

**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** MARCH 4 - 6, 2019  
COX CONVENTION CENTER OKLAHOMA CITY

## Community Resilience Indicator Analysis

*County-level Analysis of Commonly Used Indicators to Inform FEMA Technical Assistance*

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**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** Support FEMA Goal 1:  
Build a Culture of Preparedness

**Community Resilience Indicator Analysis:**

- Provides a data-driven basis to prioritize locations for technical assistance investment, and
- Informs community resilience technical assistance syllabus and materials.

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**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** 5-Step Methodology to Identify and Map Commonly Used Indicators of Community Resilience

1 Conduct Literature Review of Meta-Analyses → 2 Catalog Distinct Methodologies → 3 Create and Apply Inclusion Criteria

4 Identify Commonly Used Indicators → 5 Sort Indicator Data into 5 Bins and Map → Analysis and Recommendation

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**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** Limitations of Analysis

- **County-level Analysis:** may mask some local issues
- **Open Source Data:** more specific data may be available from proprietary sources; this methodology used open, easily available, no cost datasets
- **Incomplete National Datasets:** U.S. Census primary datasets do not include results for many of the U.S. territories
- **Hazard Assessments Not Included:** hazard risk was not a factor in this analysis, but can be overlaid
- **No Assessment of Community Capacity:** this analysis does not include data on a community's capacity to respond to hazards relative to these indicators

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**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** Benefits of Analysis

- **Existing Peer-reviewed Research:** peer-review process provides greater validity
- **Commonly Used Indicators:** suggest some research agreement
- **Attention to Individual Indicators:** (vs domains comprised of multiple indicators) may help users pinpoint specific areas for improvement
- **Relative Assessment:** identifies priority areas while acknowledging all communities can take steps to improve resilience
- **Broad Application of Findings:** offers national perspective and local baseline; useful for NIC TA, other FEMA programs and SLTT partners
- **Framework for Further Analysis:** counties can use this framework for more granular analysis to develop strategies to improve resilience

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**NATIONAL TORNADO SUMMIT & DISASTER SYMPOSIUM** Commonly Used Community Resilience Indicators

11 Population-Focused Indicators and Metric Used

Educational Attainment: % population over 25 without high school diploma
Unemployment Rate: % of labor force unemployed
Disability: % of population with a disability
English Language Proficiency: % limited-English-speaking households
Mobility: % of occupied housing units with no vehicles available
Home Ownership: % owner-occupied housing units
Age: % of population 65 years and over
Household Income: median household income
Income Inequality: Gini Index
Health Insurance: % of population with no health insurance coverage (private or public)
Single-parent Households: % of single-parent households

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## Commonly Used Community Resilience Indicators

9 Community-Focused Indicators and Metric Used

Connection to Civic and Social Organizations: # of organizations per 10,000 people
Hospital Capacity: # of hospitals per 10,000 people
Medical Professional Capacity: # of health diagnosing and treating practitioners per 1,000 people
Affiliation with a Religion: % of population that are religious adherents
Mobile Homes: % of mobile homes
Population Change: % change in residents who have lived in same county for more than 5 years
Public School Capacity: # of public schools per 5,000 population
Hotel/Motel Capacity: # of hotels/motels per 5,000 population
Rental Property Capacity: % vacant rental housing units

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## Correlation Analysis and Mapping County-level Data

- Correlation Analysis** to provide greater understanding of inter-connectedness between indicators.
- Choropleth Maps** provide high-level visual understanding of relative values of county-level data.
- Online Tool** allows users to view indicator layers and data points for each county. <http://disasters.geoplatform.gov>
- Indicator / Regional Analysis and Recommendations** are included in the report to highlight specific findings by indicator, by region, and for NIC TA.

**Color Scale for Choropleth Maps**

Potentially high disaster resilience

Potentially low disaster resilience

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## Community Resilience Indicator Maps

**Educational Attainment: Lack of High School Diploma in Adults Over Age 25**

**Findings:**

- In 42 percent of U.S. counties, the percentage of adults without a high school diploma is higher than the national average of 13 percent.
- A total of 40 counties in Kentucky and Tennessee have 70 percent or higher adult population without a high school diploma.
- There are clusters of counties below the national average across the Southwest, Texas, Nevada, and California.
- Most of the counties in Texas that have higher population values between 28 and 35 percent of adults have not completed high school.

