Computer and Internet Use in the United States: 2018

American Community Survey Reports

By Michael Martin
Issued April 2021

ACS-49

INTRODUCTION[1]

Access to a household computer and connection to the Internet is important to many Americans. From accessing news sources to connecting to family and friends, the Internet provides an arena that services nearly all aspects of daily life. Students of all ages use computers and broadband connections to complete homework assignments and take online courses. Job seekers can also obtain information about employment and apply to jobs online. Access to broadband Internet,[2] in particular, is credited with having beneficial effects on individual empowerment, economic growth, and community development.[3]

Given its importance, it is not surprising that Internet availability and utilization has been of increasing interest to academic researchers and policymakers alike. The U.S. Census Bureau has produced national- and state-level estimates of computer use periodically since 1984 and estimates of Internet use since 1997 from the Current Population Survey (CPS). The American Community Survey (ACS) began collecting data on computer ownership and Internet subscriptions in 2013 and provides yearly estimates for geographies with populations of 65,000 people or more. In 2018, for the first time, the ACS made data available for all counties, census tracts, and block groups using a 5-year summary file.

This report explores the data on computer and Internet use from the 2018 ACS, paying particular attention to the demographic and geographic variations linked to these topics. The main focus of the report is on the 2018 ACS 1-year data, but the report also includes both 2018 ACS 5-year data (to provide estimates for smaller geographies) and data from the CPS (to provide historical estimates related to computer ownership and Internet subscription). The questions used in the 2018 ACS are provided in Figure 1.[4, 5]

[1] The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-POP001-0086.

[2] A "broadband" Internet subscription refers to having at least one type of Internet subscription other than a dial-up subscription alone. In the American Community Survey, it specifically refers to those who said "Yes" to one or more of the following types of subscriptions: broadband (high speed) such as cable, fiber optic or Digital Subscriber Line (DSL); cellular data plan for a smartphone or other mobile device; satellite; or some other service other than dial up.

[3] Jayakar et al., "Broadband 2021," *Report of the Interdisciplinary Workshop on the Development of a National Broadband Research Agenda*, Institute for Information Policy, Pennsylvania State University, University Park, PA, 2016.

[4] The ACS 5-year data rely on survey years with a previous question wording. More information on the content of these changes can be found at <www.census.gov/content/dam/Census/library/publications/2018/acs/ACS-39.pdf>.

[5] Additional information on the change to the question wording in 2016 can be found at <www.census.gov/library/working-papers/2017/acs/2017_Lewis_01.html>.

United States® Census Bureau

U.S. Department of Commerce
U.S. CENSUS BUREAU
census.gov

HIGHLIGHTS FROM THE ACS DATA

- Among all households in 2018, 92 percent had at least one type of computer[6] and 85 percent had a broadband Internet subscription.
- Smartphone ownership surpassed ownership of all other computing devices. Smartphones were present in 84 percent of households, while 78 percent of households owned a desktop or laptop. Tablet ownership fell behind at 63 percent.
- Smartphone ownership was more prevalent than desktop or laptop ownership in households with younger heads of household, as well as in households with lower levels of income and education.
- Urban residents were more likely than rural residents to use computing devices (93 percent of urban households compared to 89 percent of rural households) and were more likely to have any sort of Internet subscription (86 percent of urban households compared to 81 percent of rural households).
- In most states, urban residents had a higher rate of broadband subscription than their rural counterparts, though a number of states in the Northeast had higher rates of broadband subscription among rural households.

[6] Categorically, the ACS considers all desktops, laptops, tablets, and smartphones as computers, along with selected computing technologies such as smart home devices and single board computers such as RaspberryPi and Arduino boards compiled from write-in responses.

Figure 1.
ACS Questions on Computer and Internet Use: 2018

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

	Yes	No
a. Desktop or laptop	☐	☐
b. Smartphone	☐	☐
c. Tablet or other portable wireless computer	☐	☐
d. Some other type of computer *Specify*	☐	☐

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

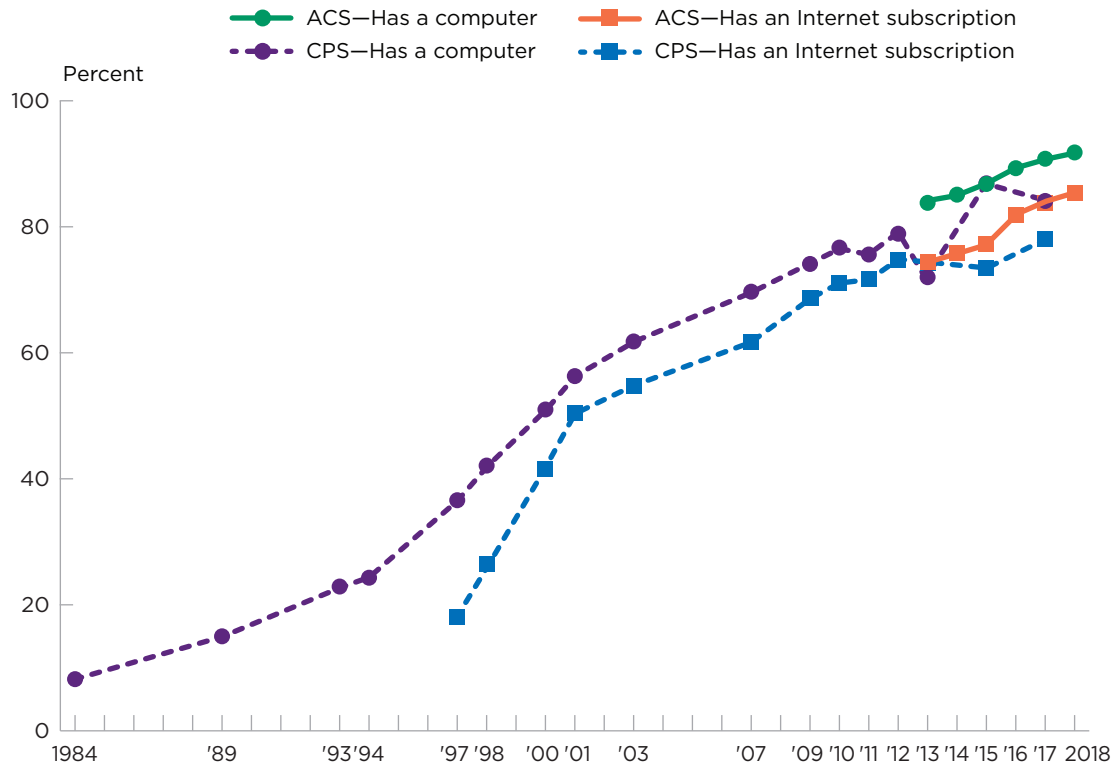
- ☐ Yes, by paying a cell phone company or Internet service provider
- ☐ Yes, without paying a cell phone company or Internet service provider ➔ *SKIP to question 11*
- ☐ No access to the Internet at this house, apartment, or mobile home ➔ *SKIP to question 11*

