# Exploring the Digital Nation
## COMPUTER AND INTERNET USE AT HOME


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ECONOMICS AND STATISTICS ADMINISTRATION
and
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in the
U. S. DEPARTMENT OF COMMERCE



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# EXPLORING THE DIGITAL NATION
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**Economics and Statistics Administration**

*and*

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**U.S. Department of Commerce**

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# Exploring the Digital Nation: Computer and Internet Use at Home

## Foreword

The Internet is an extraordinary platform for innovation, economic growth, and social communication. High-speed Internet services delivered over broadband networks are critical to maintaining the United States' competitiveness in a global economy. A strong correlation exists between broadband (both deployment and adoption) and indices of economic growth, such as increases in Gross Domestic Product, employment, and property values. The Administration recognizes the importance of broadband to improve health care, enhance education, and provide essential job training and employment assistance for Americans seeking work. President Obama recently reiterated his long-standing commitment to ensuring broadband's role in the nation's future, stating:

> ***I will not sacrifice the core investments that we need to grow and create jobs. We will invest in medical research. We will invest in clean energy technology. We will invest in new roads and airports and broadband access. We will invest in education. We will invest in job training. We will do what we need to do to compete, and we will win the future.***
>
> —Remarks by President Obama on Fiscal Policy in Washington, DC, April 13, 2011

The American Recovery and Reinvestment Act of 2009 (Recovery Act) provides a down payment on needed investments to extend the nation's broadband infrastructure, expand public computer center capacity, and promote broadband adoption. The National Telecommunications and Information Administration (NTIA) provides approximately $4 billion to fund 229 projects under the Recovery Act's Broadband Technology Opportunities Program (BTOP). These investments, combined with the Department of Agriculture's Broadband Initiatives Program, total approximately $7 billion, and they are beginning to pay dividends. BTOP grantees have installed or upgraded over 18,000 miles of new broadband networks, added or upgraded more than 16,000 computer workstations, and reported over 110,000 new subscribers as of June 30, 2011. The projects are stimulating the deployment and adoption of broadband in communities across the United States and we expect that they will continue to do so for years to come. In addition, NTIA recently launched *DigitalLiteracy.gov* in partnership with nine Federal agencies to create an online resource for improving digital literacy.

Government efforts, private sector investment, and increased demand for Internet services and applications all play a key role in facilitating the steady growth in households' computer and Internet use. For its part, the Department of Commerce is a leader in analyzing broadband access and adoption in America. In October 2010, the U.S. Census Bureau within the Economics and Statistics Administration, in collaboration with NTIA, significantly expanded the Current Population Survey (CPS) to include new questions on computer and Internet use. The Census Bureau surveyed about 54,300 households, and through statistical methods extrapolated the survey results to represent 119.5 million American households.

The CPS data revealed that 68 percent of households used broadband Internet access service, up from 64 percent the previous year. Despite this improvement, demographic and geographic disparities demonstrate a persistent digital divide among certain groups. For example, rural low-income minorities' broadband adoption at home lagged significantly behind that of other groups. In addition, almost one-third of Americans are not accessing broadband service at home. The Administration has made it a priority to evaluate the effectiveness of existing programs, develop new programs as needed, and work collaboratively with industry to design new strategies to ameliorate the digital divide. Our ongoing analysis highlights that there is no simple "one size fits all" solution to resolve the adoption disparities among broadband users. The Administration will continue to encourage Congress, state and local officials, and the private sector to find ways to promote broadband deployment and adoption so that we continue to create jobs, prepare the workforce for the rapidly developing Internet economy, and increase the nation's competitiveness.

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# Exploring the Digital Nation: Computer and Internet Use at Home


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# Exploring the Digital Nation: Computer and Internet Use at Home

## Executive Summary

This report updates and expands last year's report, *Exploring the Digital Nation: Home Broadband Internet Adoption in the United States*, based on data from the Census Bureau's most recent Current Population Survey (CPS) School Enrollment and Internet Use Supplement. The report also provides additional information augmenting the February 2011 research preview, *Digital Nation: Expanding Internet Usage*, and includes new findings on computer and Internet use in the United States. For example, we use regression analysis to help explain some of the disparities in broadband Internet adoption that exist between demographic and geographic groups. The analysis reveals that, by holding constant certain factors such as household income, education, or age, the adoption disparities may decrease significantly.

Below is a summary of our final review of the 2010 CPS results. These findings may assist policymakers as they consider ways to promote broadband deployment and adoption in the United States.[1]

## Summary of the 2010 CPS Results

- As of October 2010, more than 68 percent of households used broadband Internet access service, up from 64 percent one year earlier (Section 1, Figure 1). Approximately 80 percent of households had at least one Internet user, either at home or elsewhere (Section 3.1, Figure 3).
- Cable modem (32 percent) and DSL (23 percent) ranked as the most commonly used broadband technologies (Section 3.1, Figure 3). Other technologies, including mobile broadband, fiber optics, and satellite services, accounted for a small, but growing, segment of households with broadband Internet access service.

[1] In this report, we examine Internet access service from the demand side based on the Census Bureau's survey of households. We use the terms "adoption," "use," "utilization," "access," and "connection" interchangeably to indicate that a household reported having Internet access service. The term "Internet access service" includes both the provision of dial-up Internet access service and broadband Internet access service. Similarly, the CPS survey inquires about households' ownership or use of a home computer to examine whether they have access to the devices necessary to access the Internet. The report describes such access as "ownership" or "use" and employs the terms interchangeably.

- Dial-up use at home – the preferred form of residential Internet access through the mid 2000s – continued to decline from five percent in October 2009 to three percent one year later (Section 3.1, Figure 3).

- Over three-fourths (77 percent) of households had a computer – the principal means by which households access the Internet – compared with 62 percent in 2003 (Section 1, Figure 1). Low computer use correlates with low broadband adoption rates.

- Broadband Internet adoption, as well as computer use, varied across demographic and geographic groups. Lower income families, people with less education, those with disabilities, Blacks, Hispanics, and rural residents generally lagged the national average in both broadband adoption and computer use. For example, home broadband adoption and computer use stood at only 16 percent and 27 percent, respectively, among rural households headed by a Black householder without a high school diploma (Section 4.2, Table 4). Also, households with school-age children exhibited higher broadband adoption and computer use rates than other households (Section 4.1, Figure 7).

- The differences in socio-economic attributes do not entirely explain why some groups lagged in adoption. Broadband Internet adoption disparities decrease when regression analysis holds constant certain household characteristics, such as income, education, race, ethnicity, foreign-born status, household composition, disability status, or geographic location. For example, the gap with respect to broadband Internet adoption associated with disabilities decreases from 29 to six percentage points when controlling for income, education, age, and other attributes (Section 4.3, Figure 18).

- The most important reasons households without broadband Internet or dial-up service gave for not subscribing were: (1) lack of need or interest (47 percent); (2) lack of affordability (24 percent); and (3) inadequate computer (15 percent) (Section 5, Figure 19).

- Households reporting affordability as the major barrier to subscribing to broadband service cited both the fixed cost of purchasing a computer and the recurring monthly subscription costs as important factors (Section 5, Figure 21). Our analysis of the expanded CPS data suggests that work, school, public libraries, and someone else's house were all popular alternatives for Internet access among those with no home broadband Internet access service (Section 6, Figure 23). Not surprisingly, individuals with no home broadband Internet access service relied on locations such as public libraries (20 percent) or other people's houses (12 percent) more frequently than those who used broadband Internet access service at home.

# Exploring the Digital Nation: Computer and Internet Use at Home

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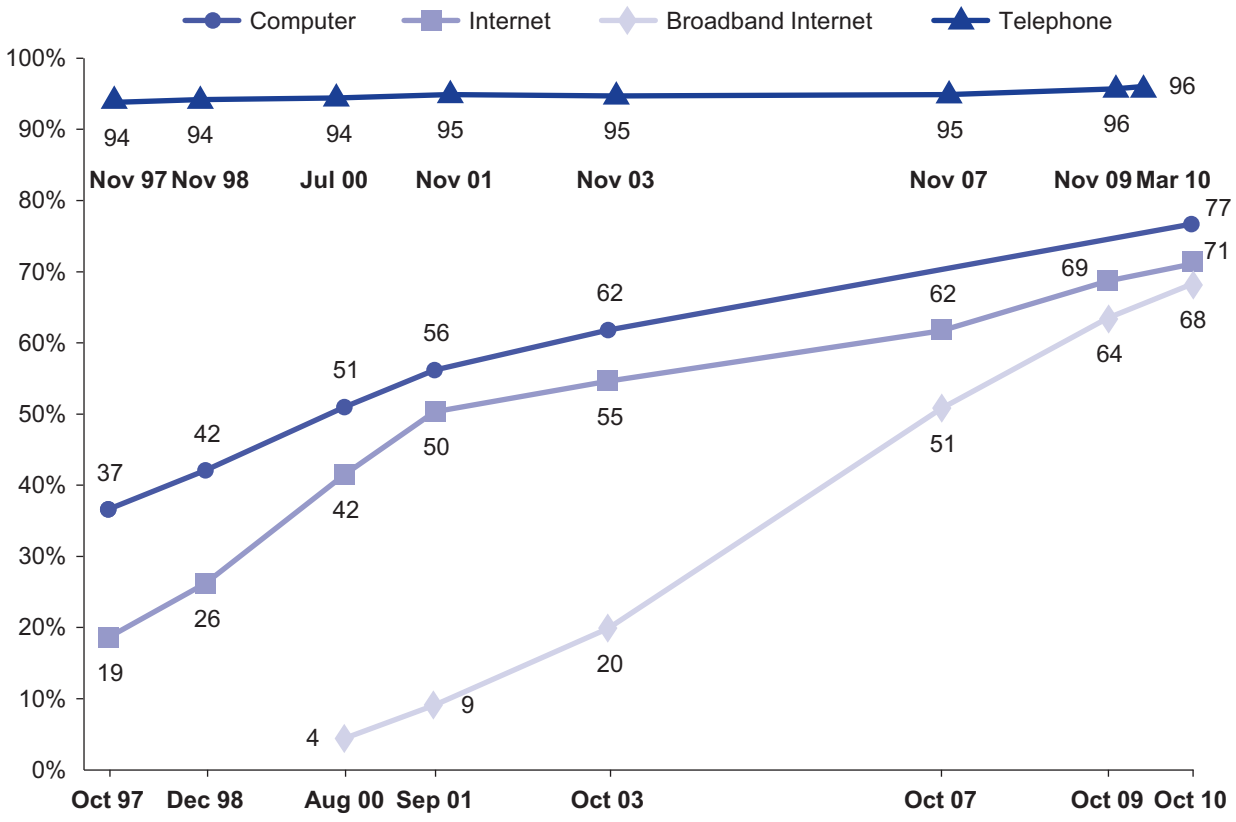
## 1. Introduction

The Internet has transformed our social and economic environment by providing an important platform for innovation, economic growth, and social communication. Residential use of broadband Internet access services has risen dramatically during the past decade, demonstrating that the Internet plays a key role in the everyday lives of many people.

**Figure 1: Overview of Household Adoption Rates by Technology**
**Percent of U.S. Households**




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations. "Digital Nation: Expanding Internet Usage," National Telecommunications and Information Administration, February 2011.

*Note:* Internet adoption depicted above combines broadband and dial-up Internet access services. 2001-2010 computer and Internet use data employ 2000 Census-based weights, and earlier years use 1990 Census-based weights.

Nonetheless, as Figure 1 illustrates, not everyone uses a computer or the Internet. Today, there exists a substantial gap between these technologies' adoption rates (77 and 71 percent, respectively) and that of telephone service (96 percent); broadband Internet access (68 percent) trails as well. However, the differentials have decreased significantly between very mature telephone subscribership and growing digital technologies. For example, in 2003 computer use lagged by approximately 33 percentage points and broadband by almost 75 percentage points. While telephone diffusion has plateaued for more than two decades, nascent computer and Internet adoption rates have continued to climb, albeit at a slower pace than earlier in the decade. In contrast, broadband Internet's rise has remained sharp and robust, as dial-up adoption plunged from 37 percent in 2000 to three percent in 2010.

In February 2011, NTIA released *Digital Nation: Expanding Internet Usage*, a research preview that provided a first look at data from the October 2010 School Enrollment and Internet Use Supplement to the Census Bureau's Current Population Survey. The preview relied on several statistical tables that the Census Bureau released shortly after it began processing the survey data. These tables provided us with certain information about disparities in broadband adoption based on demographic characteristics such as income, race, and population density. The preliminary CPS data, however, limited our analysis until the Census Bureau made available a public use dataset for the survey, which facilitated a more detailed examination of the data.

Armed with complete survey results, ESA and NTIA produced custom statistics on adoption of Internet access services by demographics and geography, and reasons for non-adoption. In addition to calculating statistics not listed in the summary tables that NTIA used for the 2011 research preview, such as information on computer ownership, we employed regression analysis to estimate the effects of different variables, such as income or race, on such outcomes as broadband adoption when holding other factors constant. In other words, it allowed us to estimate how much of the digital divide remains attributable to population density or geography (for example) if we control for characteristics like education and income.

This report, therefore, draws on the October 2010 CPS data to provide new insights from the survey's expanded questions on computer use and Internet adoption.[2] These additional questions enabled us to study home computer use, identify the types of broadband Internet access services used at home, and determine the locations from which people used the Internet outside the home. In addition, one of the main findings of the 2011 preview was that affordability played a large role in a household's decision not to subscribe to broadband services. The expanded questionnaire allowed us to identify the types of costs that concerned households, including fixed costs, such as the cost of computer equipment and Internet service installation, and recurring costs, such as monthly Internet access subscription fees.

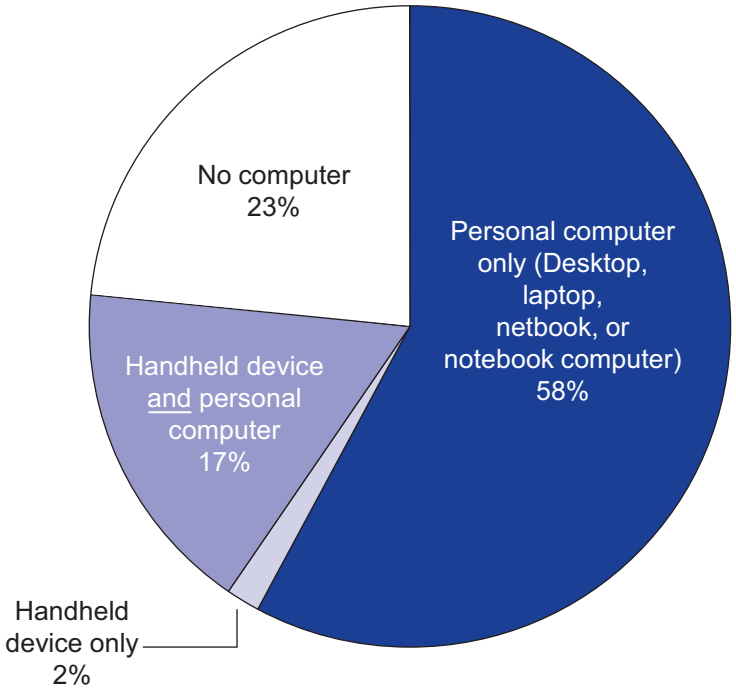
[2] Please see Appendix A for a detailed description of the data and methodology employed in this report.

## 2. Household Computer Use, 2010

More than three-quarters (77 percent) of all American households had a computer at home in 2010, up from 62 percent in 2003.[3,4] Figure 2 shows that the majority of U.S. households (58 percent) used a desktop, laptop, netbook, or notebook computer only (personal computer), while 17 percent used a handheld device (which includes smartphones and other Internet-capable devices of similar functionality) in addition to a personal computer. Handheld devices appear to be complementary to personal computers since the substantial majority of households with handheld devices also used a personal computer. Only two percent of households reported having just a handheld device.

A significant segment of the population, almost one-fourth (23 percent) of all American households, did not own or use a computer at home in 2010.

### Figure 2: Household Computer Use by Type of Computer, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Handheld devices include smartphones and other Internet-capable devices of similar size and functionality.

[3] For the 2010 household-level estimate of computer usage based on the total sample, the margin of error at the 90 percent confidence level is plus or minus 0.35 percentage points based on a standard error (SE) of 0.21 percentage points. See Appendix B, Table B2 for estimates of computer use and standard errors for population subgroups. The last time the CPS included data on computer use was in 2003.

[4] All comparisons referenced in this paper have been tested for statistical significance, and are significant at the 90 percent confidence level.

The finding that a relatively small share of the population owned handheld devices raises the question whether households with handheld devices differ in their demographic characteristics from others. Table 1 shows demographic information for three groups: households that owned a handheld device (alone or in addition to a personal computer), those with a personal computer only, and those with no computer of any type. Handheld devices were more prevalent in higher-income households – almost one-third of households (31 percent) with a handheld device had family incomes exceeding $100,000 in 2010, compared to 16 percent of households with a personal computer only, and three percent of households with no computer. In general, households that reported using a handheld device had younger and more educated householders than those without a handheld device or computer.[5]

### Table 1. Household Characteristics by Type of Computer at Home, 2010

| | Handheld device alone or in combination | Personal computer only (Desktop, laptop, netbook, or notebook) | No computer |
|---|---|---|---|
| Mean Age* (years) | 42 | 49 | 57 |
| Income < $25,000 | 14% | 23% | 57% |
| Income > $100,000 | 31% | 16% | 3% |
| High school diploma* | 18% | 28% | 42% |
| College degree or more* | 48% | 33% | 10% |
| Urban | 89% | 83% | 79% |
| Rural | 10% | 16% | 21% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Handheld devices include smartphones and other Internet-capable devices of similar functionality.

*These are attributes of the householder.

[5] The householder is the person (or one of the people) who owns or rents the housing unit where the subject household resides, or, if there is no such person, any adult member, excluding roomers, boarders, or paid employees.

# 3. Household Internet Adoption, 2010

## 3.1 Types of Household Internet Adoption

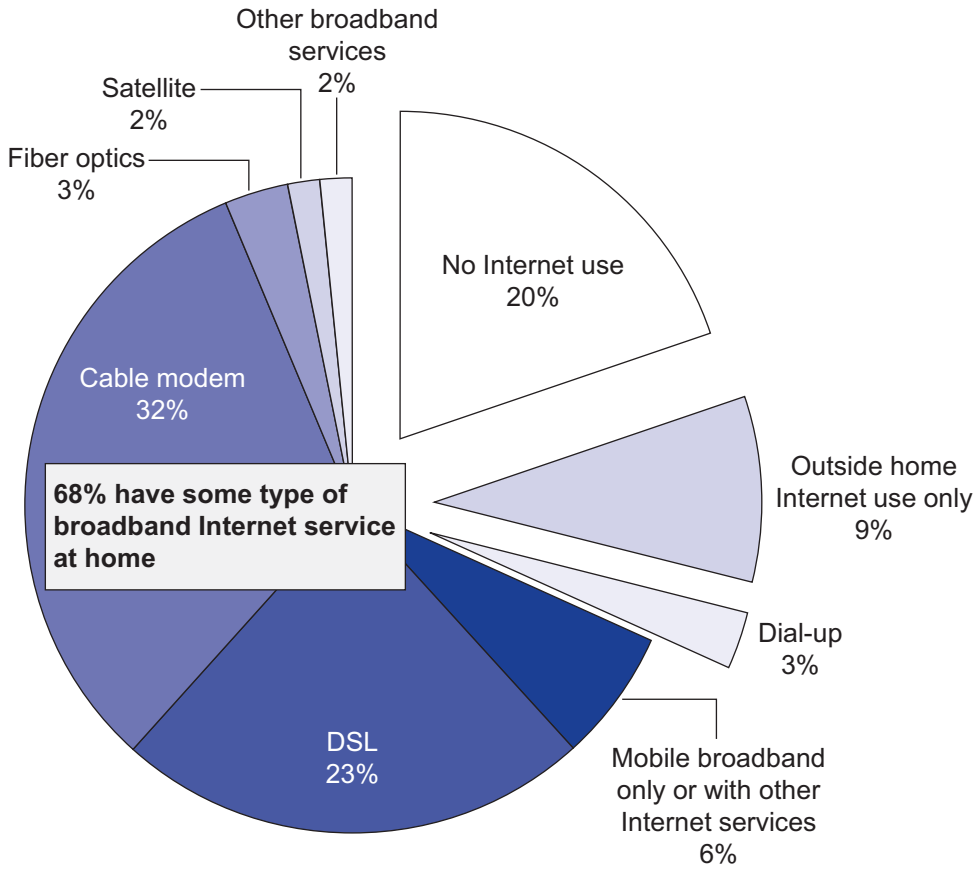
In 2010, more than two-thirds (68 percent) of all American households utilized broadband Internet access services, up four percentage points (64 percent) from the previous year.[6] Figure 3 shows that cable modem and DSL were, by far, the leading broadband technologies for residential Internet access, with 32 percent and 23 percent of households, respectively, utilizing these services.[7] Other broadband technologies, such as mobile broadband, fiber optics, and satellite technologies, accounted for a small segment of household Internet connections.

A shrinking share of home Internet users – about three percent of households in 2010 – used dial-up to access the Internet, down from five percent in 2009. By combining the percentages of households with broadband Internet access and those with dial-up services, we note that seven out of every ten (71 percent) American households had home Internet access service in 2010. Another nine percent of households had Internet users who only accessed the Internet outside the home. Together, these figures suggest that 80 percent of American households in 2010 had at least one Internet user, up three percentage points from the previous year.

[6] A household with at least one of the following high-speed, high capacity, two-way Internet services is considered to have broadband: DSL, cable modem, fiber optics, satellite, mobile broadband, or some other non-dial-up Internet connection. The CPS did not ask about the speed of the particular broadband service a household uses because of the difficulty of gathering the information. The household-level estimate on broadband Internet access based on the total sample has a margin of error of plus or minus 0.38 percentage points, based on a standard of error of 0.23 percentage points. See Appendix B, Table B2 for estimates of Internet access and standard errors for population subgroups.

[7] The shares of households with DSL, cable modem, fiber optics, and satellite technologies shown in Figure 3 include households that reported having only that specific type of technology. The vast majority of households with these technologies had only one type of Internet technology. In contrast, the six percent of households with mobile broadband includes households that reported having mobile broadband, either alone or in addition to other types of technologies. The category "Other broadband services" includes unspecified technology types, or any other combination of listed technology types excluding mobile broadband. For example, the total share of households with DSL was 24.6 percent, including 23.4 percent with DSL alone, 0.8 percent with DSL and mobile broadband, and 0.4 percent with DSL and other broadband service. Similarly, the total share of households with cable modem was 33.9 percent, with 32.0 percent with cable modem alone, 1.4 percent with cable modem and mobile broadband, and 0.5 percent with cable modem and other broadband service.

