



Exploring the Digital Nation

America's Emerging Online Experience

Prepared by
National Telecommunications and Information Administration
and
Economics and Statistics Administration
in the
U.S. Department of Commerce

June 2013

Exploring the Digital Nation: America's Emerging Online Experience



Prepared by

National Telecommunications and Information Administration

and

Economics and Statistics Administration



U.S. Department of Commerce

June 2013

Exploring the Digital Nation: America's Emerging Online Experience

Foreword

Researchers and policymakers recognize that availability and use of high-speed Internet services – a range of connection technologies collectively known as broadband – are essential to economic growth. The United States has made considerable progress towards ubiquitous broadband access, with more than 93 percent of the population living in areas offering wired broadband service, and about 98 percent having access to either wired or terrestrial wireless connectivity at speeds of at least 3 Mbps download and 768 Kbps upload (NTIA & FCC, 2013). The Internet has rapidly grown from an academic network into a resource that is now integral to the lives of most Americans. In 2000, only 4 percent of homes used broadband Internet service. By 2011, 69 percent were online at speeds greater than dial-up. The President has observed, however, that we have more work to do.

By connecting every corner of our country to the digital age, we can help our businesses become more competitive, our students become more informed and our citizens become more engaged.

—President Obama, announcing U.S. Ignite, June 12, 2012

Additionally, our nation's technology industry leads the way in revolutionizing the nature of Internet use through mobile devices. Smartphones – driven by American-made operating systems and applications – now lead the mobile market. Over one billion smartphone users worldwide carry the global network in their pockets, including the 46 percent of Americans currently using these devices – now surpassing the 41 percent who use traditional mobile phones (Pew Internet, 2012). Mobile broadband is vital to our future.

For our families and our businesses, high-speed wireless service, that's the next train station; it's the next off-ramp. It's how we'll spark new innovation, new investment, new jobs.

—President Obama, addressing Northern Michigan University, February 10, 2011

One of the Obama Administration's priorities is to increase broadband use in the United States, which is a key ingredient for job creation and sustainable economic growth. The National Telecommunications and Information Administration ("NTIA") has been directly implementing this policy in a range of ways, including:

- Overseeing nearly \$4 billion of Broadband Technology Opportunities Program ("BTOP") and State Broadband Initiative ("SBI") grants;
- Working to reallocate 500 MHz of spectrum for commercial wireless broadband service;

- Developing and maintaining the National Broadband Map;
- Creating a digital literacy portal with the Department of Education and eight other agencies; and,
- Analyzing broadband availability and adoption data in collaboration with the Economics and Statistics Administration (“ESA”) of the Department of Commerce.

The Administration strongly believes that good data begets sound policymaking, and to that end, the Department of Commerce (“the Department”) is the leading source of published data on broadband availability and Internet use in America. The Department collects data from several sources, including BTOP, SBI, and the Computer and Internet Use Supplement to the Census Bureau’s Current Population Survey (“CPS”). These datasets are publicly available for use by researchers to conduct economic, financial, demographic, and other studies.

The National Broadband Map, which is a searchable database that includes over 125 million records, has already attracted nearly one million unique users and served over 100 million third-party data requests. Unveiled in February 2011 and updated every six months, the map offers a research tool that details individual Internet service providers, showing where they offer service, the maximum speeds they advertise, and how much of a geographic area – down to the Census block level – they cover.

While the map provides extensive data on the availability of broadband, the CPS Computer and Internet Use Supplement collects detailed data about Internet adoption – who actually goes online, and how. While over 90 percent of Americans live in areas where high-speed Internet is available, only seven in ten households used broadband at home by July 2011. Why the disparity? Overall, 48 percent of households lacking home Internet connections reported that they had no need to use the Internet at home, or were uninterested in it. Affordability is the next largest concern, cited by 28 percent of non-using households. The lack of an adequate (or perhaps any) computer ranked third (13 percent) among reasons given by households not online.

At NTIA’s request, the July 2011 CPS Computer and Internet Use Supplement included a significant new series of questions regarding online activities. The answers to these questions provide valuable insights into how people use the Internet. For example, Americans ages 25 and older frequently reported relying on the Internet for personal communications, information, financial services, and other activities. One of the most significant findings is that once disadvantaged groups overcome the hurdles of getting online, they – more than other users – conduct job searches online. This helps not only the individual but also the nation’s economy.

The CPS Supplement reviewed in this report is the first large-scale data collection in eight years of how people use the Internet, and should be invaluable for further study. With these and future data, we seek to monitor America’s embrace of the digital age and accelerate our progress in this regard through effective policymaking.

