

# Digital Divides: A Connectivity Continuum for the United States

by Thom File | Social and Economic Statistics Division, U.S. Census Bureau, U.S. Department of Commerce

## Background

- Access to computing technology and the Internet is not a simple “yes/no” proposition
- Number of ways people use computers and access the Internet have increased
- “Connectivity Continuum” ranges from no Internet connection or computer, to connecting from multiple locations and devices

## Strategy for Estimating Connectivity

- Combined 14 questions on computer ownership, Internet access, and device usage to form a scale of connectivity
- Analyze results descriptively by demographic breakdowns and geography
- Perform logistic regression analyses predicting the connectivity continuum by various population characteristics

## Data

- July 2011 Current Population Survey
- Annual Computer and Internet use supplement
- Representative of the U.S. non-institutionalized civilian population
- Analytic sample size of about 60,000 households

## Source

- Continuum is a recoded outcome from the following questions:
  - 1 question about the number of computers at home
  - 6 questions to identify devices used to access Internet (desktop, laptop, tablet, cellphone, gaming system, TV based device)
  - 7 questions about connecting locations (home, school, work, library, community center, Internet café, some other location)

## Connectivity Continuum Outline and Distribution

### High Connectivity

- Internet both inside and outside the home, from multiple devices (27.0 percent)
- Internet both inside and outside the home, not from multiple devices (10.3 percent)

- Internet at home only, from multiple devices (12.9 percent)
- Internet at home only, not from multiple devices (13.8 percent)

- Internet only outside the home, has a computer at home (2.6 percent)
- Internet only outside the home, no computer at home (3.0 percent)

- No Internet use anywhere, has a computer at home (14.4 percent)

- No Internet use anywhere, no computer at home (15.9 percent)

### No Connectivity

## Descriptive Results

- A plurality of Americans connected to the Internet from multiple locations and multiple devices (27.0 percent). These individuals were considered “high connectivity” individuals
- The second most common position on the continuum was the opposite extreme –individuals without any computer or Internet activity at all (15.9 percent), or “no connectivity” individuals

## No Connectivity

- About 36 percent of individuals aged 65 years and older had no connectivity
- Other groups with no connectivity
  - Blacks and Hispanics (about 25 percent each and not statistically different)
  - Individuals with less than \$25,000 in household income (35.6 percent)
  - Individuals with less than high school completion (44.9 percent)