## Figure 3: Household Internet Adoption by Type of Technology, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Other broadband services include unspecified service types, or any other combination of listed service types excluding mobile broadband.

## 3.2 Mobile Broadband Internet Use at Home

The explosive growth of wireless technologies in recent years reflects Americans' desire to carry portable devices that provide communications capabilities they previously could only access at home or work. Mobile broadband services offer Internet access utilizing service providers' cellular networks. Mobile broadband is unique in its ability to function wherever radio signals are available, rather than at a fixed location (or, where Wi-Fi routers are used, a small range of locations). This feature supports a continuous Internet connection using mobile devices, and enables the use of location-aware online services. Smartphones with "data plans" represent the most common way people obtain mobile broadband service. In addition, mobile users may access mobile broadband services with cards, adapters, and base stations that connect computers

and other Internet-ready devices.[8] CPS data suggest that a small share of households (six percent) utilized mobile broadband services at home in 2010 (Figure 3).[9]

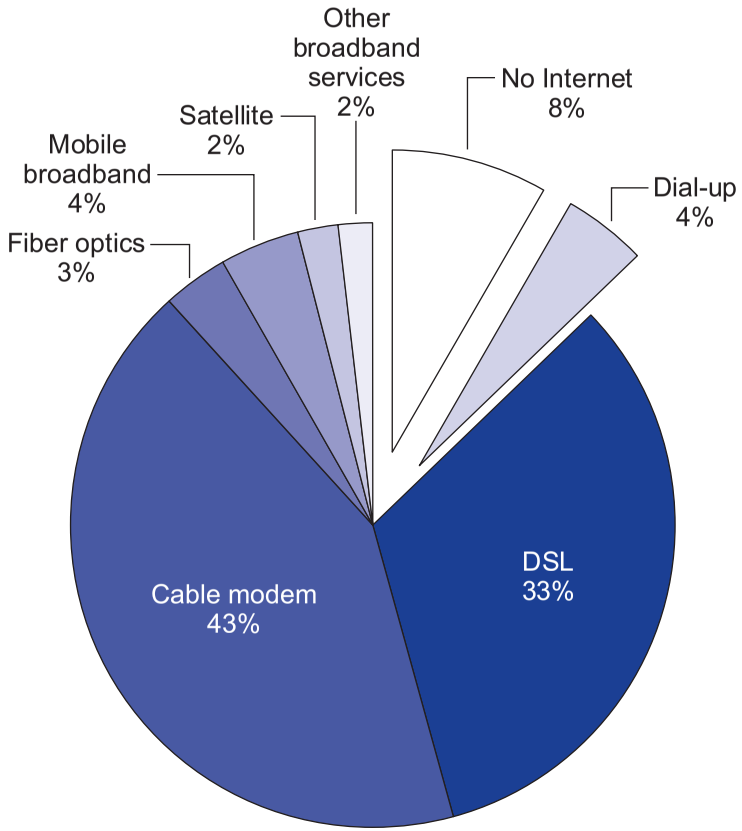
Home mobile broadband adoption was more widespread in households reporting use of a handheld device. Figure 4 compares Internet use between two groups - households that reported owning a handheld device (alone or in addition to a personal computer) and households that did not own any handheld device but reported owning a personal computer. According to Figure 4, approximately one in five households (21 percent) with a handheld device used mobile broadband (Figure 4, right panel), compared to only four percent of households with personal computers (Figure 4, left panel).

In addition to having a stronger preference for mobile broadband Internet access, users of handheld devices were also more likely than their counterparts using only personal computers to subscribe to fiber optic broadband services and less likely to subscribe to DSL services. Six percent of households with a handheld device reported fiber optics use, compared to three percent of households with no handheld device but with a personal computer; DSL was used in 23 percent of households with a handheld device versus 33 percent of households with only a personal computer.

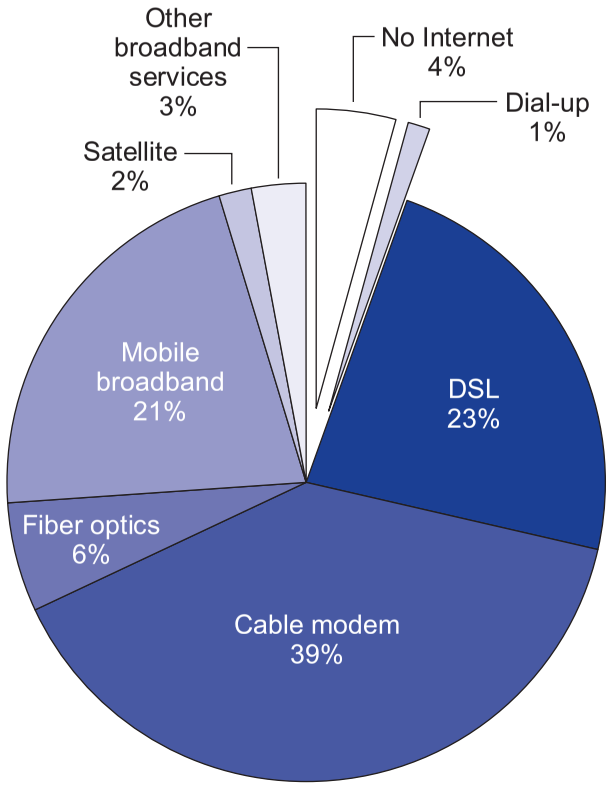
[8] For purposes of the CPS, mobile broadband does not refer to Wi-Fi networks, which ultimately rely on a different transmission mode (e.g., one might have a cable modem at home that is connected to a Wi-Fi base station for wireless Internet access at home, but from the provider's perspective it is a cable connection). It also does not include satellite connections.

[9] Note that Figure 3 refers only to mobile broadband adoption **at home**. This differs from our finding that 19 percent of households used a handheld device (see Figure 2), which alone does not indicate mobile broadband use inside the home. The higher mobile broadband adoption rates reported in some other studies measure activities that are not strictly limited to the use of a mobile broadband device at home. For example, an OECD study found mobile broadband subscriptions to be 44.4 per 100 people in the United States (OECD, 2010). This number includes both home and "business" subscriptions. Also, a Pew study found that 40 percent of American adults use their cell phones to access the Internet, email, or instant messaging, regardless of whether the cell phones are used inside or outside the home (Smith, 2010). Similarly, a working paper from the Federal Communications Commission (FCC) found that 30 percent of American adults used their cell phones to send emails, access web pages, or download applications (FCC, 2010).

## Figure 4: Internet Connection Technology by Home Computer Type, Households, 2010




**Connection Type, Personal Computer Users**



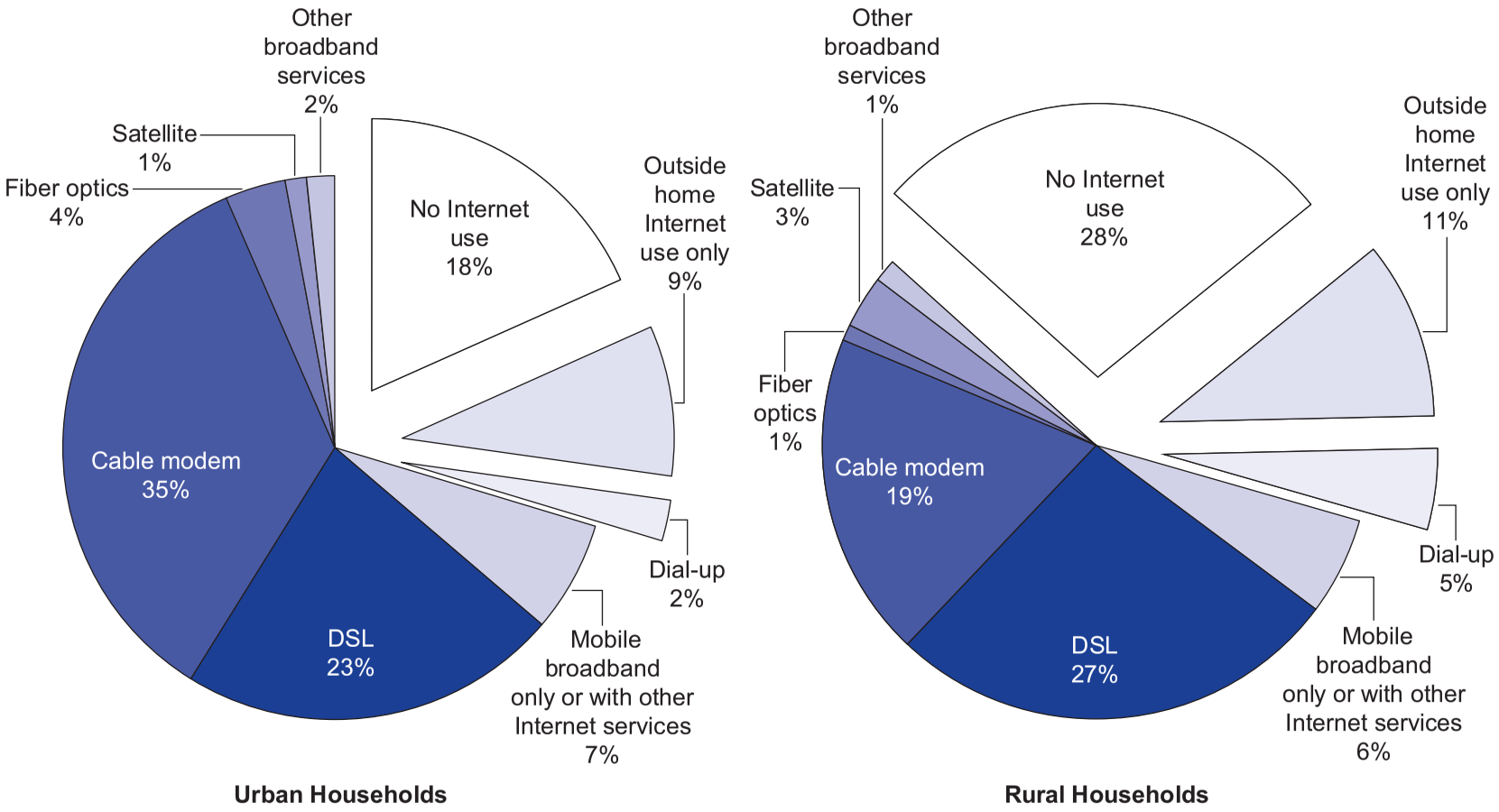

**Connection Type, Handheld Device Users (alone or in combination)**

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Figure 5 compares Internet use for urban and rural households. Note that this report uses metropolitan and nonmetropolitan areas as proxies for urban and rural areas, respectively.[10] Home mobile broadband penetration in 2010 was similar among urban (7 percent) and rural households (6 percent). Both urban and rural households report cable modem and DSL as the leading broadband technologies for residential broadband Internet access. Urban households, however, were more likely to use fiber optics and cable modem connections, and less likely to utilize DSL and dial-up services than their rural counterparts.

[10] The geographic variable for identifying a household's location as urban or rural is not available in the CPS public use files. This report uses the terms "urban" and "rural" to refer to metropolitan and nonmetropolitan areas, respectively. The definition of a metropolitan area (effective since 2000) is based on "core based statistical area" (CBSA), which includes both metropolitan and micropolitan statistical areas. According to the 2000 standards, each CBSA must have at least one urban area with at least 10,000 inhabitants. Each metropolitan statistical area must contain at least one urbanized area with a population of 50,000 or more. Each micropolitan statistical area must contain at least one urban cluster with population of between 10,000 and 50,000. As of June 6, 2003, there are 362 metropolitan statistical areas and 560 micropolitan statistical areas in the United States. For more information, see U.S. Census Bureau (2010a) and Office of Management and Budget (2010).

## Figure 5: Internet Connection Type by Urban and Rural Location, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

# 4. Computer and Home Internet Use by Household Demographic Characteristics and Geography, 2010

This section studies how computer use and home Internet adoption vary across households with different demographic and socio-economic backgrounds. It also examines the impact of geographic location on computer ownership and home Internet access. The results are useful to identify groups that lagged – or led – in adoption of these technologies in 2010. Sections 4.1 and 4.2 look at Internet adoption rates by demographic attributes and geography. Section 4.3 utilizes regression analysis to evaluate specifically broadband Internet adoption among comparable households.

The results indicate that households with lower incomes and less education, as well as Blacks, Hispanics, people with disabilities, and rural residents were less likely to have home Internet access service. However, differences in socio-economic attributes do not entirely explain why certain racial and ethnic groups or rural residents lagged in adoption. Further, households without computers comprised the vast majority of non-adopters of home broadband Internet access services. Predictably, the majority of computer users also utilized broadband at home.

## 4.1 Demographic and Geographic Gaps in Computer and Internet Use

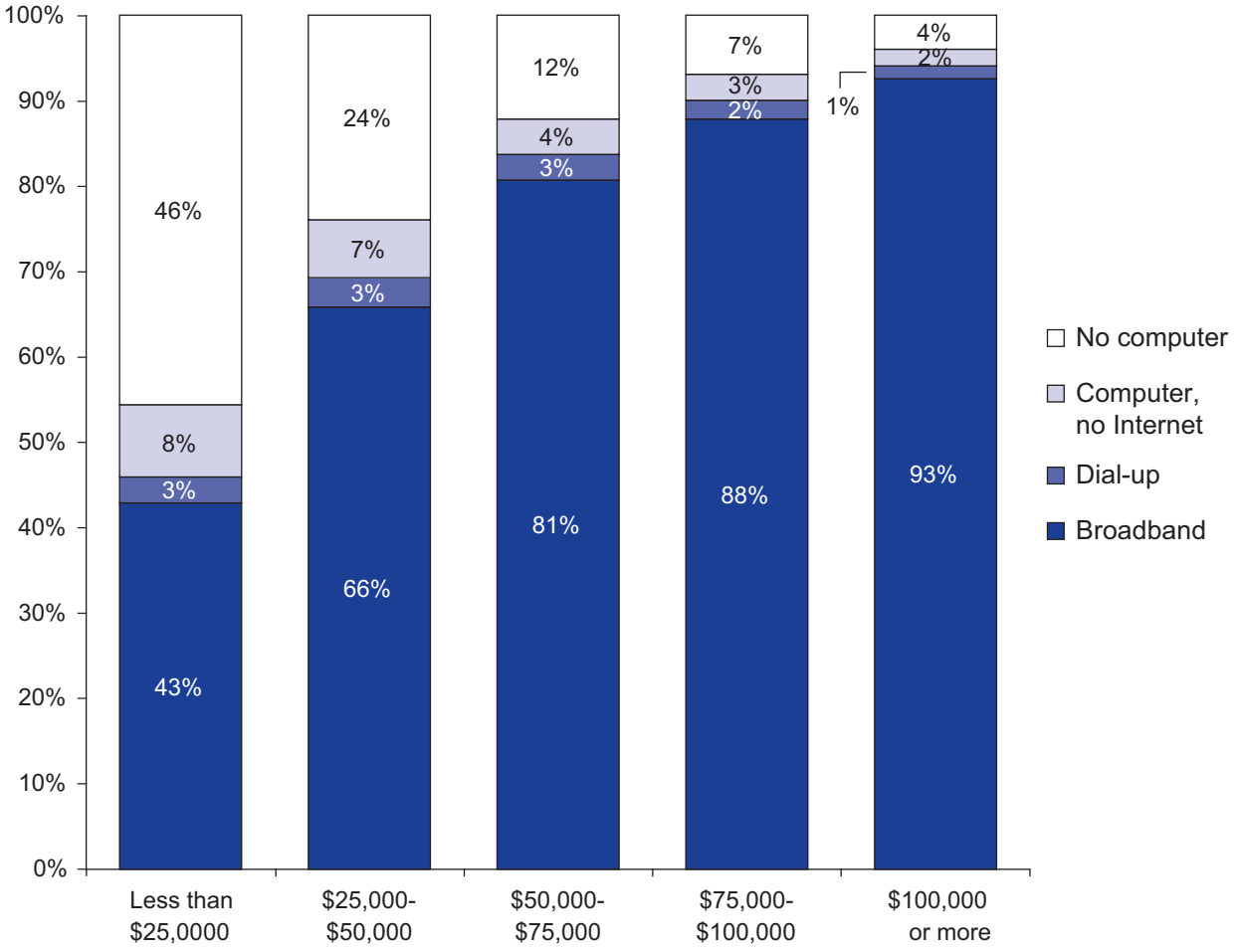
Figure 6 shows that home computer use and Internet adoption are strongly associated with income. Almost half (46 percent) of the households in the lowest-income category did not have a computer, compared to only four percent of the highest-income households.

Focusing on broadband, adoption exhibited a similar relationship with income. Less than half (43 percent) of all households with annual household incomes below $25,000 in 2010 reported having broadband Internet access at home, compared with the vast majority (93 percent) of households with incomes exceeding $100,000. Dial-up service, however, accounted for a very small segment of households with Internet access irrespective of income (ranging from one percent to three percent of all households depending on income).

The total share of households with computers, as shown by the blue segments of each vertical bar in Figure 6, consists of households with broadband, dial-up, and those that reported having a computer, but no Internet access. The vast majority of this computer-using group had broadband Internet access at home. Moreover, this pattern was visible across income groups, suggesting that broadband adoption was more consistent among computer users than among all households across income groups. Almost four-fifths (79 percent) of households with computers and incomes below $25,000 used broadband at home, compared to 96 percent of computer-using households with incomes exceeding $100,000.[11]

[11] These percentages are based on calculations set forth in Appendix B, Table B2.

## Figure 6: Computer and Internet Use by Household Income, 2010

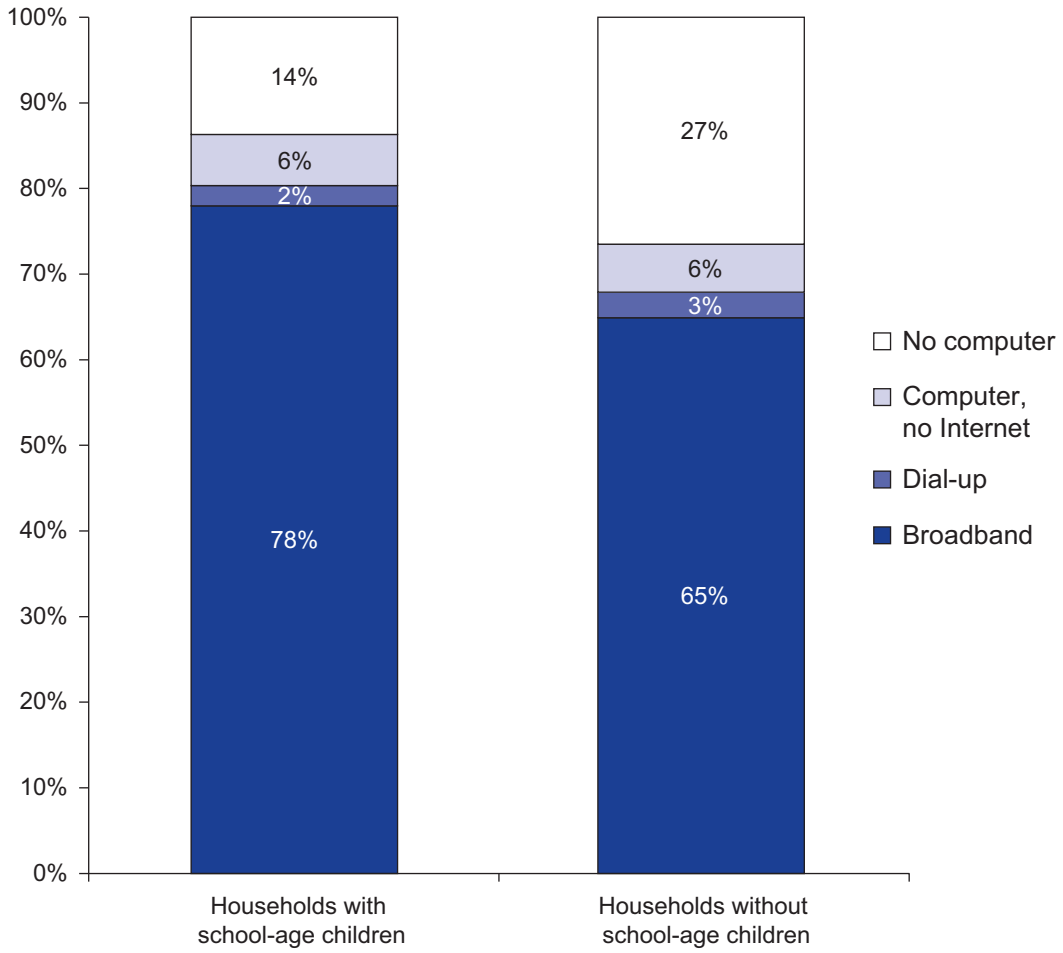



*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Figure 7 illustrates home Internet access and computer ownership by presence of school-age children (between 6 and 17 years of age). Households with one or more children between 6 and 17 years of age were more likely to own a computer (86 percent) and to have home broadband Internet access services (78 percent) than households with no school-age children (computer and broadband adoption rates were 74 percent and 65 percent, respectively).[12] Dial-up Internet access service was also less prevalent among households with school-age children (2 percent) than those without children (3 percent).

[12] Percentages in this paragraph are based on calculations of the actual numbers (see Appendix B, Table B2) and may not precisely equal the sum of the percentages shown in the accompanying figure due to rounding.

