

# Rural Geography

Defining and analyzing rural America

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Julia Christensen

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UC Berkeley

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# Introduction

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# Background

## Research Questions:

- (1) How do physical environments shape the ability of different people/groups to politically organize?
- (2) When people/groups do mobilize, how do these environments shape the nature of their engagement with politics?

## Scope of Presentation:

1. What data is available for rural areas?
2. Can data be used to understand variation within rural areas?

# Data

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# Collecting Data

Data sources:

1. Cooperative Congressional Election Study (CCES)
  - Common Content, Cumulative File (2006-2016)
2. U.S. Census -
  - Decennial census
  - American Community Survey (ACS)
  - Tiger Shapefiles
3. USDA
  - Rural-Urban Continuum Codes (RUCC)
  - Urban Influence Codes (UIC)
  - County Typology Codes

# Constructing the Analysis Dataset

Process:

1. Download Datasets
2. Clean & Standardize Datasets
3. Merge Datasets with map shape files using county FIPS codes

# Analysis

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# Tools

## Tools for Mapping:

- Download shape file

```
> f <- tempfile()  
> file_path <- "http://www2.census.gov/geo/tiger/GENZ2010/  
    gz_2010_us_050_00_20m.zip"  
> download.file(file_path, destfile = f)  
> unzip(f, exdir = ".")  
> shapefile_fips <- read_shape("gz_2010_us_050_00_20m.shp")
```

- Read shapefile with rgdal

```
> setwd(paste0(file_path_dat, "USDA_Shapefile/"))  
> US.counties <- rgdal:::readOGR(dsn = ".",
    layer = "gz_2010_us_050_00_5m")
```

## Other Tools:

- L<sup>A</sup>T<sub>E</sub>X presentation template
- R Packages: tidyverse, viridis, tidycensus, magrittr, RColorBrewer

# Analysis Strategy

## Short Version:

- MAPPING!

## Long Version:

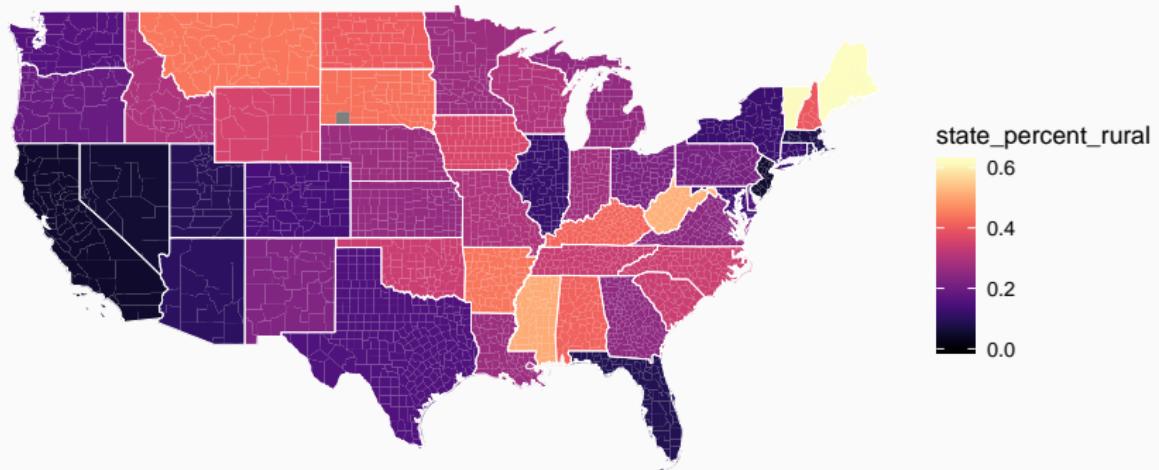
- Determined available data for rural areas
- Compared definitions of rural by mapping
- Assessed relevant variation by mapping
- Visually compared to available CCES data by mapping

