

U.S. Census Bureau: Community Resilience Estimates

Washington & Oregon State Data Centers
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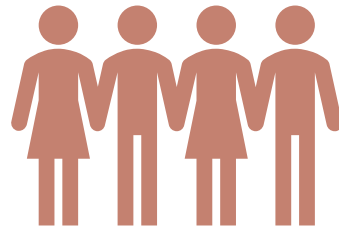


The Census Bureau's
Community Resilience Estimates (CRE) provide a
precise, understandable, and easy-to-use
measure of social vulnerability to disasters and
“shocks.”

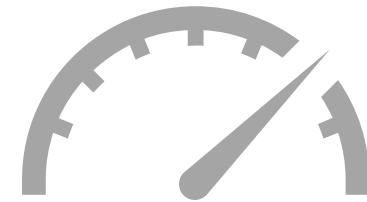
The Census Bureau and COVID-19



COVID-19 pandemic reiterated the need for usable information about the population.



Many groups reached out to the Census Bureau for data.



Overwhelming need for a single, easy to understand metric of social vulnerability.

Why should *Census* measure Resilience/Social Vulnerability?


- Access to microdata → individual and household level data which retains correlation of individual risks.
 - Microdata ideal for identifying most vulnerable populations to ensure equitable distribution of resources.

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- Access to microdata → individual and household level data which retains correlation of individual risks.
 - Microdata ideal for identifying most vulnerable populations to ensure equitable distribution of resources.
- Statistical experts in small area modeling that can improve survey data with modeling techniques and auxiliary data.
- This creates a granular, precise, accurate, and timely data product measuring social vulnerability.
 - Down to tract level, smaller margins of error, 1-year estimates

Validation of CRE

RESEARCH ARTICLE | JUNE 01 2024

A Research Note on Community Resilience Estimates: New U.S. Census Bureau Data With an Application to Excess Deaths From COVID-19 

John Anders; Craig Wesley Carpenter; Katherine Ann Willyard; Bethany DeSalvo

In this research note, we describe the results of the first validation study of the U.S. Census Bureau's new Community Resilience Estimates (CRE), which uses Census microdata to develop a tract-level vulnerability index for the United States. By employing administrative microdata to link Social Security Administration mortality records to CRE, we show that CRE quartiles provide more stable predictions of COVID-19 excess deaths than single demographic categorizations such as race or age, as well as other vulnerability measures including the U.S. Centers for Disease Control and Prevention's Social Vulnerability Index (SVI) and the Federal Emergency Management Agency's National Risk Index (NRI). We also use machine learning techniques to show that CRE provides more predictive power of COVID-19 excess deaths than standard socioeconomic predictors of vulnerability such as poverty and unemployment, as well as SVI and NRI. We find that a 10-percentage-point increase in a key CRE risk measure is associated with one additional death per neighborhood during the initial outbreak of COVID-19 in the United States. We conclude that, compared with alternative measures, CRE provides a more accurate predictor of community vulnerability to a disaster such as a pandemic.



