

JUNE 2019

# COMMUNITY RESILIENCE INDICATOR ANALYSIS

*County-Level Analysis of Commonly Used  
Indicators from Peer-Reviewed Research*

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U.S. DEPARTMENT OF  
**ENERGY**

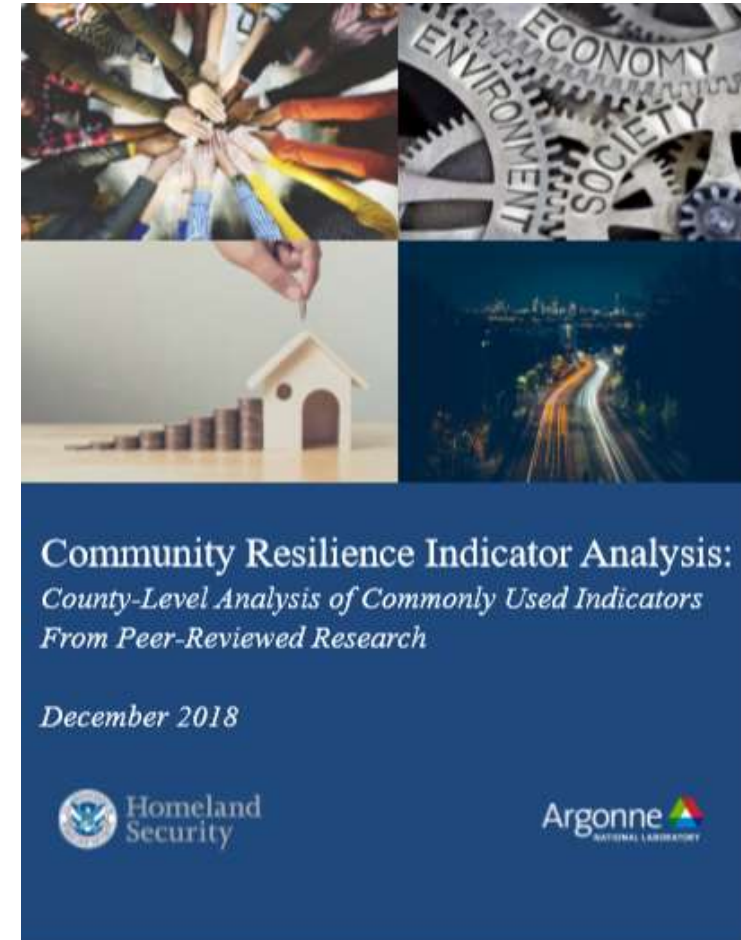
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# SUPPORT FEMA GOAL 1: BUILD A CULTURE OF PREPAREDNESS

