

OHIO SEA GRANT AND STONE LABORATORY

Storm Hazards in Northeast OH: Analyzing Community Vulnerability and Resilience

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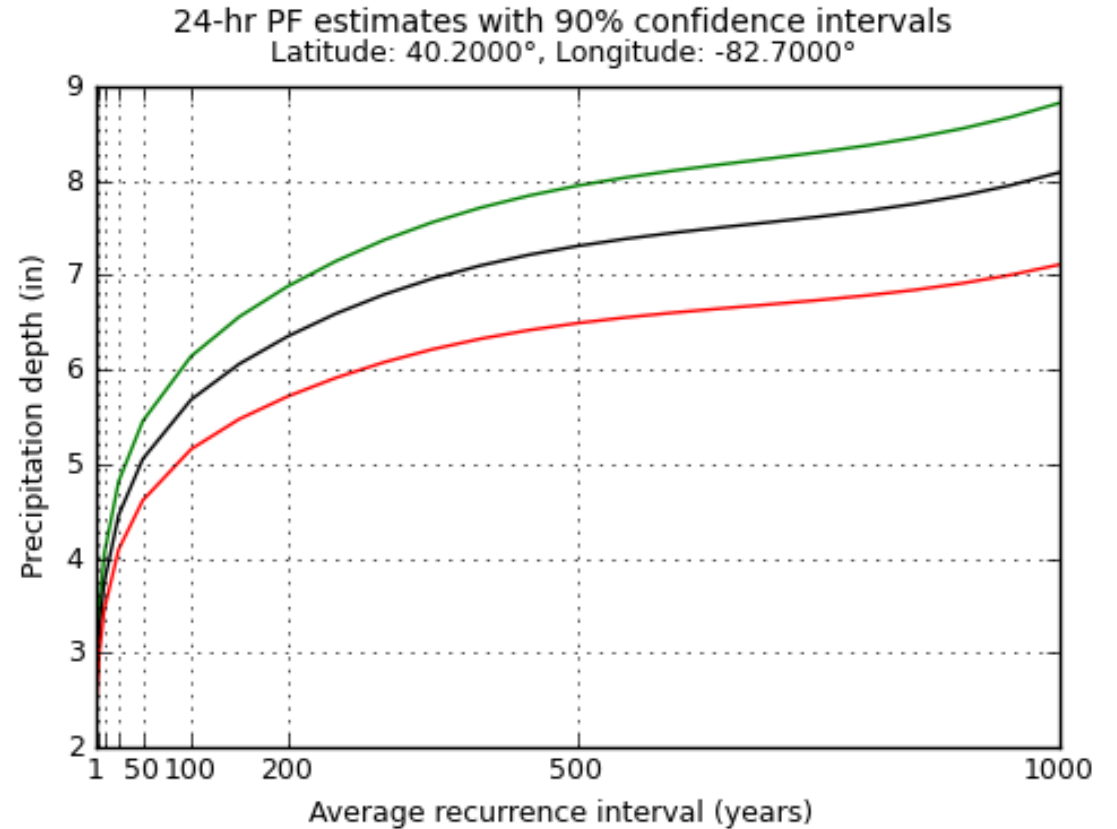
Why Research Storm Hazards?

- Cuyahoga County Natural Hazards Mitigation Plan (2011 update):
 - Severe thunderstorms and flooding are most destructive natural hazards
 - Nine of past 11 declarations of disaster
 - Over \$650 million in damages from 1950-2010



Future Precipitation Frequency?

- Increase in heaviest 1% of all precipitation events
- NOAA Atlas 14 precipitation frequency estimates



NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Mon Feb 1 19:58:05 2016

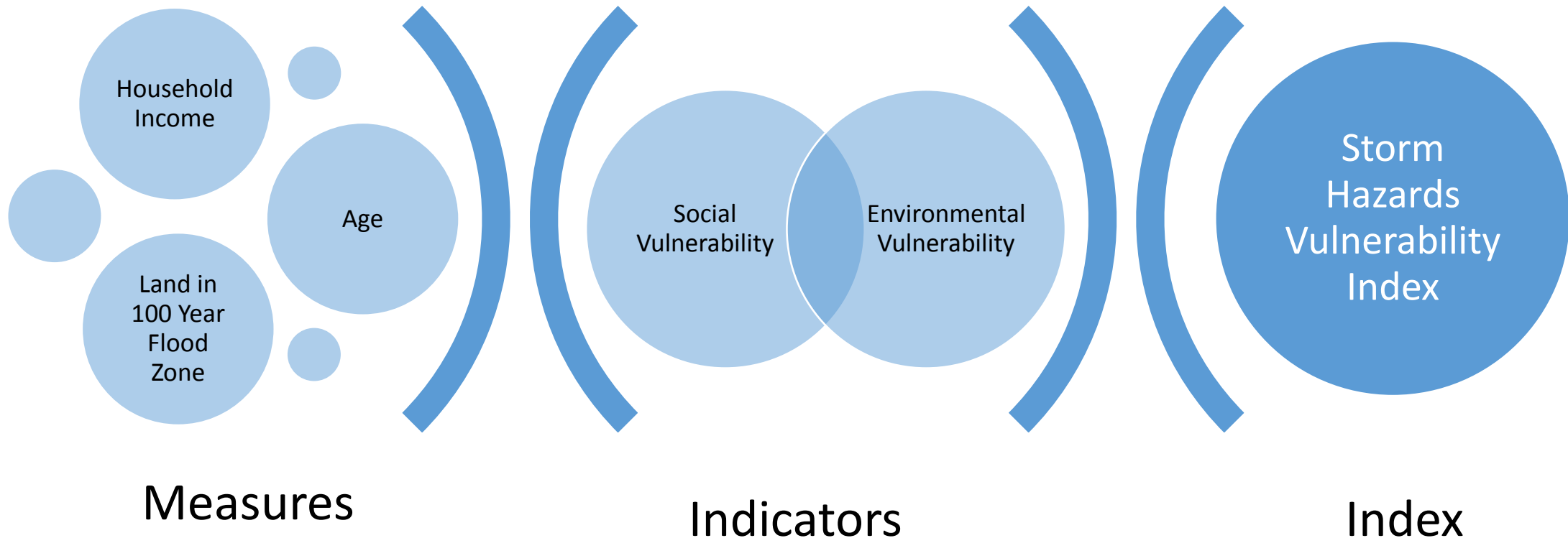
Goals and Purpose of Project

- **Goals:**
 - Identify areas that are most vulnerable to storm hazards
 - Analyze community resilience and adaptive capacity
- **Purpose:**
 - Use science-based information to support local decision making
- **Develop outreach/education materials**