## Figure 7: Computer and Internet Use by Presence of School-Age Children, 2010

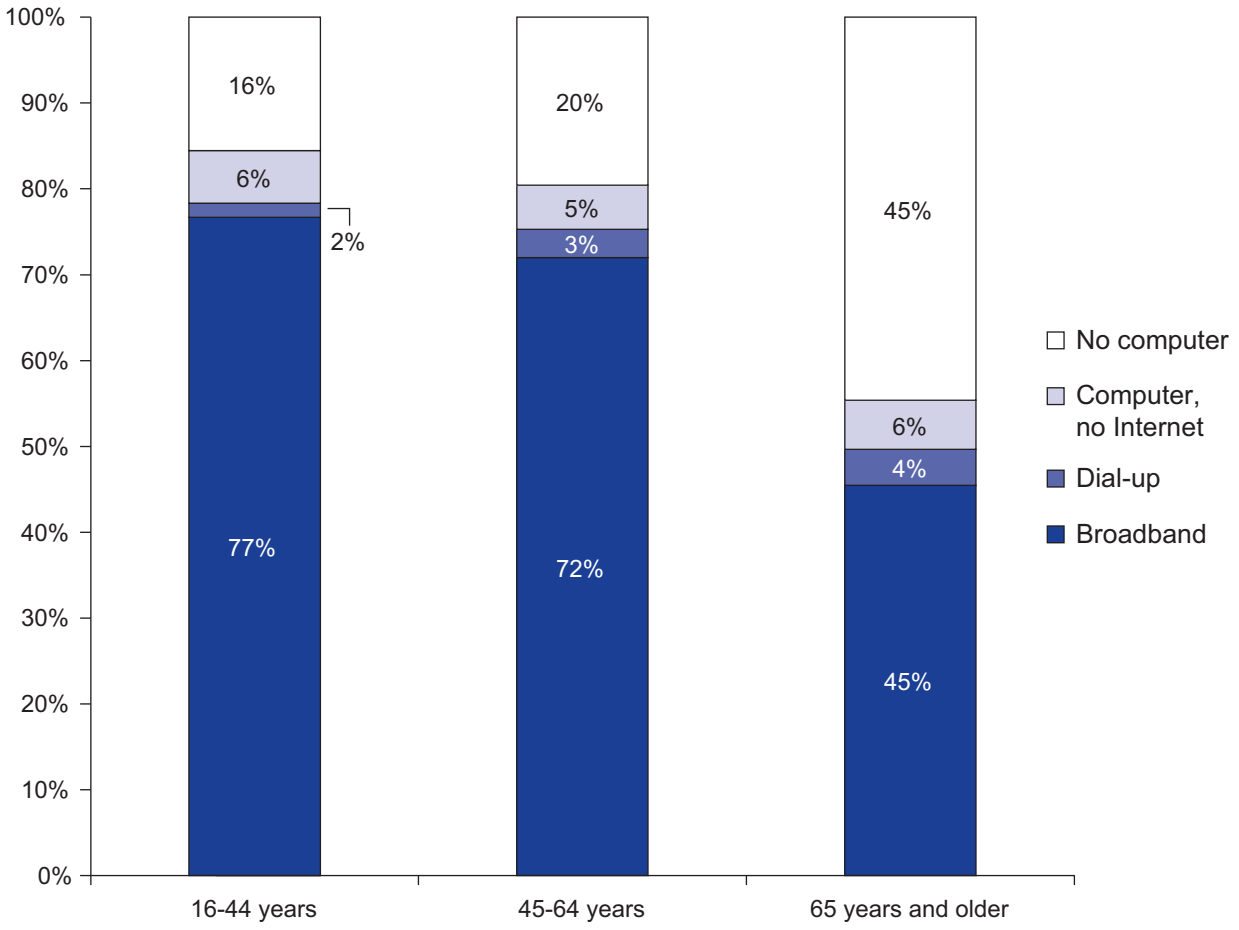



*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

We find a similar relationship between home computer use and broadband adoption. The substantial majority of households with computers had broadband Internet access. Among computer owners, 91 percent of households with one or more school-age children, and 88 percent of households with no school-age child, utilized broadband (see Appendix B, Table B2).

Figure 8 shows home computer use and Internet adoption by householder age. Older householders, particularly those ages 65 and older, were less likely than their younger counterparts to live in a home with a computer (55 percent) or have broadband Internet access service at home (45 percent). Unsurprisingly, the differences in broadband adoption across age categories were much less pronounced among computer owners. Among households with computers, 91 percent of householders ages 16 to 44 years had broadband service, compared to 82 percent of their older counterparts, 65 years and older (see Appendix B, Table B2).

## Figure 8: Computer and Internet Use by Householder Age, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

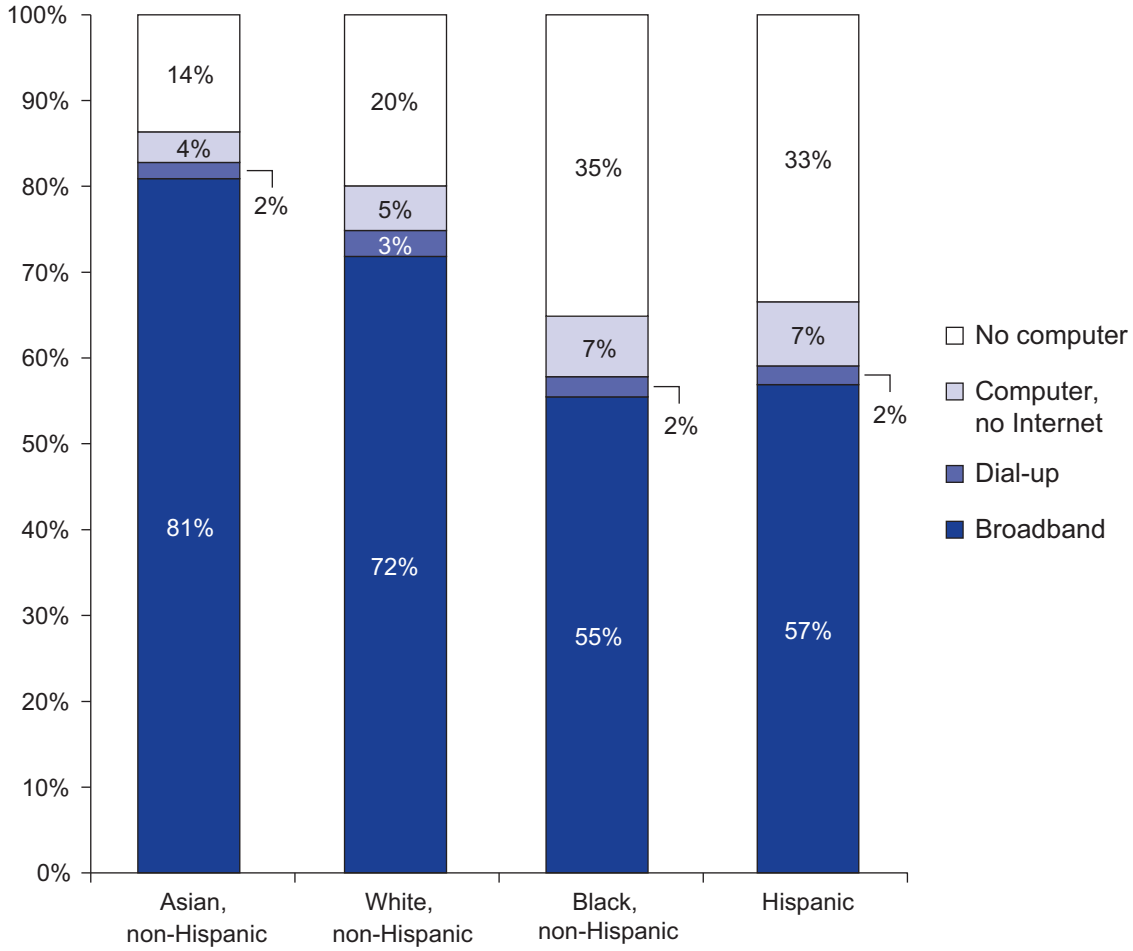
Figure 9 displays the data by race and ethnicity. Asian households exhibited the highest rates of home computer ownership (86 percent) and broadband service (81 percent), followed by White households (80 percent owned a computer and 72 percent had home broadband Internet services).[13] Hispanic households and Black households lagged behind – only about two-thirds of Black households and Hispanic households (65 percent and 67 percent, respectively) had a computer at home, and only slightly more than half of all Black and Hispanic households (55 percent and 57 percent, respectively) had broadband service.[14] Households headed by American

[13] As described in the Data and Methodology section (Appendix A), the data on race and ethnicity (as well as education, age, disability status, and foreign-born status) are for the householder. As a result, "White households" (for example) refer to households headed by a White person. The same definition applies to Black, Hispanic, Asian, and American Indian or Alaska Native households. Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

[14] Percentages in this paragraph are based on calculations of the actual numbers (see Appendix B, Table B2) and may not precisely equal the sum of the percentages shown in the accompanying figure due to rounding.

Indian or Alaska Native householders also had computer use (66 percent) and broadband adoption (52 percent) rates that trailed the national average (see Appendix B, Table B2).[15]

**Figure 9: Computer and Internet Use by Householder Race and Ethnicity, 2010**




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

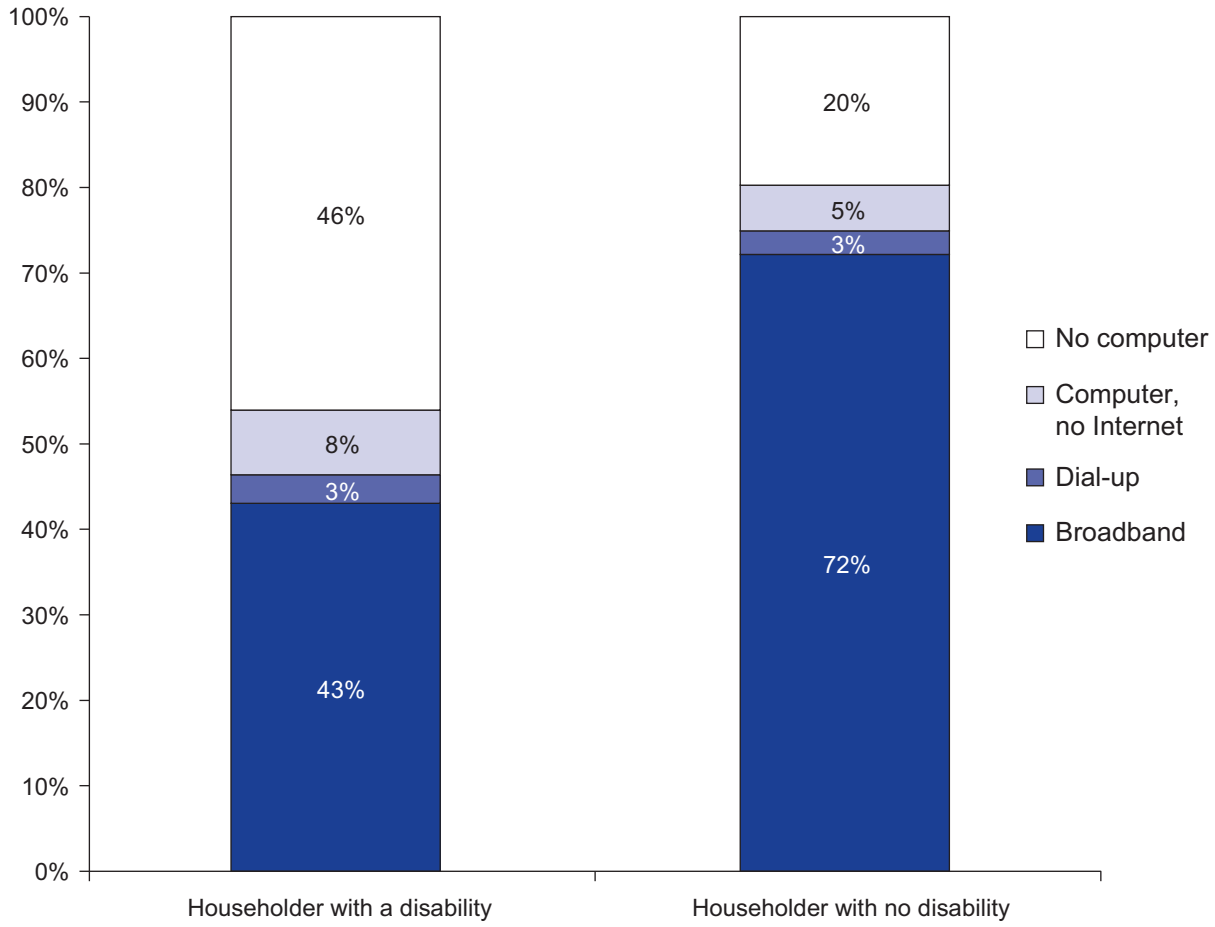
*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

Data for only computer-using households show a less pronounced race- and ethnicity-related gap in broadband adoption. Among households using computers, broadband Internet adoption rates were 94 percent for Asians, 90 percent for Whites, and 86 percent for both Black and Hispanic households (see Appendix B, Table B2). This again suggests that computer use is strongly correlated with broadband Internet access at home.

[15] Figure 9 does not include data on American Indian and Alaska Native householders due to data limitations for this group by Internet connection technology.

Figure 10 shows home computer use and Internet adoption by householder's disability status.[16] Almost half of all households headed by someone with a disability did not have a computer at home (46 percent), compared to a much smaller segment (20 percent) of homes where the householder had no disability. Households headed by people with disabilities were also much less likely to subscribe to broadband service than those with no disability.

**Figure 10: Computer and Internet Use by Householder Disability Status, 2010**



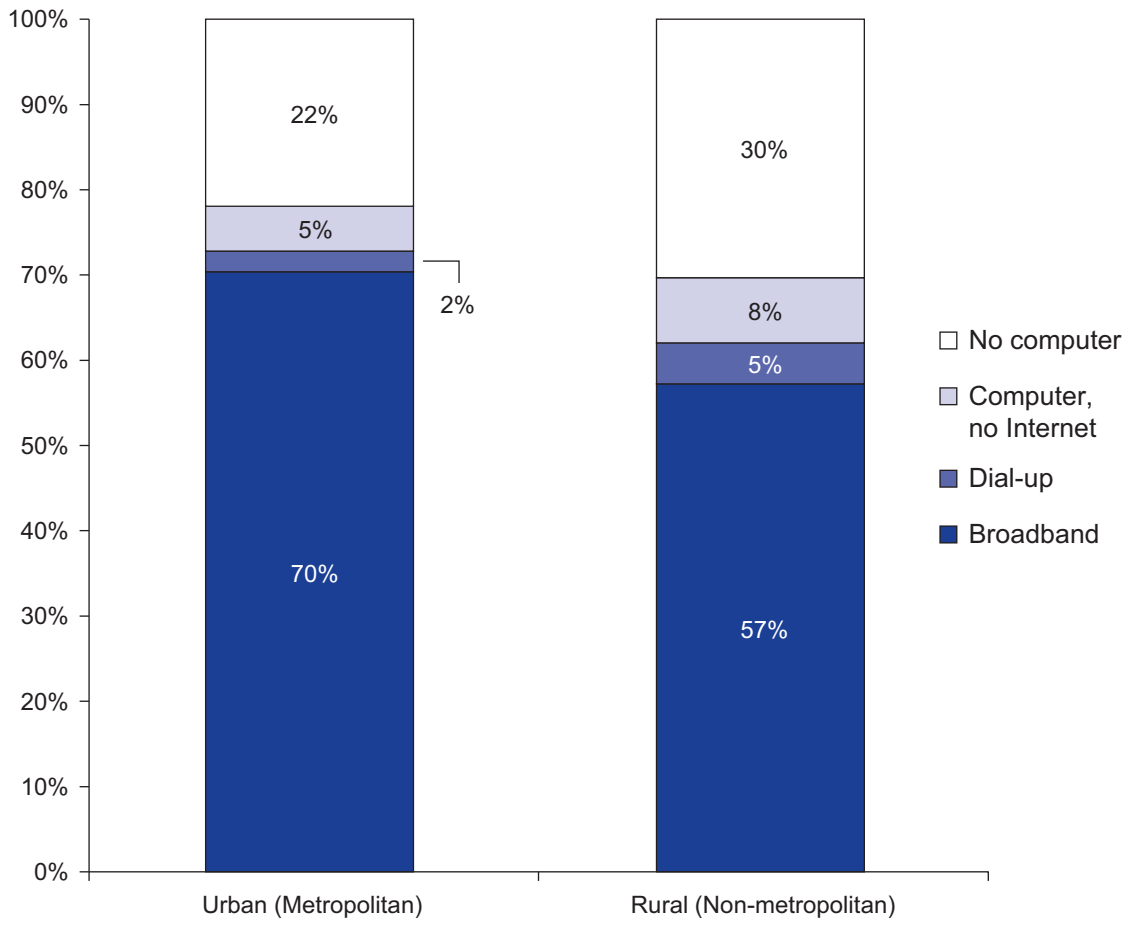

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Among computer-using households, 80 percent of homes headed by someone with a disability used broadband at home, compared to 90 percent of those headed by someone with no disability (see Appendix B, Table B2).

[16] In the CPS, a civilian adult is considered to have a disability if he or she reported having at least one of the following conditions: (1) hearing impairment; (2) blindness or impaired vision despite wearing glasses; (3) physical, mental, or emotional condition that impairs the ability to concentrate, remember, or make decisions; (4) difficulty walking or climbing stairs; (5) difficulty dressing or bathing; or (6) physical, mental, or emotional condition that impairs the ability to do errands alone, such as visiting a doctor's office or shopping (Bureau of Labor Statistics and U.S. Census Bureau, 2010).

The next three figures show household computer ownership and Internet use data by geographic location. Figure 11 demonstrates that one out of five urban households (22 percent) did not own a computer in 2010, compared to roughly one out of three (30 percent) rural households. Urban (metropolitan) dwellers also were more likely than their rural (non-metropolitan) counterparts to have broadband Internet access at home (70 percent compared to 57 percent). Rural residents were more likely to utilize dial-up services to go online – five percent of rural households utilized dial-up services, compared with two percent of urban dwellers.

**Figure 11: Computer and Internet Use by Urban and Rural Location, 2010**



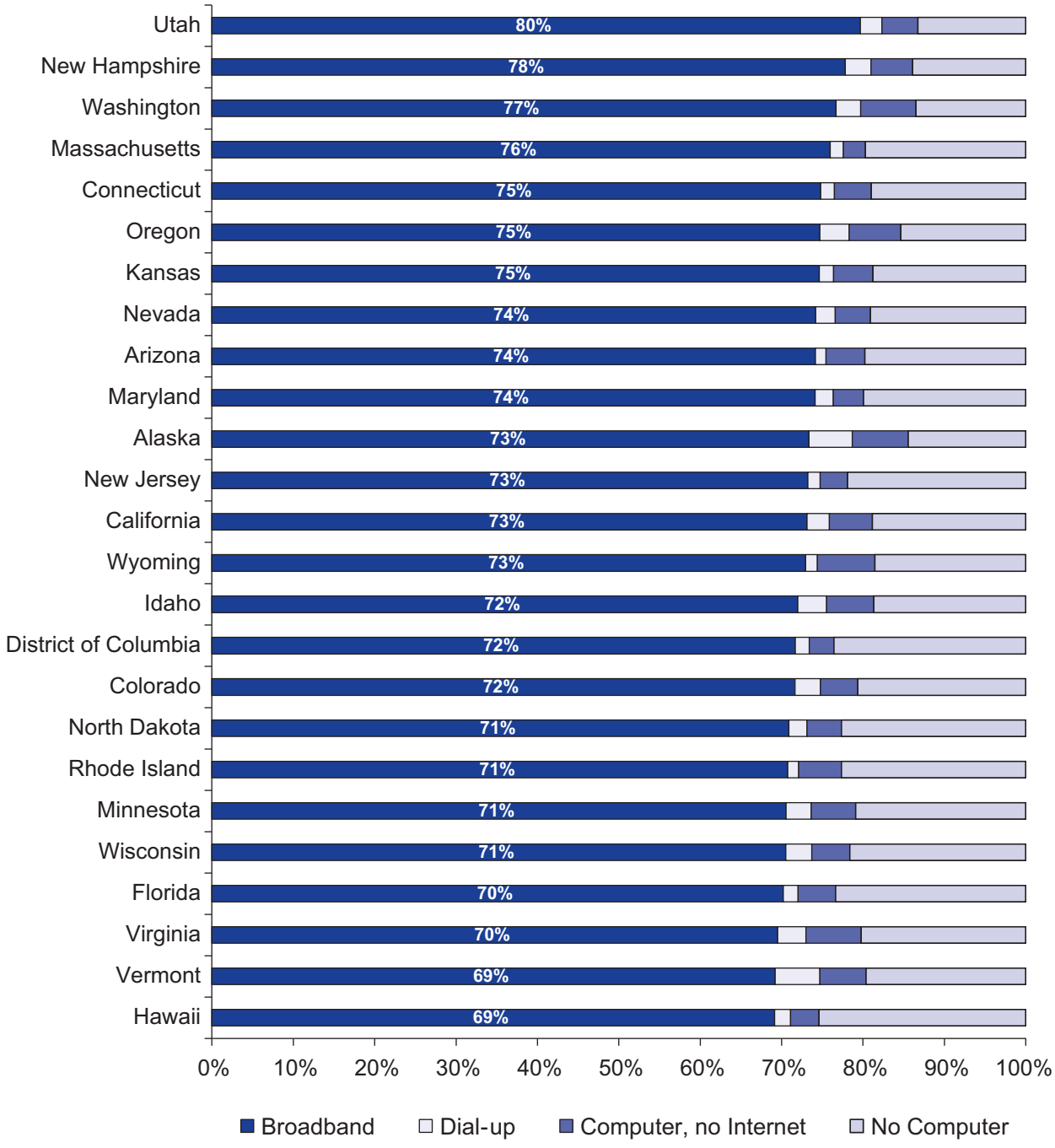

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Among computer owners, 90 percent of urban households and 82 percent of rural households used broadband services (see Appendix B, Table B2).