10 **Do you or any member of this household have access to the Internet using a –**

	Yes	No
a. cellular data plan for a smartphone or other mobile device?	☐	☐
b. broadband (high speed) Internet service such as cable, fiber optic, or DSL service installed in this household?	☐	☐
c. satellite Internet service installed in this household?	☐	☐
d. dial-up Internet service installed in this household?	☐	☐
e. some other service? *Specify service*	☐	☐

Source: 2018 American Community Survey (ACS) questionnaire.

Figure 2.
Percentage of Households With Computer and Internet Use: 1984 to 2018



Note: More information can be found at <www.census.gov/cps> and <www.census.gov/acs>.
Sources: U.S. Census Bureau, 1984–2017 Current Population Survey (CPS) Computer and Internet Supplement, 1993 CPS Education Supplement, 1994 CPS Voting and Computer Use Supplement, and 2013–2018 American Community Survey (ACS), 1-year estimates.

- Higher rates of Internet subscription were found in households with higher household income and those where the householder had a higher level of educational attainment. Characteristics associated with lower subscription rates were a householder who rented rather than owned a home, householders with limited English proficiency, and households with at least one person who was disabled.
- Over half of all households (53 percent) had "high connectivity"—a term used here to refer to households with a laptop or desktop computer, smartphone, tablet, and a broadband Internet connection. "High connectivity" ranged from 84 percent of households with an income of $150,000 or more to 24 percent of households with an income under $25,000.
- While many households had home-based Internet connections (such as cable, fiber-optic, Digital Subscriber Line [DSL], and satellite), others relied on a cell phone provider and connected to the Internet through a smartphone. Households relying only on a smartphone were more likely to make $25,000 or less, be headed by someone under 35 years old, or have a Black or Hispanic householder.

TRENDS IN COMPUTER AND INTERNET USE OVER TIME

Figure 2 shows the percentage of households owning a computer or subscribing to the Internet from 1984 to 2018 using data from the CPS and the ACS. Although both surveys show changes over time for computer and Internet use, it is important to note the estimates for each measure varied between the surveys due to differences in question wording, data collection methods, and weighting

Key Differences Between the American Community Survey and the Current Population Survey

The Current Population Survey (CPS) has been collecting data about computer use since 1984 and Internet use since 1997. In 2013, the American Community Survey (ACS) also began collecting data on these topics as mandated by the 2008 Broadband Data Improvement Act. Strengths of the CPS data include the greater detail available through its longer questionnaire and its longer time series, whereas the ACS, with its larger sample size, provides estimates at more detailed levels of geography. Additional questions posed on the CPS cover where respondents use computers and the Internet outside of the home, as well as attitudes toward these technologies for both users and nonusers.

Estimates of computer and Internet use vary between these surveys due to differences in question wording, data collection methods, and weighting procedures. The universe for the CPS is the civilian, noninstitutionalized population of the United States. The universe for the ACS is the resident population of the United States, which includes group quarters. However, questions on computer and Internet use are asked only of those residing in households, so the ACS data in this report reflect only the household population. CPS questionnaires were revised in 2010, 2011, 2013, 2015, and 2017, while the ACS questionnaire was updated in 2016. In the ACS, the computer ownership response options were expanded to allow respondents to indicate smartphones and tablets separately, and the Internet subscription question was condensed and reworded to improve respondent engagement with the question. CPS questions have been altered numerous times to account for changes in technology and to introduce questions related to how respondents use their computing devices and Internet connections. Prior to 2015, estimates of computer ownership only included desktops, laptops, and tablets. The revision in 2015 added smartphones to this estimate, causing the estimate to vary survey to survey between 2013 and 2017. The ACS has always included smartphones in its estimates of computer ownership. Research has shown that responses can be sensitive to questionnaire wording, especially as it relates to Internet access using smartphones.*

Timing of interviews might also affect the data. ACS data are collected year-round each year. CPS data were collected in October of most years through 2010, and again in 2012. In 2011, 2013, and 2015, the CPS Computer and Internet Supplement was administered in July. From 2017 forward, the CPS supplement is collected every other year in November.

* Jamie Lewis, "2016 American Community Survey Content Test Evaluation Report: Computer and Internet Use," American Community Survey Memorandum Series ACS17-RER-09, located at <www.census.gov/library/working-papers/2017/acs/2017_Lewis_01.html>.

procedures. More information can be found in the text box titled, "Key Differences Between the American Community Survey and the Current Population Survey." In 1984, 8 percent of households had a computer, according to the CPS. By 2000, about half of all households (51 percent) had a computer. In 2017, this percentage had grown to 75 percent. The ACS, by contrast, indicated that in 2013, 84 percent of households had a computer (desktop or laptop, handheld, or other), with the percentage growing to 91 percent in 2017 and 92 percent in 2018.

The CPS began to collect data about Internet use in 1997. At this time, only 18 percent of households used the Internet. This percentage increased to 62 percent a decade later in 2007, and further climbed to 78 percent by 2017. The percentage of households in the ACS subscribing to some sort of Internet connection increased from 74 percent in 2013 to 84 percent in 2017 and 85 percent in 2018.