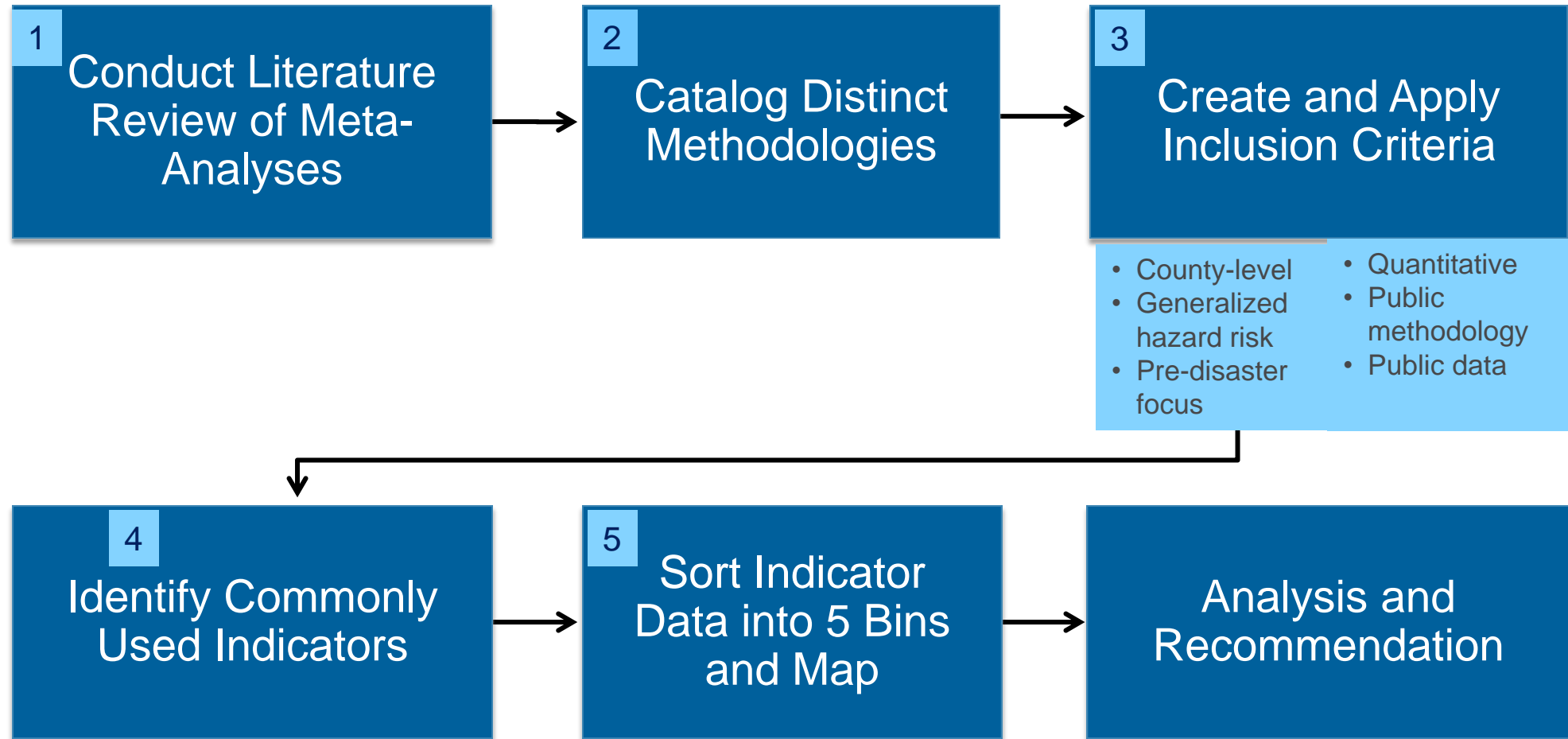
## Community Resilience Indicator Analysis:

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



<https://fema.connectsolutions.com/resilienceindicatorgis/>

# 5-STEP METHODOLOGY TO IDENTIFY AND MAP COMMONLY USED INDICATORS OF COMMUNITY RESILIENCE



## LIMITATIONS OF ANALYSIS

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- **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

## BENEFITS OF ANALYSIS

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- **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



# COMMONLY USED COMMUNITY RESILIENCE INDICATORS

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## 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

# COMMONLY USED COMMUNITY RESILIENCE INDICATORS

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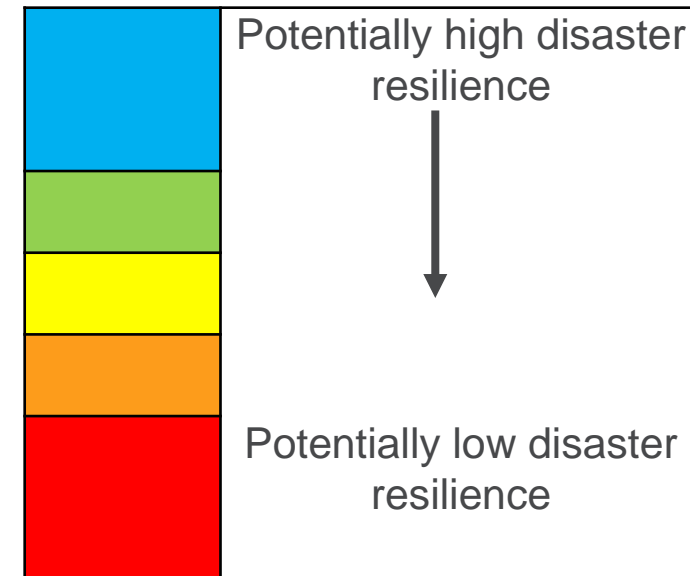
## 9 Community-Focused Indicators and Metric Used

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

# 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://bit.ly/CommunityResilience>**  
**Indicator Analysis**
- **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