Exploring the Digital Nation: America's Emerging Online Experience

Acknowledgments

NATIONAL TELECOMMUNICATIONS & INFORMATION ADMINISTRATION

Lawrence E. Strickling
*Assistant Secretary for Communications
and Information*

ECONOMICS & STATISTICS ADMINISTRATION

Mark Doms
Under Secretary for Economic Affairs

Joint Project Team

NTIA

John B. Morris, Jr., *Associate Administrator for
Policy Analysis and Development*

James McConnaughey, *Chief Economist*

Maureen Lewis, *Director of Minority
Telecommunications Development*

Rafi M. Goldberg, *Policy Analyst*

ESA

Robert Rubinovitz, *Deputy Chief Economist*

Rebecca Lehrman, *Economist*

U.S. CENSUS BUREAU

- Demographic Surveys Division
- Technologies Management Office
- Demographic Statistical Methods Division
- Social, Economic, and Housing
Statistics Division
- Population Division

The Project Team would like to thank Sabrina Montes, David Beede, George McKittrick, Joshua Malloy, Nicholas Elo, Joanne Caldwell, and Jane Callen of the Economics and Statistics Administration; Angela Simpson, Marsha MacBride, Heather Phillips, Juliana Gruenwald, Kathy Smith, Eli Veenendaal, Anthony Wilhelm, Anne Neville, Laura Breeden, Mailyn Fidler, and Maxwell Slackman of the National Telecommunications and Information Administration; Lisa Clement, Gregory Weyland, Mary Beth Eldridge, Kyra Linse, Agatha Heesock Jung, Joyce Holland Ray, Sunhak Kim, Kurt Bauman, and Thomas File of the Census Bureau; Thomas C. Power and R. David Edelman of the White House Office of Science and Technology Policy; Chris Chapman of the Department of Education; and Peter Stenberg of the Department of Agriculture for their contributions to this report.

Exploring the Digital Nation: America's Emerging Online Experience

Executive Summary

This report, based on data from the Census Bureau's July 2011 Current Population Survey ("CPS") Computer and Internet Use Supplement, updates and substantially expands on the previous study in this series, *Exploring the Digital Nation: Computer and Internet Use at Home*, issued in 2011. For the first time in eight years, this study goes beyond new findings on computer and Internet adoption in the United States to also present data on Americans' online activities – what Americans do once they connect to the Internet. The dataset contains information collected from more than 53,000 households, reporting on what Americans do online – including enjoying entertainment, communicating with friends, job searching and training, and researching health conditions and care, among other activities.

Below are highlights of the July 2011 CPS results. These findings about online activities, broadband adoption, and reasons some do not go online at home provide key factual underpinnings for the development of sound policies for increasing broadband adoption in the United States.¹

What Americans Do Online

The July 2011 CPS data collection gathered information on a broad range of online activities. This report focuses primarily on three areas – employment, health, and civic engagement – that are particularly important for society. The CPS data suggest that widespread Internet use benefits society, that mobile devices further increase these benefits, and that the Internet's great utility leads users to go online regularly and rely on it in their daily lives.

- **Employment:** Seventy-three percent of unemployed Internet users reported going online to look for work, as did 52 percent of underemployed users. Online career training appeared to be most popular among those Americans who are currently employed. (pp. 6-7)
- **Health:** Researching health plans and finding medical information were relatively common online activities. Less common, however, was online interaction with healthcare professionals, and telemedicine remains in its infancy. (pp. 10-11)

¹ In this report, as in previous analyses, ESA and NTIA examine residential Internet service – service that connects homes to the Internet – from the demand side based on the Census Bureau's survey of households. The terms "adoption," "use," "utilization," "access," and "connection" are used interchangeably to indicate that a household reported having Internet service. The term "Internet service" includes both the provision of dial-up service and broadband service. Similarly, the CPS survey inquired about households' ownership or use of a home computer to examine whether they have available to them the devices people used to go online. The report describes such home computer access as "ownership" or "use" and employs the terms interchangeably. This study employs the terms "usage" and "online activities" in a similar way.

- **Civic Engagement:** The Internet may be significantly more effective than television – and closer to traditional print media and radio – in encouraging civic engagement, particularly in light of the Internet's emergence as a news medium. (p. 14)
- **Other Activities:** Large majorities of users relied on the Internet for personal communications (77 percent) and general information (66 percent). The Internet was also a popular venue for financial services, as 53 percent of users relied on the Internet for banking, and 52 percent relied on it for shopping and other consumer services. Additionally, nearly half of users depended on the Internet for entertainment, and a third relied on it for on-the-go services such as real-time directions. Seventy-two percent of Internet users went online daily for these and a broad range of other activities. (pp. 16-17)

How Americans Get Online

In considering how Americans connect to the Internet, the data show that both mobility and higher-speed connections are increasingly becoming hallmarks of daily life. Reliability and cost are among the most important factors for households in choosing an Internet provider. Disparities in broadband adoption based on demographics and geography persist, but have generally diminished over time.