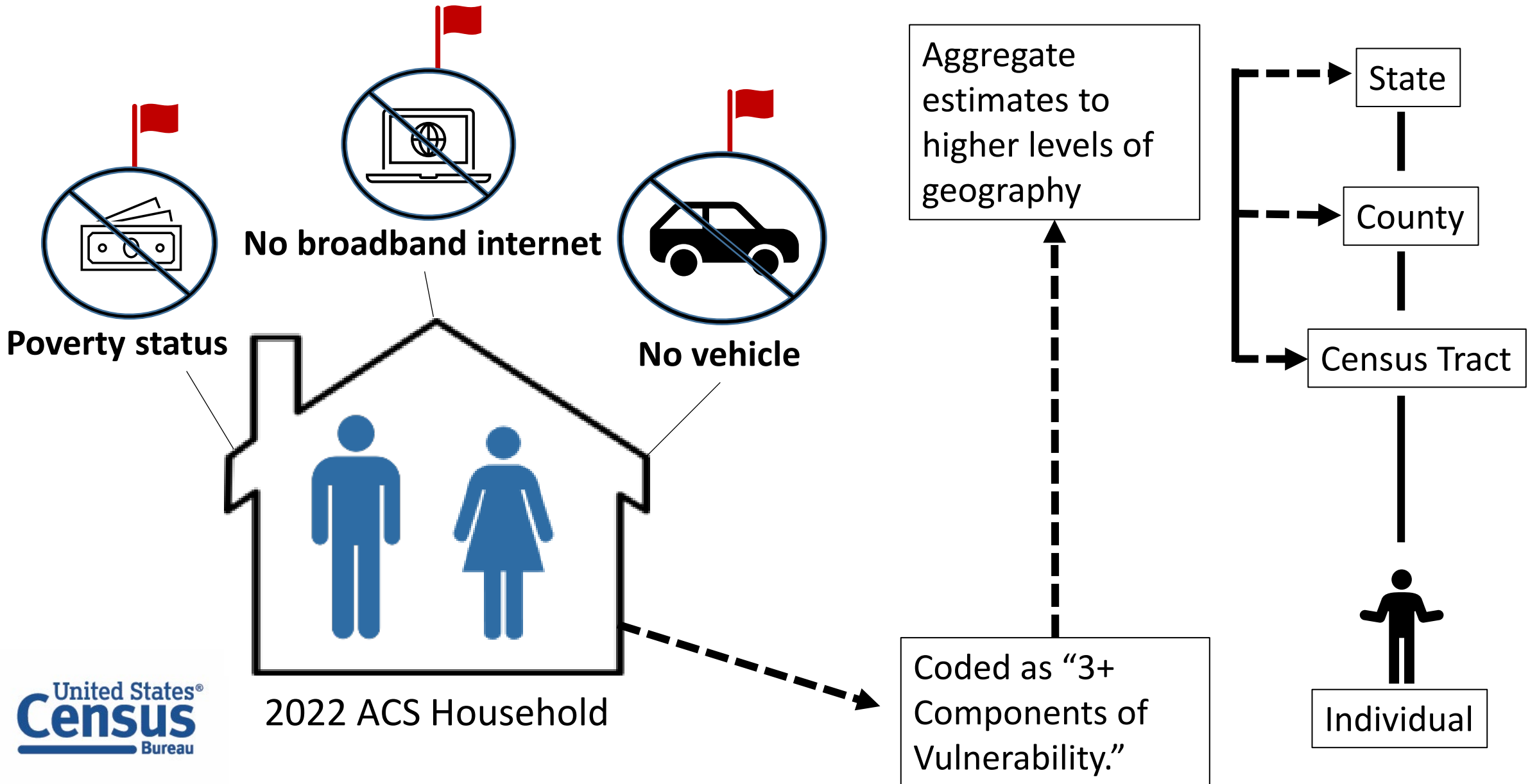
What is the CRE?