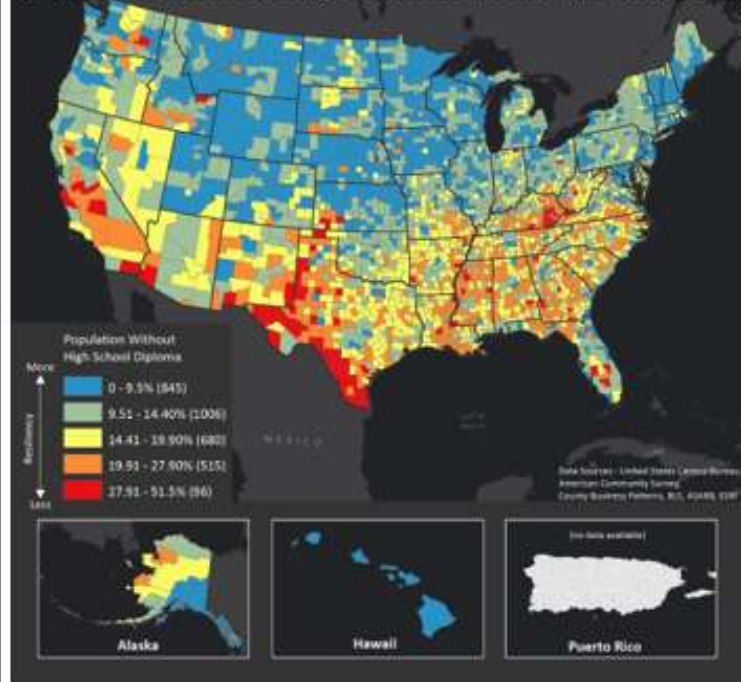




# COMMUNITY RESILIENCE INDICATOR MAPS

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

### Population Without High School Diploma (over age 25)



**Data Source:**  
U.S. Census  
American Community  
Survey (ACS) 2012-  
2016 5-year estimate,  
Table 21501

**Binning Method:**  
Jenks Natural Breaks

**National Average:**  
13 percent of U.S.  
adult population does  
not have a high school  
diploma.

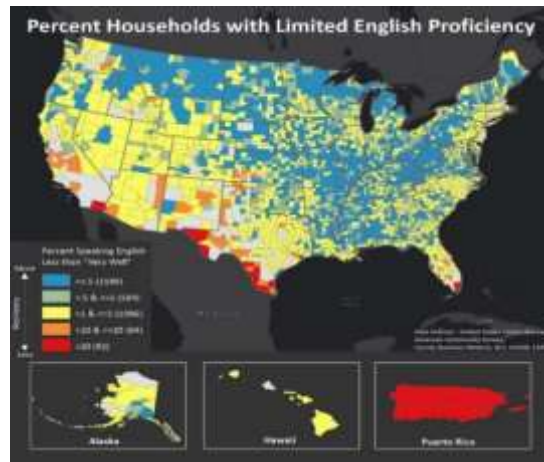
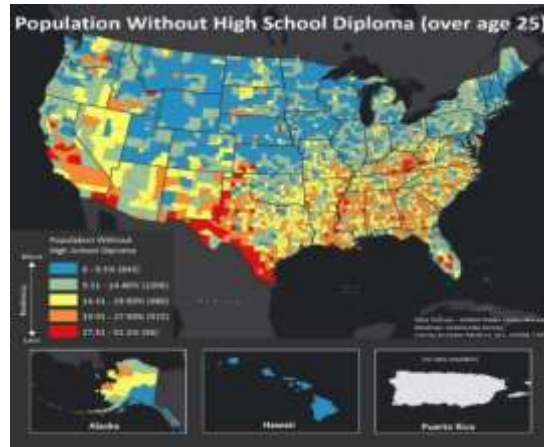
### Findings:

- In 41 percent of U.S. counties, the percentage of adults without a high school diploma is higher than the national average of 13 percent.
- About half of all counties in Kentucky and Mississippi have 20 percent or higher adult populations without a high school education.
- There are clusters of counties below the national average across the Southeast, Texas, Nevada, and California.
- Most of the counties in Texas that border Mexico have populations where between 28 and 51 percent of adults have not completed high school.