NATIONAL CHARACTERISTICS OF COMPUTER AND INTERNET USE: 2018

Table 1 contains information on computer and Internet use by a variety of demographic, social, and geographic characteristics. Nationally, 78 percent of households owned a desktop or laptop computer. Beginning in 2017, smartphone ownership

Table 1.

Computer and Internet Use for Households by Selected Characteristics: 2018

Household characteristics	Total households (in thousands)		Households with a computer								Households with an Internet subscription			
			Any computer type		Desktop or laptop computer		Smartphone		Tablet		With any Internet subscription		With a broadband subscription	
	Estimate	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)
Total households	**121,520**	**153**	**91.8**	**0.1**	**77.5**	**0.1**	**84.4**	**Z**	**62.5**	**0.1**	**85.3**	**0.1**	**85.1**	**0.1**
Age of Householder														
15–34 years	22,795	84	97.8	0.1	80.1	0.2	96.6	0.1	65.7	0.2	90.9	0.1	90.8	0.1
35–44 years	20,799	51	97.6	0.1	83.5	0.1	95.8	0.1	74.3	0.2	91.9	0.1	91.8	0.1
45–64 years	46,084	68	94.3	0.1	80.5	0.1	88.6	0.1	66.2	0.2	88.0	0.1	87.8	0.1
65 years and older	31,843	48	80.1	0.1	67.2	0.2	62.4	0.1	47.3	0.2	73.2	0.2	72.5	0.2
Race and Hispanic Origin of Householder														
White alone, not Hispanic	81,415	85	92.2	0.1	81.1	0.1	83.4	0.1	64.7	0.2	86.8	0.1	86.5	0.1
Black alone, not Hispanic	14,731	45	87.8	0.1	64.0	0.2	81.9	0.2	52.0	0.3	77.9	0.2	77.7	0.2
Asian alone, not Hispanic	5,856	26	96.5	0.1	88.9	0.3	93.1	0.2	73.9	0.3	92.4	0.2	92.3	0.2
Hispanic (of any race)	16,352	47	92.0	0.1	67.9	0.2	88.4	0.1	57.1	0.3	82.4	0.2	82.3	0.2
Age of Household Members														
Without member(s) under 18	84,658	147	89.2	0.1	74.7	0.1	79.5	0.1	55.9	0.2	82.2	0.1	81.8	0.1
With member(s) under 18	36,863	85	97.9	Z	83.7	0.1	95.8	0.1	77.7	0.2	92.6	0.1	92.5	0.1
Limited English Speaking														
No	116,149	164	92.2	0.1	78.7	0.1	84.8	Z	63.6	0.1	86.0	0.1	85.8	0.1
Yes	5,371	38	82.6	0.3	50.5	0.4	77.2	0.3	39.3	0.5	69.9	0.3	69.7	0.3
Households Where at Least One Member Has a Disability														
No	90,557	156	94.4	Z	80.9	0.1	88.6	Z	65.9	0.1	88.3	0.1	88.1	0.1
Yes	30,963	71	84.3	0.1	67.4	0.2	72.3	0.1	52.8	0.2	76.5	0.2	76.1	0.2
Housing Tenure														
Owner occupied	77,708	236	93.2	Z	83.3	0.1	84.8	0.1	68.4	0.1	88.5	0.1	88.1	0.1
Renter occupied	43,812	125	89.4	0.1	67.1	0.2	83.8	0.1	52.1	0.2	79.8	0.1	79.6	0.1

See notes at end of table.

Table 1.

Computer and Internet Use for Households by Selected Characteristics: 2018—Con.

Household characteristics	Total households (in thousands)		Households with a computer								Households with an Internet subscription			
			Any computer type		Desktop or laptop computer		Smartphone		Tablet		With any Internet subscription		With a broadband subscription	
	Estimate	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)
Urban and Rural by Region														
Urban area	97,964	77	92.5	Z	78.4	0.1	85.6	0.1	63.4	0.1	86.3	0.1	86.1	0.1
Rural area	23,556	141	89.0	0.1	73.6	0.2	79.5	0.1	58.9	0.2	81.3	0.2	80.8	0.2
Northeast	21,459	30	91.3	0.1	78.8	0.2	82.4	0.1	63.2	0.2	86.2	0.1	85.9	0.1
Urban area	18,222	24	91.4	0.1	78.6	0.2	83.2	0.1	63.2	0.2	86.3	0.1	86.1	0.1
Rural area	3,238	20	90.6	0.2	79.7	0.3	78.0	0.3	62.9	0.4	85.3	0.3	84.7	0.3
Midwest	26,940	50	91.0	0.1	76.3	0.2	82.7	0.1	61.7	0.2	84.7	0.1	84.3	0.1
Urban area	20,524	41	91.6	0.1	76.8	0.2	83.8	0.1	62.2	0.2	85.4	0.2	85.1	0.2
Rural area	6,416	66	89.4	0.2	74.8	0.2	79.3	0.2	60.1	0.3	82.4	0.2	81.8	0.2
South	45,788	81	91.2	0.1	74.9	0.2	84.5	0.1	60.7	0.2	83.6	0.1	83.4	0.1
Urban area	34,818	54	92.3	0.1	76.6	0.2	86.1	0.1	62.1	0.2	85.2	0.1	85.0	0.1
Rural area	10,970	57	87.7	0.2	69.7	0.3	79.3	0.2	56.3	0.3	78.7	0.3	78.3	0.3
West	27,333	33	94.0	0.1	81.8	0.1	87.6	0.1	65.9	0.2	88.2	0.1	88.0	0.1
Urban area	24,401	30	94.3	0.1	82.2	0.1	88.3	0.1	66.4	0.2	88.8	0.1	88.5	0.1
Rural area	2,932	24	91.6	0.3	79.1	0.4	81.9	0.4	61.9	0.5	84.0	0.3	83.4	0.4
Household Income														
Less than $25,000	23,803	78	76.9	0.1	50.9	0.2	65.5	0.1	35.8	0.2	64.7	0.2	64.3	0.2
$25,000–$49,999	25,816	78	89.7	0.1	69.1	0.2	79.0	0.1	50.8	0.2	81.1	0.2	80.7	0.2
$50,000–$99,999	36,353	104	96.3	Z	84.2	0.1	89.5	0.1	67.5	0.2	91.1	0.1	90.8	0.1
$100,000–$149,999	18,235	77	98.5	Z	92.8	0.1	95.0	0.1	80.2	0.2	95.6	0.1	95.5	0.1
$150,000 and more	17,314	69	99.0	Z	96.1	0.1	96.8	0.1	87.6	0.1	97.1	0.1	97.0	0.1
Total Households with Householders 25 Years and Older	**117,096**	**134**	**91.6**	**0.1**	**77.4**	**0.1**	**84.0**	**Z**	**62.8**	**0.1**	**85.3**	**0.1**	**85.0**	**0.1**
Educational Attainment of Householder														
Less than high school graduate	11,720	64	74.9	0.2	45.2	0.3	67.0	0.2	36.3	0.3	63.1	0.2	62.9	0.2
High school graduate (includes equivalency)	28,273	81	85.6	0.1	63.3	0.2	74.8	0.1	49.3	0.2	76.6	0.2	76.2	0.2
Some college or associate's degree	35,314	79	94.6	0.1	81.0	0.1	86.8	0.1	65.4	0.2	88.4	0.1	88.2	0.1
Bachelor's degree or higher	41,789	164	97.8	Z	93.1	0.1	92.5	0.1	77.3	0.1	94.6	0.1	94.4	0.1