Credit: News Net 5, Cleveland

Creating a Storm Hazards Vulnerability Index



Social Vulnerability Indicator

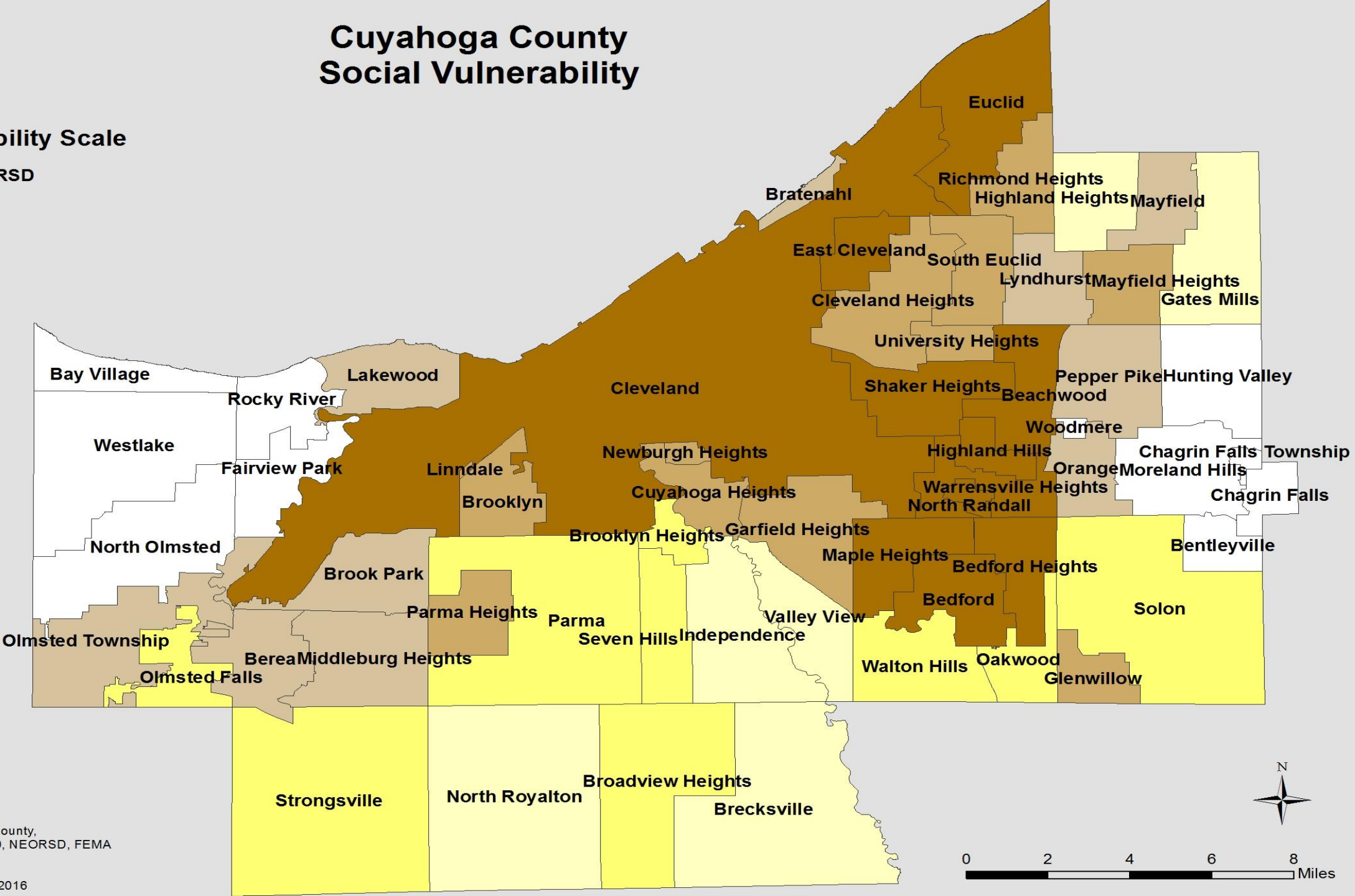
- Measures
 - Age
 - Gender
 - Household income
 - Race/ethnicity
 - Owner-occupied housing

United States®
Census
2010

Cuyahoga County Social Vulnerability

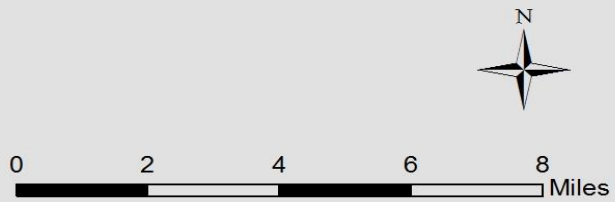
Social Vulnerability Scale

- Outside NEORS
- Very Low
- Low
- Medium
- High
- Very High



Source
Boundary - Cuyahoga County,
Vulnerability data - US Census 2010, NEORS, FEMA