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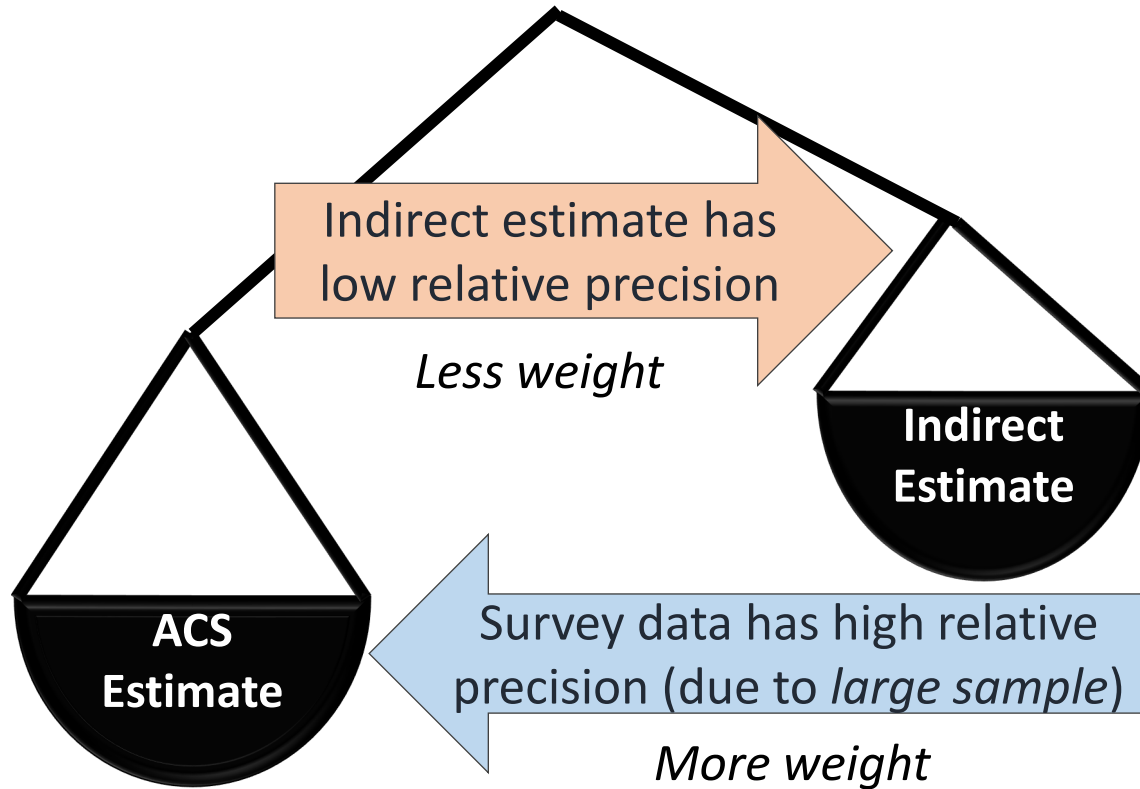
- The Community Resilience Estimates (CRE) are modeled estimates of social vulnerability in the population:
 - Nation, state, county, census tract
- Uses data from the:
 - American Community Survey (1-year)
 - Population Estimates Program (PEP)
- Ten vulnerability components