## Individual Map Pages Include:

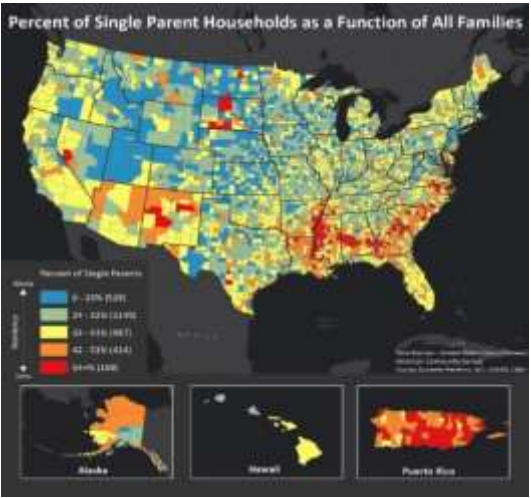
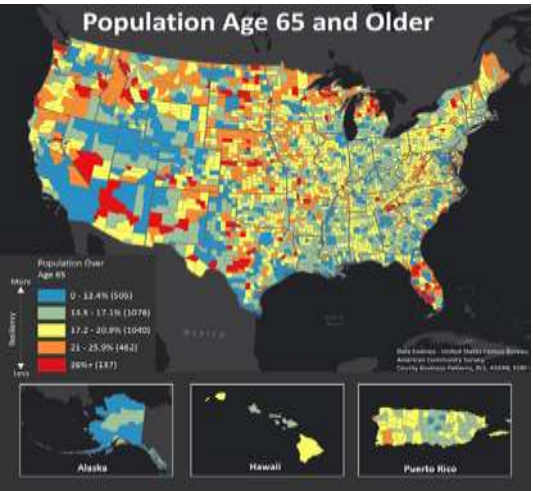
- Map Thumbnail
- Map Bin Legend (including the number of counties in each bin)
- Data Source and Date
- Binning Method
- National Average
- Findings

# POPULATION-FOCUSED COMMUNITY RESILIENCE INDICATOR MAPS

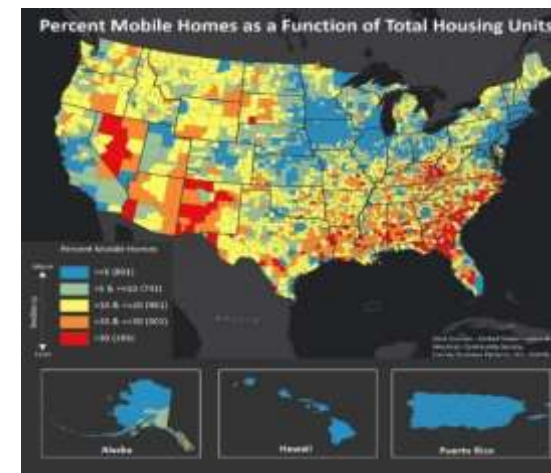
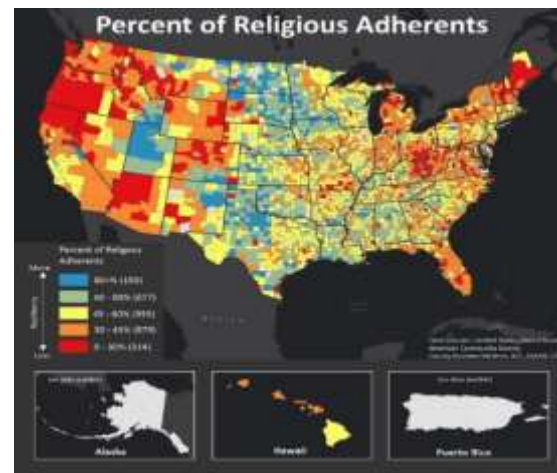