Author
Connie Murzyn, April 2016



Environmental Vulnerability Indicator

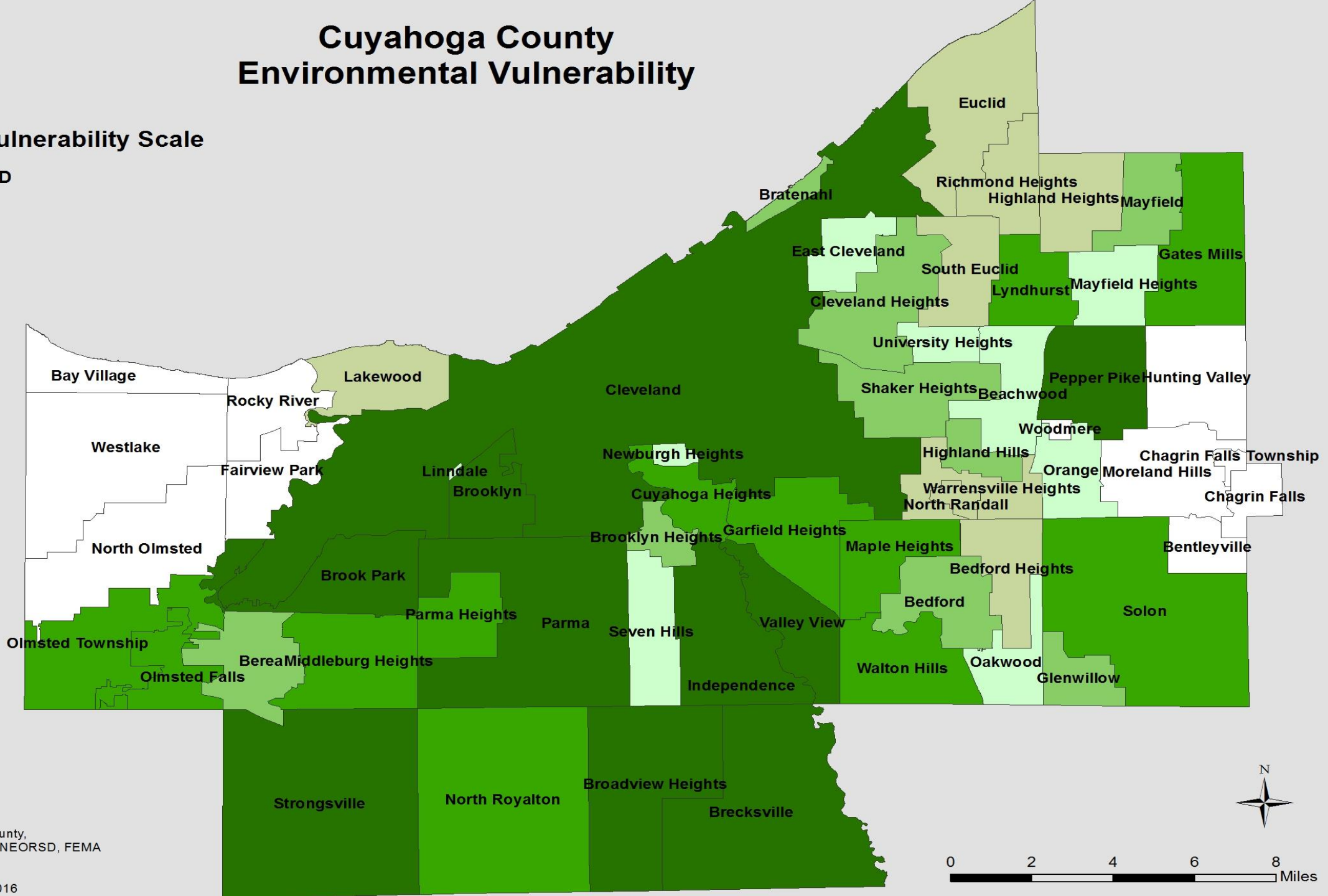
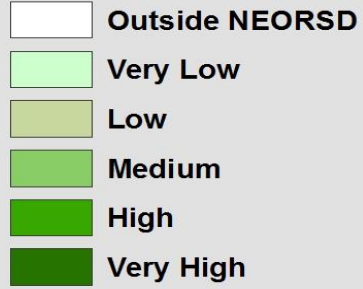


- **Measures**

- Acres of land in 100yr flood zone
- Erosion hazards
- Water quality issues
- Structural hazards
- Debris hazards

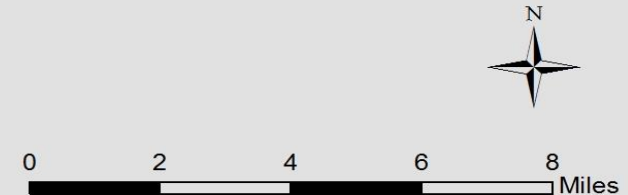
Cuyahoga County Environmental Vulnerability