# Results

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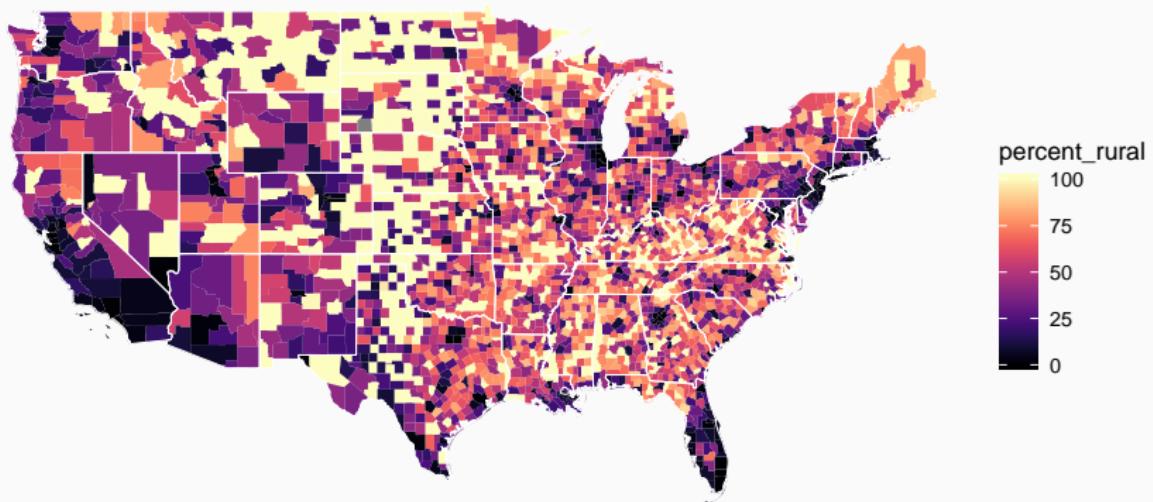
# Defining Rural: Census

% Rural Population by State, 2010 Census



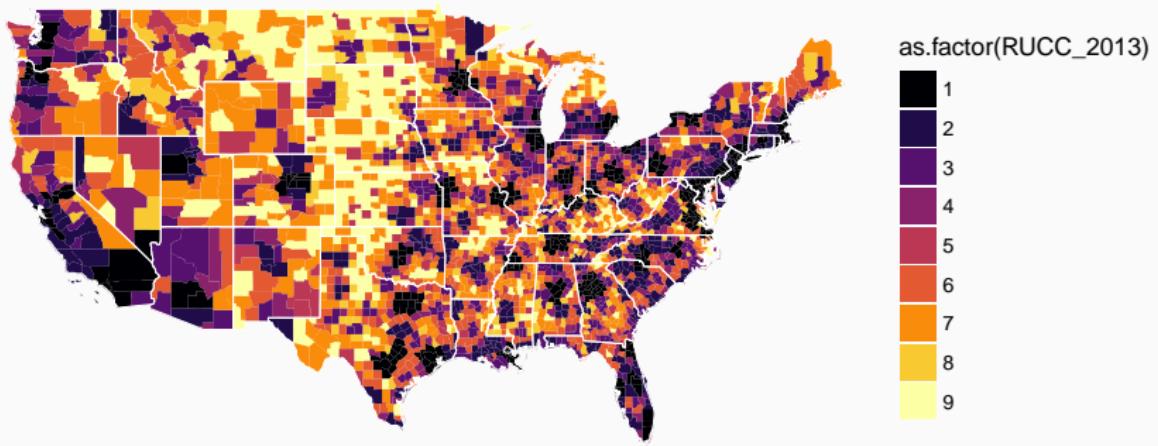
# Defining Rural: Census

% Rural Population by County, 2010 Census



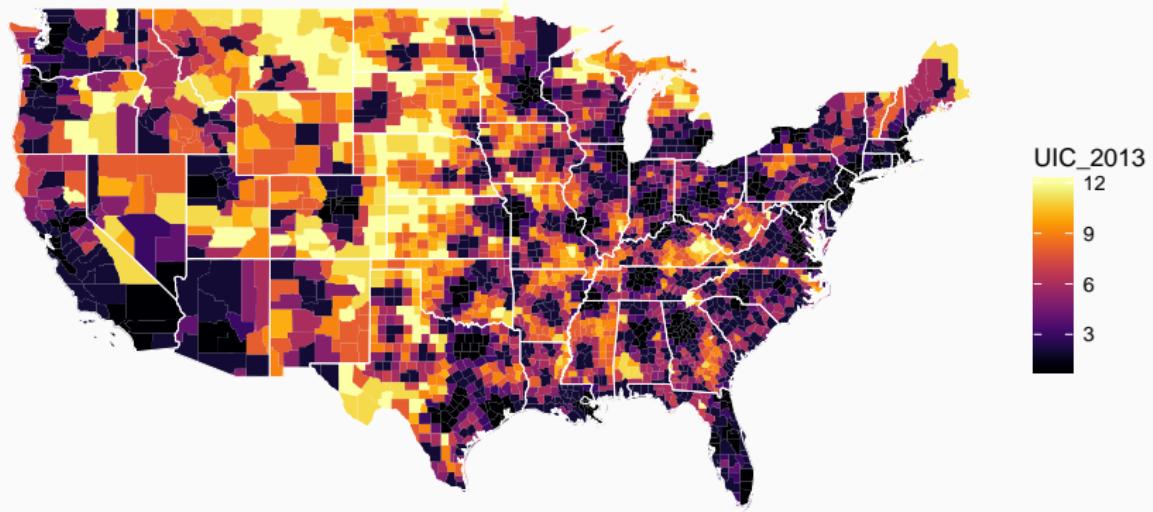
# Defining Rural: USDA Rural-Urban Continuum Codes (RUCC)

