program

National Risk Index

- Began as a strategy for reducing cost and eliminating inconsistent risk assessments in planning
- Identifies areas that offer high return on mitigation investment
- Reduces the cost of risk assessment allowing community planners to prioritize action
- Provides pre-calculated, top-down national baseline risk assessment



National Risk Index Contributors

State Government

Regional Government

Federal Government

Local Government

Academia

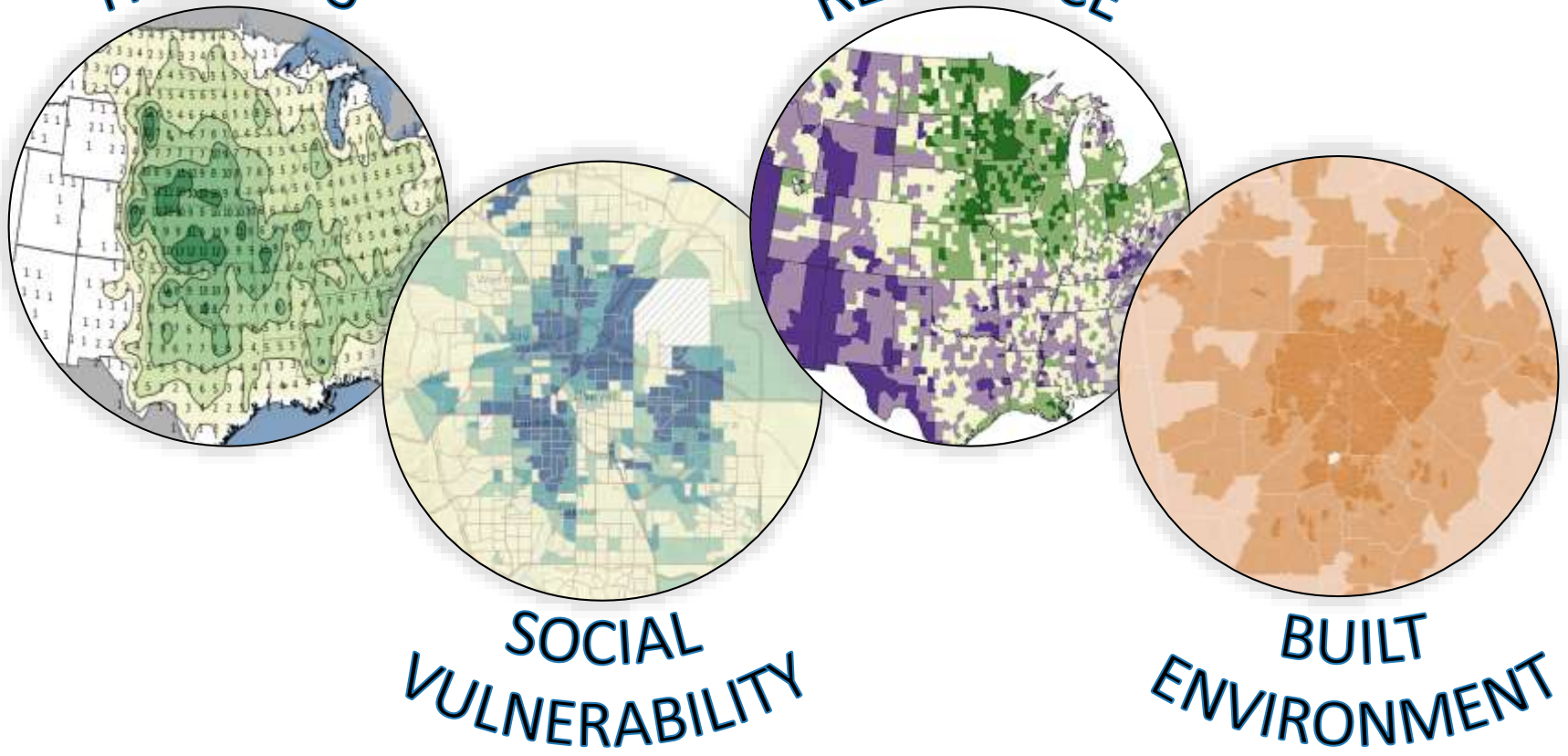
Private

Non-Profit

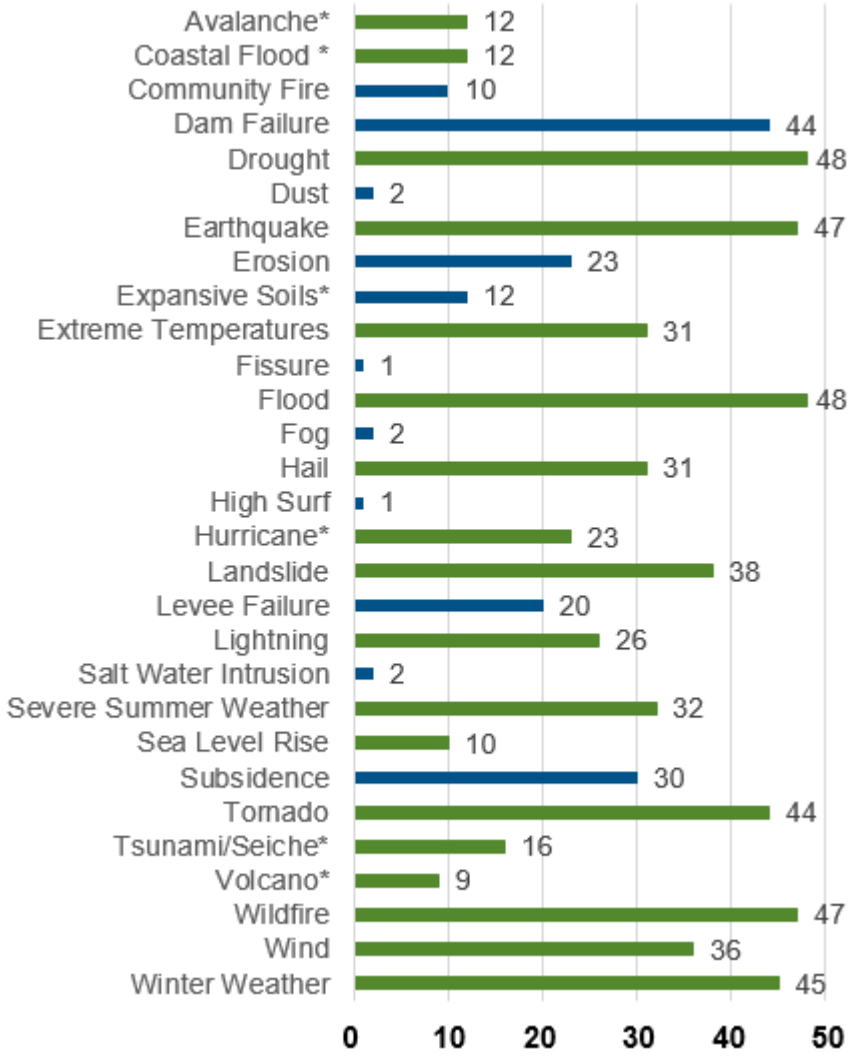
FEMA

National Risk Index Contributors

National Risk Index Components



National Risk Index Hazard Selection



- Reviewed the 50 State Hazard Mitigation Plans
  - Initial list developed from rate of occurrence in each state plan
- Natural hazards only
  - Man-made hazards or hazards related to anthropogenic activities not included

Hazard Included in Analysis
Hazard Excluded from Analysis
* Significant Regional Hazard for Consideration

NOTES:
- Coastal Flood and Sea Level Risk Hazards were combined
- Extreme Temperature is both Hot and Cold
- Severe Summer Weather is covered by Wind, Hail, Tornado, and Lightning
- Winter Weather is both Snow and Ice

National Hurricane Center
USGS science for a changing world
FEMA
NOAA
Storm Prediction Center
Forest Service U.S. Department of Agriculture
National Drought Mitigation Center NDMC University of Nebraska
IEM
UNISDR United Nations Office for Disaster Risk Reduction
nehrp
Colorado Avalanche Information Center
US Army Corps of Engineers