Example of CRE Flags and Aggregating Estimates

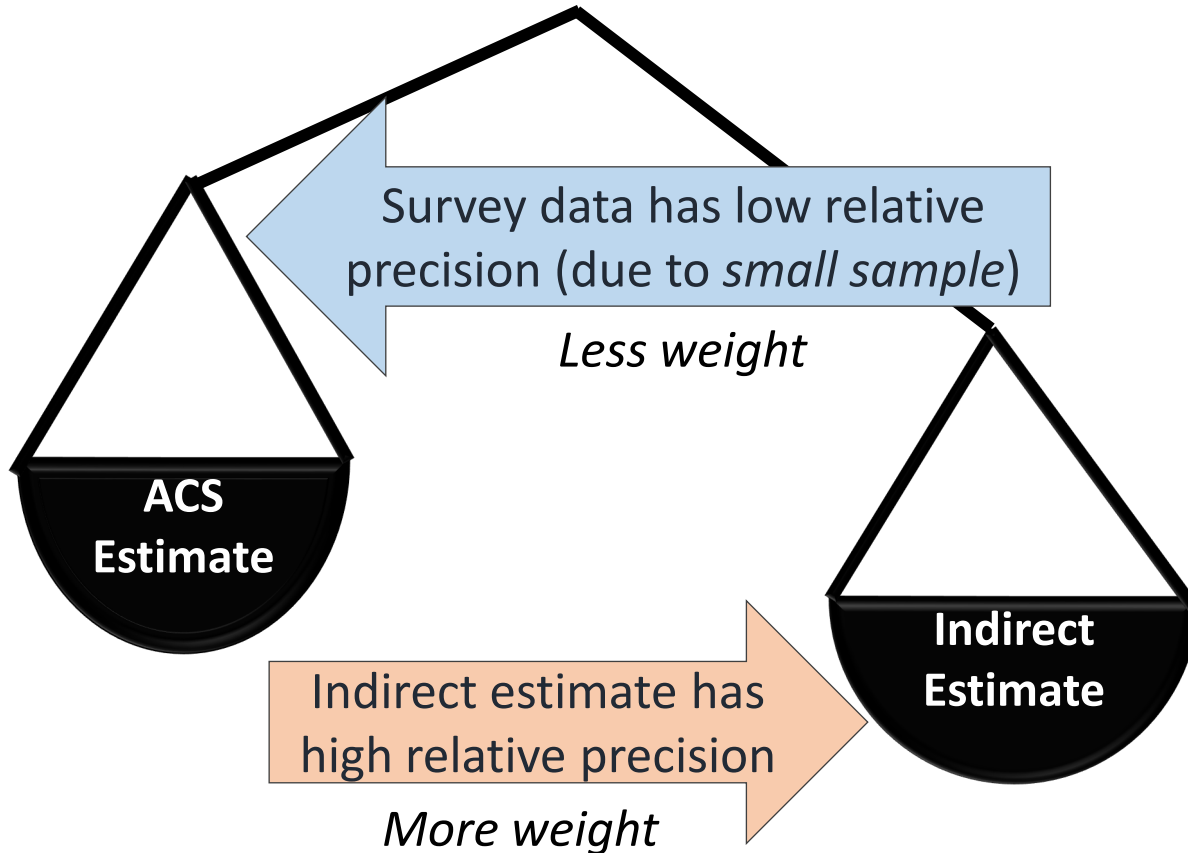


Small Area Estimation Methods



Small area estimates for areas with **large** sample sizes

Small Area Estimation Methods



Small area estimates for areas with **small** sample sizes

Major Output Differences

Community Resilience Estimates

- Number of people
- Percentage of population
- Margin of error

Other measures of social vulnerability

- Indexed values
 - Value of 0 to 1
 - 1 is most vulnerable
 - 0.5 would be moderate
 - 0 is least vulnerable

- This is tabulated for three groups:
 - Zero flagged indicators (“low”)
 - One-two flagged indicators (“moderate”)
 - Three or more flagged indicators (“high”)

National 2022 CRE Estimates

0 Components of Social Vulnerability	1-2 Components of Social Vulnerability	3+ Components of Social Vulnerability
115,417,153 (+/-1,140,437)	145,319,124 (+/-1,240,564)	67,760,309 (+/-1,022,619)
35.1% (+/-0.4%)	44.2% (+/-0.4%)	20.6% (+/-0.3%)

What CRE data product should I use?