Figure 12 shows computer and Internet use by state. Proportions of households without a computer at home ranged from about one-third of households (33 percent) in Mississippi to 13 percent of households in Utah. Average broadband adoption in 2010 varied by state from

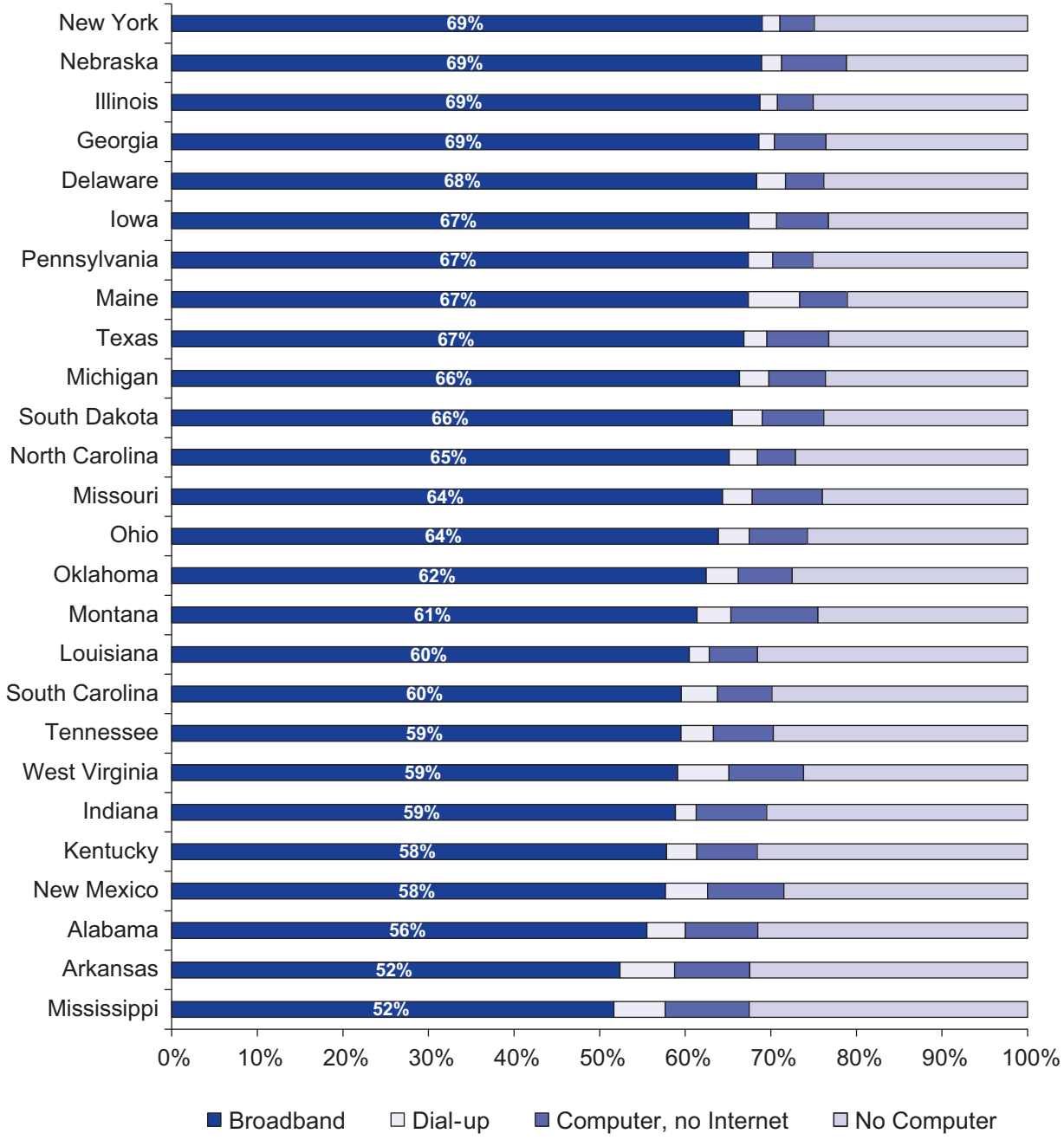
about half (52 percent) of all households in Mississippi to 80 percent in Utah. Broadband Internet access service was the leading mode for residential Internet access, while dial-up service accounted for a small segment of online households regardless of state.[17]

**Figure 12: Computer and Internet Use by State, 2010 (by Household Broadband Adoption Rate)**




[17] Note that states are ordered by estimated average household broadband usage rate for ease of understanding and not as a specific ranking. Rates for broadband, Internet, and computer use should be understood in the context of their associated confidence intervals, set forth in Appendix B, Tables B5 and B6.

## Figure 12: Computer and Internet Use by State, 2010, *cont'd* (by Household Broadband Adoption Rate)



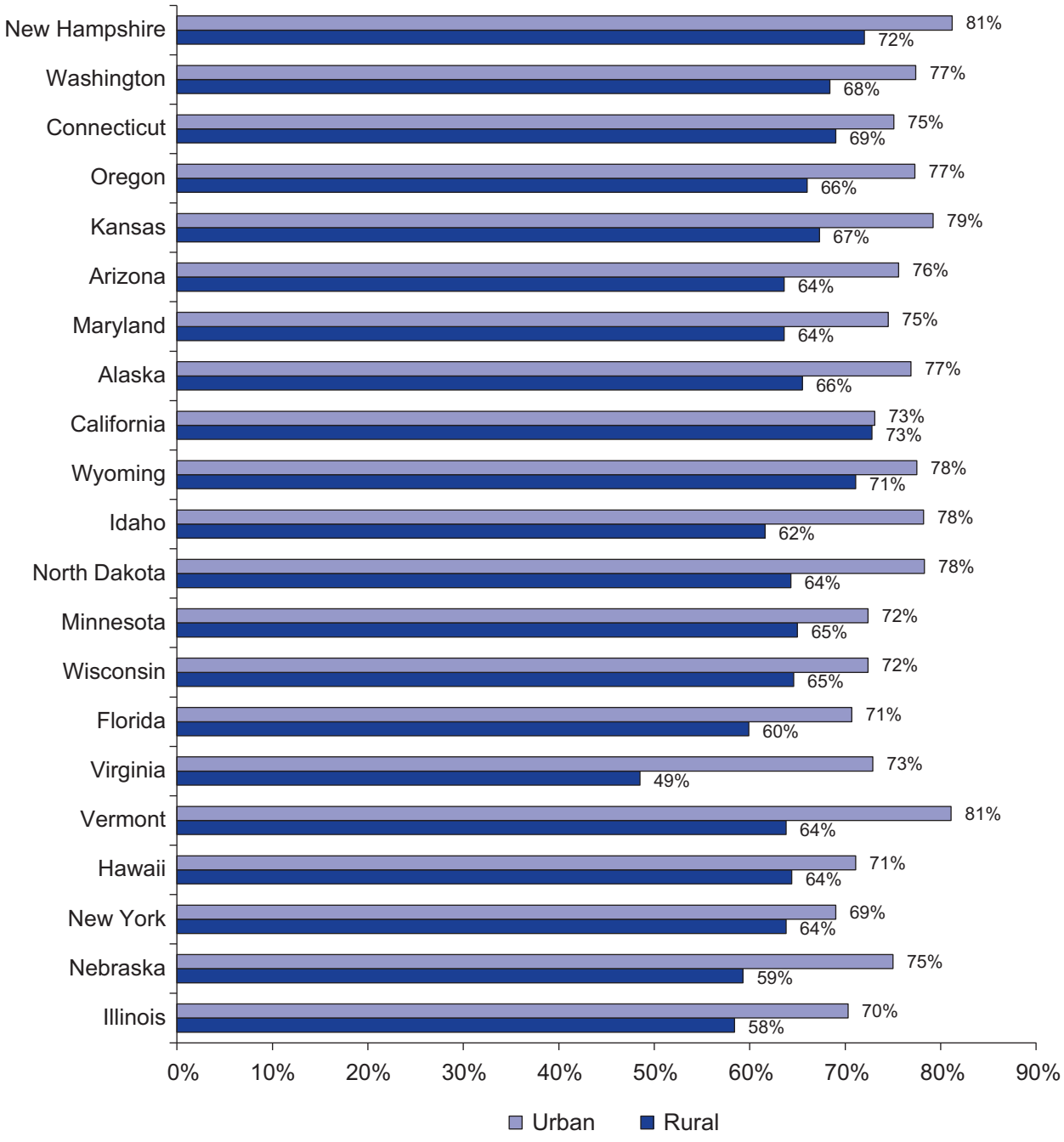

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Because of sampling variability, average adoption rates for two states may not be different from one another in a statistically significant way. Tables B5 and B6 in Appendix B provide the 90 percent confidence interval for each state.

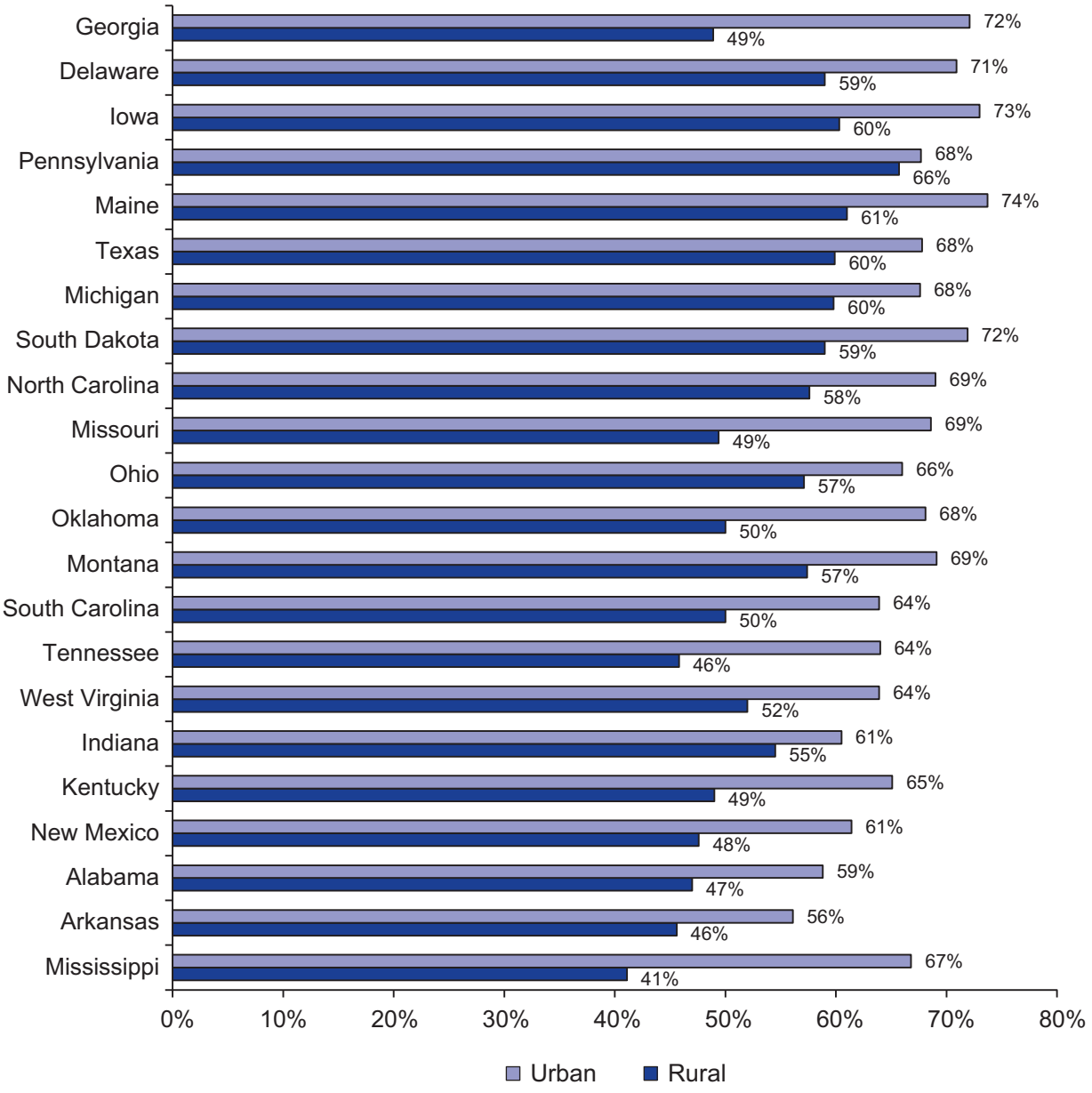
The pattern of generally higher broadband adoption in urban compared to rural areas occurred across states. Figure 13 shows the share of urban and rural households with broadband service by state. The urban-rural gap in broadband adoption varied from zero percent in California (that is, average broadband adoption rates were practically the same in urban and rural areas of California) to 26 percent in Mississippi, where the average broadband adoption rates ranged from 67 percent in urban areas to 41 percent in rural areas.[18]

[18] Id. See Appendix B, Tables B7, B8.

## Figure 13: Broadband Internet Use in Urban and Rural Locations, by State, 2010 (by Overall Household Broadband Adoption Rate)



## Figure 13: Broadband Internet Use in Urban and Rural Locations, by State, 2010, *cont'd* (by Overall Household Broadband Adoption Rate)




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* The following states were not included in this figure due to data limitations for rural areas in the CPS: Colorado, Louisiana, Nevada, Rhode Island, Massachusetts, New Jersey, and Utah. The District of Columbia had no rural areas. In 2010, the average broadband adoption rates for the urban areas in these states were as follows: Colorado - 71 percent, Louisiana - 63 percent, Nevada - 75 percent, Rhode Island - 71 percent, Massachusetts - 76 percent, New Jersey - 73 percent, and Utah - 79 percent. Because of sampling variability, average adoption rates for two states may not be different from one another in a statistically significant way. Tables B7 and B8 in Appendix B provide the 90 percent confidence interval for each state.

## 4.2 A Detailed Look at Computer and Broadband Internet Use by Demographic Characteristics and Geography

This section provides a more detailed analysis of the survey results with respect to demographic characteristics and geography. The previous section identified the households exhibiting low and high levels of computer use and Internet access service adoption, and separately, their urban or rural locations. This section combines the "who" and "where" in our identification of low and high adopters.

Table 2 shows computer use and broadband Internet adoption by race, ethnicity, income, and education within urban and rural areas. Households headed by someone without a high school diploma had particularly low home computer use and broadband service adoption, while rural households displayed slightly lower rates than their urban counterparts. Among households headed by someone without a high school diploma, 39 percent of rural households and 46 percent of urban households used a computer; and 26 percent of rural households and 35 percent of urban households had broadband service. Compared to the national average of 68 percent, broadband Internet adoption was also particularly low among rural households with incomes less than $25,000 (35 percent), and rural households headed by someone of American Indian or Alaska Native background (31 percent).

## Table 2: Household Computer Use and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, Income, and Education, 2010

| Household Characteristic | Computer Use | | Broadband Adoption | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| **All Households** | 78% | 70% | 70% | 57% |
| **Race and Ethnicity*** | | | | |
| White, non-Hispanic | 82% | 72% | 75% | 60% |
| Black, non-Hispanic | 66% | 53% | 57% | 41% |
| Hispanic | 67% | 57% | 58% | 46% |
| Asian, non-Hispanic | 86% | 85% | 81% | 83% |
| American Indian and Alaska Native, non-Hispanic | 74% | 52% | 66% | 31% |
| **Household Income** | | | | |
| Less than $25,0000 | 56% | 49% | 45% | 35% |
| $25,000-$50,000 | 76% | 74% | 67% | 60% |
| $50,000-$75,000 | 88% | 87% | 82% | 76% |
| $75,000-$100,000 | 93% | 91% | 89% | 82% |
| $100,000 or more | 96% | 94% | 93% | 87% |
| **Education*** | | | | |
| No high school diploma | 46% | 39% | 35% | 26% |
| High school diploma | 68% | 64% | 59% | 50% |
| Some college | 84% | 82% | 75% | 69% |
| College degree or more | 93% | 89% | 88% | 80% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

*These are attributes of the householder.

Table 3 contains data on computer use and broadband Internet adoption by race, ethnicity, family income, and urban or rural location. Rural Black and Hispanic households with family incomes below $25,000 had the lowest rates of home computer use (44 percent for Blacks, 45 percent for Hispanics) and broadband Internet adoption (32 percent for Blacks, 30 percent for Hispanics).

### Table 3: Household Computer Use and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, and Income, 2010

| Race, Ethnicity, and Income | Computer Use | | Broadband Adoption | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| **All Households** | 78% | 70% | 70% | 57% |
| **White, non-Hispanic** | | | | |
| Less than $25,0000 | 60% | 50% | 49% | 36% |
| $25,000-$50,000 | 78% | 75% | 69% | 62% |
| $50,000-$75,000 | 89% | 87% | 83% | 76% |
| $75,000 or more | 96% | 93% | 92% | 85% |
| **Black, non-Hispanic** | | | | |
| Less than $25,0000 | 49% | 44% | 39% | 32% |
| $25,000-$50,000 | 70% | 64% | 60% | 47% |
| $50,000-$75,000 | 83% | 77% | 76% | 70% |
| $75,000 or more | 90% | 85% | 84% | 81% |
| **Hispanic** | | | | |
| Less than $25,0000 | 49% | 45% | 38% | 30% |
| $25,000-$50,000 | 71% | 60% | 60% | 53% |
| $50,000-$75,000 | 84% | 85% | 77% | 79% |
| $75,000 or more | 93% | 86% | 88% | 76% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race. Non-Hispanic Asians, and non-Hispanic American Indians and Alaska Natives are not included in this table due to small sample issues.

Table 4 displays a similar pattern of computer use and broadband Internet adoption by race and educational attainment, and by urban or rural location. Households headed by a Black householder without a high school diploma and living in rural areas exhibited the lowest levels of home computer use (27 percent) and broadband Internet adoption (16 percent).

## Table 4: Household Computer Use and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, and Education 2010

| Householder Characteristic | Computer Use | | Broadband Adoption | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| **All Households** | 78% | 70% | 70% | 57% |
| **White, non-Hispanic** | | | | |
| No high school diploma | 47% | 42% | 37% | 27% |
| High school diploma | 70% | 65% | 62% | 52% |
| Some college | 86% | 83% | 78% | 70% |
| College degree or more | 93% | 90% | 89% | 80% |
| **Black, non-Hispanic** | | | | |
| No high school diploma | 36% | 27% | 27% | 16% |
| High school diploma | 57% | 50% | 47% | 38% |
| Some college | 74% | 73% | 64% | 56% |
| College degree or more | 87% | 82% | 81% | 75% |
| **Hispanic** | | | | |
| No high school diploma | 47% | 38% | 35% | 28% |
| High school diploma | 65% | 59% | 56% | 45% |
| Some college | 83% | 81% | 74% | 73% |
| College degree or more | 90% | 83% | 84% | 72% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race. Non-Hispanic Asians, and non-Hispanic American Indians and Alaska Natives are not included in this table due to small sample issues.

## 4.3 Marginal Effects of Household Characteristics on the Likelihood that a Household Uses Broadband Internet Access Service

The finding that socio-economic characteristics, as well as race, ethnicity, and geographic location are highly correlated with household technology usage patterns might be misleading, as these household attributes are themselves correlated with each other. For instance, income and education are likely to be higher in urban areas if employment opportunities requiring high levels of skill and specialization are disproportionately located in urban areas. As a result, it is not clear from the tabulations how much of the urban-rural gap in home broadband adoption results from socio-economic differences between urban and rural residents. The same issue applies for the tabulations by race and ethnicity.

By utilizing regression analysis, we can estimate the marginal or "isolated" association between technology usage and a particular household characteristic.[19] For example, one way of estimating the marginal effect of living in an urban area on broadband adoption is by comparing broadband adoption among urban and rural households that are otherwise similar with respect to key determinants of broadband adoption, such as income, education, race, ethnicity, age, state of residence, and other factors. In other words, the marginal effect of living in an urban rather than a rural location is the gap in average broadband adoption between urban and rural households, after accounting for differences in socio-economic and demographic characteristics.

The rest of this section utilizes regression analysis to estimate the relationship between selected demographic and geographic characteristics and home broadband Internet adoption. The factors for which we control in this analysis include household income, education, age, race, ethnicity, foreign-born status, household composition (total number of persons in a household and whether a related school-age child lives there), disability status, and geographic location (urban-rural location and state). For characteristics like education, race, ethnicity, age, disability status, and foreign-born status, we use information for the householder.

Note that the CPS data do not provide information on availability and price of Internet access services in a household's immediate location, both of which are important determinants of adoption. Even though we are unable to control directly for price and availability, the regression analysis accounts for a household's geographic location (urban or rural location, the population size of a household's urban area, and state) and therefore would capture some of the variation in price and availability along these geographic dimensions.[20]

We present the results from this regression analysis in Table B4 of Appendix B. Figures 14-18 graphically present the gaps in broadband adoption. Each figure uses a pair of bars to display the adoption gap between two groups of households. Within each pair, the left bar (which is also the longer bar) shows the simple gap in average adoption before controlling for other household attributes. The right bar (which is also the shorter bar) shows the remaining adoption gap which is unexplained by our model, that is, it is the remaining gap after accounting for differences in household demographic, socio-economic, and geographic characteristics. Within each figure, the left panel (or pair of bars) presents the adoption gap information based on data for all households, and the right panel shows the information based on the sample of computer owners only.

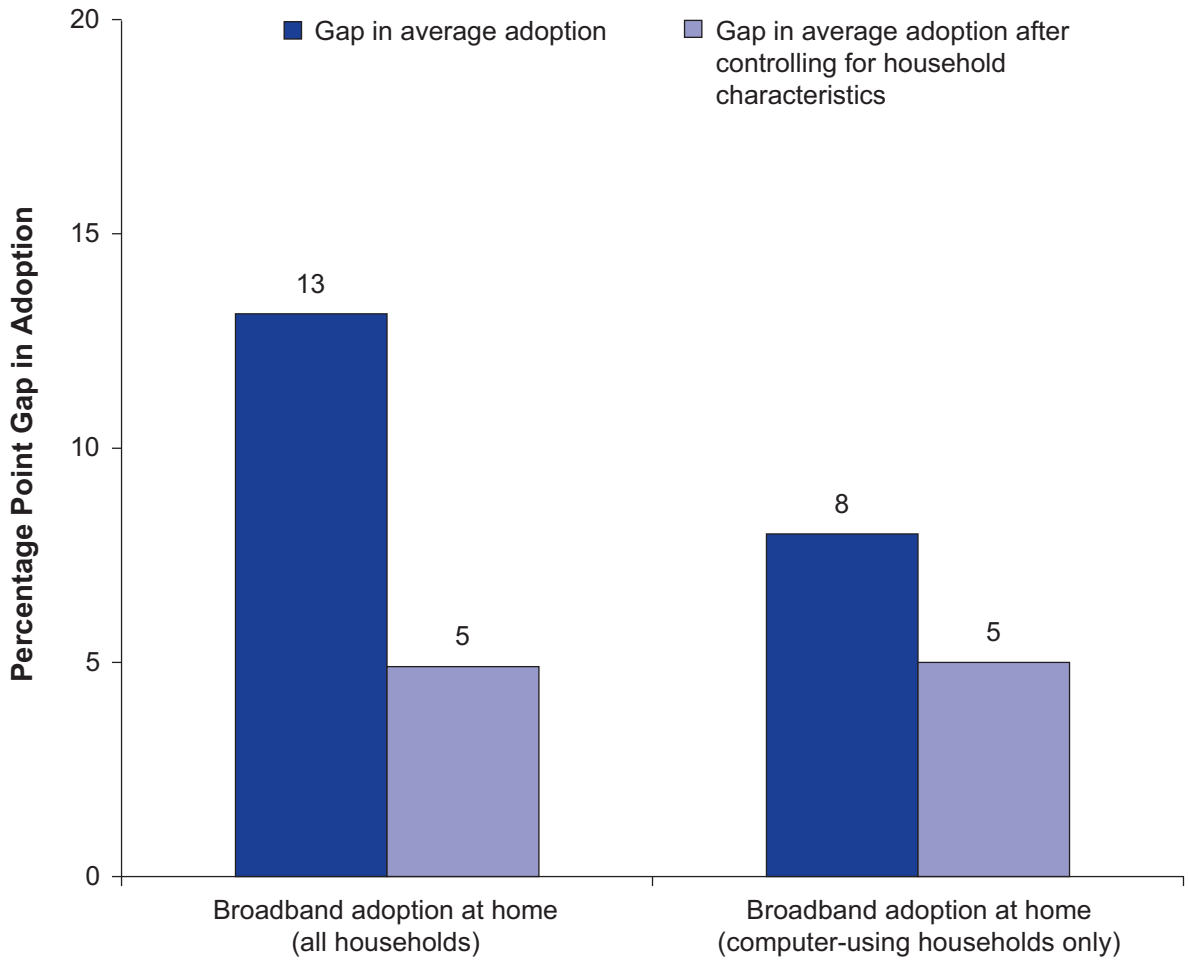
[19] Household characteristics include income, education, age, race, disability status, citizenship status, presence of children, and population density. See Table B4 in Appendix B for more detail.