Natural Hazards Data Sources

Hazard	Source
Avalanche	CO Avalanche Information Center
Coastal Flood	NOAA National Weather Service, Storm Events Database, and Coastal sea level rise
Cold Wave	NOAA North American Climate Extremes Monitoring, National Weather Service, and Storm Events Database
Drought	National Drought Mitigation Center
Earthquake	National Earthquake Hazards Reduction Program
Hail	NOAA Storm Prediction Center and Storm Events Database
Heat Wave	NOAA North American Climate Extremes Monitoring and Storm Events Database
Hurricane	NOAA National Hurricane Center and Storm Events Database, Hazus Wind Probabilistic Geodatabase
Ice Storm	U.S. Army Corps of Engineers

Hazard	Source
Landslide	U.S. Geological Survey
Lightning	NOAA Severe Weather Data Inventory, Storm Events Database, and National Center for Environmental Information
Riverine Flood	FEMA Special Flood Hazard Exposure Map and National Flood Hazard Layer
Snowstorm/Blizzard	NOAA Storm Events Database and National Operating Hydrologic Remote Sensing Center
Strong Wind	NOAA Storm Prediction Center and Storm Events Database
Tornado	NOAA Storm Prediction Center and Storm Events Database
Tsnuami/Seiche	NOAA National Center for Environmental Information, individual state sponsored datasets from HI, CA, OR, WA, and AK
Volcano	UN Office for Disaster Risk Reduction
Wildfire	U.S. Geological Survey and U.S. Forest Service

Social Vulnerability and Community Resilience

Social Vulnerability Index: SoVI 2010-2014

- Developed by the University of South Carolina's HVRI
- Grouped into 7 components with 29 variables (SoVI 2010):
  1. Race and class (7 variables)
  2. Wealth (5 variables)
  3. Elderly residents (6 variables)
  4. Hispanic ethnicity (5 variables)
  5. Special needs individuals (2 variables)
  6. Native American ethnicity (1 variables)
  7. Service industry employment (2 variables)
- Comparative index at the county or subcounty level
- Positive and negative component loading

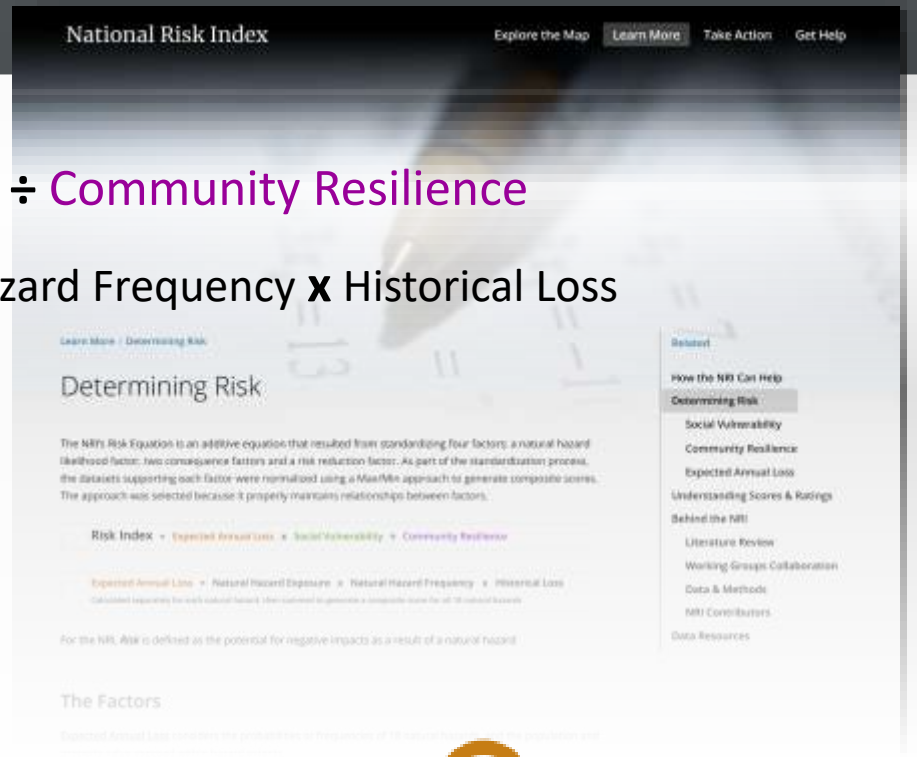
Baseline Resilience Indicators for Communities: BRIC 2010-2014