CRE Data Products

- Standard CRE
- CRE for Equity
- CRE for Puerto Rico
- CRE for Heat

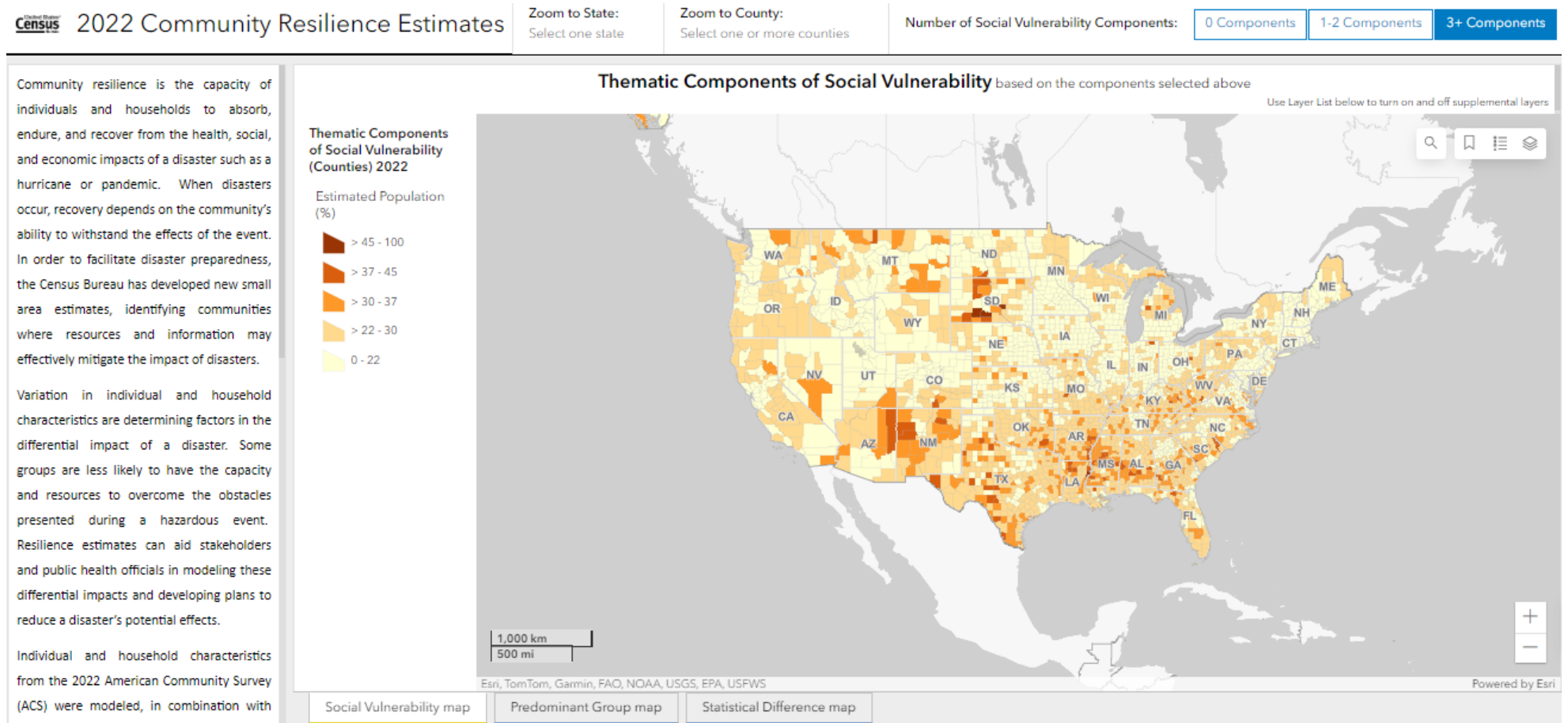


Standard CRE

- The Standard CRE provides an easily understood metric of social vulnerability.
- Determine social vulnerability for:
 - The nation
 - States
 - County
 - Neighborhoods (census tract)
- General estimates for impacts of disasters, such as hurricanes, floods, earthquakes, wildfires, and pandemics
- 2022 data released on January, 2024