[20] The results presented in Appendix B, Table B4 show the urban-rural gap by urban area size.

Figure 14 shows the adoption gaps between urban and rural households. According to Figure 11 from the previous section, 70 percent and 57 percent of urban and rural households, respectively, reported having broadband service at home, identifying a 13 percentage point gap in broadband adoption between urban and rural households (represented by the left bar in the left panel of Figure 14). After we account for socio-economic and demographic differences between urban and rural households, the remaining adoption gap is five percentage points (represented by the right bar in the left panel of Figure 14).

The right panel of Figure 14 shows the urban-rural adoption gap among computer users only. Ninety percent of urban households with computers and 82 percent of rural households with computers reported having broadband at home, indicating an eight percentage point gap. After accounting for socio-economic and demographic attributes, the gap declines to five percentage points. This suggests that, even among computer owners of similar income, education, age, and other demographic characteristics, urban dwellers were on average five percentage points more likely than their rural counterparts to adopt home broadband service. The variation in price and availability of broadband services could account for part of this unexplained urban-rural gap.

## Figure 14: Broadband Internet Adoption Gap between Urban and Rural Households, 2010



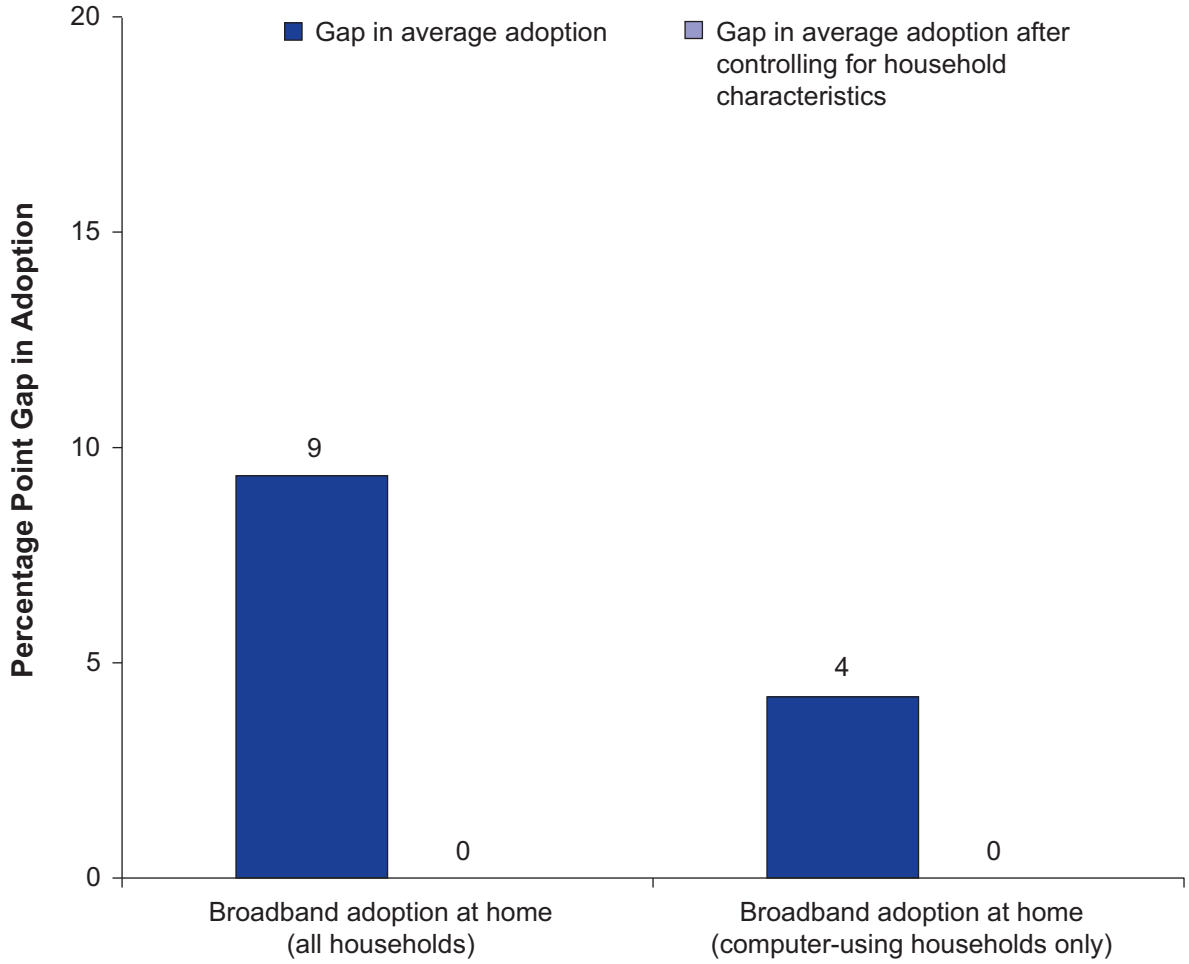

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Turning to the data by race and ethnicity, Figure 9 showed that Asian households displayed the highest rates of broadband adoption (81 percent), followed by White (72 percent), Hispanic (57 percent), and Black (55 percent) households. This suggests that Asian households on average were nine percentage points more likely to have broadband Internet access services than White households. In addition, White households were 17 percentage points and 15 percentage points more likely than Black and Hispanic households, respectively, to have home broadband Internet access. Once we control for socio-economic and geographic differences, the broadband adoption gap between Asians and Whites disappears (Figure 15), whereas the gap between White and Black households, and between White and Hispanic households both decline to 11 percentage points (left panels, Figures 16 and 17). An important topic for future research

would be the persistence of broadband adoption gaps between the latter groups even after accounting for demographic, socioeconomic, and geographic factors.

Computer users, on the contrary, displayed much less disparate broadband adoption rates across race and ethnicity. Ninety-four percent of Asian households, 90 percent of White households, 86 percent of Black households, and 86 percent of Hispanic households with computers used broadband at home, implying adoption gaps of four percentage points between Asian and White, White and Black, and White and Hispanic households. Controlling for demographic characteristics and geography erases the Asian and White difference, and reduces both the White-Black and White-Hispanic gaps to three percentage points.

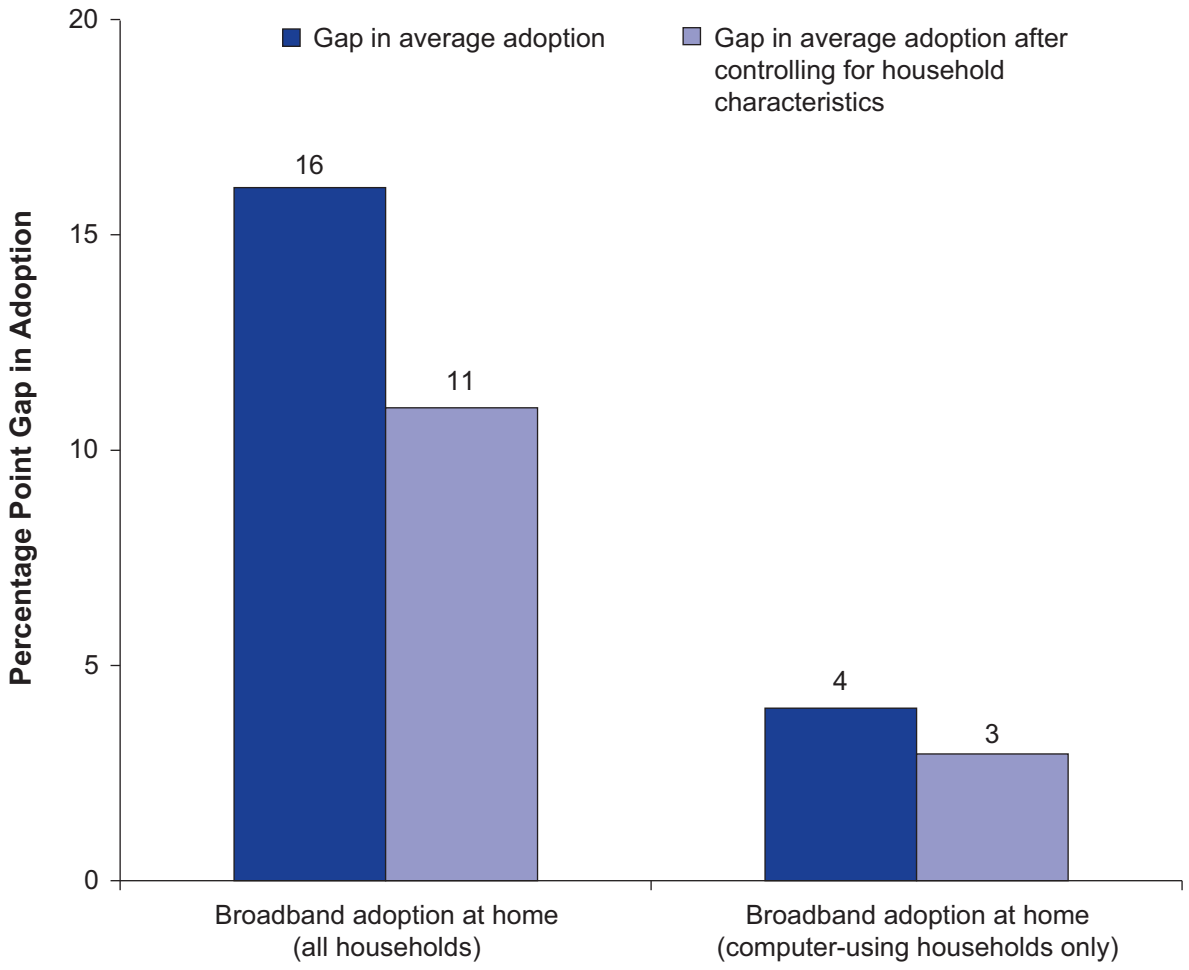
**Figure 15: Broadband Internet Adoption Gap between non-Hispanic Asian and White Households, 2010**




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

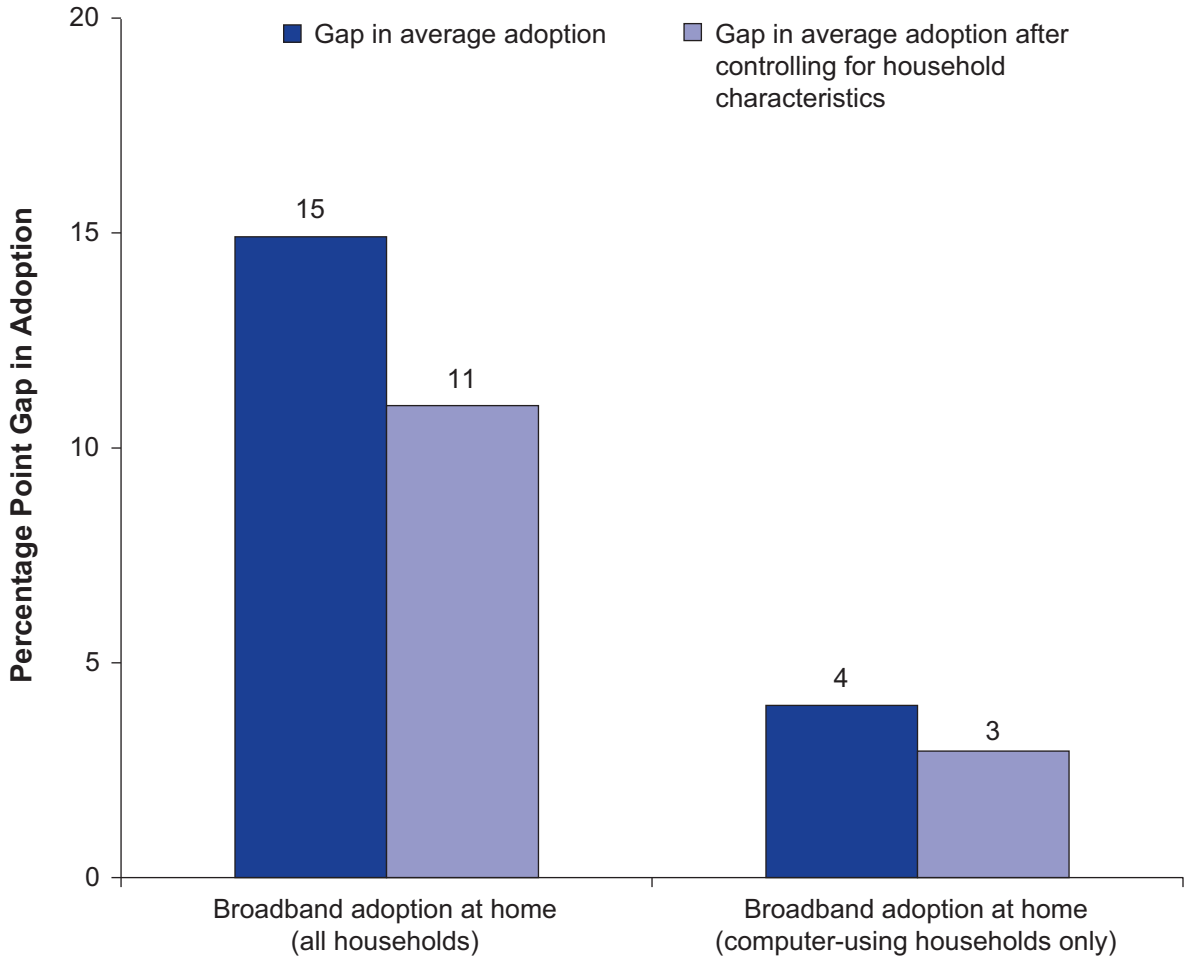
## Figure 16: Broadband Internet Adoption Gap between non-Hispanic White and Black Households, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

## Figure 17: Broadband Internet Adoption Gap between non-Hispanic White and Hispanic Households, 2010

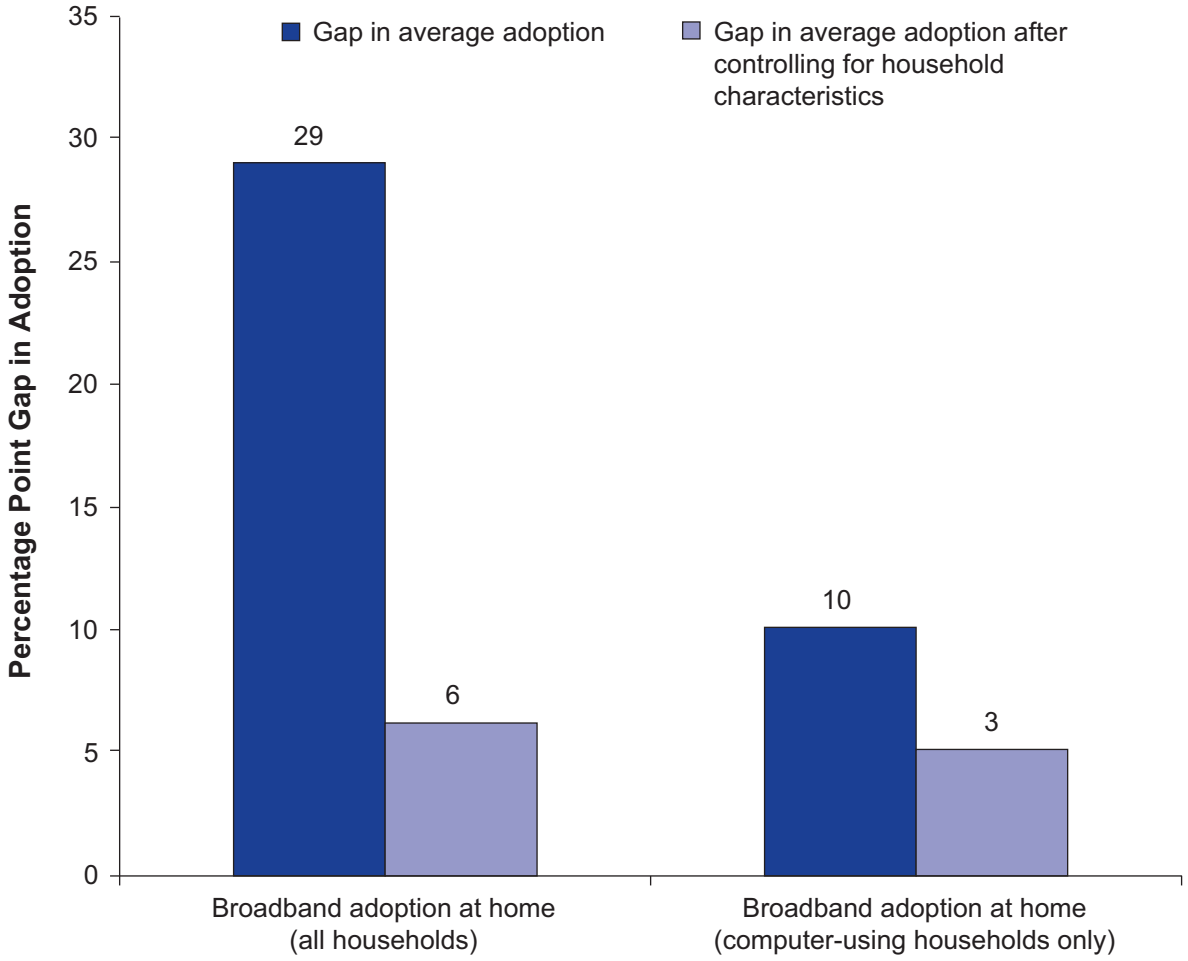



*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

Turning to the data by disability status, Figure 10 showed 43 percent of households headed by someone with a disability used broadband, compared to 72 percent of households headed by someone with no disability, implying a 29 percentage point gap in broadband Internet access. Once we control for income, education, age, and other key attributes, the gap in broadband Internet access declines to six percentage points or about one-fifth of the original gap (see left panel, Figure 18). Looking at computer owners exclusively shows smaller differences (10 percentage point difference before and three percentage point difference after controlling for demographic factors and geography, as shown in Figure 18, right panel). This suggests that differences in demographic and socio-economic attributes and geography explain a substantial portion of the disability-related broadband gap, even among computer owners.

## Figure 18: Broadband Internet Adoption Gap between Householders with no Disability and with Disability, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

The regression results presented in this section suggest that income and education are strongly associated with broadband Internet access at home, but are not the sole determinants. Other factors, such as race, ethnicity, and urban-rural location are also independently associated with technology usage patterns. The adoption gaps are less pronounced among computer users, that is, computer use and broadband adoption strongly correlate, perhaps because both exhibit strong associations with demographic and socio-economic attributes.

The CPS data do not provide information on price and availability of broadband Internet access in a household's immediate location, which is why we are unable to directly account for these factors. Consequently, we are unable to distinguish how much of the variation across socio-economic and geographic dimensions results from factors related to demand as opposed to supply considerations. Lower demand for broadband Internet access or lack of affordability may partially explain why some households decline to adopt broadband Internet access service, but other reasons may include lack of supply or availability of residential broadband services.

## 5. Non-Adoption of Internet Access Services at Home, 2010

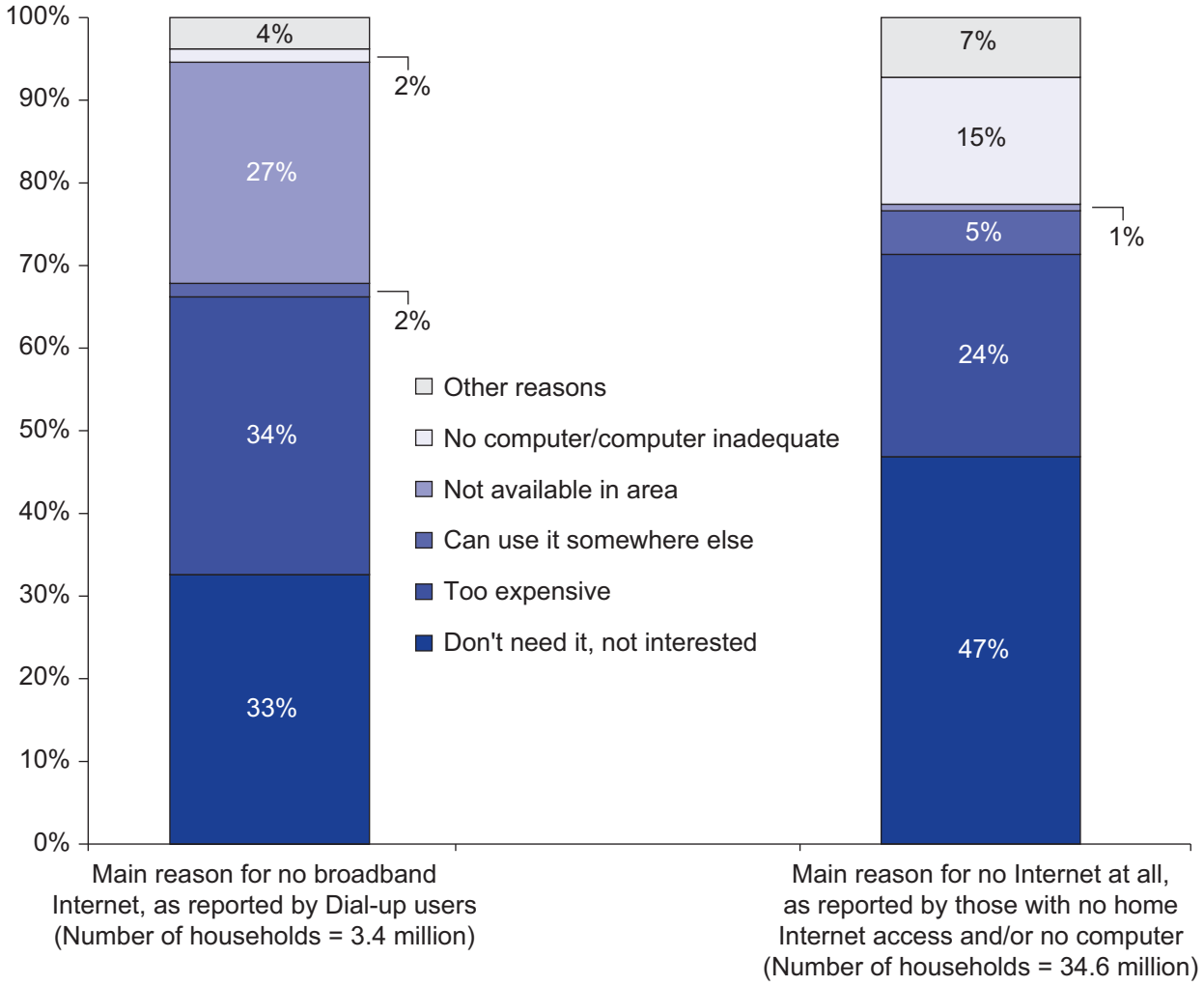
The CPS Supplement asked households using dial-up Internet access services (hereafter referred to as "dial-up households") to state their main reason for not having broadband Internet service at home (tabulations shown on the left panel of Figure 19). In addition, the CPS asked households without Internet service or a home computer to state their main reason for not having home Internet access (tabulations shown on the right panel of Figure 19). The reasons for non-adoption are likely to have significant policy implications. For example, if lack of availability of broadband services is the main impediment to broadband adoption at home, then policies to expand usage may require attracting broadband providers to offer service. However, if there is a lack of information about broadband service availability, or a perceived lack of need or interest in broadband, then policies may incorporate public awareness campaigns.