Environmental Vulnerability Scale

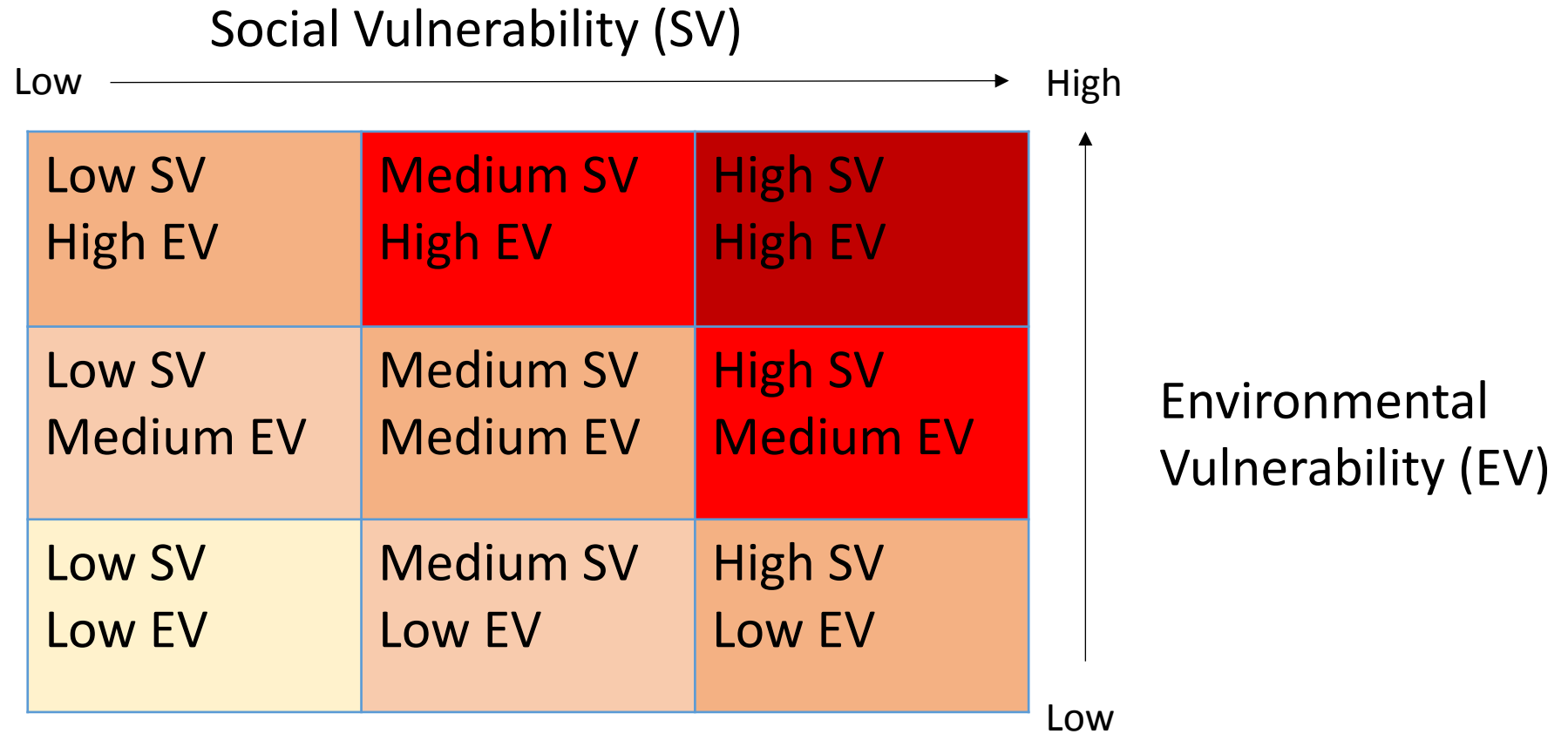


Source
Boundary - Cuyahoga County,
Vulnerability data - US Census 2010, NEORS, FEMA

Author
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Storm Hazards Vulnerability Index



Resilience Indicator (coming soon!)

- **Measures**
 - Local understanding of hazards
 - Financial and technical resources
 - Regional collaborative relationships
 - Sustainable policy standards
 - Planning mechanisms in place



Discussion

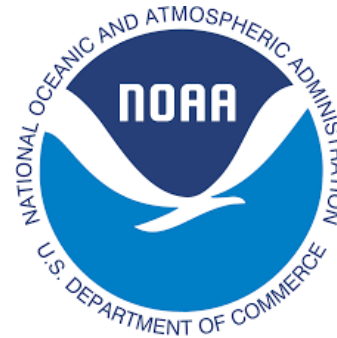
- Analyzing vulnerabilities and resilience helps to support sustainable decision making
- Provides road map for building adaptive capacity to changing climatic conditions
- Helps prioritization of best management practices and watershed planning
- Support for grant applications to secure funds for adaptation, BMP implementation



Source: Rustwire.com

Acknowledgements

- NOAA Coastal Storm Program - funding
- NEORSRSD - data on environmental vulnerability measures
- ODNR – data on land in 100 year flood zone
- Connie Murzyn – GIS mapping



Questions and comments?

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