# POPULATION-FOCUSED MAPS (CONT'D)



# COMMUNITY-FOCUSED COMMUNITY RESILIENCE INDICATOR MAPS

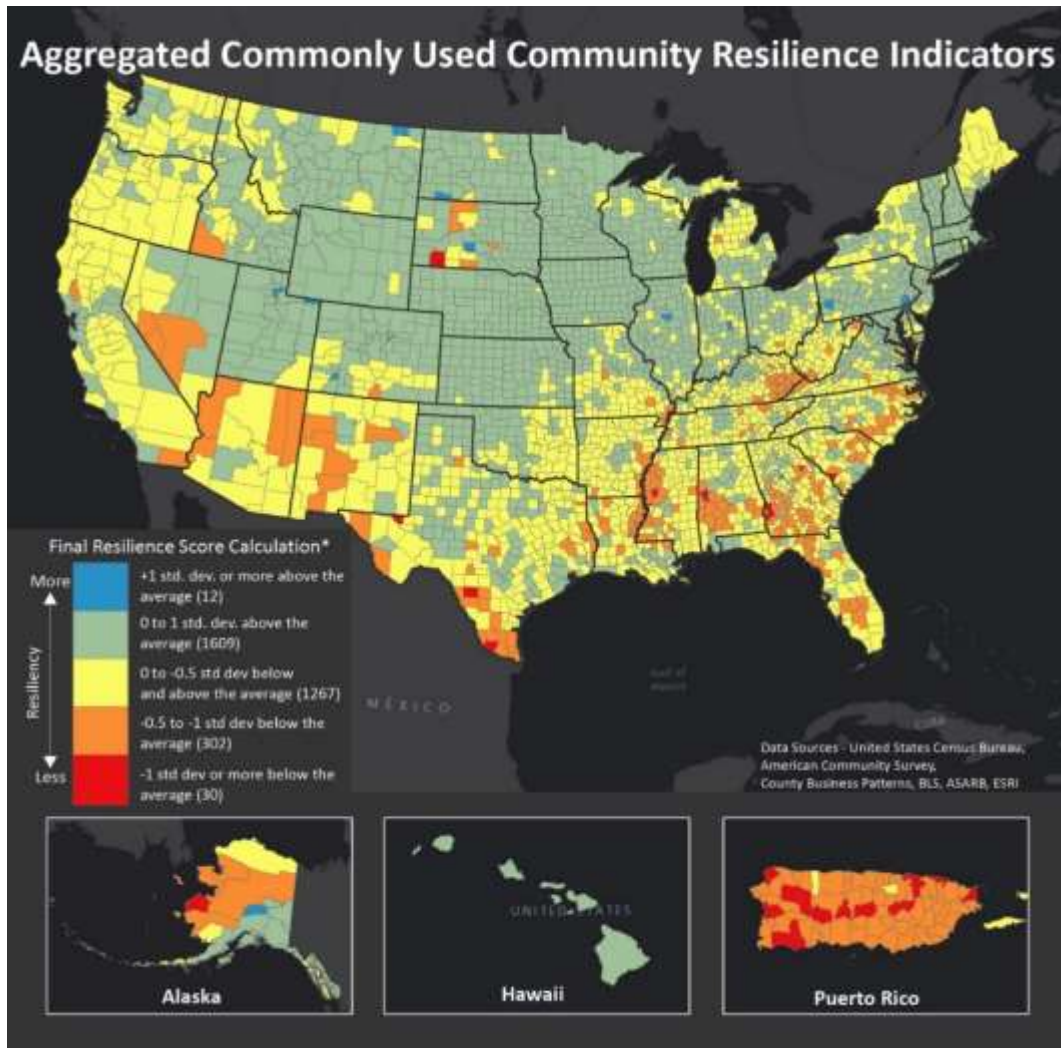


# COMMUNITY-FOCUSED MAPS (CONT'D)





# AGGREGATE COMMUNITY RESILIENCE INDICATOR



Counties in the least resilient bins (red and orange) tend to be in:

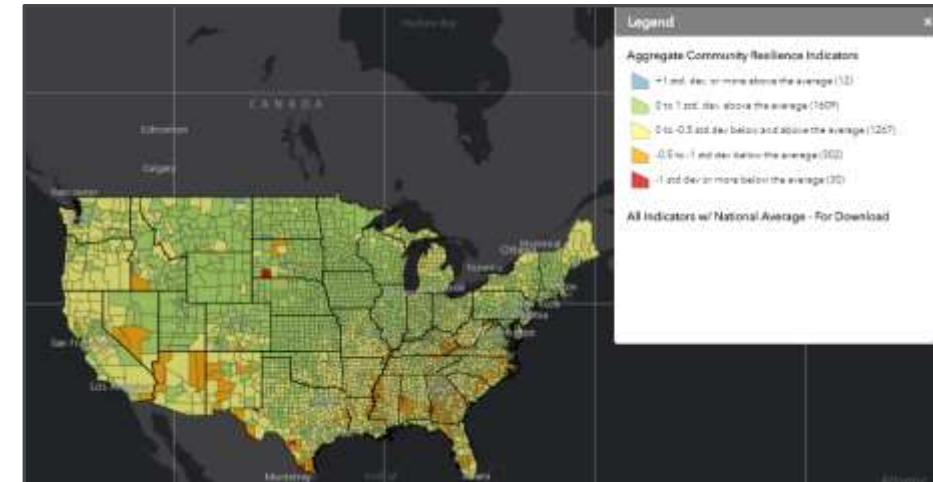
- The Lower Mississippi Delta region
- Tribal areas (North and South Dakota, and New Mexico;
- South Texas, western New Mexico, and northern Arizona
- Southwestern Georgia
- Southwestern Alabama
- Puerto Rico
- The central area of Alaska