Z Margin of error is less than 0.1.

Source: U.S. Census Bureau, 2018 American Community Survey, 1-year estimates.

surpassed desktop and laptop ownership, and 84 percent of households owned a smartphone in 2018.[7] The year 2017 marked the first time that laptops and desktops were not the most frequently owned type of device. As computing capabilities of smartphones increase, we may see households replace traditional computing equipment with portable devices. Tablet ownership trailed smartphones, desktops, and laptops, with 63 percent of households owning them. Most households had at least some sort of Internet subscription (85 percent), and in most cases, this subscription was to a broadband service.

Householder Demographics

Households with older householders[8] tended to have lower levels of both computer ownership and Internet subscription. Only about 80 percent of households with a householder aged 65 or over owned some sort of computer (desktop, laptop, smartphone, or tablet), while all other age groups had ownership rates above 90 percent. Smartphones were owned in roughly 62 percent of households with a householder aged 65 or over, and in roughly 97 percent of those with householders under 35 years old. Older households were also less likely to have a subscription to a broadband Internet service, with only 73 percent of households in the oldest age category having a broadband subscription, compared to 88 percent for those between the ages of 45 and 64, the next lowest subscription rate.

Computer and Internet use also varied by race and Hispanic origin of the householder. Households with an Asian householder were most likely to own or use a computer and to have a broadband Internet subscription. In contrast, households with a Black householder were the least likely to own or use a desktop or laptop, own or use a smartphone or tablet, or to have a broadband subscription. Differences in ownership or use of smartphones across households headed by each race and Hispanic origin group were smaller than differences in desktop or laptop ownership or broadband subscription. For example, the gap between Asians and Hispanics in smartphone use was 5 percentage points, while the gap for laptop or desktop use was 21 percentage points, and for tablet use, 17 percentage points. Relative to non-Hispanic Whites, smartphone use by Hispanics was roughly 5 percentage points higher.

Household Structure

Households with children under 18 years old were more likely to have a computer and an Internet subscription than households without children. They were also more likely to have a broadband Internet subscription. Limited English-speaking households lagged behind other households for both computer ownership and broadband subscription rates.[9]

Households in which at least one member had a physical or mental disability owned any sort of computer device about 84 percent of the time, while households with no members who had a disability owned some sort of computer device about 94 percent of the time. Households with at least one member with a disability also had a broadband subscription only 76 percent of the time, compared to 88 percent of the time for households without members with a disability.

Geographic Context

Households in urban areas also owned all types of computers and reported broadband subscriptions more frequently than those in rural areas. This was true in almost every geographic region of the United States for all device types. In the Northeast, rural households were slightly more likely to own a desktop or laptop than urban households. The divide between urban and rural households in device ownership and broadband subscription was larger in the South than in other regions.[10] Overall, households in the West had higher rates of desktop, laptop, smartphone, and tablet ownership and broadband subscription than households in other regions.

[7] In 2016, 77 percent of households reported owning a smartphone, while 77 percent of households reported owning a desktop or laptop. Information from Table S2801 can be found at <https://data.census.gov>. In 2017, 82 percent of households reported owning a smartphone, with 78 percent of households owning a desktop or laptop. Information from Table S2801 can be found at <https://data.census.gov>.

[8] The U.S. Census Bureau defines a householder as the person (or one of the people) in whose name the housing unit is owned or rented (maintained), or if there is no such person, any adult member, excluding roomers, boarders, or paid employees. If the house is owned or rented jointly by a married couple, the householder may be either spouse.

[9] A "limited English-speaking household" is one in which there is no one aged 14 and over who speaks English at home or who speaks English "very well."

[10] The difference in smartphone ownership between urban and rural households in the West is not statistically significant from households in the South.

Socioeconomic Status

Household income and educational attainment of the householder, key indicators of socioeconomic status, were also closely linked to computer ownership and Internet subscription. Of households earning $150,000 or more, 99 percent had some sort of computing device, compared with only 77 percent of households making less than $25,000. Similarly, 98 percent of households in which the householder had a bachelor's degree or higher had some sort of computer, while only 75 percent of households in which the householder did not have a high school diploma had a computer. Broadband subscription rates also differed by 30 percentage points or more across both income and education.