Note that households' responses on the main reason for not using broadband Internet at home reflect their subjective opinions since the survey respondent may not have adequate information on pricing, availability, or the value of Internet access services. For instance, one may believe that broadband Internet access is not available in the area, but be misinformed. As a result, we caution that any comparison across households, while informative, requires careful analysis.

The left panel of Figure 19 shows that expense, lack of need, and lack of availability were the main impediments to broadband adoption for dial-up households. One-third of dial-up users reported "lack of need" (33 percent), about one-third reported "too expensive" (34 percent), and about one-fourth (27 percent) reported "lack of availability." Note that dial-up households accounted for three percent of American households in 2010.

In contrast, almost half (47 percent) of households without a computer or home Internet access stated lack of need as their main reason for not having home Internet services (right panel of Figure 19). About one-fourth (24 percent) reported affordability, and 15 percent reported inadequate computer as the primary reason for no home Internet access. Note that those households reporting no Internet access or home computer were a much larger group (29 percent) than the collective dial-up households (representing about three percent of American households).

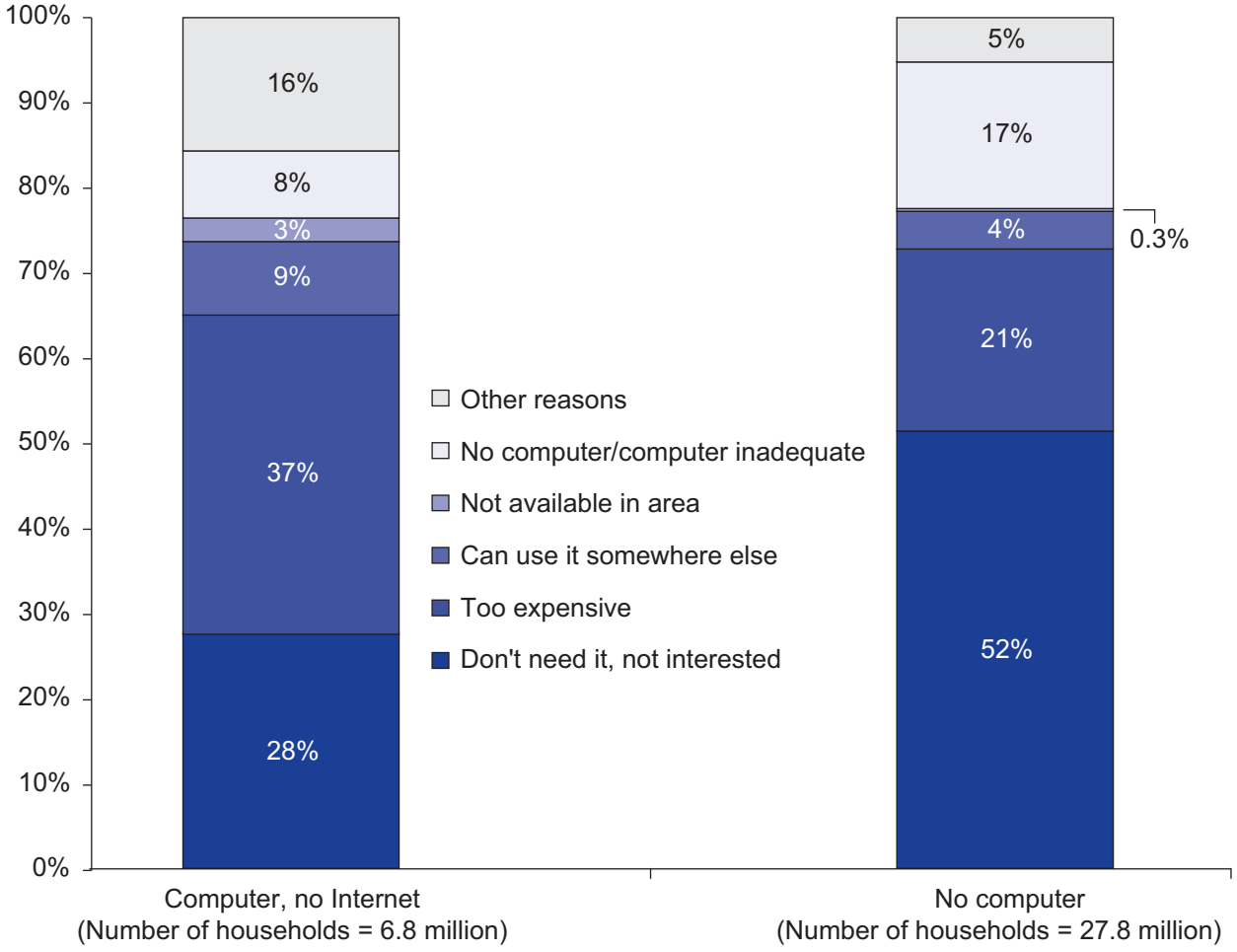
## Figure 19: Main Reason for Not Having Home Internet Access Service, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Figure 20 tabulates the main reason for no Internet access at home separately for those households with, and those without, a computer at home. Among households that owned a computer but did not have home Internet access, expense was the most commonly provided reason (37 percent), followed by lack of need (28 percent). On the contrary, among households that did not own a computer, lack of need or demand dominated (52 percent).

## Figure 20: Main Reason for Not Having Home Internet Access Service, by Household Computer Ownership, 2010

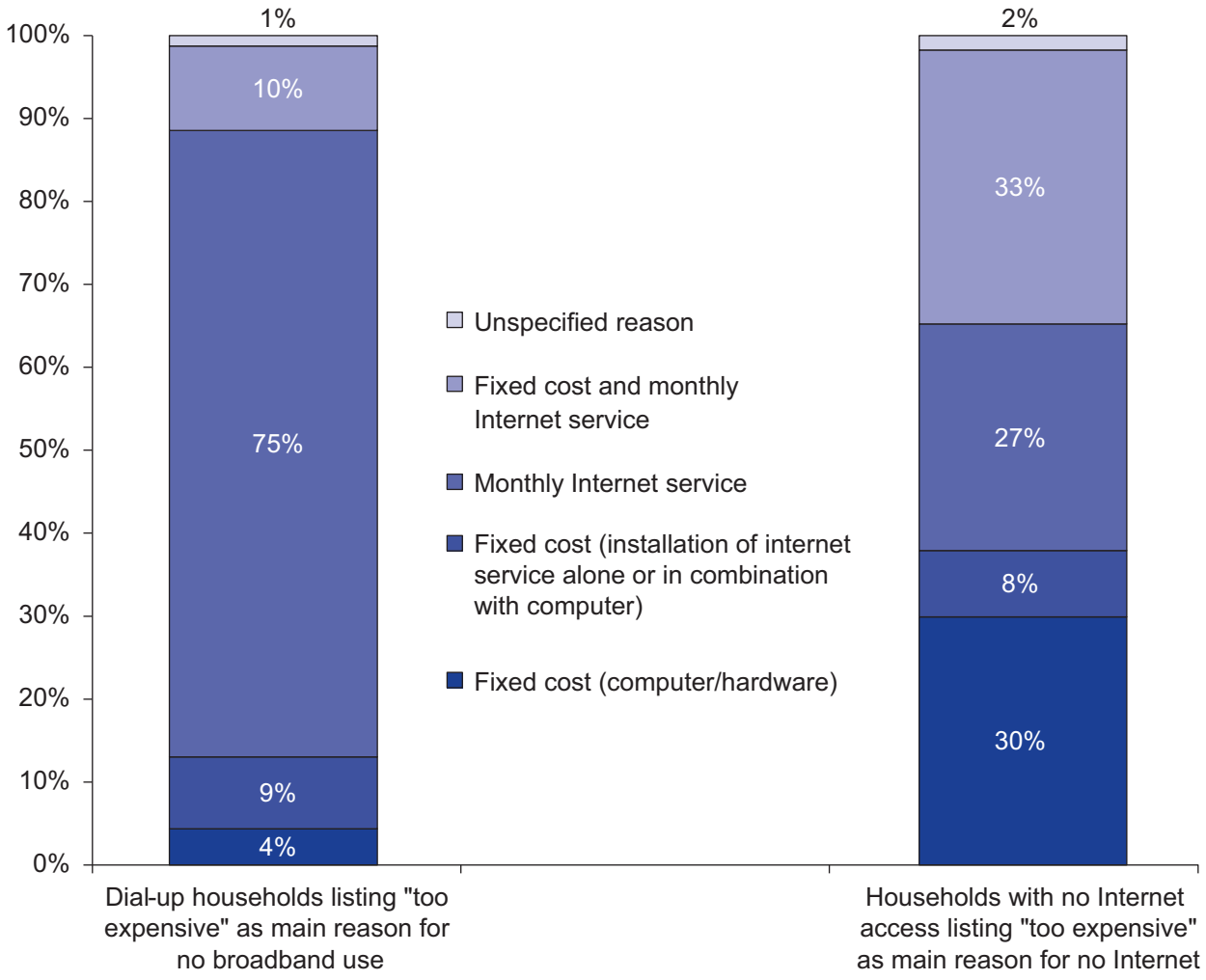



Source: U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

The CPS asked households that responded "too expensive" as their main reason for not having home Internet service to indicate what costs most concerned them – the fixed costs of purchasing a computer or installing home Internet access services, or the recurring monthly subscription costs. Figure 21 tabulates these responses. The left panel of Figure 21 shows that, among dial-up households stating expense or affordability as their main reason for not having broadband, the cost of monthly Internet access service was a more serious concern than fixed costs. The vast majority (75 percent) of these households cited the monthly service cost and another 10 percent reported both the monthly service cost and fixed costs as their main impediments to adopting broadband Internet access at home. These responses are not surprising. Since dial-up users likely have already incurred the fixed costs of computers and equipment, the monthly subscription costs outweighed the fixed costs of computers and installation as the primary obstacle to home broadband service.

Among households that reported affordability as their main reason for not having any Internet access, both the fixed costs of purchasing a computer and equipment, as well as the monthly subscription costs were important (shown on the right panel of Figure 21). One-third of these households (33 percent) reported both monthly subscription and fixed costs, slightly more than one-fourth (27 percent) reported monthly cost alone, and almost one-third (30 percent) reported the fixed cost of a computer and equipment as their primary obstacle to having Internet access.

## Figure 21: Detailed Reasons Why Internet Access Service Was Too Expensive



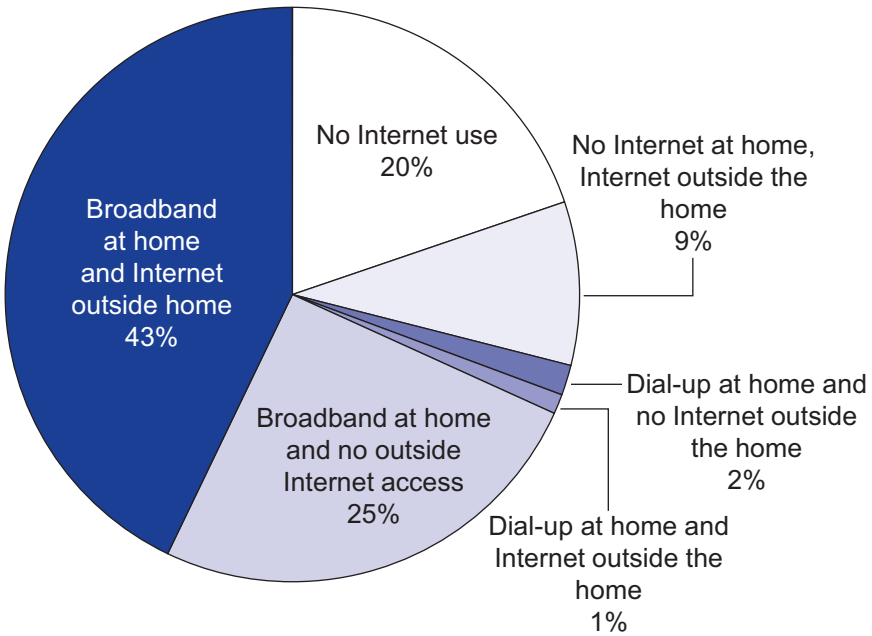

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

## 6. Internet Use Outside the Home, 2010

This report demonstrates that persistent differences exist in the adoption rate for broadband Internet access services across demographic groups, and that socio-economic and geographic factors, as well as demand or need, affordability, and availability all play significant roles in household adoption decisions. The variation in broadband Internet access across demographic groups points to an important area of investigation – do people who lack home broadband Internet access services use the Internet at locations outside the home and, if so, where do they access it? The expanded questions of the October 2010 CPS allow us to take a closer look at this topic.

Section 3 showed that more than two-thirds of American households (68 percent) utilized home broadband Internet access in 2010. According to Figure 22, the majority of these broadband households also used the Internet outside the home. Forty-three percent of American households had broadband Internet access at home and used the Internet outside the home, while 25 percent of households had broadband at home but did not use the Internet outside the home. Three percent of American households used dial-up at home – almost two percent of households had dial-up and did not use the Internet outside the home, and one percent of households both used dial-up and found additional locations outside the home from which they connected to the Internet.

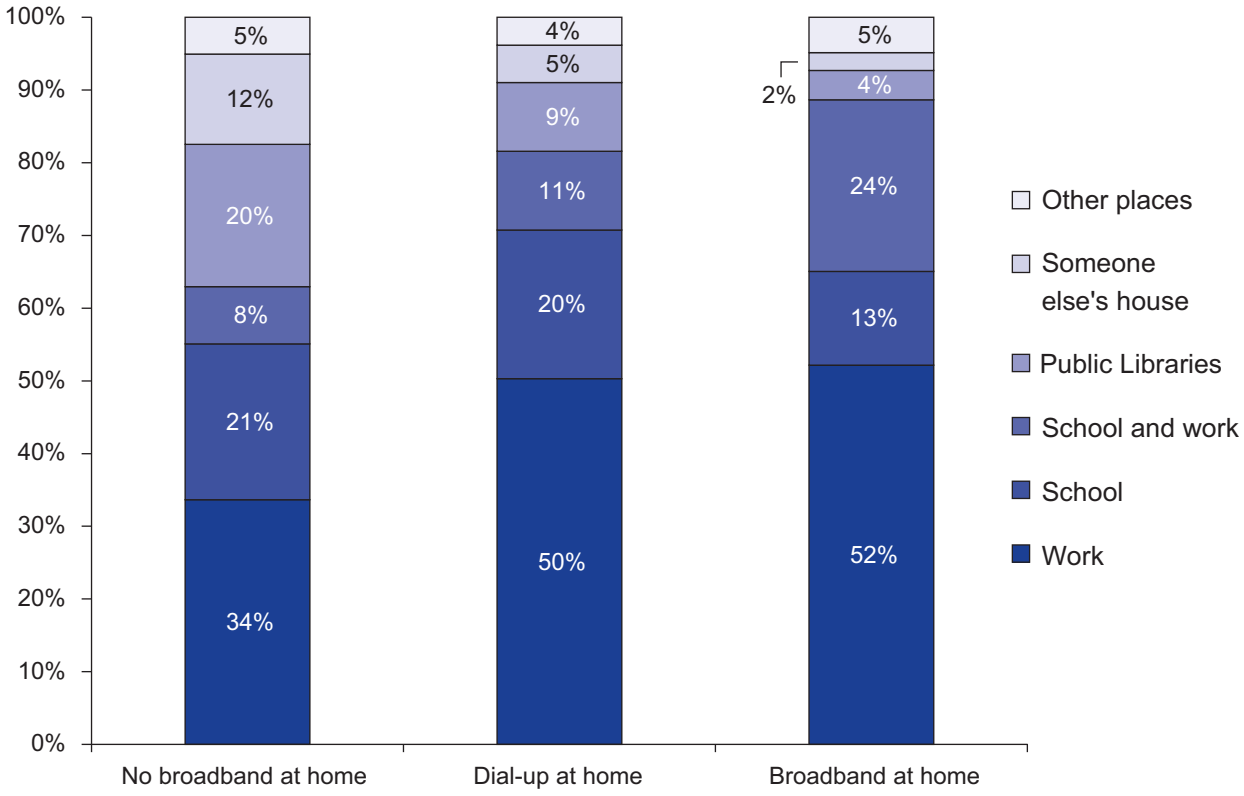
### Figure 22: Household Distribution of Internet Access Points, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

Figure 23 shows the tabulation results for locations outside of the home where people reported accessing the Internet. In general, those without broadband Internet access at home depended more heavily on public libraries or someone else's house for Internet access than those with broadband service. The left bar of Figure 23 shows that residents of households with no broadband primarily accessed the Internet at work, school, or the public library. Those with broadband Internet access at home (showed by the right bar) primarily connected to the Internet at work or school, but relied less heavily on public libraries or someone else's house. Only four percent of broadband households reported accessing the Internet at a public library, compared to 20 percent of those without broadband Internet access at home. About two percent of broadband households also accessed the Internet at someone else's house, compared to 12 percent of non-broadband households.

## Figure 23: Internet Access Outside the Home, by Home Broadband Adoption, 2010




*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Respondents could select up to seven different locations where they accessed the Internet outside of home. We developed mutually exclusive categories for Figure 23. "Work" includes households that accessed the Internet at work only, as well as households that accessed the Internet at work and some other location (other than school). "School" includes households that accessed the Internet at school only or in combination with some other location (other than work). "Public libraries" include households that accessed the Internet at public libraries only or in combination with locations other than work or school. "Someone else's house" includes households who accessed the Internet at someone else's house only or in combination with other places aside from work, school, or a public library. "Other places" include community centers, Internet cafés/coffee shops, or unspecified places.

# 7. Conclusion

President Obama is dedicated to "connecting every part of America to the digital age" (NTIA, 2011). For policymakers, that commitment means ensuring that households have access to broadband services to give them the opportunity to participate in the information economy. As demonstrated in this report, while broadband adoption continues to grow, disparities persist. Households in certain demographic and geographic groups are less likely than their peers to use broadband services and, more importantly, these gaps remain to varying degrees even after socio-economic and geographic factors have been taken into account. The data and analyses provide policymakers with empirical evidence to help them address such disparities and find ways to enable all Americans to embrace the digital age.

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# Appendix A: Data and Methodology

This report uses data from the October 2010 Current Population Survey (CPS), a monthly survey of a representative sample of the U.S. noninstitutional population that provides data on labor force participation, income, and demographic characteristics of households. In addition, this report analyzes data from the most recent (October 2010) CPS School Enrollment and Internet Use Supplement, a special supplement to the CPS that periodically gathers information on Internet use.[21]

The October 2010 School Enrollment and Internet Use Supplement asked each surveyed household whether someone in that household used or owned a computer, used the Internet, and the locations from which they accessed the Internet (home, office, school, library, and other places). In addition, the survey asked the household which of the following technologies members utilized to connect to the Internet from home: dial-up service, DSL, cable modem, fiber optics, satellite, mobile broadband, or some other Internet connection technology. Using these data, it is possible to determine whether a household owned a personal computer (i.e., desktop, laptop, netbook, or notebook) or a handheld device, as well as the type of broadband technology (i.e., DSL, cable modem, fiber optics, satellite, or mobile broadband) members utilized to connect to the Internet. The survey also asked those households that did not access Internet services to state their main reason for not doing so.

Our sample consists of all households where the head of the household or "householder" is at least 16 years of age.[22] About 54,300 household records comprise our sample, representing 119.5 million American households. We analyze computer ownership and broadband Internet use at the household level and its association with household-level characteristics, such as income, size and composition, and geographic location.[23] For characteristics like education, race, ethnicity, age, disability status, and foreign-born status, we use information for the householder. In this report we use the words "adoption," "use," "utilization," and "access" interchangeably to indicate that a household reported having Internet access.

Data on computer use, as well as the types of broadband technology that online households utilized, have not been available since the early 2000s. The supply and demand for both mobile devices and residential Internet access services have changed enormously during this period. The data from the October 2010 CPS make it possible to identify the preferred or most common types of computers and access technologies used for residential Internet access, including the prevalence of mobile broadband technologies and handheld devices.

[21] This report analyzes data from the most recent survey conducted in October 2010, the ninth such Internet survey conducted since the early 1990s. For a more detailed description of the survey, see Bureau of Labor Statistics and U.S. Census Bureau, 2010.

[22] The householder is the person (or one of the people) who owns or rents the housing unit, or, if there is no such person, any adult member, excluding roomers, boarders, or paid employees.

[23] Detailed data on computer use and broadband adoption both at the household and individual level are presented in Appendix B, Tables B1, B2, and B3.