- **Mobile Broadband is Growing:** While personal computers were still the preferred means of accessing the Internet, mobile phones were a strong complement to personal computers. Thirty-nine percent of people who accessed the Internet from home used both a personal computer and a mobile device. Tablets were not a primary means of going online for most Internet users in 2011, with only 9 percent saying they used a tablet to go online. (pp. 18-19)
- **Broadband Technologies are Dominant:** The types of technology that households have adopted to access the Internet have changed over time. Dial-up use has steadily declined, from 11 percent of households in 2007 to just 2 percent in 2011, so that virtually all households that used the Internet at home in 2011 did so via broadband technologies. Twenty-eight percent of households did not use the Internet at home, but 69 percent of households had some type of broadband Internet service at home, compared to only half (51 percent) of households in 2007. (p. 20)
- **Service Reliability is a Key Factor:** Among households using the Internet at home, 37 percent indicated they considered reliable service the most important factor in determining their choice of Internet service provider, closely followed by connection speed (33 percent), and then affordability (24 percent). (p. 21)
- **Cost is Also Important:** Thirty-eight percent of households that switched Internet service providers cited differences in cost as the main reason for doing so, followed by 30 percent of households that changed providers in order to obtain faster connection speeds. Thirty-six percent of households with broadband Internet service reported they paid between \$30 and \$44 per month for non-bundled service. Only 6 percent of households with broadband reported paying less than \$15 per month, while 16 percent reported paying \$60 or more per month. (pp. 23-24)

The Who and Where of Going Online

The prevalence of Internet use differs by demographic and geographic characteristics. In aggregate, seven out of ten households and about two out of three persons ages 16 and older used broadband at home by 2011. However, low-income, non-Asian minority, and rural households were much less likely to be connected than their more affluent, urban, and white or Asian American counterparts. Additionally, Internet users frequently go online at locations outside the home, including many who do not live in households with Internet connections. Disaggregating data in this fashion can help researchers and policymakers to understand better the nature of Internet use in the United States.

- **Impact of Demographics:** The propensity for households to own computers, use the Internet, and adopt broadband varied based on demographic characteristics. Low-income and less educated households experienced computer ownership and broadband adoption rates well below the national average. Furthermore, lower percentages of African American and Hispanic households adopted broadband Internet in 2011, compared to all households and to white and Asian American households. Households headed by someone with a disability also had lower levels of computer and Internet use. Households with school-age children were more likely than those without children to own a computer and to adopt broadband. Younger households had higher rates of computer ownership and broadband adoption compared to households headed by a senior citizen. (pp. 26-27)
- **Urban-Rural Divide:** Geographic location was also associated with differing adoption rates. Urban households had higher rates of computer ownership and broadband adoption than their rural counterparts. Compared to the national adoption rate, white and Asian American households, and high-income and highly educated households, had higher computer ownership and broadband adoption rates in both urban and rural areas. Rural African American and Hispanic households with low incomes reported the lowest computer and broadband adoption rates. (pp. 26-29)
- **State-by-State Data:** At the state level, the proportion of households with a computer at home ranged from 65 percent to 85 percent. State broadband adoption rates ranged from 53 percent to 80 percent. Broadband adoption rates in states tended to be higher in urban locations than in rural locations, with the size of the urban-rural gap ranging from 1 percentage point to 29 percentage points in 2011. (pp. 31-34)
- **Place of Access:** Ninety-two percent of people who accessed the Internet did so from home. Internet users who did not have a computer at home went online at public libraries, work, school, and a range of other places including other people's houses, cafés, and community centers. (p. 35)

Why Some Americans Do Not Go Online at Home

A key ongoing focus of the CPS data collections in the *Digital Nation* series is to look closely at households that do not have broadband Internet service to assess why not. Despite the tendency most have developed for accessing the Internet from home, approximately 30 percent of the 119 million households represented in the CPS did not use the Internet at home, which contributed

to the persistence of the digital divide. While that gap of digitally disconnected households has continued to shrink in recent years, households reported three primary reasons for not using the Internet where they live: They do not need or are not interested, the Internet is too expensive, or they lack adequate computing equipment.

- **Big Picture:** Almost half of households not using the Internet at home (48 percent) stated they do not need the Internet or are not interested in accessing this important resource. Another 28 percent of households without Internet at home cited expense as the main deterrent to their use, and 13 percent explained they did not have a computer at all or one that worked well enough to go online. (pp. 36-41)
- **Lack of Interest or Need:** Households whose members have never used the Internet in their homes were most likely to say they had no interest in or need for such service at 52 percent, compared to 20 percent of former home Internet users who no longer had such service. Similarly, 52 percent of households without children under 18 living at home expressed disinterest in home Internet use, making them twice as likely as households with school-age children at home (26 percent) to cite this reason. The high incidence of disinterest in home Internet use among those who have never used the Internet at home and those without school-age children living with them may reflect these groups' lack of exposure to the benefits and relative ease of Internet use that experienced Internet users in the household could provide. (pp. 36-38)
- **Too Expensive:** The percentage of households reporting that home Internet service was "too expensive" increased by 4 points in the nine-month period between the 2010 and 2011 data collections, possibly reflecting some consumers' concern about their personal financial circumstances during a period of slow economic recovery. Forty-one percent of former users discontinued home Internet service because of its expense. (pp. 38-40)
- **No Adequate Computer:** Although the number of households without a computer or one adequate enough to connect to the Internet declined by 2 percentage points between 2010 and 2011 to 13 percent, 57 percent of households citing this reason for not using the Internet in their homes earned less than \$25,000 annually. (p. 41)
- **Lack of Availability:** Among non-using households, a lack of service availability was not one of the key obstacles to using the Internet at home. For example, only 2 percent of rural households cited no Internet service in their area as their primary reason for not using the Internet at home, compared to 1 percent of urban households. However, the data still show a significant unmet demand for broadband among dial-up Internet users. Twenty-one percent of dial-up users stated they did not use broadband at home because it was not available in their area. (p. 42)