- Developed by the University of South Carolina's HVRI
- 6 resilience category scores, plus total score
  1. Social
  2. Economic
  3. Community capital
  4. Institutional
  5. Infrastructural
  6. Environmental
- Comparative indicators at the county level
- Indicators analyze the relationship between resilience, vulnerability, and the relative impact of disasters on rural and urban places

Determining Risk

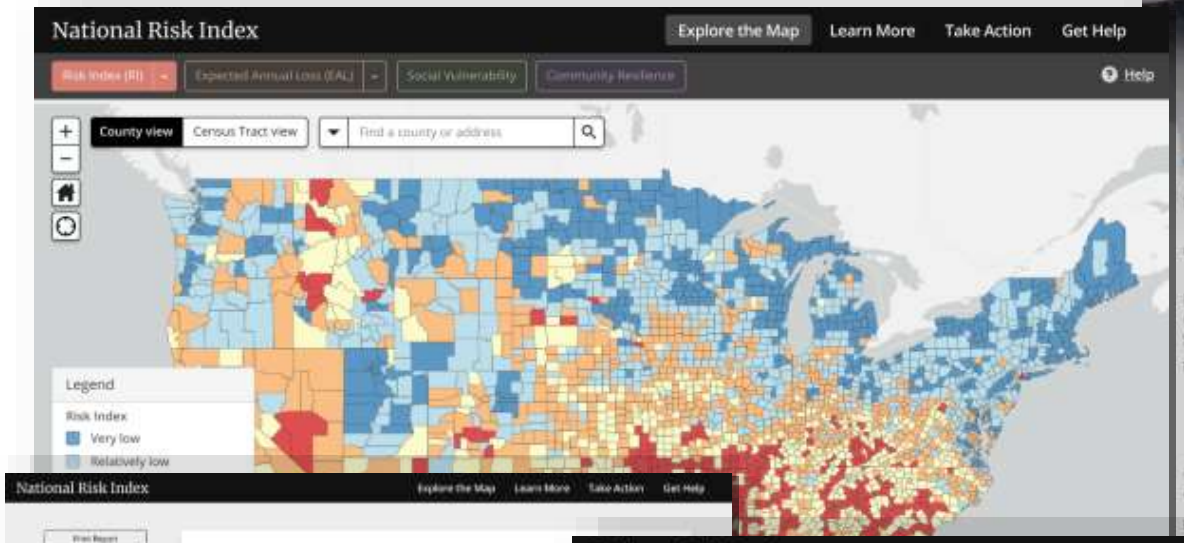
National Risk Index = **Expected Annual Loss** **x** Social Vulnerability ÷ Community Resilience

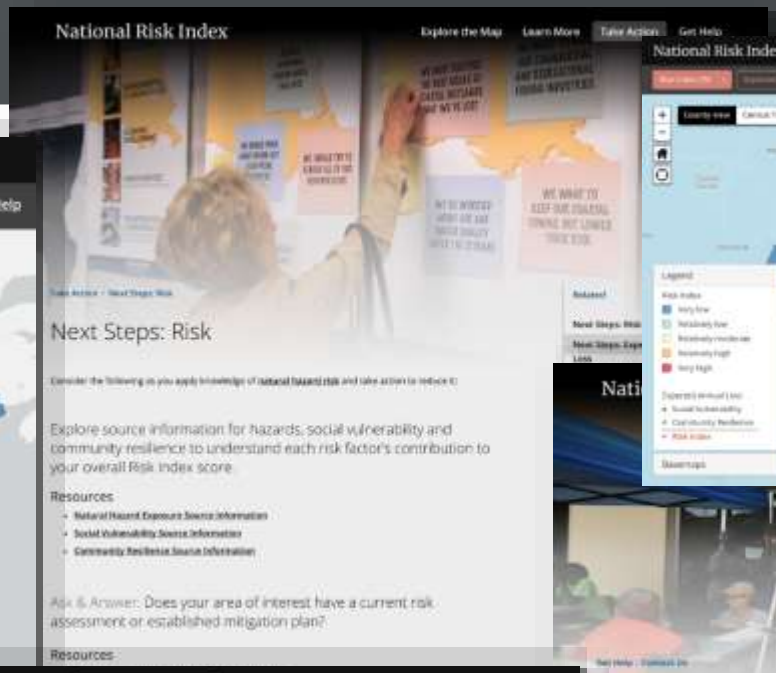
Expected Annual Loss = Natural Hazard Exposure **x** Natural Hazard Frequency **x** Historical Loss