**Individual Map Pages Include:**

- Map Thumbnail
- Map Bin Legend (including the number of counties in each bin)
- Data Source and Date
- Binning Method
- National Average
- Findings

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## Population-focused Community Resilience Indicator Maps

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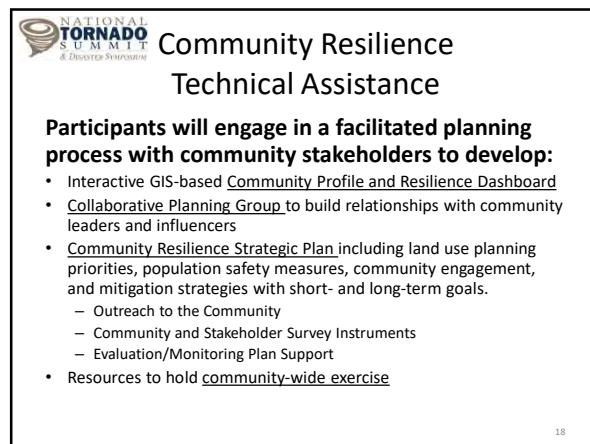
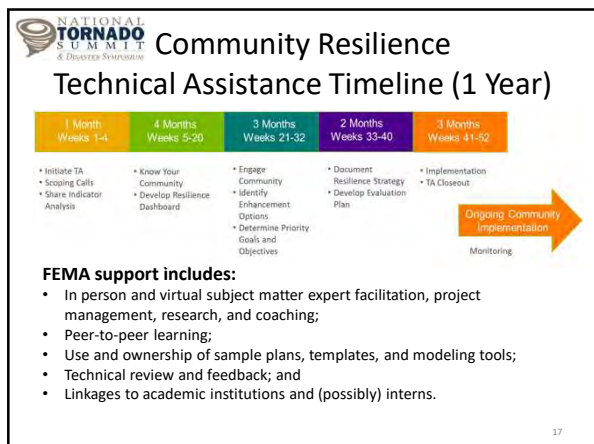
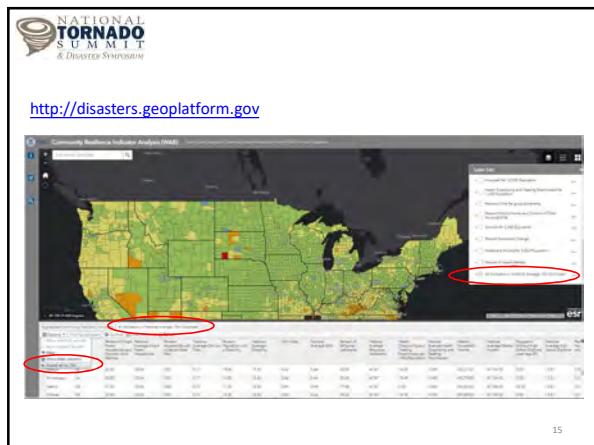
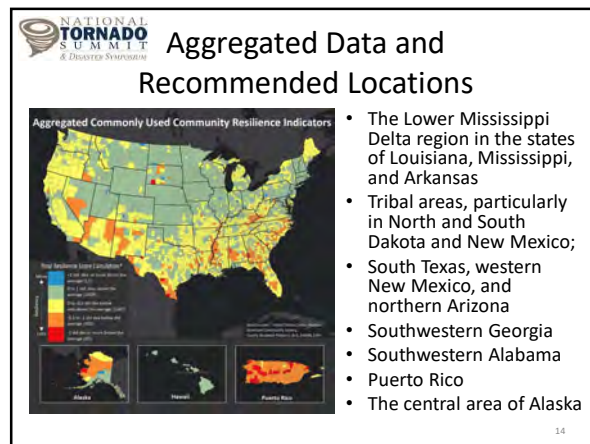
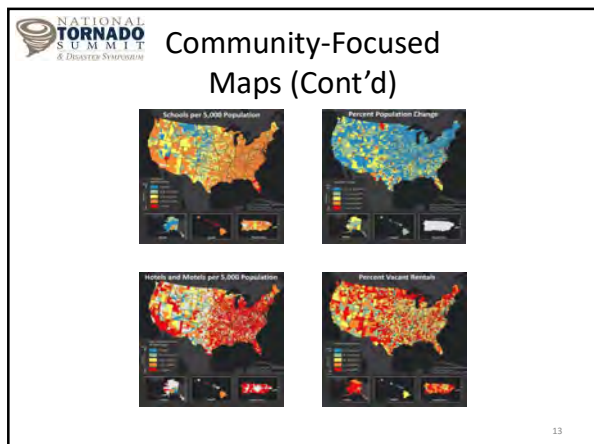
## Population-focused Maps (Cont'd)

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## Community-Focused Community Resilience Indicator Maps

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# Community Resilience Technical Assistance

## Questions and Discussion