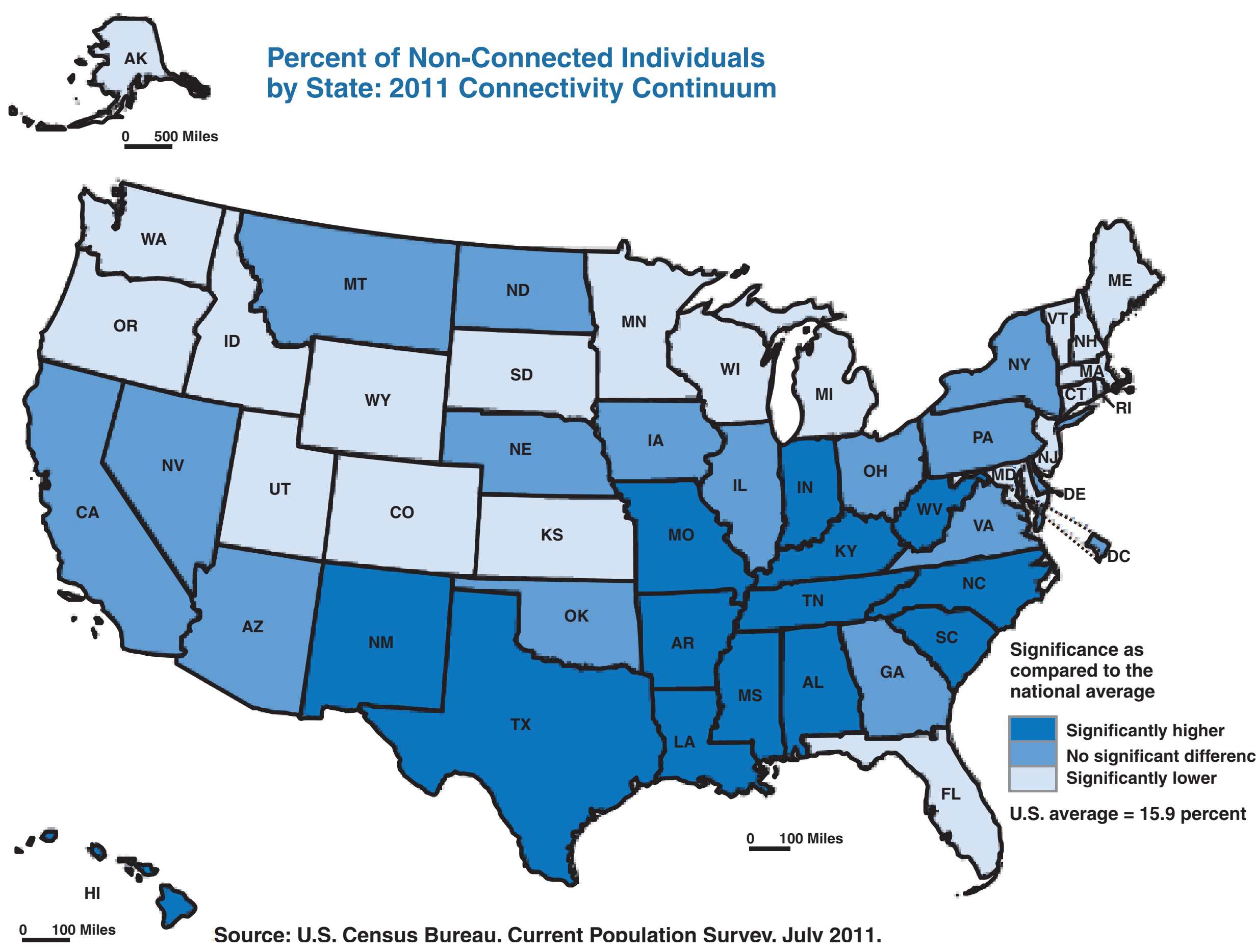