Standard CRE - Tool

- [CRE Dashboard](#) – best when you just want CRE estimates

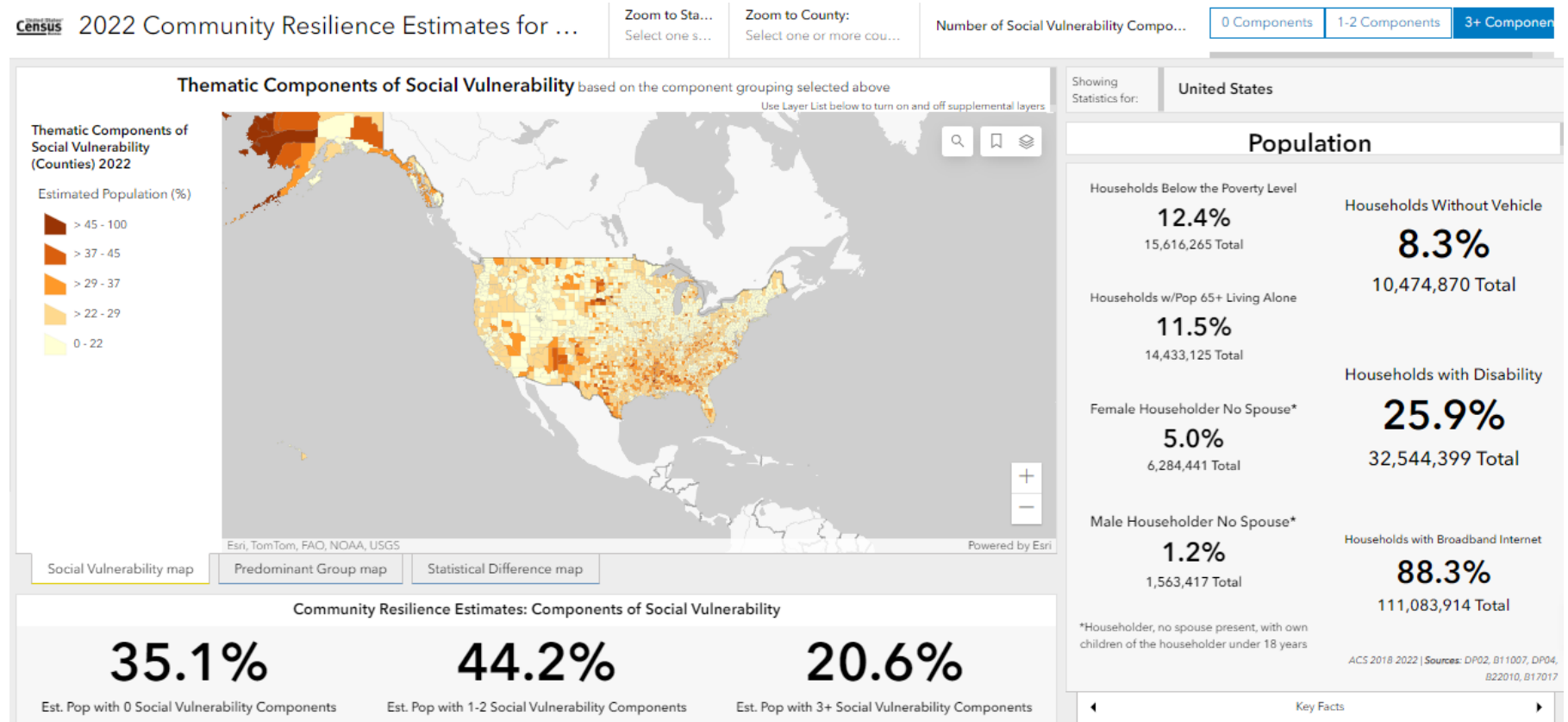


CRE, Equity Supplement (CRE for Equity)

- Dataset of Estimates from Multiple Programs
 - CRE estimates
 - American Community Survey, 5-Year Estimates
 - 2020 Decennial Census
 - Planning Database
- Provide social context for:
 - CRE estimates/social vulnerability
 - Discussions about equity
 - Comparisons to the nation across a number of variables (“statistical flags”)
- 2022 data released on February, 2024