The July 2011 CPS Computer and Internet Use Supplement, which surveyed more than 53,000 households, is a critical source of data about how Americans use the Internet, how they go online, and why some do not. This report highlights some of the key findings from the data, and lays a foundation for a broad array of academic and policy researchers to explore the dataset and reach additional conclusions to inform policy decisions about broadband and the Internet.

Exploring the Digital Nation: America's Emerging Online Experience

Table of Contents

1. Introduction: Broadband Internet in the United States	1
2. Online Activities: Why Connectivity Matters	4
3. Adoption	18
4. Non-Adoption at Home	35
5. Conclusion	42
References	45
Appendix A: Data and Methodology	49
Appendix B: Statistical Tables	51

Exploring the Digital Nation: America's Emerging Online Experience

1. Introduction: Broadband Internet in the United States

The Internet plays a vital role in most Americans' lives, and is increasingly becoming a key tool for job searches and training, for research on health issues, and for active participation in our society. Since its commercialization in the 1990s, the Internet has brought sweeping changes in the ways Americans communicate, gather information, conduct commerce, and entertain themselves. Widespread Internet use provides numerous societal benefits, including increased civic engagement,² economic growth, and enhanced productivity (NTIA, 2011, p. 6).

To inform public policy decisions that maximize the benefits of a connected society, the Department of Commerce has been at the forefront of gathering critical information about the availability, adoption, and use of Internet services for almost twenty years. The National Telecommunications and Information Administration ("NTIA") sponsors the Computer and Internet Use Supplement to the Census Bureau's Current Population Survey ("CPS") to gather the data on Internet adoption and usage habits that form the basis for this report. This report – prepared by NTIA and the Economics and Statistics Administration ("ESA") – provides highlights from the latest of this series of data collections, and for the first time in eight years, the data include an array of information on how Americans use broadband services.

As the National Broadband Map demonstrates, high-speed Internet is widely available in the United States. The map shows that 98 percent of Americans live in areas where broadband Internet connections are available with download speeds of at least 3 Mbps and upload speeds of at least 768 Kbps, through either wired or wireless technologies (see Table 1).³

² Jennings and Zeitner (2003) determined that Internet use may increase levels of civic engagement (or at least abate a generally negative trend). Tolbert and McNeal (2003) found that Internet users were more likely to vote in the 1996 and 2000 presidential elections.

³ The National Broadband Map ("NBM") provides detailed broadband availability data. Launched in 2011, the map displays data collected semiannually by NTIA's State Broadband Initiative ("SBI") in collaboration with the Federal Communications Commission ("FCC") and 56 state and territorial partners. The NBM database provides a snapshot of the United States on a very granular (Census block) level, yielding substantial geographic data relating to broadband availability. Data available from the map include each company providing broadband service to a Census block, the technology used to provide each service, and the maximum advertised speed of the service (both download and upload).

Table 1: Nationwide Availability of Broadband by Minimum Speed and Technology Type, Percent of Household Units and Population, 2011

Technology	Download Speed: 3 Mbps Upload Speed: 768 Kbps			
	Household Units	% Margin of Error (+ / -)	Population	% Margin of Error (+ / -)
Any Technology	97.7	0.7	98.2	0.6
Wireline	92.8	0.0	93.4	0.0
Wireless	92.8	2.0	93.9	1.8

Source: National Broadband Map, Broadband Statistics Report, "Access to Broadband Technology by Speed" (NTIA & FCC, 2013).