# Appendix B: Statistical Tables

## Table B1: Computer Ownership by Demographic Characterisitics, 2010

| | Total | Desktop, laptop, netbook or notebook only (no handheld) | Handheld mobile device alone or in combination | No Computer |
|---|---|---|---|---|
| **All households** | 119,516,167 | 57.8% | 18.3% | 23.3% |
| (standard error) | (328,675) | (0.2%) | (0.2%) | (0.2%) |
| **Household Income** | | | | |
| Less than $25,0000 | 34,509,443 | 45.1% | 8.9% | 45.6% |
| | (245,038) | (0.4%) | (0.2%) | (0.4%) |
| $25,000 to $50,000 | 32,961,706 | 62.1% | 13.5% | 24.0% |
| | (240,331) | (0.4%) | (0.3%) | (0.3%) |
| $50,000 to $75,000 | 21,228,025 | 66.5% | 20.8% | 12.2% |
| | (197,966) | (0.5%) | (0.4%) | (0.3%) |
| $75,000 to $100,000 | 12,472,081 | 66.6% | 25.9% | 6.9% |
| | (154,594) | (0.6%) | (0.6%) | (0.3%) |
| $100,000 or more | 18,344,912 | 58.3% | 36.5% | 4.0% |
| | (185,178) | (0.5%) | (0.5%) | (0.2%) |
| **Householder Education** | | | | |
| No High School Diploma | 14,150,347 | 38.0% | 6.2% | 55.6% |
| | (157,219) | (0.6%) | (0.3%) | (0.6%) |
| High School Diploma | 34,946,796 | 55.0% | 11.6% | 33.1% |
| | (235,012) | (0.4%) | (0.2%) | (0.3%) |
| Some College | 34,167,814 | 64.1% | 19.0% | 16.4% |
| | (232,836) | (0.4%) | (0.3%) | (0.3%) |
| College Degree or More | 36,251,210 | 62.5% | 28.9% | 7.7% |
| | (238,567) | (0.3%) | (0.3%) | (0.2%) |
| **Householder Race and Ethnicity** | | | | |
| White, Non-Hispanic | 83,598,462 | 60.1% | 19.3% | 20.0% |
| | (315,569) | (0.2%) | (0.2%) | (0.2%) |
| Black, Non-Hispanic | 14,853,701 | 50.2% | 14.3% | 35.1% |
| | (130,599) | (0.5%) | (0.4%) | (0.5%) |
| American Indian and | 730,295 | 53.4% | 12.2% | 34.4% |
| Alaska Native, Non-Hispanic | (34,336) | (2.4%) | (1.6%) | (2.3%) |
| Asian, Non-Hispanic | 4,667,055 | 61.2% | 24.8% | 13.6% |
| | (76,205) | (0.9%) | (0.8%) | (0.7%) |
| Hispanic | 14,137,933 | 52.2% | 14.0% | 33.5% |
| | (159,699) | (0.7%) | (0.5%) | (0.7%) |
| **Householder Sex** | | | | |
| Male | 60,041,712 | 58.5% | 20.0% | 20.8% |
| | (287,815) | (0.3%) | (0.2%) | (0.2%) |
| Female | 59,474,455 | 57.2% | 16.6% | 25.8% |
| | (286,923) | (0.3%) | (0.2%) | (0.2%) |
| **Householder Age** | | | | |
| Average Age (years) | 49.9 | 49.4 | 42.3 | 57.4 |
| | (0.3) | (0.3) | (.05) | (0.6) |
| **Householder Disability Status** | | | | |
| Has a disability | 16,381,088 | 45.2% | 8.3% | 46.1% |
| | (168,292) | (0.5%) | (0.3%) | (0.5%) |
| Does not have a disability | 102,746,723 | 59.9% | 19.8% | 19.7% |
| | (326,579) | (0.2%) | (0.2%) | (0.2%) |
| **Household Geographic Location** | | | | |
| Metropolitan area | 99,413,612 | 57.8% | 19.7% | 21.9% |
| | (325,338) | (0.2%) | (0.2%) | (0.2%) |
| Non-metropolitan area | 19,236,331 | 58.0% | 11.4% | 30.3% |
| | (221,876) | (0.6%) | (0.4%) | (0.6%) |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

# Table B2: Computer Use, Internet and Broadband Adoption at the Household Level, by Demographic Characteristics and Geographic Locations, 2010

| | Total | Computer use | Internet use | Broadband adoption | |
|---|---|---|---|---|---|
| | | All households | All households | All households | Computer-using households |
| **All households** | 119,516,167 | 76.7% | 71.1% | 68.2% | 88.9% |
| (standard error) | (328,675) | (0.2%) | (0.2%) | (0.2%) | (0.1%) |
| **Household Income** | | | | | |
| Less than $25,0000 | 34,509,443 | 54.4% | 45.9% | 42.9% | 78.8% |
| | (245,038) | (0.4%) | (0.4%) | (0.4%) | (0.4%) |
| $25,000 to $50,000 | 32,961,706 | 76.1% | 69.3% | 65.8% | 86.6% |
| | (240,331) | (0.3%) | (0.4%) | (0.4%) | (0.3%) |
| $50,000 to $75,000 | 21,228,025 | 87.8% | 83.7% | 80.7% | 91.9% |
| | (197,966) | (0.3%) | (0.4%) | (0.4%) | (0.3%) |
| $75,000 to $100,000 | 12,472,081 | 93.1% | 90.1% | 87.8% | 94.4% |
| | (154,594) | (0.3%) | (0.4%) | (0.4%) | (0.3%) |
| $100,000 or more | 18,344,912 | 96.0% | 94.1% | 92.6% | 96.4% |
| | (185,178) | (0.2%) | (0.2%) | (0.3%) | (0.2%) |
| **Householder Education** | | | | | |
| No High School Diploma | 14,150,347 | 44.5% | 35.7% | 33.1% | 74.6% |
| | (157,219) | (0.6%) | (0.5%) | (0.5%) | (0.7%) |
| High School Diploma | 34,946,796 | 66.9% | 60.3% | 56.9% | 85.0% |
| | (235,012) | (0.3%) | (0.4%) | (0.4%) | (0.3%) |
| Some College | 34,167,814 | 83.6% | 77.4% | 74.3% | 88.9% |
| | (232,836) | (0.3%) | (0.3%) | (0.3%) | (0.3%) |
| College Degree or More | 36,251,210 | 92.3% | 89.2% | 87.2% | 94.5% |
| | (238,567) | (0.2%) | (0.2%) | (0.2%) | (0.2%) |
| **Householder Race and Ethnicity** | | | | | |
| White, Non-Hispanic | 83,598,462 | 80.0% | 74.9% | 71.8% | 89.7% |
| | (315,569) | (0.2%) | (0.2%) | (0.2%) | (0.2%) |
| Black, Non-Hispanic | 14,853,701 | 64.9% | 57.8% | 55.5% | 85.5% |
| | (130,599) | (0.5%) | (0.5%) | (0.5%) | (0.5%) |
| American Indian and Alaska Native, Non-Hispanic | 730,295 | 65.6% | 56.8% | 52.3% | 79.6% |
| | (34,336) | (2.3%) | (2.4%) | (2.4%) | (2.4%) |
| Asian, Non-Hispanic | 4,667,055 | 86.4% | 82.8% | 80.9% | 93.7% |
| | (76,205) | (0.7%) | (0.7%) | (0.7%) | (0.5%) |
| Hispanic | 14,137,933 | 66.6% | 59.1% | 56.9% | 85.5% |
| | (159,699) | (0.7%) | (0.7%) | (0.7%) | (0.6%) |
| **Householder Sex** | | | | | |
| Male | 60,041,712 | 79.2% | 74.0% | 71.2% | 89.9% |
| | (287,815) | (0.2%) | (0.2%) | (0.3%) | (0.2%) |
| Female | 59,474,455 | 74.2% | 68.1% | 65.3% | 87.9% |
| | (286,923) | (0.2%) | (0.3%) | (0.3%) | (0.2%) |
| **Householder Age** | | | | | |
| 16 to 44 years | 47,979,027 | 84.4% | 78.3% | 76.7% | 90.8% |
| | (266,130) | (0.2%) | (0.3%) | (0.3%) | (0.2%) |
| 45 to 64 years | 46,162,699 | 80.4% | 75.3% | 72.0% | 89.5% |
| | (262,325) | (0.3%) | (0.3%) | (0.3%) | (0.2%) |
| 65 years and older | 25,374,441 | 55.4% | 49.6% | 45.5% | 82.1% |
| | (205,050) | (0.4%) | (0.4%) | (0.4%) | (0.4%) |
| **Household Type** | | | | | |
| Households with school-age children | 29,996,963 | 86.3% | 80.4% | 78.1% | 90.5% |
| | (220,445) | (0.3%) | (0.3%) | (0.3%) | (0.2%) |
| Households without school-age children | 89,519,204 | 73.5% | 67.9% | 64.9% | 88.3% |
| | (319,994) | (0.2%) | (0.2%) | (0.2%) | (0.2%) |

## Table B2: Computer Use, Internet and Broadband Adoption at the Household Level, by Demographic Characteristics and Geographic Locations, 2010 *(cont'd)*

| | Total | Computer use | Internet use | Broadband adoption | |
|---|---|---|---|---|---|
| | | All households | All households | All households | Computer-using households |
| **Householder Disability Status** | | | | | |
| Has a disability | 16,381,088<br>(168,292) | 54.0%<br>(0.5%) | 46.4%<br>(0.5%) | 43.1%<br>(0.5%) | 79.8%<br>(0.6%) |
| Does not have a disability | 102,746,723<br>(326,579) | 80.3%<br>(0.2%) | 74.9%<br>(0.2%) | 72.2%<br>(0.2%) | 89.9%<br>(0.1%) |
| **Household Citizenship Status** | | | | | |
| Citizens (including foreign-born) | 111,737,231<br>(328,557) | 77.3%<br>(0.2%) | 71.8%<br>(0.2%) | 68.9%<br>(0.2%) | 89.1%<br>(0.1%) |
| Non-citizen | 7,778,937<br>(134,834) | 68.0%<br>(0.8%) | 60.7%<br>(0.9%) | 58.3%<br>(0.9%) | 85.7%<br>(0.7%) |
| **Urban-Rural Status** | | | | | |
| Metropolitan Area | 99,413,612<br>(325,338) | 78.1%<br>(0.2%) | 72.8%<br>(0.2%) | 70.4%<br>(0.2%) | 90.1%<br>(0.2%) |
| Non-metropolitan Area | 19,236,331<br>(221,876) | 69.7%<br>(0.6%) | 62.0%<br>(0.6%) | 57.3%<br>(0.6%) | 82.1%<br>(0.6%) |
| **Metropolitan Area (CBSA) Size** | | | | | |
| Less than 1,000,000 | 32,045,595<br>(277,640) | 76.5%<br>(0.4%) | 70.8%<br>(0.4%) | 67.9%<br>(0.4%) | 88.9%<br>(0.3%) |
| 1,000,000 to 2,499,999 | 20,735,483<br>(187,425) | 77.5%<br>(0.4%) | 72.2%<br>(0.4%) | 69.8%<br>(0.4%) | 90.0%<br>(0.3%) |
| 2,500,000 to 499,999,999 | 20,540,004<br>(186,626) | 82.2%<br>(0.4%) | 77.3%<br>(0.4%) | 75.0%<br>(0.4%) | 91.2%<br>(0.3%) |
| 5,000,000 or more | 22,272,392<br>(193,541) | 77.5%<br>(0.4%) | 73.0%<br>(0.4%) | 71.2%<br>(0.4%) | 91.8%<br>(0.4%) |
| Sample Size<br>Population | 54,269<br>119,516,167 | | | | |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

# Table B3: Computer Use, Internet and Broadband Adoption at the Individual Person Level, by Demographic Characteristics and Geographic Location, 2010

| | Total | Computer use | Internet use | Broadband adoption |
|---|---|---|---|---|
| **All people age 3 and older** | 292,065,057 | 81.4% | 65.0% | 63.0% |
| (standard error) | (298,963) | (0.2%) | (0.2%) | (0.2%) |
| | **Household Income** | | | |
| Less than $25,0000 | 71,475,861 | 59.6% | 40.6% | 38.4% |
| | (472,342) | (0.4%) | (0.4%) | (0.4%) |
| $25,000 to $50,000 | 77,222,903 | 79.3% | 60.0% | 57.4% |
| | (482,761) | (0.3%) | (0.4%) | (0.4%) |
| $50,000 to $75,000 | 54,694,545 | 89.6% | 73.5% | 71.3% |
| | (432,720) | (0.3%) | (0.4%) | (0.4%) |
| $75,000 to $100,000 | 34,663,881 | 93.9% | 80.1% | 78.3% |
| | (362,174) | (0.3%) | (0.4%) | (0.5%) |
| $100,000 or more | 54,007,868 | 96.9% | 86.2% | 85.1% |
| | (430,771) | (0.2%) | (0.3%) | (0.3%) |
| | **Education** | | | |
| No High School Diploma | 41,927,111 | 64.2% | 43.9% | 42.1% |
| | (271,156) | (0.3%) | (0.4%) | (0.4%) |
| High School Diploma | 71,043,770 | 73.4% | 56.5% | 53.7% |
| | (325,529) | (0.2%) | (0.3%) | (0.3%) |
| Some College | 65,686,166 | 87.1% | 77.0% | 74.4% |
| | (318,033) | (0.2%) | (0.2%) | (0.2%) |
| College Degree or More | 63,715,654 | 93.3% | 87.1% | 85.4% |
| | (315,025) | (0.1%) | (0.2%) | (0.2%) |
| | **Race and Ethnicity** | | | |
| White, Non-Hispanic | 190,266,571 | 85.3% | 71.4% | 69.1% |
| | (590,558) | (0.2%) | (0.2%) | (0.2%) |
| Black, Non-Hispanic | 35,096,831 | 70.2% | 52.5% | 50.7% |
| | (321,363) | (0.6%) | (0.7%) | (0.7%) |
| American Indian and Alaska Native, Non-Hispanic | 1,750,907 | 68.7% | 51.2% | 47.1% |
| | (104,476) | (2.9%) | (3.1%) | (3.1%) |
| Asian, Non-Hispanic | 13,413,301 | 90.3% | 70.6% | 69.3% |
| | (197,574) | (0.7%) | (1%) | (1%) |
| Hispanic | 46,368,897 | 71.3% | 47.5% | 46.0% |
| | (189,554) | (0.7%) | (0.8%) | (0.8%) |
| | **Sex** | | | |
| Male | 142,927,723 | 82.0% | 65.0% | 63.1% |
| | (602,891) | (0.2%) | (0.3%) | (0.3%) |
| Female | 149,137,334 | 80.8% | 65.1% | 62.9% |
| | (604,465) | (0.2%) | (0.3%) | (0.3%) |
| | **Age** | | | |
| 3 to 15 years | 53,674,951 | 84.8% | 53.0% | 51.8% |
| | (456,464) | (0.3%) | (0.5%) | (0.5%) |
| 16 to 44 years | 118,971,154 | 85.7% | 75.3% | 73.5% |
| | (587,627) | (0.2%) | (0.3%) | (0.3%) |
| 45 to 64 years | 80,541,611 | 82.7% | 69.2% | 66.6% |
| | (529,334) | (0.3%) | (0.4%) | (0.4%) |
| 65 years and older | 38,877,341 | 61.0% | 41.6% | 38.5% |
| | (399,433) | (0.5%) | (0.5%) | (0.5%) |
| | **Household Type** | | | |
| Households with school-age children | 122,429,615 | 86.4% | 67.2% | 65.5% |
| | (590,756) | (0.2%) | (0.3%) | (0.3%) |
| Households without school-age children | 169,635,442 | 77.8% | 63.5% | 61.1% |
| | (602,859) | (0.2%) | (0.3%) | (0.3%) |

## Table B3: Computer Use, Internet and Broadband Adoption at the Individual Person Level, by Demographic Characteristics and Geographic Location, 2010 *(cont'd)*

| | Total | Computer use | Internet use | Broadband adoption |
|---|---|---|---|---|
| **Disability Status** | | | | |
| Has a disability | 26,615,113<br>(337,816) | 60.6%<br>(0.6%) | 40.7%<br>(0.7%) | 38.3%<br>(0.6%) |
| Does not have a disability | 215,757,587<br>(559,451) | 83.3%<br>(0.2%) | 71.3%<br>(0.2%) | 69.0%<br>(0.2%) |
| **Citizenship Status** | | | | |
| Citizens (including foreign-born) | 271,072,746<br>(410,258) | 82.2%<br>(0.2%) | 66.3%<br>(0.2%) | 64.2%<br>(0.2%) |
| Non-citizen | 20,992,311<br>(345,420) | 71.1%<br>(0.8%) | 48.6%<br>(0.9%) | 47.1%<br>(0.9%) |
| **Urban-Rural Status** | | | | |
| Metropolitan Area | 244,464,515<br>(499,361) | 82.4%<br>(0.2%) | 66.4%<br>(0.2%) | 64.7%<br>(0.2%) |
| Non-metropolitan Area | 45,509,222<br>(522,832) | 75.8%<br>(0.5%) | 57.6%<br>(0.6%) | 53.9%<br>(0.6%) |
| **Metropolitan Area (CBSA) Size** | | | | |
| Under 1,000,000 | 78,090,127<br>(641,721) | 80.9%<br>(0.4%) | 65.1%<br>(0.5%) | 63.0%<br>(0.5%) |
| 1,000,000 to 2,499,999 | 49,326,079<br>(441,243) | 82.2%<br>(0.4%) | 67.2%<br>(0.5%) | 65.5%<br>(0.5%) |
| 2,500,000 to 499,999,999 | 51,180,606<br>(447,875) | 85.8%<br>(0.3%) | 70.2%<br>(0.4%) | 68.4%<br>(0.4%) |
| 5,000,000 and over | 56,773,520<br>(466,636) | 82.0%<br>(0.3%) | 64.7%<br>(0.4%) | 63.5%<br>(0.4%) |
| Sample Size<br>Population | 129,494<br>292,065,057 | | | |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Data for Whites, Blacks, Asians, and American Indians and Alaska Natives do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

# Table B4: Marginal Effects: Regression Broadband Adoption on Demographic and Geographic Characteristics, 2010

| Linear probability models | Having home broadband | | Having home broadband (among computer owners) | |
|---|---|---|---|---|
| | (1) | (2) | (1) | (2) |
| Household Income: Less than $25,0000 | Omitted | Omitted | Omitted | Omitted |
| Household Income: $25,000-$50,000 | 0.1368*** | 0.1366*** | 0.0582*** | 0.0581*** |
| | (0.006) | (0.006) | (0.006) | (0.006) |
| Household Income: $50,000-$75,000 | 0.2156*** | 0.2153*** | 0.0927*** | 0.0926*** |
| | (0.007) | (0.007) | (0.006) | (0.006) |
| Household Income: $75,000-$100,000 | 0.2403*** | 0.2395*** | 0.1029*** | 0.1023*** |
| | (0.007) | (0.007) | (0.006) | (0.006) |
| Household Income: $100,000 or more | 0.2460*** | 0.2441*** | 0.1083*** | 0.1072*** |
| | (0.007) | (0.007) | (0.006) | (0.006) |
| Education: No High School Diploma | Omitted | Omitted | Omitted | Omitted |
| Education: High School Diploma | 0.1320*** | 0.1317*** | 0.0746*** | 0.0745*** |
| | (0.008) | (0.008) | (0.010) | (0.010) |
| Education: Some College | 0.2465*** | 0.2460*** | 0.1001*** | 0.0999*** |
| | (0.008) | (0.008) | (0.010) | (0.010) |
| Education: College Degree or More | 0.3048*** | 0.3035*** | 0.1262*** | 0.1254*** |
| | (0.008) | (0.008) | (0.010) | (0.010) |
| Age | 0.0093*** | 0.0094*** | 0.0031*** | 0.0031*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Age squared | -0.0001*** | -0.0001*** | -0.0000*** | -0.0000*** |
| | (0) | (0) | (0.000) | (0.000) |
| White, Non-Hispanic | Omitted | Omitted | Omitted | Omitted |
| Black, Non-Hispanic | -0.1099*** | -0.1126*** | -0.0280*** | -0.0299*** |
| | (0.007) | (0.007) | (0.007) | (0.007) |
| Hispanic | -0.1096*** | -0.1113*** | -0.0281*** | -0.0294*** |
| | (0.008) | (0.008) | (0.007) | (0.007) |
| Asian, Non-Hispanic | -0.0052 | -0.0078 | 0.0080 | 0.0063 |
| | (0.01) | (0.01) | (0.007) | (0.007) |
| Other, Non-Hispanic | -0.0529*** | -0.0534*** | -0.0337** | -0.0337** |
| | (0.014) | (0.014) | (0.014) | (0.014) |
| Disability | -0.0634*** | -0.0629*** | -0.0328*** | -0.0323*** |
| | (0.007) | (0.007) | (0.007) | (0.007) |
| Disability-not identified | 0.1065*** | 0.1074*** | 0.0636*** | 0.0650*** |
| | (0.02) | (0.02) | (0.010) | (0.010) |
| Foreign-born non-citizen | -0.0473*** | -0.0487*** | -0.0208** | -0.0217** |
| | (0.01) | (0.01) | (0.009) | (0.009) |
| Total number of persons in household | 0.0470*** | 0.0472*** | 0.0129*** | 0.0130*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| Has related school-age children | 0.1217*** | 0.1224*** | 0.0174 | 0.0182 |
| | (0.014) | (0.014) | (0.012) | (0.012) |
| Total number of persons in household for households with related school-age children (interaction) | -0.0396*** | -0.0398*** | -0.0085*** | -0.0087*** |
| | (0.004) | (0.004) | (0.003) | (0.003) |
| Rural (Nonmetropolitan) | Omitted | Omitted | Omitted | Omitted |
| Urban (Metropolitan) | 0.0528*** | | 0.0490*** | |
| | (0.006) | | (0.006) | |
| Metropolitan Area not identified | 0.0617*** | | 0.0211 | |
| | (0.023) | | (0.022) | |
| Metropolitan size: Less than 1,000,000 | | 0.0492*** | | 0.0464*** |
| | | (0.007) | | (0.006) |
| Metropolitan size: 1,000,000 to 2,499,999 | | 0.0529*** | | 0.0543*** |
| | | (0.008) | | (0.007) |
| Metropolitan size: 2,500,000 to 499,999,999 | | 0.0676*** | | 0.0555*** |
| | | (0.008) | | (0.008) |
| Metropolitan size: 5,000,000 or more | | 0.0661*** | | 0.0593*** |
| | | (0.009) | | (0.008) |
| Metropolitan area size not identified | | 0.0287*** | | 0.0234** |
| | | (-0.011) | | (0.010) |
| Constant | 0.0641** | 0.0665** | 0.5704*** | 0.5712*** |
| | (0.026) | (0.026) | (0.028) | (0.028) |
| Sample Size | 54,269 | 54,269 | 41,844 | 41,844 |
| Estimated Number of Households | 119,516,167 | 119,516,167 | 91,702,117 | 91,702,117 |
| R-squared | 0.276 | 0.277 | 0.073 | 0.073 |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The marginal effects presented in the report are from the first and third columns. The columns labeled (2) include controls for urban (metropolitan) area size. State of residence is included in the regression. Data for Whites, Blacks, and Asians do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