Broadband Internet Access Across States and Counties

Broadband subscription rates varied across states and the urban and rural areas in each state (Table 2). Utah, Washington state, and Colorado are among the states ranked highest in overall broadband subscription rates, while Arkansas, New Mexico, and Mississippi ranked lowest. In Utah, rural households only had a broadband subscription rate of 88 percent, compared to 90 percent for all Utah households and households in urban areas. In most states, rural broadband subscription rates lagged behind rates of urban subscription to varying degrees. Nationally, 5 percent fewer rural households subscribed to a broadband service than did urban households.

In a number of states in the Northeast, rural broadband subscription rates were higher than urban subscription rates. Urban households trailed rural households by 8 percentage points in Rhode Island, 3 percentage points in Connecticut and New Jersey, and 2 percentage points in Massachusetts. Rural populations in these states had higher levels of median income than their urban counterparts. For example, in New Jersey, the median income for urban households was $80,984 in 2018, while the median income for rural households was $100,504.[11] Nationally, the median income for rural households lag behind urban households, with a rural median income of $60,446 in 2018 compared to $62,305 for urban households. Evidence for a link between higher incomes and higher rates of broadband subscription at the national level is present in Table 1, and that link may be contributing to higher rates of subscription in the wealthy rural parts of these states. These states also had a higher availability of broadband connections in both urban and rural areas,[12] which may increase the likelihood that homes in rural areas subscribe to a broadband service.[13]

However, states with high rural broadband subscription rates are not the norm, as all other states had rural broadband subscription rates lower than urban households in that state.[14] Rural households trailed urban households by about 10 percentage points in New Mexico, Arizona, and Virginia. Both Virginia and Arizona had overall broadband subscription rates above the national average, due in part to high connectivity in populated urban areas, but rural households continued to lag behind.

Figure 3 presents a breakdown of broadband subscriptions by county using the 5-year 2018 ACS data. This map helps to illustrate some of the urban-rural divisions presented in Table 2. For example, in

[11] The income data for New Jersey and other states can be found by consulting table S1901 at <https://data.census.gov>.

[12] In every county in these four states, 95 percent of households or more had a high capacity Internet service available in 2015. Further information can be found from Michael J. R. Martin, "Deconstructing the Digital Divide: Identifying the Supply and Demand Factors That Drive Internet Subscription Rates," Working Paper Number SEHSD-WP2019-15, located at <www.census.gov/content/dam/Census/library/working-papers/2019/demo/sehsd-wp2019-15.pdf>.

[13] Michael J. R. Martin and Jamie Lewis, "What Is Associated with Providing Fixed Internet Service? A Look at Merged Administrative and Survey Data," Working Paper Number SEHSD-WP2018-12, located at <www.census.gov/library/working-papers/2018/demo/SEHSD-WP2018-12.html>.

[14] In Maine, Vermont, and Nevada, these differences are not significant.

Table 2.

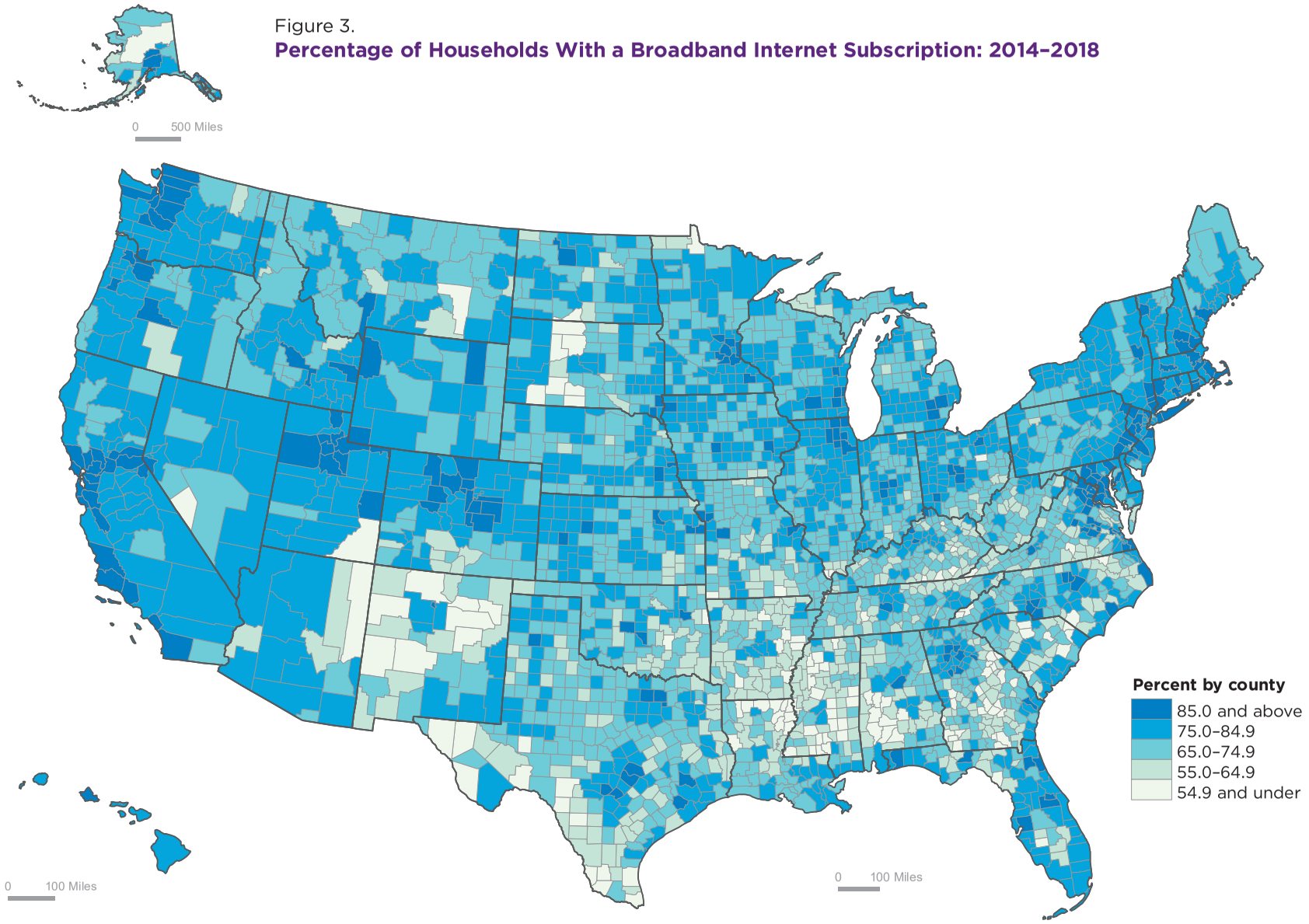
Percentage of Households With a Broadband Internet Subscription by Rural and Urban Residence: 2018