USDA Rural–Urban Continuum by County (2013)

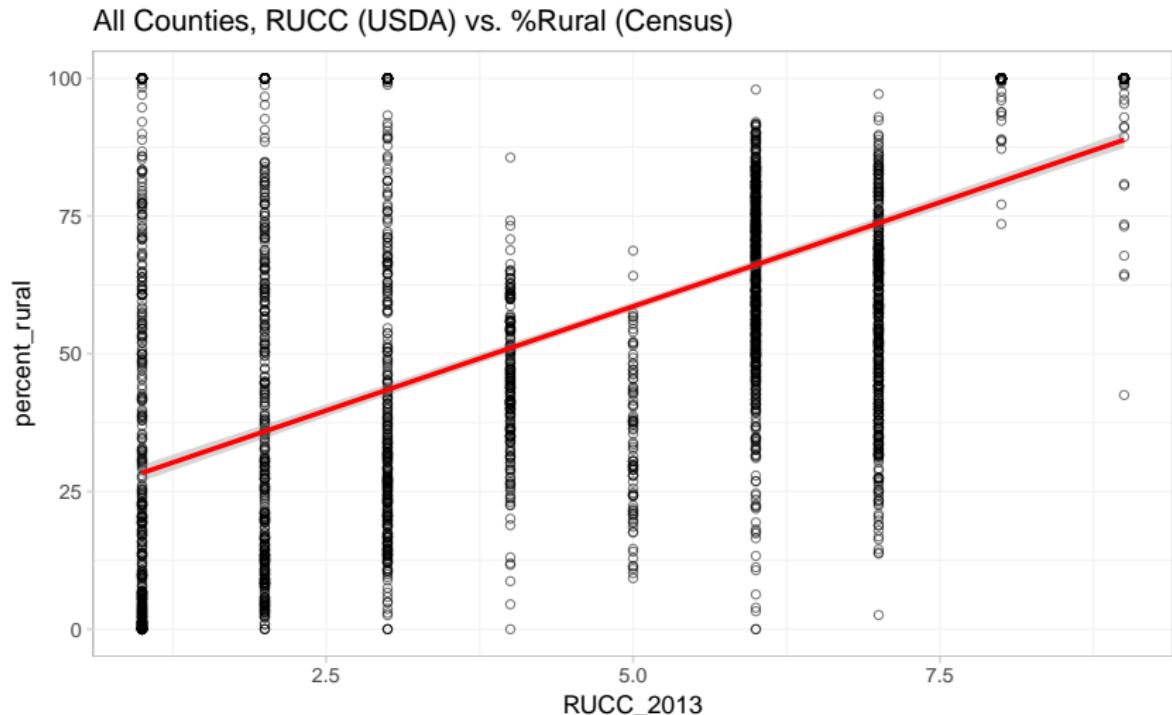


# Defining Rural: Urban Influence Codes (UIC)

USDA Urban Influence Codes by County (2013)