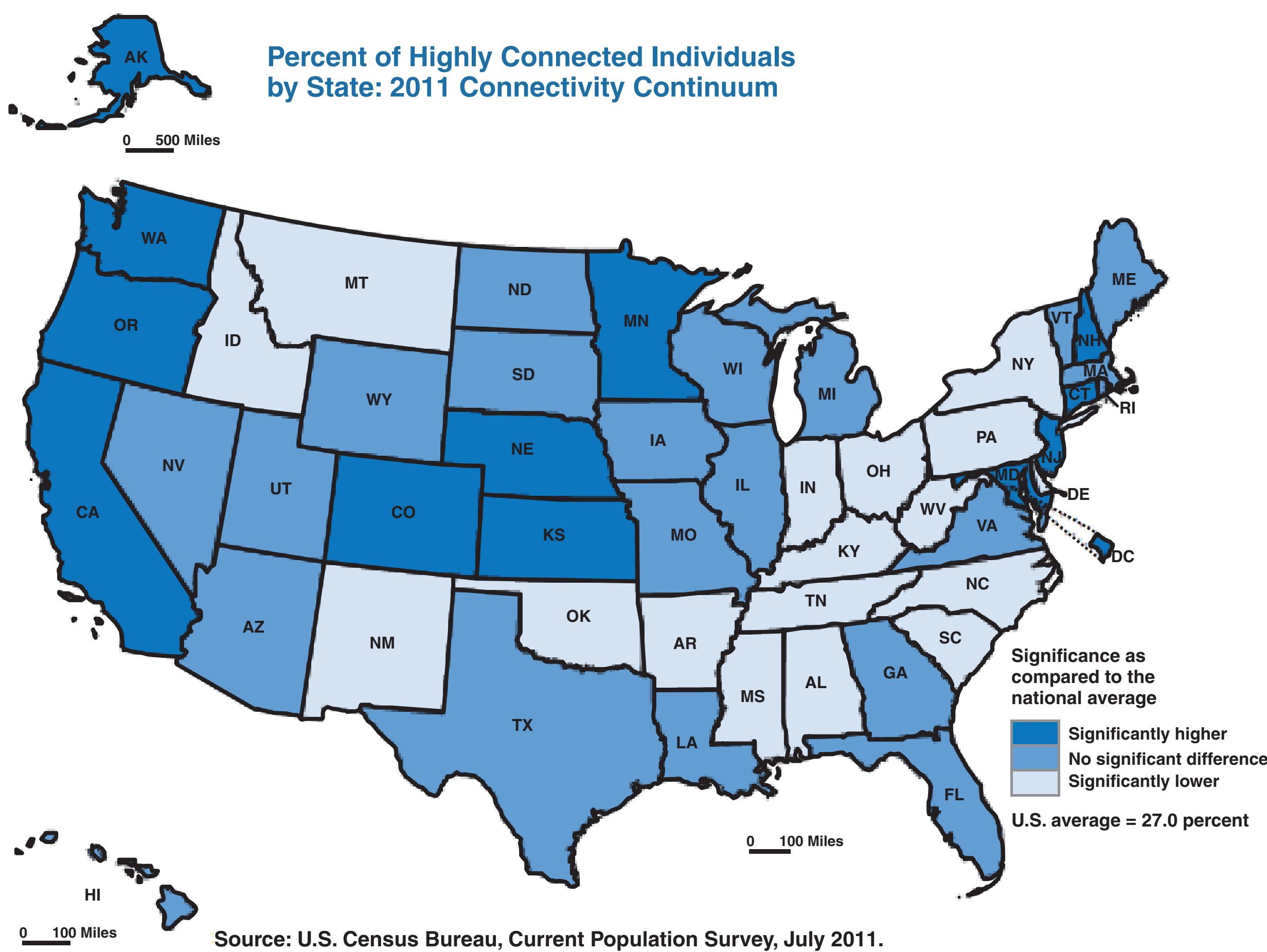
## High Connectivity