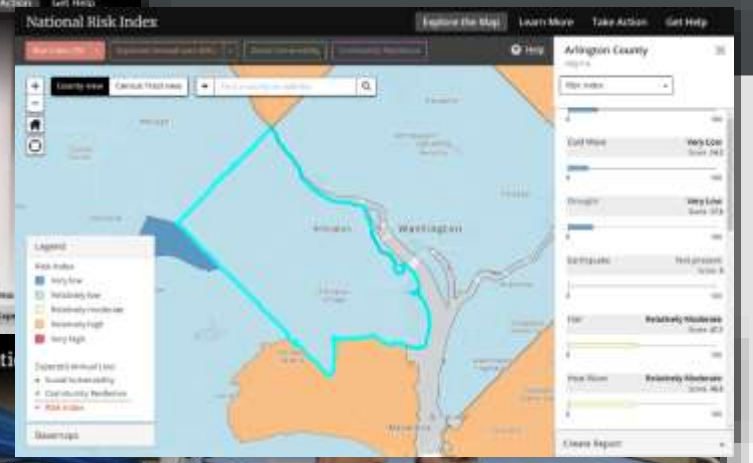


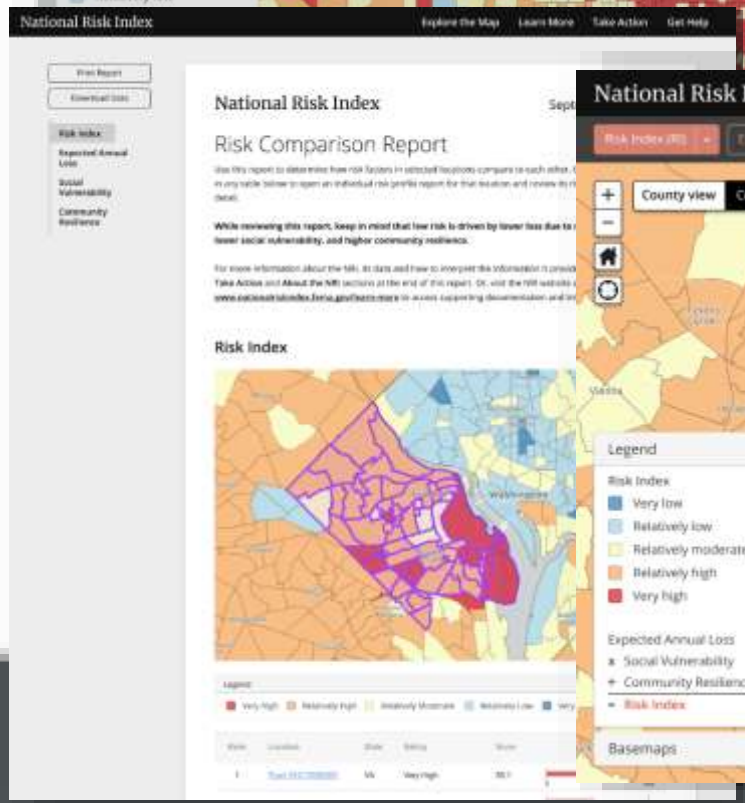
- Risk is defined as the potential for negative impacts as a result of a natural hazard
- Considers the probabilities or frequencies of 18 natural hazards, and the population and property value exposed within hazard extents
- Expected Annual Loss is calculated separately for each natural hazard, then summed to generate a composite score for all 18 natural hazards
- Equation supports traditional hazards risk approach of risk being defined
  as the product of Hazard, Vulnerability, and Exposure