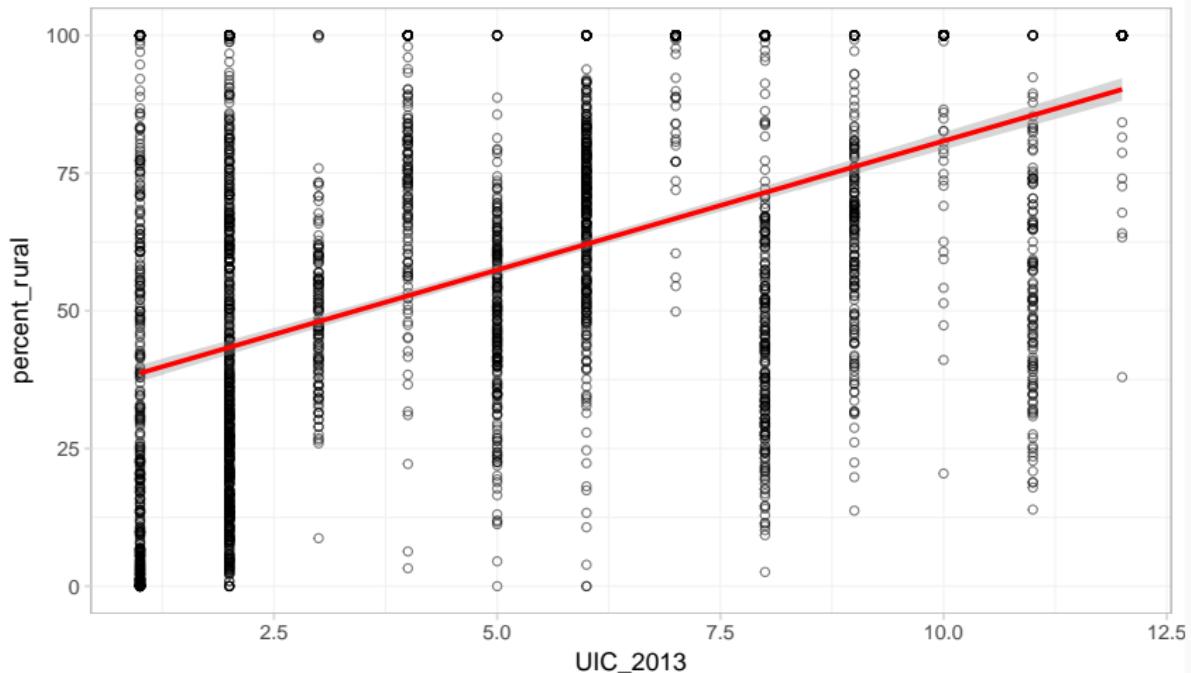


# Defining Rural: Comparing Census to USDA (RUCC)



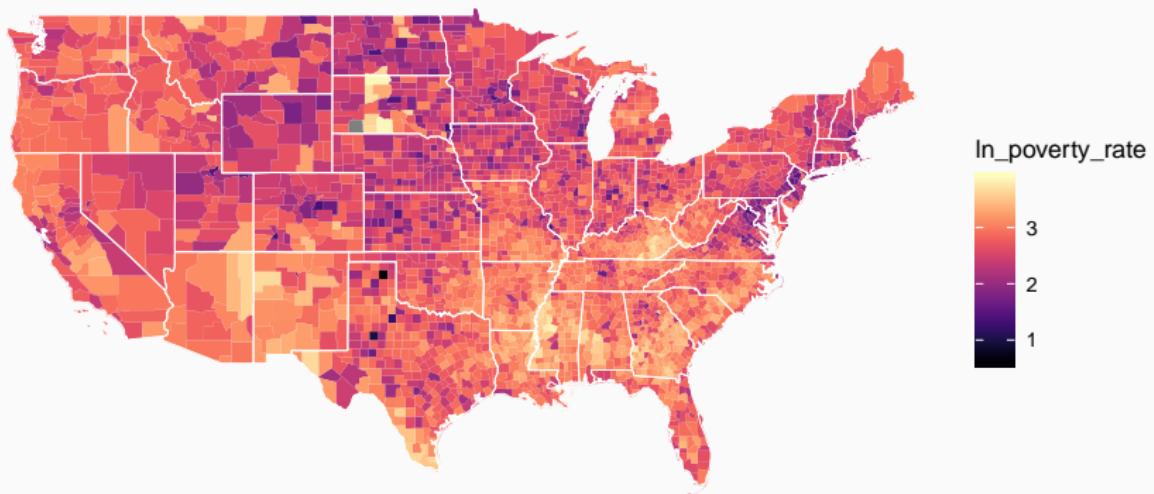
# Defining Rural: Comparing Census to USDA (UIC)

All Counties, UIC (USDA) vs. %Rural (Census)