Geographic area	All areas		Urban areas		Rural areas	
	Percent	Margin of error (±)	Percent	Margin of error (±)	Percent	Margin of error (±)
Utah	90.0	0.5	90.2	0.5	88.4	1.3
Washington	90.0	0.3	90.4	0.3	87.5	0.8
Colorado	89.4	0.3	89.9	0.3	86.1	1.0
New Hampshire	89.1	0.8	89.7	0.9	88.2	1.0
California	88.7	0.1	88.9	0.2	85.1	0.6
Delaware	88.4	0.8	89.1	0.9	84.8	2.0
Maryland	88.2	0.4	88.4	0.4	86.6	1.1
New Jersey	88.0	0.3	87.8	0.3	91.1	1.0
Massachusetts	87.9	0.3	87.8	0.4	90.2	1.0
Oregon	87.9	0.4	88.9	0.5	83.5	1.1
Alaska	87.5	0.8	90.4	1.2	81.6	1.7
Connecticut	87.0	0.6	86.6	0.6	90.1	1.2
Minnesota	86.8	0.3	87.8	0.5	83.8	0.4
Arizona	86.2	0.4	87.3	0.4	77.1	1.2
Idaho	86.2	0.7	86.9	0.8	84.4	1.2
District of Columbia	86.1	1.1	86.1	1.1	X	X
Nevada	85.9	0.5	86.0	0.5	83.9	2.3
Hawaii	85.7	0.9	86.4	0.9	79.2	3.6
Nebraska	85.7	0.5	87.2	0.7	81.9	1.0
Wyoming	85.7	1.3	86.8	1.5	83.6	2.1
Virginia	85.6	0.4	88.0	0.4	78.4	0.9
New York	85.3	0.2	85.4	0.2	84.2	0.6
Rhode Island	85.3	1.0	84.7	1.0	92.4	2.0
Florida	85.2	0.2	85.5	0.2	82.8	0.8
Illinois	85.1	0.3	85.5	0.3	82.0	0.6
United States	**85.1**	**0.1**	**86.1**	**0.1**	**80.8**	**0.2**
Texas	84.5	0.2	85.1	0.2	81.5	0.5
Ohio	84.5	0.3	85.1	0.3	82.2	0.5
Wisconsin	84.4	0.3	85.0	0.4	83.1	0.4
Kansas	84.3	0.5	85.2	0.6	82.0	1.0
Michigan	84.1	0.2	84.6	0.3	82.6	0.5
Pennsylvania	84.1	0.2	84.7	0.3	81.8	0.5
Maine	84.0	0.7	84.0	1.4	83.9	0.7
Georgia	83.7	0.4	85.6	0.4	78.0	0.9
Iowa	83.6	0.5	84.3	0.6	82.3	0.6
Montana	83.6	0.9	84.4	1.1	82.5	1.3
North Carolina	83.5	0.3	85.7	0.4	79.1	0.6
Missouri	82.9	0.4	84.8	0.4	78.3	0.7
Indiana	82.8	0.4	83.5	0.4	80.7	0.7
Vermont	82.5	1.0	82.8	1.9	82.3	1.3
South Dakota	82.1	1.0	83.6	1.4	80.0	1.1
Tennessee	82.1	0.4	83.5	0.5	79.2	0.8
Oklahoma	81.9	0.4	84.2	0.5	77.4	0.6
Kentucky	81.7	0.5	85.2	0.7	76.4	0.8
South Carolina	81.5	0.5	83.9	0.6	76.5	1.0
North Dakota	80.3	1.3	81.8	1.7	78.2	1.5
Alabama	79.3	0.5	81.4	0.6	76.3	0.9
West Virginia	79.0	0.8	81.7	1.1	76.1	1.1
Louisiana	78.1	0.5	79.3	0.6	74.7	1.2
Arkansas	76.9	0.6	79.3	0.9	73.7	0.9
New Mexico	76.9	0.8	79.0	1.0	69.1	1.5
Mississippi	76.3	0.7	80.3	0.8	72.2	1.3

X Not applicable. The District of Columbia has no area that is classified as rural.

Source: U.S. Census Bureau, 2018 American Community Survey, 1-year estimates.

Figure 3.
Percentage of Households With a Broadband Internet Subscription: 2014–2018



Note: A "broadband" Internet subscription refers to having at least one type of Internet subscription other than a dial-up subscription alone. More specifically, it refers to those who said "Yes" to one or more of the following types of subscriptions: broadband (high speed) such as cable, fiber optic or DSL; cellular data plan for a smartphone or other mobile device; satellite; or fixed wireless. More information can be found at <www.census.gov/acs>.
Source: U.S. Census Bureau, 2014–2018 American Community Survey, 5-year estimates.

Virginia, counties adjacent to Washington, DC, and Richmond had 85 percent or more of households with broadband subscriptions, while a number of counties in the center of the state had fewer than 65 percent of households with subscriptions. Counties with household broadband subscription rates at or below 55 percent were found in 25 states, with 13 of these states located in the South, 6 in the West, and 6 in the Midwest. Of the 138 counties with broadband subscription rates at or below 55 percent, 111 of them were in the South.

