INFO 3300/5100
PROJECT 1 FINAL REPORT

The Internet Access Gap: Internet Access in the United States by Poverty and Disability

Team

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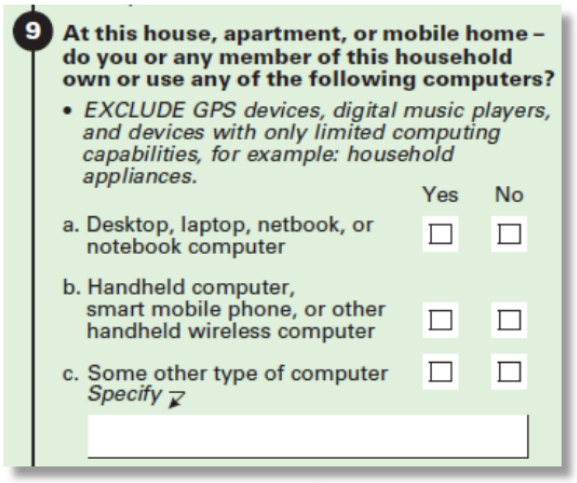
Description of data

- In 2013, the Census Bureau's American Community Survey started asking three new questions related to computer and internet access by household. These new questions were mandated by the 2008 Broadband Data Improvement Act.
- See actual questions below:

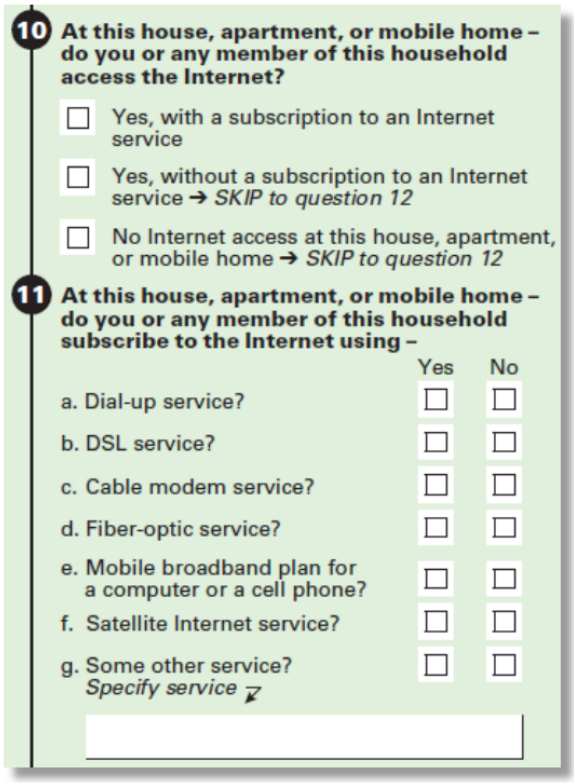


9 **At this house, apartment, or mobile home – do you or any member of this household own or use any of the following computers?**

- *EXCLUDE GPS devices, digital music players, and devices with only limited computing capabilities, for example: household appliances.*

	Yes	No
a. Desktop, laptop, netbook, or notebook computer	☐	☐
b. Handheld computer, smart mobile phone, or other handheld wireless computer	☐	☐
c. Some other type of computer *Specify*	☐	☐

Source: ACS-1(2013)KFI



10 **At this house, apartment, or mobile home – do you or any member of this household access the Internet?**

- ☐ Yes, with a subscription to an Internet service
- ☐ Yes, without a subscription to an Internet service ➔ *SKIP to question 12*
- ☐ No Internet access at this house, apartment, or mobile home ➔ *SKIP to question 12*

11 **At this house, apartment, or mobile home – do you or any member of this household subscribe to the Internet using –**

	Yes	No
a. Dial-up service?	☐	☐
b. DSL service?	☐	☐
c. Cable modem service?	☐	☐
d. Fiber-optic service?	☐	☐
e. Mobile broadband plan for a computer or a cell phone?	☐	☐
f. Satellite Internet service?	☐	☐
g. Some other service? *Specify service*	☐	☐

- The American Community Survey (ACS) is an ongoing statistical survey that samples a small percentage of the population every year. The ACS provides communities,

businesses, researchers and policy analysts up-to-date information they need to plan investments and services.
- We used statistics derived from answers to #10, part 1.
- We used this new data as insight into internet access--see variables below.

Source of data
- Estimates based on analysis of the U.S. Census Bureau's 2013 American Community Survey (ACS) Public Use Micro Data Sample (PUMS)
- http://www.census.gov/acs

Variables
- Location
    - US
    - State
    - Divisions (as defined by U.S. Census Bureau)
- Gap (percentage)
    - Percentage gap in internet access BETWEEN people with a disability living in poverty AND people without a disability not living in poverty.
- Access to the internet (percentage) by:
    - Disability and no poverty
    - Poverty and no disability (at 100% poverty)
    - Disability and poverty
    - No disability and no poverty

Transformations of data
- Bill Erickson, a researcher at the Employment and Disability Institute, was already set to pull estimates for internet access by people with disabilities from the 2013 ACS.
- Bill developed weighted population frequencies (in order to scale the small sample size of the ACS to the broader US population) based on analysis of the 2013 ACS and used this data to develop percentages for internet access by disability and poverty status.
- The population included in the estimates are working age (21-64 years old) persons living in households.
- Poverty in this analysis is estimated at 100% poverty.