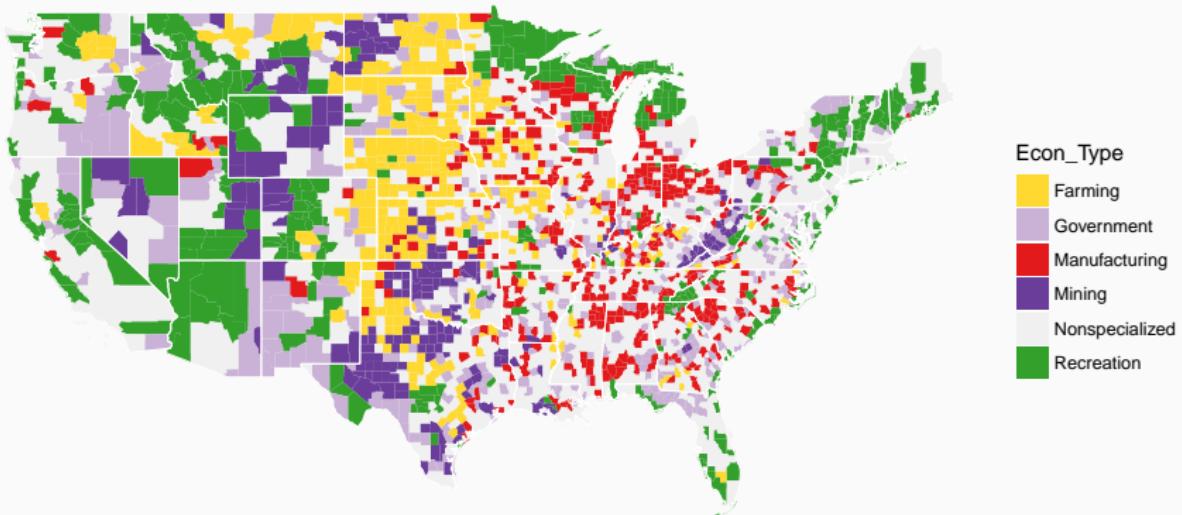
# Variation: Poverty

$\ln(\text{Poverty Rate})$ , 2016 ACS



# Variation: Economy

USDA Econ Type by County (2013)



# Variation: Population Loss between 2000 and 2010

USDA Population Loss by County (2010)



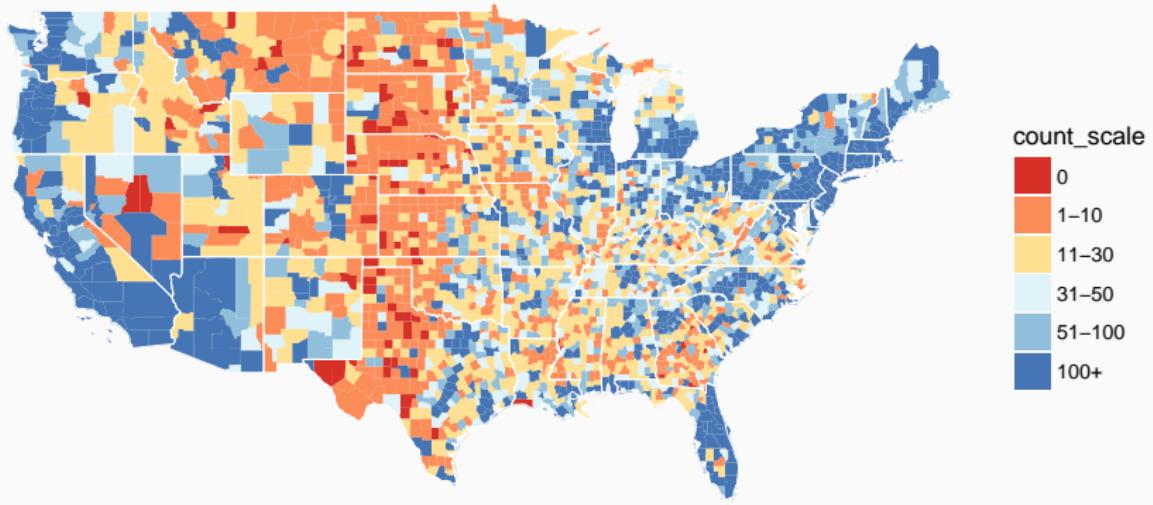
# Variation: Retirement

USDA Retirement Destination by County (2013)



# CCES: Respondents per County

CCES Responses by County (2006–2016)



## Conclusion

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# Challenges

Problem: Geographic data

- Large data -> slow computer
- Multiple standards with confusing file structures

Solution:

- Only merged with single map shape file after performing all other tasks
- Used tibbles and tidyverse functions instead of base R functions

Example: tidycensus package

**Big Question:** Is this project worth pursuing further given the data limitations?

Questions? Comments?