# DISASTERS GEOPLATFORM

<http://bit.ly/CommunityResilienceIndicatorAnalysis>

- All indicator maps available on FEMA's Disasters GeoPlatform.
- Tabs provide easy navigation of:



**Overview:** includes background and implications for emergency managers.



**Methodology:** provides a summary of the analysis conducted to identify the 20 commonly used community resilience indicators.



**Connection to Resilience:** provides the data source and how researchers connected each indicator to community resilience.



**Resilience Indicators:** shows each indicator and its associated color-coded legend of relative resilience.

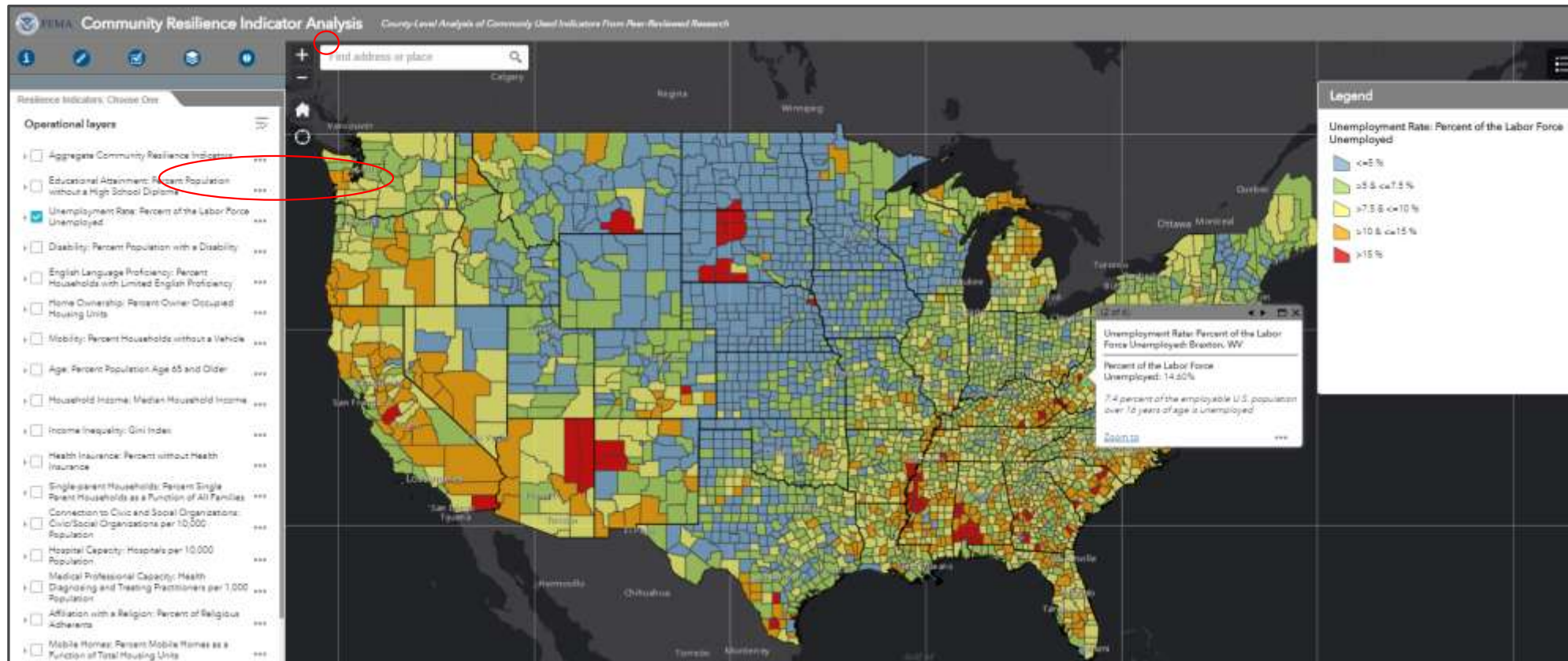


**User Guide And FAQs:** includes a link to the CRIA Web Map User Guide and a list of frequently asked questions.

# DISASTERS GEOPLATFORM

<http://bit.ly/CommunityResilienceIndicatorAnalysis>

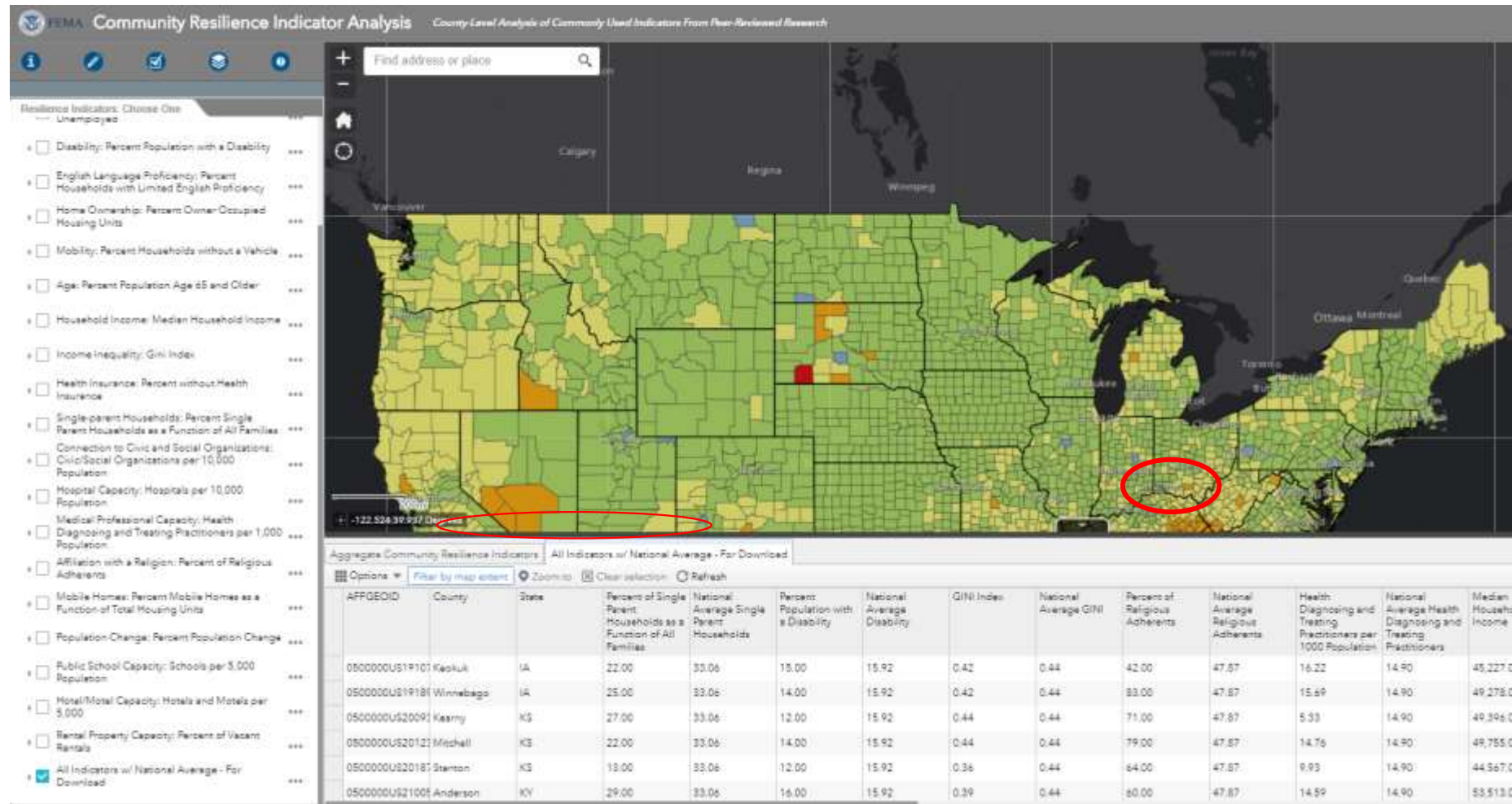
- Choose a County and click on a layer list icon  – The legend for that indicator will appear as well as a pop-up box with the indicator data for that county and the national average.