Household Connectivity Spectrum

As explained in the text box on this page, the questions asked on computer and Internet use can be used to construct a scale ranging from those with the highest number of devices and connections to the lowest (Figure 4). Overall, 53 percent of American households had "high connectivity," meaning they had four key computer and Internet items: a desktop or laptop, a smartphone, a tablet, and a broadband Internet subscription. Households in which the householder was 35 to 44 years old were most likely to be highly connected, at 66 percent. Households with a householder aged 65 and over were the least likely to be highly connected, at 36 percent. Households with higher household income were also more likely to be highly connected. Of households with an income of $150,000 or more, 84 percent had a desktop or laptop, a smartphone, a tablet, and a broadband Internet subscription.

Defining "High Connectivity" Over Time

As technology continues to change over time, so too does the definition of what it means to be "highly connected." For the purposes of this report, this concept is used to capture those who had four key computer and Internet items: a desktop or laptop, a smartphone, a tablet, and a broadband Internet subscription. This group may reflect those who are early adopters of new technology. In reports using data from 2015 and earlier, these were respondents who owned or used a desktop or laptop, handheld device, and had broadband. However, in this report, this definition has been updated to include tablets and refers specifically to smartphones instead of handheld devices. This definition will continue to evolve over time as new devices become available and categories are updated to reflect these changes.

At the opposite end, among low-income households (income under $25,000), 24 percent had high connectivity. Among race and Hispanic origin groups, Asians were the most likely to be highly connected, while non-Hispanic Blacks were the least likely to be highly connected.

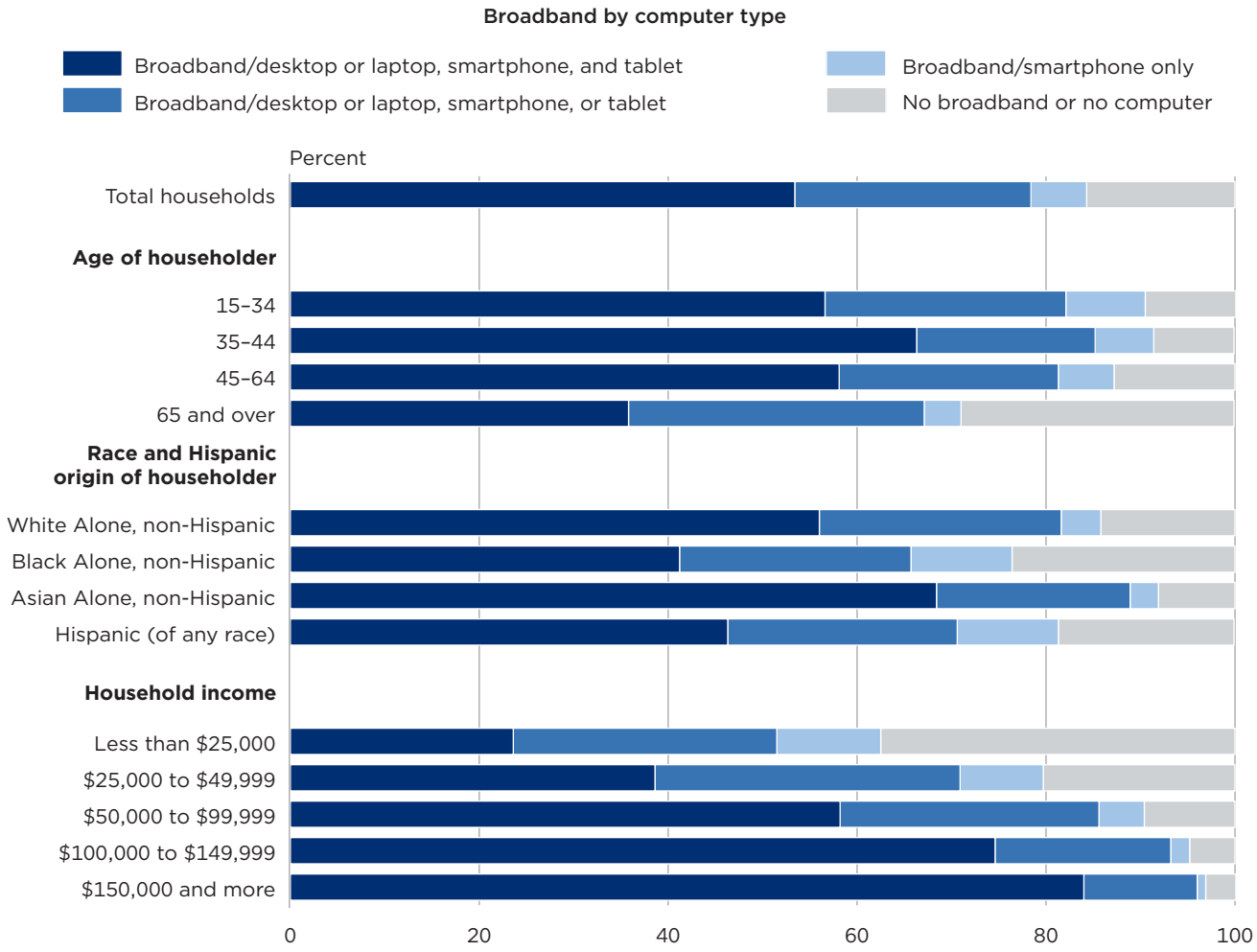
It is interesting to observe households who lacked a desktop, laptop, or tablet, but were still connected to the Internet—i.e., they relied on smartphones alone for Internet connectivity. These households are referred to as "smartphone-only households." The prevalence of smartphone-only households decreased as age of householder and household income increased. Of households with income below $25,000 a year, 11 percent accessed the Internet through a smartphone alone, while only about 1 percent of households making $150,000 or more did so. Low-income households were least likely to be "high connectivity" households but had the highest proportion of smartphone-only households. Similarly, households with Black and Hispanic householders had lower rates of "high connectivity" than households with White or Asian householders, but higher proportions that were smartphone only. As smartphones continue to evolve and increase in popularity, penetration of these technologies into traditionally less connected groups may help bolster Internet access across the board.[15]

CONCLUSION

This report highlights findings from the 2018 ACS data on computer and Internet use. Following trends observed in both the ACS and CPS, computer ownership and Internet access rates both continued to increase. Not all households are

[15] Further discussion of the "handheld-only" group can be found from, Jamie M. Lewis, "Handheld Device Ownership: Reducing the Digital Divide?" SEHSD Working Paper 2017-04, U.S. Census Bureau, 2017. This group was also examined by Thom File and Camille Ryan, "Computer and Internet Use in the United States: 2013," American Community Report, ACS-28, U.S. Census Bureau, 2014.