## Backup Slides

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# US Census Rural Definition

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"Rural" encompasses all population, housing, and territory not included within an urban area.

The Census Bureau's urban areas represent densely developed territory, and encompass residential, commercial, and other non-residential urban land uses.

The Census Bureau identifies two types of urban areas:

1. Urbanized Areas (UAs) of 50,000 or more people;
2. Urban Clusters (UCs) of at least 2,500 and less than 50,000 people.

## Rural-Urban Continuum Codes (RUCC)

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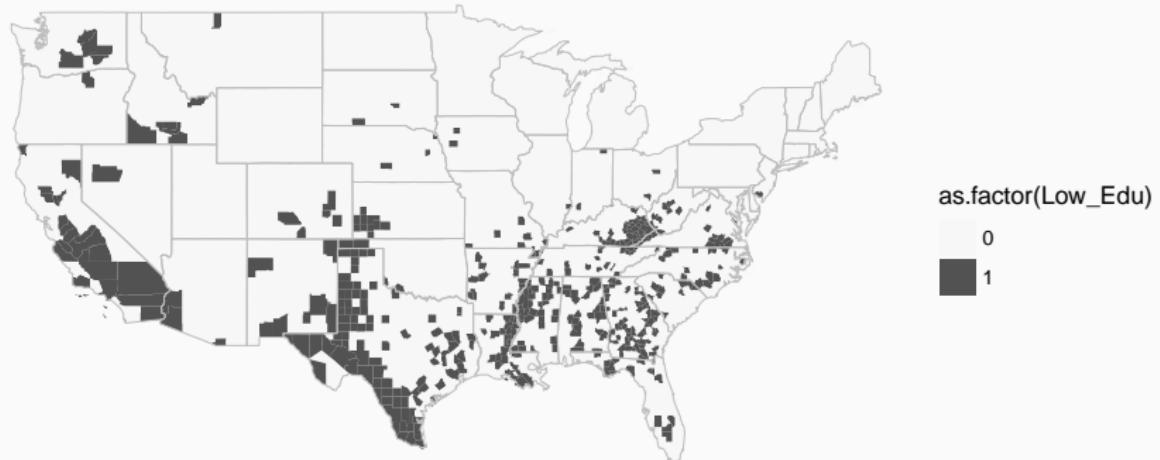
1. Counties in metro areas of 1 million pop or more
2. Counties in metro areas of 250,000 to 1 million pop
3. Counties in metro areas of fewer than 250,000 pop
4. Urban pop of 20,000 or more, adjacent to a metro area
5. Urban pop of 20,000 or more, not adjacent to a metro area
6. Urban population of 2,500 to 19,999, adjacent to a metro area
7. Urban pop of 2,500 to 19,999, not adjacent to a metro area
8. Completely rural or less than 2,500 urban pop, adjacent to a metro area
9. Completely rural or less than 2,500 urban pop, not adjacent to a metro area

# Urban Influence Codes (UIC)

1. In large metro area of 1+ million residents
2. In small metro area of less than 1 million residents
3. Micropolitan area adjacent to large metro area
4. Noncore adjacent to large metro area
5. Micropolitan area adjacent to small metro area
6. Noncore adjacent to small metro area and contains a town of at least 2,500 residents
7. Noncore adjacent to small metro area and does not contain a town of at least 2,500 residents
8. Micropolitan area not adjacent to a metro area
9. Noncore adjacent to micro area and contains a town of at least 2,500 residents
10. Noncore adjacent to micro area and does not contain a town of at least 2,500 residents
11. Noncore not adjacent to metro or micro area and contains a town of at least 2,500 residents
12. Noncore not adjacent to metro or micro area and does not contain a town of at least 2,500 residents

# Variation: Low Education

USDA Low Education by County (2013)



# Variation: Low Employment

USDA Low Employment by County (2013)



# Variation: Persistent Poverty

USDA Persistent Poverty by County (2013)



# Variation: Persistent Child Poverty

USDA Persistant Child Poverty by County (2013)