- Young people (18 to 34 years old) likely to report being highly connected (37.1 percent)
- Older people (65 years of age and older) not as highly connected (only 5.6 percent)
- Also highly connected:
  - Asians and Non-Hispanic Whites (about 31 percent each and not statistically different)
  - Individuals with incomes over \$150,000 (51.8 percent)
  - People with steady employment (39.6 percent)
  - People with college degrees (47.3 percent)

## Geographic Variability

- The degree of connectivity also varied across states
- High connectivity states include:
  - Colorado, the District of Columbia, Maryland, Minnesota, and Washington\*
- Low connectivity states include:
  - Mississippi, New Mexico, South Carolina, West Virginia, and Tennessee\*
- The majority of southern states lagged behind the nation in terms of highly connected individuals
- The South had high percentages of no connectivity
- The Pacific Coast stood out for having large percentages of high connectivity
- Western region and states in New England, showed small concentrations of no connectivity

\*States listed in the bullets may not be significantly different from other states listed in the same bullet, and may not be significantly different from additional states.

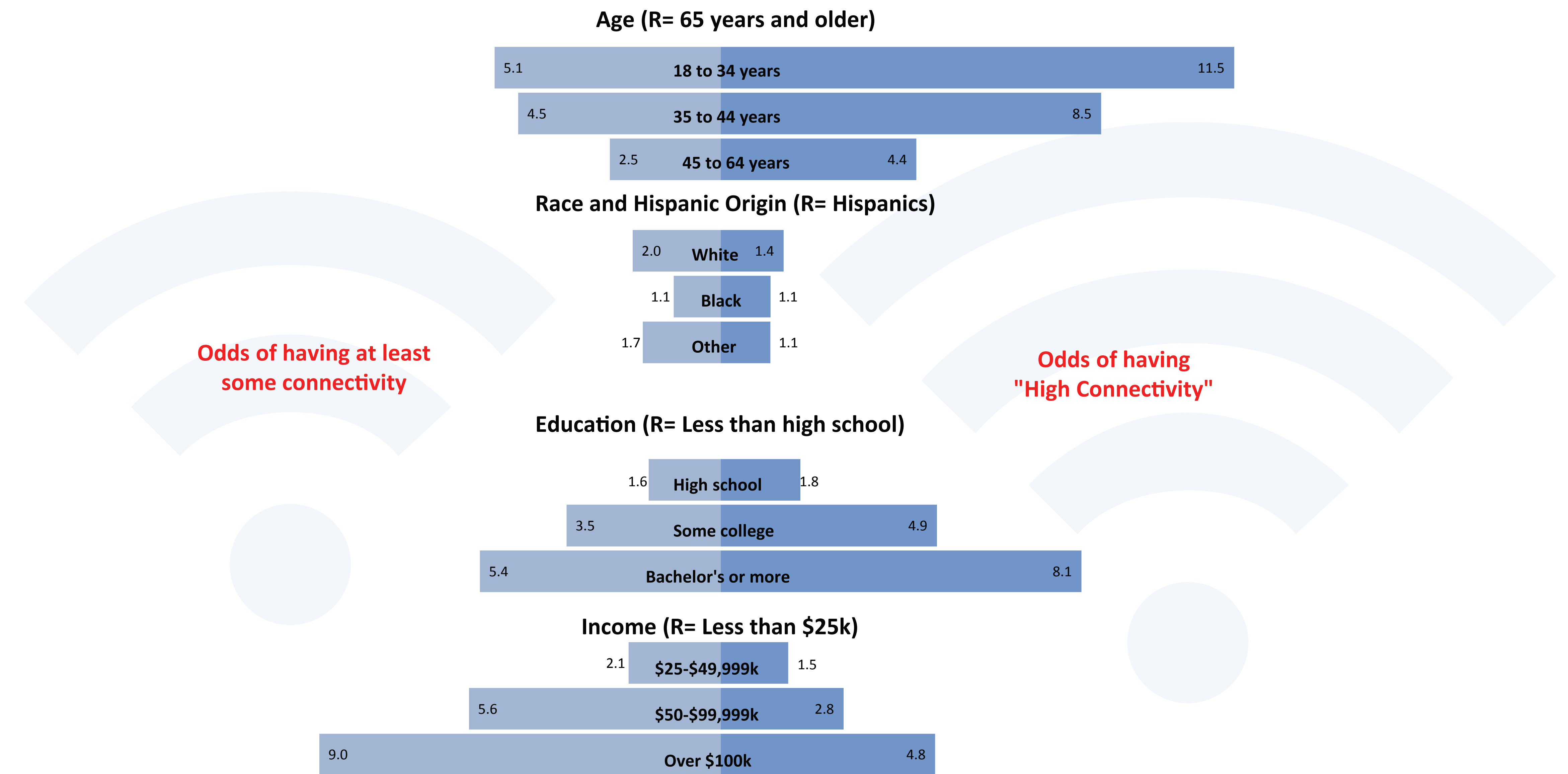


## Multivariate Analysis

- Two multivariate regressions - high connectivity and at least some connectivity (i.e. everyone except people with no connectivity)
- Factors in the models include age, race and Hispanic origin, sex, educational attainment, income, and region of residence
- Models were performed for the population 18 years of age and older
- Results are displayed as odds ratios, which are related to the probability of being either highly connected or having at least some connectivity, after allowing for the influence of other variables
- Values above 1 indicate that, compared with the reference group, people have higher odds of having high connectivity or some connectivity
- Values below 1 indicate that they have lower odds

## Research Questions

- **Research Question 1:** Are certain characteristics more likely than others to predict highly connected individuals?
- **Research Question 2:** Are certain characteristics more likely than others to predict non connected individuals?
- **Research Question 3:** Is there logical relationship between characteristics and their likelihood of predicting high connectivity and at least some connectivity?



## Discussion

- Impact of factors was generally as expected, as older, Black and/or Hispanic, less educated, and less affluent individuals had lower odds of reporting at least some connectivity
- Younger, non-Hispanic White, more educated, and more affluent individuals had increased odds of being highly connected
- No consistent effect for gender or region once controls were introduced
- Income, education, and age mattered most
- Generally, significant factors in the model had impact on both models
- Although not perfectly correlated, these results provide encouraging evidence concerning the linearity of our continuum