Figure 4.
Percentage of Households by Broadband Internet Subscription and Computer Type: 2018



Note: More information can be found at <www.census.gov/acs>.
Source: U.S. Census Bureau, 2018 American Community Survey, 1-year estimates.

equal in their rates of access, however, as substantial variation exists along both demographic and geographic characteristics. Homes with older householders, those with lower levels of income or education, and those without children present tended to have lower levels of computer ownership and broadband access. Rural households were also less likely to own computers or access the Internet except in a few select states in the Northeast. County-level patterns of broadband subscription reinforce the fact that certain areas, particularly rural and Southern areas, trail behind in broadband subscription. This report also highlights the importance of keeping track of the type of devices used, as smartphone use has exceeded that of desktop and laptop use. Additionally, gaps between Black or Hispanic households and Asian or White households were smaller for smartphone ownership than for other device types. Black and Hispanic households were more likely to be "smartphone only" homes, which may impact the types of tasks these households are able to accomplish on the Internet. As technology continues to evolve, the Census Bureau will continue to measure computer and Internet use

throughout the country and its many communities.

SOURCE AND ACCURACY

The data presented in this report are based on the American Community Survey (ACS) and the Current Population Survey (CPS). The ACS analyses use data from 2013 to 2018. Data for each year are based on a sample interviewed from January 1 through December 31 of that year. For example, the 2018 data are based on a sample interviewed from January 1, 2018, through December 31, 2018. The estimates based on the sample from each year describe the average values of person, household, and housing unit characteristics over the year of collection. Sampling error is the uncertainty between an estimate based on a sample and the corresponding value that would be obtained if the estimate were based on the entire population (as from a census). Measures of sampling error are provided in the form of margins of error for key estimates included in this report. All comparative statements for ACS in this report have undergone statistical testing, and comparisons are significant at the 90 percent level unless otherwise noted. In addition to sampling error, nonsampling error may be introduced during any of the operations used to collect and process survey data such as editing, reviewing, or keying data from questionnaires. More information on sampling and estimation methods, confidentiality protection, and sampling and nonsampling errors can be found from the ACS 1-Year Accuracy of the Data documents for 2013, 2014, 2015, 2016, 2017, and 2018 located at <www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html>.

This report also makes use of 2014–2018 5-year ACS data. These data are obtained by pooling data from each of the five years and then reweighting these data using similar processes to the approach with single-year data. These data reflect the average value over the entire period and should not be equated with a single period estimate for a given geography. More information can be found at <https://www2.census.gov/programs-surveys/acs/tech_docs/accuracy/MultiyearACSAccuracyofData2018.pdf?#>.

Multiple changes were made in 2016 to ACS questions on computer use, Internet access, and type of Internet subscription. There were several reasons for making these changes, including improving the measurement of Internet subscriptions and cellular data plans among households with smartphones, as well as keeping up with rapid changes in the types of computing devices available and the terminology used to describe them. Because of these changes, caution should be used when comparing the estimates for 2016 and later to those from previous years, since changes may be due to the revised wording and improved measurement rather than a change in use. More information can be found at <www.census.gov/library/publications/2018/acs/acs-39.html> and <www.census.gov/library/working-papers/2017/acs/2017_Lewis_01.html>.

What Is the American Community Survey?

The American Community Survey (ACS) is a nationwide survey designed to provide communities with reliable and timely demographic, social, economic, and housing data for the nation, states, congressional districts, counties, places, and other localities every year. It has an annual sample size of about 3.5 million addresses across the United States and Puerto Rico (Puerto Rico has not been included in this analysis) and includes both housing units and group quarters (e.g., nursing homes and prisons). The ACS is conducted in every county throughout the nation, and every municipio in Puerto Rico, where it is called the Puerto Rico Community Survey. Beginning in 2006, ACS 1-year estimates were released annually for geographic areas with populations of 65,000 and greater. For information on the ACS sample design and other topics, visit <www.census.gov/programs-surveys/acs/>.

Data from the CPS are shown for the Computer and Internet Supplement from 1984 to 2017. Data from the Computer and Internet Use Supplements were collected in the 50 states and the District of Columbia. The data do not represent residents of Puerto Rico and U.S. Island Areas. The CPS is a household survey primarily used to collect employment data. The sample universe for the basic CPS consists of the resident civilian, noninstitutionalized population of the United States. People in institutions, such as prisons, long-term care hospitals, and nursing homes, are not eligible to be interviewed in the CPS. Students living in dormitories are included in the estimates only if information about them is reported in an interview at their parents' home. Since the CPS is a household survey, people who are homeless and not living in shelters are not included in the sample. In 2017, the probability sample included approximately 56,000 households. Further documentation about the CPS Computer and Internet Use Supplement for 2017 and previous years can be found at <www.census.gov/programs-surveys/cps/technical-documentation/complete.2017.html>.

The estimates in this report are based on responses from a sample of the population and may differ from actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant.

All comparative statements for CPS have undergone statistical testing and are significant at the 90 percent confidence level, unless otherwise noted. In this report, the variances of estimates were calculated using both the Successive Difference Replication (SDR) method and the Generalized Variance Function (GVF) approach. Further information about the source and accuracy of the estimates is available at <www.census.gov/programs-surveys/cps/technical-documentation/complete.2017.html>.