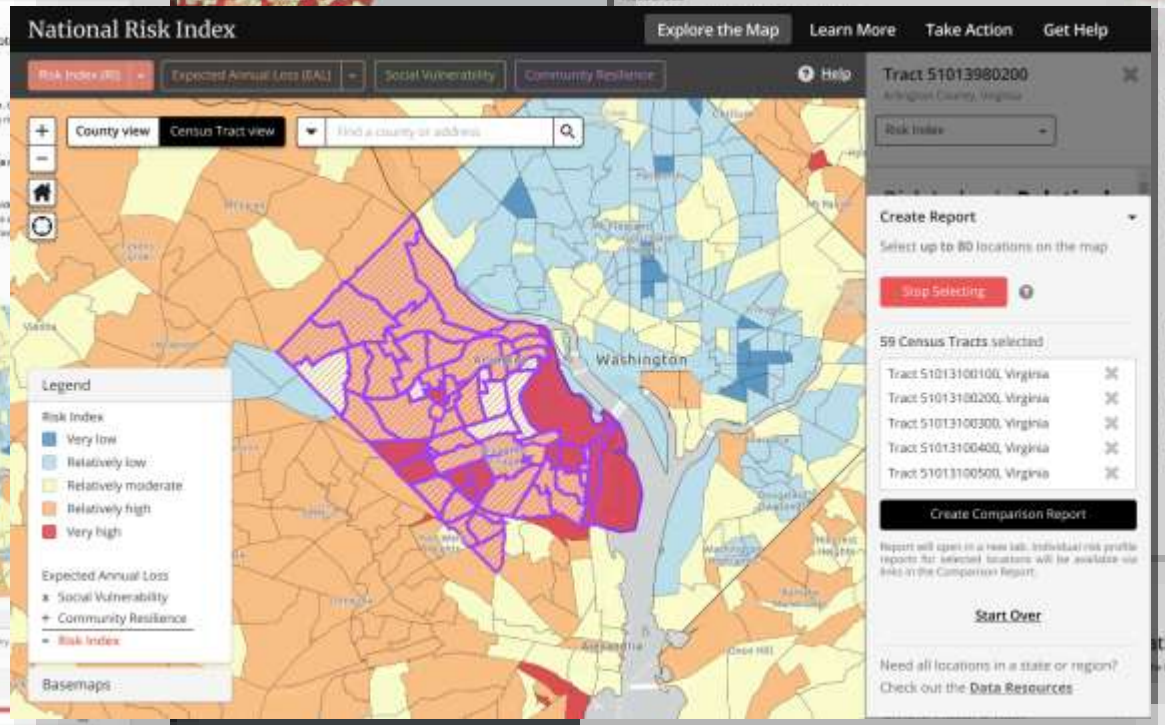
Final Products

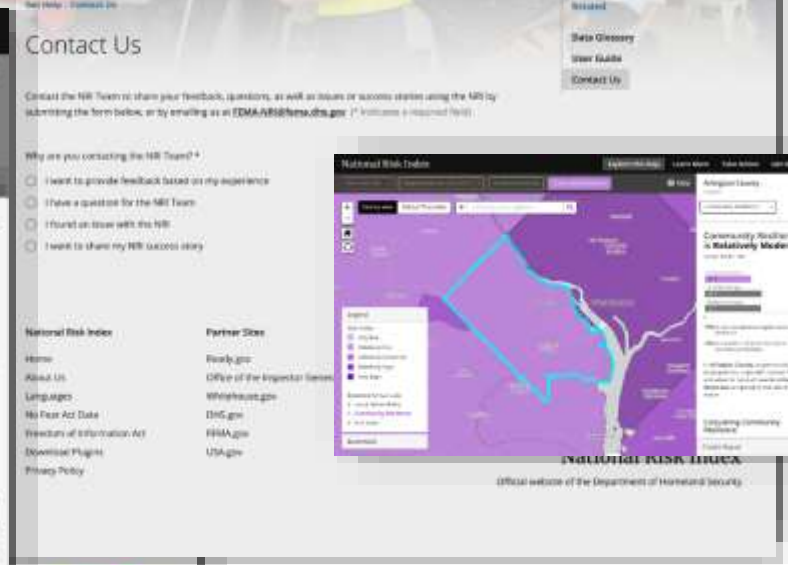












National Risk Index

Questions?

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