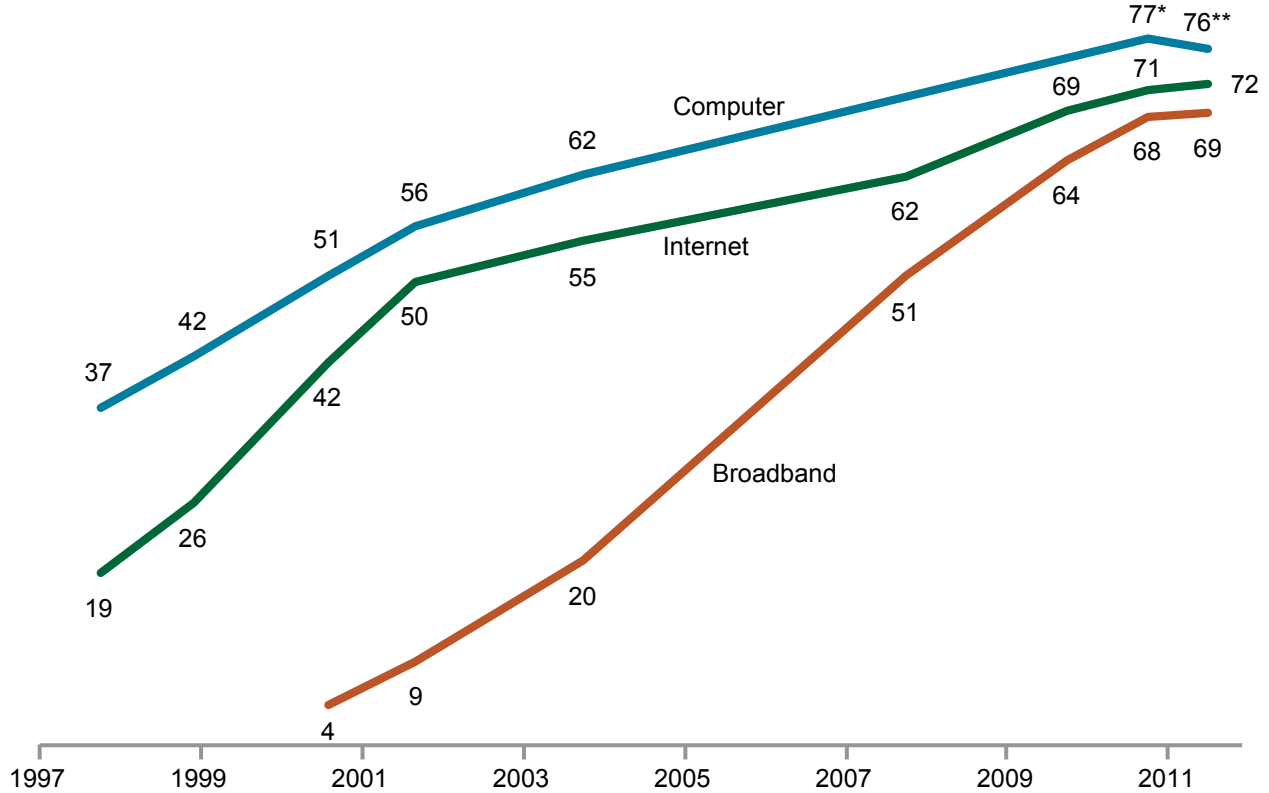
In sharp contrast to the near ubiquitous availability of high-speed Internet, actual Internet use is not yet universal. Data in the 2011 CPS Supplement show that household use of computers, the Internet, and specifically broadband Internet have all increased significantly during the last two decades (see Figure 1).⁴ Between 2000 and 2011, household computer use increased by 49 percent, while home Internet use rose by 71 percent, and broadband Internet use soared by over 1,600 percent. For comparison, household use of traditional telephone services remained relatively constant, rising by just 2 percent during that period (FCC, 2011).

Despite this growth, Internet adoption rates lag behind availability in the United States. Approximately 69 percent of households used broadband Internet at home (72 percent if including dial-up) in July 2011 (see Figure 1).⁵

⁴ See Appendix A for a detailed description of the data and methodology employed in this report.

⁵ Americans are far ahead of the world as a whole, with only one-third of the world's 1.8 billion households online in 2011 (ITU, 2011).

Figure 1: Overview of Household Adoption Rates by Technology, Percent of U.S. Households,⁶ 1997-2011



* Includes handheld devices, such as smartphones and tablets

** Includes tablets but not smartphones

Nationwide results mask the more complex details about who does and does not go online. Internet use varies significantly among different demographic groups and geographic areas.⁷ In the United States, factors such as income, educational attainment, age, gender, race, employment status, and disability status correlate with uneven Internet adoption rates. Geography also makes a difference, including population density and state. Additionally, those households that do not go online at home reported a range of underlying reasons for non-use. Lack of need or interest and affordability ranked as the major reasons for non-use at home. However, the reasons varied in importance depending on the demographics or geography involved.

⁶ CPS Supplement questions about computer use have evolved over time to keep up with the increasing computing capabilities of mobile devices. In 2003, the survey asked only about the presence of desktop and laptop personal computers in a household; however, in 2010 the increasing popularity of mobile devices prompted the inclusion of “handheld computers,” including smartphones, in the questionnaire. Staff further refined the methodology in 2011 by specifically asking about the presence of “desktop, laptop, netbook, notebook, and tablet computers” in a household, while a separate question addressed mobile phone usage. Due to the highly portable nature of mobile phones, the 2011 CPS Supplement gathered data on usage at any location rather than strictly at home.

⁷ This observation applies outside the United States as well. For example, in the United Kingdom, 80 percent of all households had Internet service at home in 2012, including 95 percent of households with children (Office for National Statistics, 2012).