# DISASTERS GEOPLATFORM

<http://bit.ly/CommunityResilienceIndicatorAnalysis>

- Export desired data into a CSV file (see User Guide for instructions).

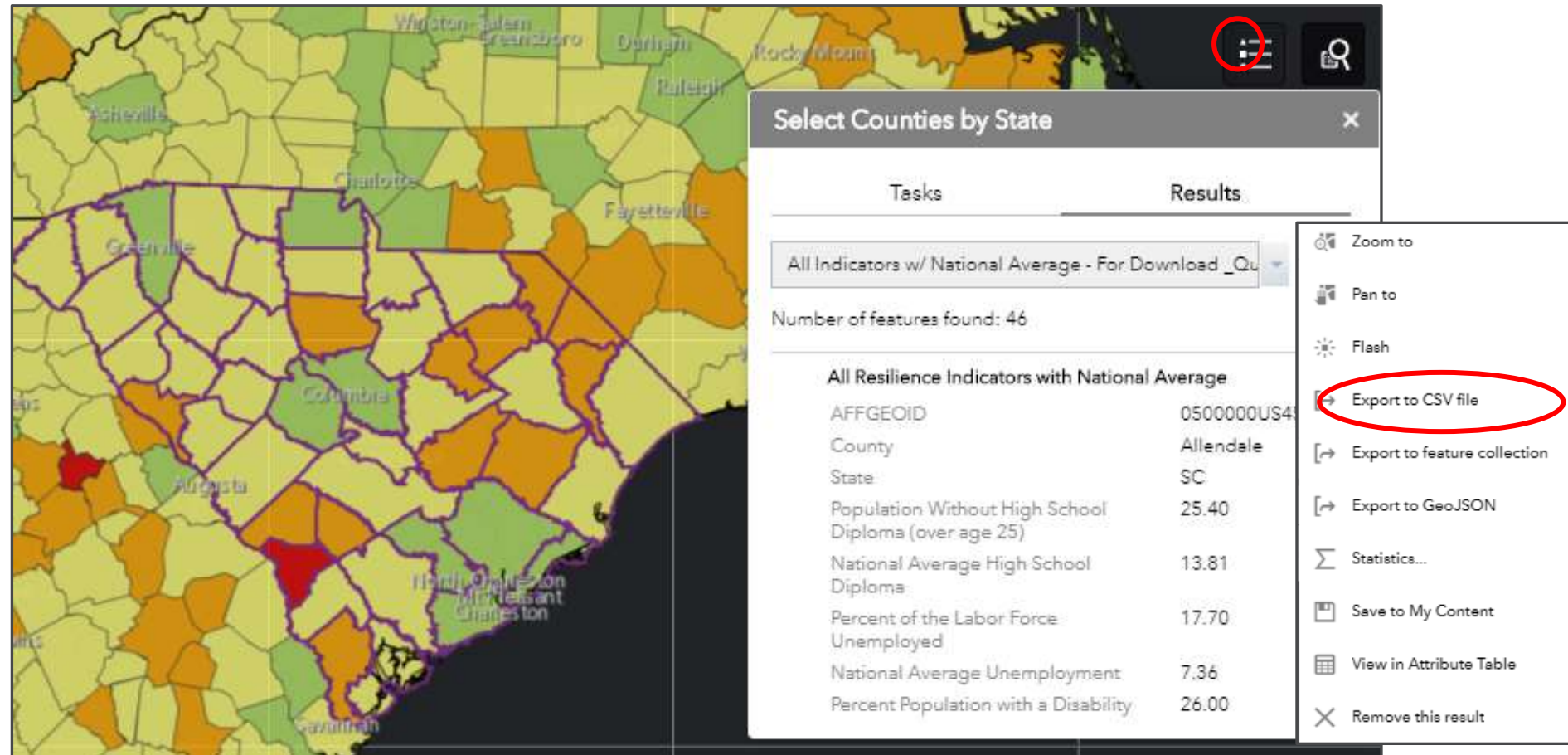




# DISASTERS GEOPLATFORM

<http://bit.ly/CommunityResilienceIndicatorAnalysis>

- View and export data for a specific state into a CSV file.



**Questions or Comments?**