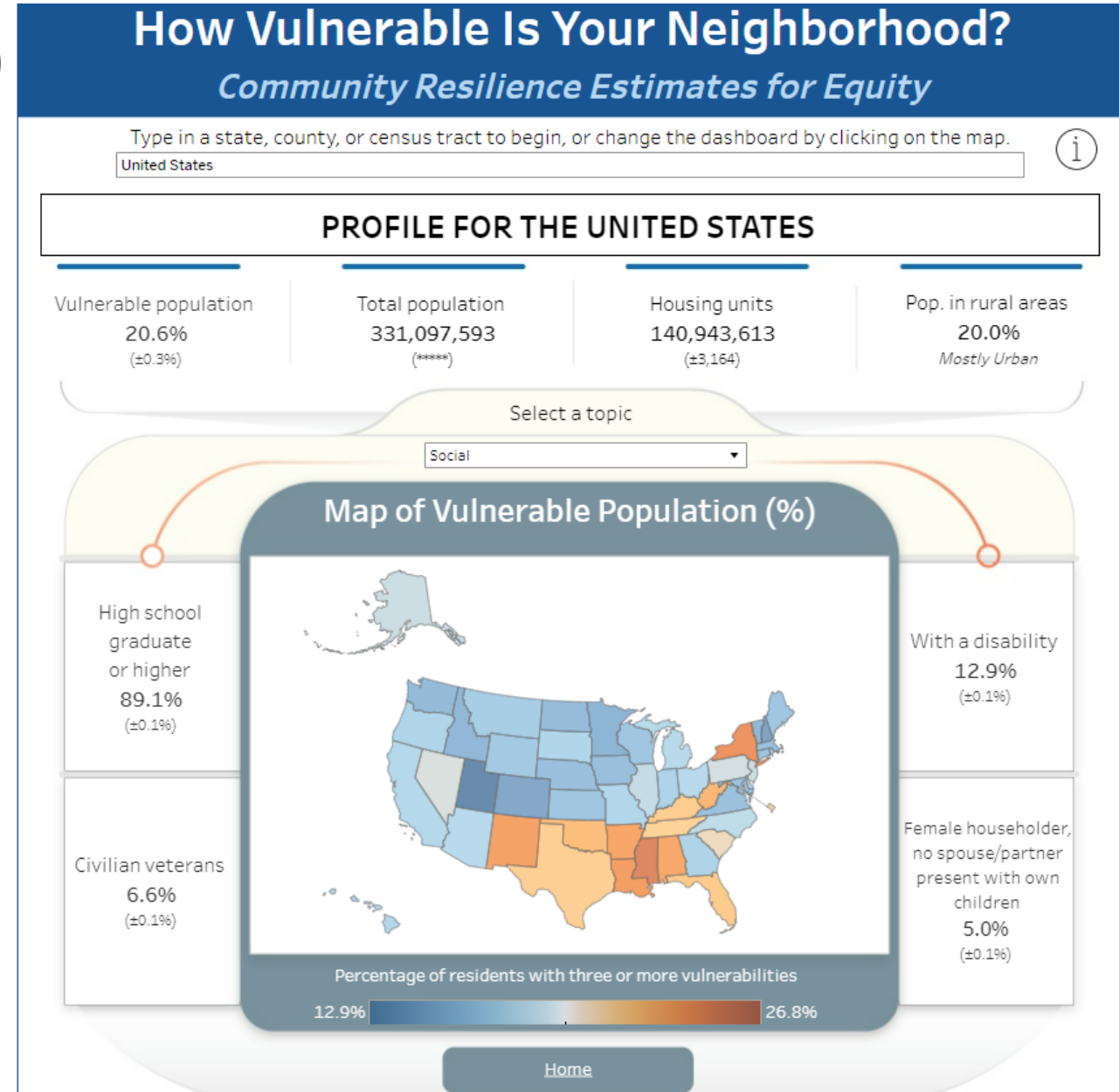
CRE for Equity- Tool(s)

- [CRE for Equity Dashboard](#) – helpful when needing more local community information (race/ethnicity, poverty, rural status, broadband access, etc.)



CRE for Equity- Tool(s)

- [CRE for Equity Profiles \(NEW\)](#)
 - more accessible equity tool
 - LIVE DEMO [\(backup\)](#)



Additional CRE Products

- [CRE for Heat](#)
 - Experimental estimates provides data users with information on how many would be vulnerable if faced with an **extreme heat event**
 - New update with 2022 data now includes heat exposure data
- [CRE for Puerto Rico](#)
 - Measure social vulnerability in Puerto Rico to disasters at commonwealth, municipio and census tract geographic levels
 - Slight methodological differences with U.S. CRE (e.g., English proficiency)
 - [Interactive tool](#) -- >New Update will have NRI hazard risk data
- [CRE for Puerto Rico, Equity Supplement](#)
 - Includes standard CRE for Puerto Rico estimates along with additional variables from PRCS 5-year and 2020 Decennial Census to provide social context
 - [CRE for Equity, Puerto Rico Profiles](#) tool

Thank you!

Community Resilience Estimates homepage:

<https://www.census.gov/programs-surveys/community-resilience-estimates.html>

Contact us at:

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