## Table B5: Internet and Broadband Adoption by State, 2010

| State | Total Households | Broadband Adoption | | | Dial-up Only | | |
|---|---|---|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound | | Lower Bound | Upper Bound |
| Alabama | 1,924,324 | 55.5% | 52.9% | 58.2% | 4.5% | 3.4% | 5.6% |
| Alaska | 266,132 | 73.4% | 70.8% | 75.9% | 5.3% | 4.0% | 6.6% |
| Arizona | 2,552,907 | 74.1% | 72.1% | 76.2% | 1.3% | 0.8% | 1.8% |
| Arkansas | 1,205,789 | 52.4% | 49.7% | 55.1% | 6.4% | 5.1% | 7.7% |
| California | 12,932,685 | 73.1% | 72.2% | 74.0% | 2.7% | 2.4% | 3.1% |
| Colorado | 2,051,111 | 71.6% | 69.2% | 74.0% | 3.1% | 2.2% | 4.1% |
| Connecticut | 1,355,754 | 74.8% | 72.3% | 77.3% | 1.7% | 0.9% | 2.4% |
| Delaware | 347,772 | 68.4% | 65.7% | 71.0% | 3.4% | 2.3% | 4.4% |
| District of Columbia | 288,297 | 71.7% | 69.2% | 74.2% | 1.7% | 1.0% | 2.4% |
| Florida | 7,631,514 | 70.2% | 69.0% | 71.4% | 1.8% | 1.5% | 2.2% |
| Georgia | 3,846,149 | 68.6% | 66.8% | 70.4% | 1.8% | 1.3% | 2.3% |
| Hawaii | 461,347 | 69.2% | 66.5% | 71.8% | 1.9% | 1.1% | 2.7% |
| Idaho | 584,409 | 72.0% | 69.5% | 74.4% | 3.6% | 2.5% | 4.6% |
| Illinois | 5,057,694 | 68.7% | 67.2% | 70.3% | 2.0% | 1.6% | 2.5% |
| Indiana | 2,589,632 | 58.9% | 56.6% | 61.1% | 2.4% | 1.7% | 3.2% |
| Iowa | 1,229,080 | 67.4% | 64.8% | 70.1% | 3.2% | 2.2% | 4.3% |
| Kansas | 1,152,298 | 74.6% | 72.2% | 77.1% | 1.7% | 1.0% | 2.5% |
| Kentucky | 1,750,335 | 57.8% | 55.0% | 60.6% | 3.5% | 2.5% | 4.6% |
| Louisiana | 1,755,129 | 60.5% | 57.7% | 63.2% | 2.3% | 1.5% | 3.2% |
| Maine | 545,320 | 67.4% | 64.4% | 70.3% | 6.0% | 4.5% | 7.5% |
| Maryland | 2,214,385 | 74.1% | 71.9% | 76.4% | 2.2% | 1.5% | 3.0% |
| Massachusetts | 2,501,199 | 76.0% | 73.9% | 78.0% | 1.6% | 1.0% | 2.2% |
| Michigan | 3,956,678 | 66.3% | 64.5% | 68.1% | 3.4% | 2.7% | 4.1% |
| Minnesota | 2,135,427 | 70.6% | 68.2% | 72.9% | 3.1% | 2.2% | 4.0% |
| Mississippi | 1,135,683 | 51.7% | 48.8% | 54.5% | 6.0% | 4.6% | 7.3% |
| Missouri | 2,401,597 | 64.4% | 62.0% | 66.7% | 3.5% | 2.6% | 4.4% |
| Montana | 440,582 | 61.4% | 58.8% | 64.0% | 4.0% | 2.9% | 5.0% |
| Nebraska | 712,266 | 68.9% | 66.3% | 71.6% | 2.3% | 1.5% | 3.2% |
| Nevada | 1,012,500 | 74.2% | 71.7% | 76.7% | 2.4% | 1.5% | 3.2% |
| New Hampshire | 526,105 | 77.8% | 75.3% | 80.3% | 3.2% | 2.1% | 4.2% |
| New Jersey | 3,221,652 | 73.2% | 71.4% | 75.1% | 1.5% | 1.0% | 2.0% |
| New Mexico | 809,399 | 57.7% | 54.9% | 60.5% | 4.9% | 3.7% | 6.1% |
| New York | 7,739,363 | 69.0% | 67.7% | 70.3% | 2.0% | 1.7% | 2.4% |

## Table B5: Internet and Broadband Adoption by State, 2010 *(cont'd)*

| State | Total Households | Broadband Adoption | | | Dial-up Only | | |
|---|---|---|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound | | Lower Bound | Upper Bound |
| North Carolina | 3,674,129 | 65.1% | 3.1% | -1.9% | 4.2% | 3.4% | 5.0% |
| North Dakota | 274,856 | 70.9% | 68.3% | 73.4% | 2.2% | 1.4% | 3.1% |
| Ohio | 4,681,232 | 63.9% | 62.2% | 65.6% | 3.6% | 2.9% | 4.2% |
| Oklahoma | 1,505,684 | 62.5% | 59.7% | 65.2% | 3.7% | 2.7% | 4.8% |
| Oregon | 1,554,311 | 74.7% | 72.2% | 77.2% | 3.6% | 2.5% | 4.7% |
| Pennsylvania | 5,129,874 | 67.4% | 65.8% | 68.9% | 2.9% | 2.3% | 3.4% |
| Rhode Island | 429,097 | 70.8% | 68.1% | 73.4% | 1.3% | 0.7% | 2.0% |
| South Carolina | 1,804,505 | 59.5% | 56.8% | 62.3% | 4.3% | 3.1% | 5.4% |
| South Dakota | 331,836 | 65.5% | 63.0% | 68.0% | 3.5% | 2.5% | 4.5% |
| Tennessee | 2,562,953 | 59.5% | 57.2% | 61.8% | 3.8% | 2.9% | 4.7% |
| Texas | 8,997,268 | 66.9% | 65.7% | 68.1% | 2.7% | 2.3% | 3.1% |
| Utah | 950,913 | 79.7% | 77.5% | 81.8% | 2.6% | 1.8% | 3.5% |
| Vermont | 263,979 | 69.2% | 66.4% | 72.0% | 5.5% | 4.1% | 6.8% |
| Virginia | 2,935,158 | 69.5% | 67.5% | 71.5% | 3.5% | 2.7% | 4.3% |
| Washington | 2,781,539 | 76.7% | 74.8% | 78.6% | 3.0% | 2.2% | 3.8% |
| West Virginia | 737,127 | 59.1% | 56.5% | 61.7% | 6.0% | 4.7% | 7.2% |
| Wisconsin | 2,339,106 | 70.5% | 68.3% | 72.8% | 3.2% | 2.3% | 4.0% |
| Wyoming | 228,089 | 72.9% | 70.4% | 75.5% | 1.5% | 0.8% | 2.2% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

## Table B6: Computer Use by State, 2010

| State | Total Households | Computer, No Internet | | | No Computer | | |
|---|---|---|---|---|---|---|---|
| | | Percent | 90 Percent Confidence | | Percent | 90 Percent Confidence | |
| | | | Lower Bound | Upper Bound | | Lower Bound | Upper Bound |
| Alabama | 1,924,324 | 8.5% | 7.0% | 10.0% | 31.5% | 29.0% | 34.0% |
| Alaska | 266,132 | 6.9% | 5.4% | 8.4% | 14.4% | 12.4% | 16.5% |
| Arizona | 2,552,907 | 4.8% | 3.8% | 5.8% | 19.8% | 17.9% | 21.7% |
| Arkansas | 1,205,789 | 8.8% | 7.3% | 10.3% | 32.5% | 29.9% | 35.0% |
| California | 12,932,685 | 5.3% | 4.8% | 5.8% | 18.8% | 18.0% | 19.7% |
| Colorado | 2,051,111 | 4.6% | 3.5% | 5.7% | 20.6% | 18.5% | 22.8% |
| Connecticut | 1,355,754 | 4.5% | 3.3% | 5.8% | 19.0% | 16.7% | 21.3% |
| Delaware | 347,772 | 4.5% | 3.3% | 5.7% | 23.8% | 21.4% | 26.3% |
| District of Columbia | 288,297 | 3.0% | 2.0% | 4.0% | 23.6% | 21.2% | 26.0% |
| Florida | 7,631,514 | 4.6% | 4.0% | 5.2% | 23.4% | 22.2% | 24.5% |
| Georgia | 3,846,149 | 6.0% | 5.1% | 6.9% | 23.6% | 21.9% | 25.2% |
| Hawaii | 461,347 | 3.5% | 2.4% | 4.6% | 25.4% | 22.9% | 27.9% |
| Idaho | 584,409 | 5.8% | 4.5% | 7.1% | 18.7% | 16.5% | 20.8% |
| Illinois | 5,057,694 | 4.2% | 3.5% | 4.9% | 25.0% | 23.6% | 26.5% |
| Indiana | 2,589,632 | 8.2% | 6.9% | 9.5% | 30.5% | 28.4% | 32.6% |
| Iowa | 1,229,080 | 6.1% | 4.7% | 7.4% | 23.3% | 20.9% | 25.7% |
| Kansas | 1,152,298 | 4.8% | 3.6% | 6.1% | 18.8% | 16.6% | 21.0% |
| Kentucky | 1,750,335 | 7.0% | 5.6% | 8.5% | 31.6% | 29.0% | 34.2% |
| Louisiana | 1,755,129 | 5.6% | 4.3% | 6.9% | 31.6% | 29.0% | 34.2% |
| Maine | 545,320 | 5.6% | 4.2% | 7.0% | 21.1% | 18.5% | 23.6% |
| Maryland | 2,214,385 | 3.7% | 2.7% | 4.7% | 20.0% | 17.9% | 22.0% |
| Massachusetts | 2,501,199 | 2.7% | 1.9% | 3.5% | 19.7% | 17.8% | 21.6% |
| Michigan | 3,956,678 | 6.6% | 5.7% | 7.6% | 23.6% | 22.0% | 25.2% |
| Minnesota | 2,135,427 | 5.5% | 4.3% | 6.6% | 20.9% | 18.8% | 23.0% |
| Mississippi | 1,135,683 | 9.8% | 8.1% | 11.5% | 32.5% | 29.9% | 35.2% |
| Missouri | 2,401,597 | 8.2% | 6.9% | 9.6% | 24.0% | 21.9% | 26.1% |
| Montana | 440,582 | 10.2% | 8.6% | 11.8% | 24.5% | 22.2% | 26.8% |
| Nebraska | 712,266 | 7.6% | 6.1% | 9.1% | 21.2% | 18.8% | 23.5% |
| Nevada | 1,012,500 | 4.3% | 3.2% | 5.5% | 19.1% | 16.9% | 21.3% |
| New Hampshire | 526,105 | 5.1% | 3.8% | 6.4% | 13.9% | 11.8% | 15.9% |
| New Jersey | 3,221,652 | 3.4% | 2.6% | 4.2% | 21.9% | 20.1% | 23.6% |
| New Mexico | 809,399 | 8.9% | 7.3% | 10.5% | 28.5% | 25.9% | 31.0% |
| New York | 7,739,363 | 4.0% | 3.5% | 4.6% | 24.9% | 23.7% | 26.1% |

## Table B6: Computer Use by State, 2010 *(cont'd)*

| State | Total Households | Computer, No Internet | | | No Computer | | |
|---|---|---|---|---|---|---|---|
| | | | 90 Percent Confidence | | | 90 Percent Confidence | |
| | | Percent | Lower Bound | Upper Bound | Percent | Lower Bound | Upper Bound |
| North Carolina | 3,674,129 | 4.5% | 3.6% | 5.3% | 27.1% | 25.4% | 28.9% |
| North Dakota | 274,856 | 4.2% | 3.1% | 5.3% | 22.7% | 20.3% | 25.0% |
| Ohio | 4,681,232 | 6.8% | 5.9% | 7.7% | 25.7% | 24.2% | 27.3% |
| Oklahoma | 1,505,684 | 6.3% | 4.9% | 7.6% | 27.5% | 25.0% | 30.0% |
| Oregon | 1,554,311 | 6.3% | 4.9% | 7.7% | 15.4% | 13.3% | 17.4% |
| Pennsylvania | 5,129,874 | 4.7% | 4.0% | 5.4% | 25.1% | 23.7% | 26.6% |
| Rhode Island | 429,097 | 5.3% | 3.9% | 6.6% | 22.7% | 20.2% | 25.2% |
| South Carolina | 1,804,505 | 6.4% | 5.0% | 7.7% | 29.9% | 27.3% | 32.4% |
| South Dakota | 331,836 | 7.2% | 5.8% | 8.5% | 23.8% | 21.6% | 26.0% |
| Tennessee | 2,562,953 | 7.0% | 5.8% | 8.2% | 29.7% | 27.6% | 31.9% |
| Texas | 8,997,268 | 7.2% | 6.6% | 7.9% | 23.2% | 22.2% | 24.3% |
| Utah | 950,913 | 4.4% | 3.3% | 5.5% | 13.3% | 11.4% | 15.1% |
| Vermont | 263,979 | 5.7% | 4.3% | 7.1% | 19.6% | 17.2% | 22.0% |
| Virginia | 2,935,158 | 6.8% | 5.7% | 7.9% | 20.2% | 18.5% | 22.0% |
| Washington | 2,781,539 | 6.8% | 5.7% | 8.0% | 13.5% | 11.9% | 15.0% |
| West Virginia | 737,127 | 8.7% | 7.2% | 10.2% | 26.2% | 23.8% | 28.5% |
| Wisconsin | 2,339,106 | 4.7% | 3.7% | 5.7% | 21.6% | 19.6% | 23.6% |
| Wyoming | 228,089 | 7.1% | 5.6% | 8.5% | 18.6% | 16.3% | 20.8% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

## Table B7: Urban Area Broadband Adoption by State, 2010

| State | Total Households | Broadband Adoption | | |
|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound |
| Alabama | 1,394,515 | 58.8% | 55.7% | 61.9% |
| Alaska | 182,990 | 76.9% | 73.9% | 79.9% |
| Arizona | 2,238,063 | 75.6% | 73.4% | 77.8% |
| Arkansas | 774,343 | 56.1% | 52.8% | 59.4% |
| California | 12,670,211 | 73.1% | 72.2% | 74.0% |
| Colorado | 1,801,148 | 71.2% | 68.6% | 73.8% |
| Connecticut | 1,289,322 | 75.1% | 72.5% | 77.7% |
| Delaware | 273,617 | 70.9% | 67.9% | 73.9% |
| District of Columbia | 288,297 | 71.7% | 69.2% | 74.2% |
| Florida | 7,287,051 | 70.7% | 69.4% | 72.0% |
| Georgia | 3,269,179 | 72.1% | 70.2% | 74.0% |
| Hawaii | 325,395 | 71.1% | 68.0% | 74.2% |
| Idaho | 365,668 | 78.2% | 75.3% | 81.1% |
| Illinois | 4,407,181 | 70.3% | 68.7% | 71.9% |
| Indiana | 1,862,332 | 60.5% | 57.8% | 63.2% |
| Iowa | 688,449 | 73.0% | 69.6% | 76.4% |
| Kansas | 707,374 | 79.2% | 76.3% | 82.1% |
| Kentucky | 961,503 | 65.1% | 61.5% | 68.7% |
| Louisiana | 1,505,052 | 62.5% | 59.6% | 65.4% |
| Maine | 273,340 | 73.7% | 69.8% | 77.6% |
| Maryland | 2,126,207 | 74.5% | 72.2% | 76.8% |
| Massachusetts | 2,431,918 | 75.6% | 73.5% | 77.7% |
| Michigan | 3,307,369 | 67.6% | 65.7% | 69.5% |
| Minnesota | 1,556,618 | 72.4% | 69.7% | 75.1% |
| Mississippi | 469,103 | 66.8% | 62.6% | 71.0% |
| Missouri | 1,867,125 | 68.6% | 66.0% | 71.2% |
| Montana | 149,610 | 69.1% | 64.9% | 73.3% |
| Nebraska | 434,971 | 75.0% | 71.8% | 78.2% |
| Nevada | 867,609 | 75.4% | 72.8% | 78.0% |
| New Hampshire | 321,621 | 81.2% | 78.2% | 84.2% |
| New Jersey | 3,221,652 | 73.2% | 71.3% | 75.1% |
| New Mexico | 592,076 | 61.4% | 58.2% | 64.6% |
| New York | 7,085,604 | 69.5% | 68.2% | 70.8% |

## Table B7: Urban Area Broadband Adoption by State, 2010 *(cont'd)*

| State | Total Households | Broadband Adoption | | |
|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound |
| North Carolina | 2,440,415 | 69.0% | 66.8% | 71.2% |
| North Dakota | 129,583 | 78.3% | 75.0% | 81.6% |
| Ohio | 3,589,034 | 66.0% | 64.1% | 67.9% |
| Oklahoma | 1,034,283 | 68.1% | 64.9% | 71.3% |
| Oregon | 1,181,748 | 77.3% | 74.6% | 80.0% |
| Pennsylvania | 4,215,756 | 67.7% | 66.0% | 69.4% |
| Rhode Island | 429,097 | 70.7% | 68.0% | 73.4% |
| South Carolina | 1,213,534 | 63.9% | 60.6% | 67.2% |
| South Dakota | 161,230 | 71.9% | 68.5% | 75.3% |
| Tennessee | 1,877,190 | 64.5% | 61.8% | 67.1% |
| Texas | 7,968,051 | 67.8% | 66.5% | 69.1% |
| Utah | 729,619 | 79.5% | 77.0% | 81.9% |
| Vermont | 82,160 | 81.1% | 76.9% | 85.3% |
| Virginia | 2,526,293 | 72.9% | 70.8% | 75.0% |
| Washington | 2,566,102 | 77.4% | 75.4% | 79.4% |
| West Virginia | 442,531 | 63.9% | 60.6% | 67.2% |
| Wisconsin | 1,765,333 | 72.4% | 69.9% | 74.9% |
| Wyoming | 65,142 | 77.5% | 73.0% | 82.0% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

## Table B8: Rural Area Broadband Adoption by State, 2010

| State | Total Households | Broadband Adoption | | |
|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound |
| Alabama | 529,809 | 47.0% | 40.8% | 53.2% |
| Alaska | 83,143 | 65.5% | 59.4% | 71.6% |
| Arizona | 314,844 | 63.6% | 55.7% | 71.5% |
| Arkansas | 431,446 | 45.6% | 40.1% | 51.1% |
| California | 262,475 | 72.8% | 64.7% | 80.9% |
| Connecticut | 66,432 | 69.0% | 54.1% | 83.9% |
| Delaware | 74,155 | 59.0% | 51.5% | 66.5% |
| Florida | 344,463 | 59.9% | 52.3% | 67.5% |
| Georgia | 576,970 | 48.9% | 42.9% | 54.9% |
| Hawaii | 135,952 | 64.4% | 58.1% | 70.7% |
| Idaho | 218,741 | 61.6% | 56.3% | 66.9% |
| Illinois | 650,512 | 58.4% | 52.8% | 64.0% |
| Indiana | 727,300 | 54.5% | 49.2% | 59.8% |
| Iowa | 540,631 | 60.3% | 55.2% | 65.4% |
| Kansas | 444,925 | 67.3% | 62.0% | 72.6% |
| Kentucky | 788,832 | 49.0% | 43.8% | 54.2% |
| Maine | 271,980 | 61.0% | 55.7% | 66.3% |
| Maryland | 88,178 | 63.6% | 48.4% | 78.8% |
| Michigan | 649,310 | 59.8% | 54.2% | 65.4% |
| Minnesota | 578,809 | 65.5% | 59.8% | 71.2% |
| Mississippi | 666,580 | 41.1% | 36.6% | 45.6% |
| Missouri | 534,472 | 49.4% | 43.0% | 55.8% |
| Montana | 290,972 | 57.4% | 53.4% | 61.4% |
| Nebraska | 277,295 | 59.3% | 53.7% | 64.9% |
| New Hampshire | 204,484 | 72.5% | 67.3% | 77.7% |
| New Mexico | 217,324 | 47.6% | 41.0% | 54.2% |
| New York | 653,759 | 63.8% | 58.2% | 69.4% |

## Table B8: Rural Area Broadband Adoption by State, 2010 *(cont'd)*

| State | Total Households | Broadband Adoption | | |
|---|---|---|---|---|
| | | Percent | 90 Percent Confidence Interval | |
| | | | Lower Bound | Upper Bound |
| North Carolina | 1,233,714 | 57.6% | 53.5% | 61.7% |
| North Dakota | 145,273 | 64.3% | 59.8% | 68.8% |
| Ohio | 1,092,197 | 57.1% | 52.7% | 61.5% |
| Oklahoma | 471,401 | 50.0% | 43.9% | 56.1% |
| Oregon | 372,564 | 66.5% | 59.7% | 73.2% |
| Pennsylvania | 914,118 | 65.7% | 61.1% | 70.3% |
| South Carolina | 590,971 | 50.5% | 44.5% | 56.4% |
| South Dakota | 170,606 | 59.5% | 55.1% | 63.8% |
| Tennessee | 685,763 | 45.8% | 40.3% | 51.3% |
| Texas | 1,029,217 | 59.9% | 55.4% | 64.4% |
| Vermont | 181,819 | 63.8% | 59.5% | 68.1% |
| Virginia | 408,865 | 48.5% | 41.3% | 55.7% |
| Washington | 215,436 | 68.4% | 59.1% | 77.7% |
| West Virginia | 294,595 | 52.0% | 46.9% | 57.1% |
| Wisconsin | 573,773 | 64.6% | 58.8% | 70.4% |
| Wyoming | 162,947 | 71.1% | 67.3% | 74.9% |

*Source:* U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA calculations.

*Note:* The following states were not included in this figure due to data limitations for rural areas: Colorado, Louisiana, Nevada, Rhode Island, Massachusetts, New Jersey and Utah. The District of Columbia had no rural areas.


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