Beyond the detailed data on Internet adoption, the 2011 CPS Supplement included questions about online activities. This significantly expanded survey contained new questions asking for which daily activities Americans used and relied on the Internet. ESA and NTIA analysis of these results suggest that the Internet has become an important tool for Americans seeking to advance their careers, learn about health care options, and become active citizens in their communities. Furthermore, Internet users frequently reported that they rely on going online for personal communications, general information, financial services, consumer services, and entertainment. These newly collected data also reveal, among other findings, that mobile devices facilitate the use of a wide range of online applications. This comes at a time when half of all mobile phone users in the United States use smartphones (The Nielsen Company, 2012).

The sections that follow probe various dimensions of Internet use in the United States. Section 2 discusses what people reported doing while online, focusing particularly on the societal benefits of specific activities, the effects of mobile devices on usage patterns, and the extent to which the country relies on the Internet and the applications it enables. Section 3 details the devices and Internet technologies Americans used to go online, the factors that motivated them to use the Internet and switch providers, the costs of Internet service, and demographic disparities in Internet use. Non-adoption of the Internet is the focus of Section 4, including the main reasons households gave for not having Internet connectivity at home. This study focuses particular attention on demographic and geographic differences in usage patterns and the implications for the country.

2. Online Activities: Why Connectivity Matters

Since NTIA published its first report on computer and Internet use nearly two decades ago, this series of studies has focused primarily on adoption rates and the digital divide between various demographic and geographic groups. Universal Internet use in the United States is a critical national policy objective, and over the years ESA and NTIA have examined gaps in adoption to understand better how to eliminate them. But *why* does Internet use matter, and what makes adoption by all Americans an appropriate goal for policymakers?

Extensive external research underlies the Administration's belief in the great value of universal Internet adoption to the nation. Academic studies suggest that Internet use increases employment and income, enhances consumer welfare, and promotes civic engagement (Brynjolfsson, Hu, & Smith, 2003; Crandall, Lehr, & Litan, 2007; Gillett, Lehr, Osorio, & Sirbu, 2006; Stenberg et al., 2009; Tolbert & McNeal, 2003). Using the Internet may even reduce damage to the environment and improve access to health information (Choo, Mokhtarian, & Salomon, 2005; Rains, 2008; Romm, 2002). In making information exchange simple, fast, and constant, the Internet enables users to lead lives that are more informed, efficient, and fulfilling.

In support of the academic community, and in an effort to expand the scope of the Department's own research to include the benefits of Internet use, NTIA worked with the Census Bureau to expand substantially the scope of the CPS Computer and Internet Use Supplement's July 2011 data collection. For the first time since 2003, the CPS Supplement included extensive questions about the ways in which people use the Internet, including the applications they utilize, their devices of

choice, and the aspects of life for which they rely on the global network. The data show how often Americans went online, the places in which they did so, and the relationship between socioeconomic factors and these actions. The collected data – highlighted below – suggest that widespread Internet use benefits society, that mobile devices further increase these benefits, and that the Internet's great utility leads users to go online regularly and rely on it in their daily lives.

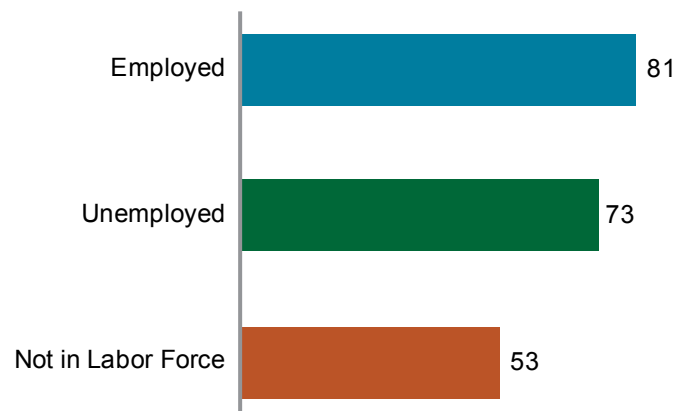
Societal Benefits

The CPS Supplement results, taken together with the extensive body of literature on the benefits of Internet use, suggest that increasing adoption can benefit society by boosting employment, improving public health, and facilitating active citizenship. The open and egalitarian nature of the Internet enables developers to create an impressive range of applications, limited primarily by the imagination. These applications, created in large part by American innovators, enable face-to-face conversations with friends and family, provide maps and directions to unfamiliar places, and support instantaneous searches through entire libraries of human knowledge. Most Americans have clearly determined the Internet to be worth the cost of service and equipment, as demonstrated by its rapid adoption during the first twenty years of public availability. Yet the CPS Supplement data confirm that Internet use remained far from universal in the United States in 2011. If increased adoption benefits society in addition to the users themselves, then the marketplace for Internet access may not reach its optimal size without additional investment in infrastructure, digital literacy training, or other forms of support. The likelihood that society may indeed benefit from widespread Internet use is examined below.