Additional files
- To render the maps we used the following additional tools/files:
    - US state/county shape file (us.json)
    - http://d3js.org/topojson.v1.min.js
    - albersUsa d3 US map projection

Criteria for data selection
- Social justice

    - We wanted to investigate a social justice issue.
- Interesting data
    - Internet access numbers are new to the 2013 ACS.
    - No disability related statistics have been published yet from the 2013 ACS.
- Timeliness/importance of topic:
    - The adverse effects of the digital divide will only continue to grow as more activities are conducted and information are disseminated via the internet.
- Related to work
    - Disability statistics are related to work Camille does at the Employment and Disability Institute in the ILR School.

Description of mapping data to visual elements (e.g., scales, position, color, shape)

- Overall design notes
    - Keep supporting elements such as text, axes and labels visually quiet and consistent in color and design so that interfere as little as possible with the key data.
    - Whenever possible reinforce central concepts in multiple ways. For example, 1) the gap between the chart points are highlighted in red to tie the width of the gap with the actual gap percentage; and 2) the concept of the gap between the no disability/no poverty and disability/poverty numbers are illustrated by the choropleths as well as the chart.
    - Use color consistently within the visualization. For example, red is only used to represent the gap in shape, number or text.
    - Highlight key concepts in color, boldness or size.
- Maps
    - Four choropleth maps were used with a single scale across all four maps to illustrate internet access by each population group.
    - Maps were placed side by side in the order that the gap data points were plotted on the chart below.
    - Same progression of colors to reinforce the message that there is a clear and consistent progression of internet access between the four groups.
- Chart
    - States are listed on the y-axis ordered by divisions defined by U.S. Census Bureau. Both divisions and states within divisions are sorted in decreasing order by percentage of internet access for people with disability in poverty.
    - Percentage of people with access to the internet is mapped on the x-axis with a linear scale from 40%-100%.
    - Percentage gap between disability/poverty and no disability/no poverty percentages for each state is listed on the right y-axis.
    - Data points for each population group (disability/poverty, poverty/no disability, disability/no poverty, no disability/no poverty) represented by four blue dots in increasing color value (dots progress left to right from light to dark).

    - Gap between the disability/poverty and no disability/no poverty points highlights the gap in internet access associated with both disability and poverty.
    - Gap between points is red to create a connection with the red gap number.
    - By highlighting the gap, we wanted to show the river of progression of the gaps through states and regions. This provides a small but noticeable trend between regions/states.

The story / What does the visualization say?

- When it comes to internet access, working-age individuals with a disability and living in poverty are doubly disadvantaged. Only 56% of this group has access to the internet at home compared to 89% individuals without a disability who live above the poverty line. This is a gap of 33%.
- The visualization also illustrates that there is a consistently large gap in access to the internet between the disability/poverty and no disability/no poverty populations in the U.S. This is manifested by the gradient effect across the four U.S. maps, as well as by the red rectangles showing the gap in the chart below.
- Disability and poverty are clear factors in reduced internet access. The visualization shows this through the consistent progression of decreasing internet access from the no disability/no poverty, disability/no poverty, poverty/no disability, to disability/poverty populations.
- Poverty (disregarding disability) consistently seems to be more detrimental to internet access than disability (disregarding poverty). The percentage of people in poverty with internet access is consistently lower than the percentage of people with disability with internet access, as illustrated both in the shade of the two maps and in the sequence of data points for each state in the chart.

What was surprising

- It was surprising that the progression of reduced access to the internet was so consistent across all states by population group.
    - For each of the 50 states, the percentage of people with internet access was highest among people with no disability/no poverty, and lowest among people with disability/poverty. Furthermore, the data consistently showed that all 50 states, people in poverty/no disability had less internet access than people with disability/no poverty.
- The percentage gap in internet access between the disability/poverty and no disability/no poverty groups were more consistent than expected.
    - The mean percentage gap across all states in the U.S. is 33%. Furthermore, the standard deviation is surprisingly small at 4.81%. This means that across all 50 states, there is a consistent gap between percentage of people in poverty/disability with internet access, and percentage of people in no poverty/no disability with internet access.
- DC is an obvious outlier, with an extremely large gap, and an extremely low percentage of access for people with disabilities living in poverty.

- DC and ID have unusually small gaps between the no poverty/disability and poverty/no disability populations. For most other states, the four categories are spaced apart.