Employment

Given the direct correlation between income and Internet use established in previous *Digital Nation* reports (ESA & NTIA, 2011), it is not surprising that employed Americans were more likely to go online than their peers who were not working. Among the nationwide population ages 25 and older, 81 percent of employed persons were Internet users in July 2011, compared with 73 percent of the unemployed⁸ and just 53 percent of those persons not in the labor force (see Figure 2).⁹ Even among employed Americans, the underemployed (those working fewer than 35 hours per week who

Figure 2: Internet Use by Employment Status, Percent of Persons Age 25+, 2011



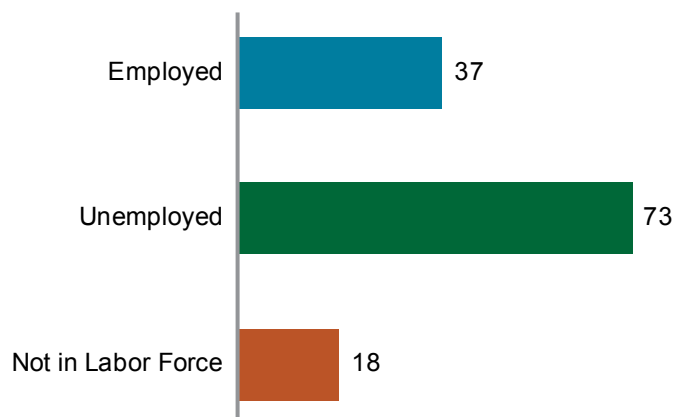
⁸ ESA and NTIA have tested all comparisons referenced in this paper, which are significant at the 95 percent confidence level.

⁹ We use the terms “employed,” “unemployed,” and “not in the labor force” in the same fashion as the Bureau of Labor Statistics. For example, a person who is unemployed has no job, is currently available for work, and either has actively looked for work during the past four weeks or is expecting to be recalled from temporary layoff (BLS, 2009).

want to work full-time) faced a similar disadvantage compared with fully employed persons.¹⁰ Only 71 percent of the underemployed were Internet users, compared with 81 percent of fully employed persons. This disparity prompts examination of whether decreased Internet use is merely a symptom of diminished income or other factors, or if evidence suggests a correlation between Internet use and employment outcomes.

One of the ways in which Internet use may affect employment is through the ability to search and apply for jobs online, especially in light of the fact that many leading employers, including the Federal Government, require online job applications.¹¹ Looking for work was a relatively frequent activity for Americans using the Internet, with 34 percent of Internet users reporting that they go online when conducting a job search. Unemployed Internet users were nearly twice as likely to look for work

Figure 3: Online Job Searching by Employment Status, Percent of Internet Users Age 25+, 2011



online as their employed counterparts, with 73 percent of the unemployed using the Internet for this activity. For comparison, 37 percent of employed Internet users conducted job searches online, and only 18 percent of those not in the labor force reported this activity (see Figure 3). Similarly, 52 percent of underemployed persons who went online used the Internet to look for jobs, compared with 36 percent of fully employed users. The apparent tendency for Internet users to go online for job searching when they are in immediate need of employment may help explain why demographic groups facing higher unemployment rates were more likely to

engage in this activity. While only 32 percent of white Internet users went online when conducting a job search, 35 percent of Hispanic users and 41 percent of African American users reported this activity.¹² Across communities, Internet users who most needed to find a job went online to advance their search.

While searching for jobs online was most frequent among those Internet users actively seeking employment, Internet-based job training was somewhat more common among those who were currently working. Twenty-eight percent of employed Internet users reported going online for job training or courses, while 25 percent of their unemployed counterparts participated in this activity. Interestingly, underemployed Internet users were less likely (21 percent) to participate in job training online than other employed users (28 percent), suggesting that such training may be more accessible to those persons with a full-time employer.

¹⁰ “Fully employed persons” refers to employed persons who are not considered to be underemployed. Underemployed persons have a job, but work fewer than 35 hours per week and want to work full-time.

¹¹ For example, the FCC noted in December 2012 that “over 80 percent of Fortune 500 companies... require online job applications” (FCC, 2012a).

¹² Data for whites, African Americans, Asian Americans, and American Indian and Alaska Natives do not include people of Hispanic origin, who may be of any race.

NTIA and other federal partners developed DigitalLiteracy.gov as a valuable resource for practitioners providing digital literacy training and services in their communities. The portal includes best practices that grantees are implementing in their projects, and other useful tools. NTIA collaborated with the U.S. Departments of Education, Agriculture, Energy, Health and Human Services, Housing and Urban Development, and Labor, as well as the Corporation for National and Community Service, the Federal Communications Commission, and the Institute of Museum and Library Sciences. The portal offers online resources on many topics, including workforce training and online job searching.

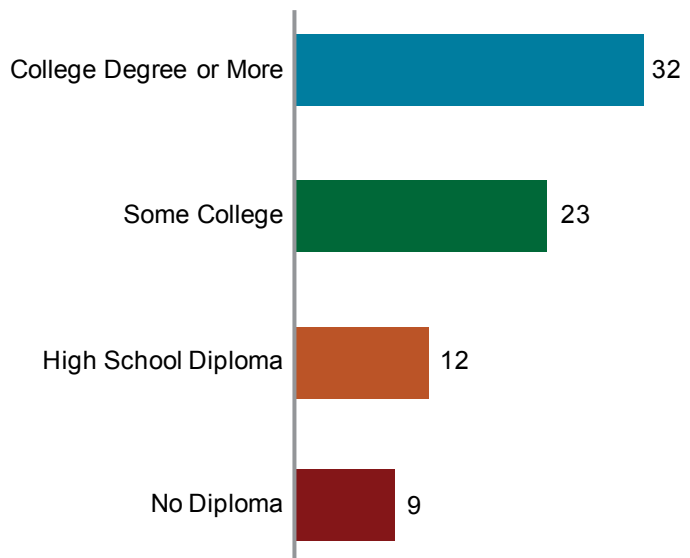
Education and family income levels also reveal disparities in Internet use for job training or courses. Only 9 percent of Internet users without high school diplomas participated in online job training or courses, compared with 12 percent of high school graduates, 23 percent of those with some college credit, and 32 percent of college graduates (see Figure 4). Similarly, 15 percent of online Americans with annual family incomes below \$25,000 used the Internet for job training, compared with 31 percent of those with family incomes of \$100,000 or more.

Americans clearly find the Internet useful in supporting their career prospects. Job seekers frequently go online to search for opportunities, while employed persons may use the Internet to further develop their skills. These usage patterns and existing research prompt examination of whether Internet use is positively correlated with employment, holding constant other factors

believed to influence employment including age, education, gender, marital status, race, disability, household size, population density, and region. The large volume of regularly-asked CPS questions on employment, which the Bureau of Labor Statistics (“BLS”) uses to calculate the official labor force estimates, helps in introducing evidence on this question. Multivariate regression analysis enables estimation of the extent to which Internet use and the factors mentioned above are correlated with an individual’s probability of employment. Appendix B details the model used for this analysis (see Table B1).

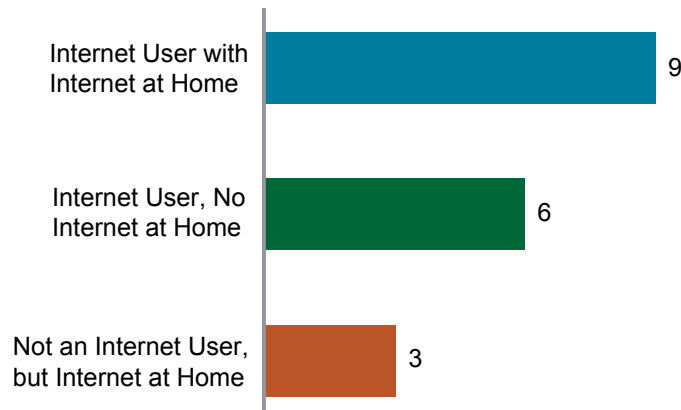
After controlling for demographic and geographic factors, Internet use among adults ages 25 and older was associated with a 6 percentage point increase in probability of employment, relative to individuals who were not online. Furthermore, living in a household where someone goes online from home – regardless of whether the individual personally does so or not – was associated with a 3 percentage point increase in the probability of having a job. The marginal effects are cumulative, so the model suggests that fitting into both of the aforementioned categories was correlated with a 9 percentage point increase in probability of employment, relative to individuals who neither used

Figure 4: Job Training Online by Education, Percent of Internet Users Age 25+, 2011



the Internet nor resided in a household where the Internet was used (see Figure 5). The model also shows that variables like age, gender, education, and race correlate with employment outcomes.¹³ While this regression analysis alone cannot establish the extent to which Internet use might improve employment outcomes, any benefits that exist go beyond the obvious returns to individual Americans and their families. Increased employment rates improve the economy, boost tax revenue

Figure 5: Marginal Effects of Internet Use on Employment, Percentage Point Increase for Persons Age 25+, 2011



to support schools and other vital public services, and, according to researchers, may even lead to decreased crime (Bausman & Goe, 2004).

These findings alone do not prove, nor can any one study of survey data establish, that Internet use causes employment. As many jobs require utilizing the Internet for communication and other purposes, it is plausible that employment causes Internet use rather than the other way around, or that each factor encourages the other. Additionally, the mutual association with family income may confound the observed relationship between the two factors.

Employment leads to higher income, and income enables individuals to purchase the equipment and services required to go online. Given the existence of other studies suggesting positive effects of Internet use on employment (Crandall, Lehr, & Litan, 2007; Gillett, Lehr, Osorio, & Sirbu, 2006), these findings provide some additional support for the theory. Taken together with the reported findings on Internet use specifically for job searching and training, the Internet appears to be useful in improving the prospects for employment.

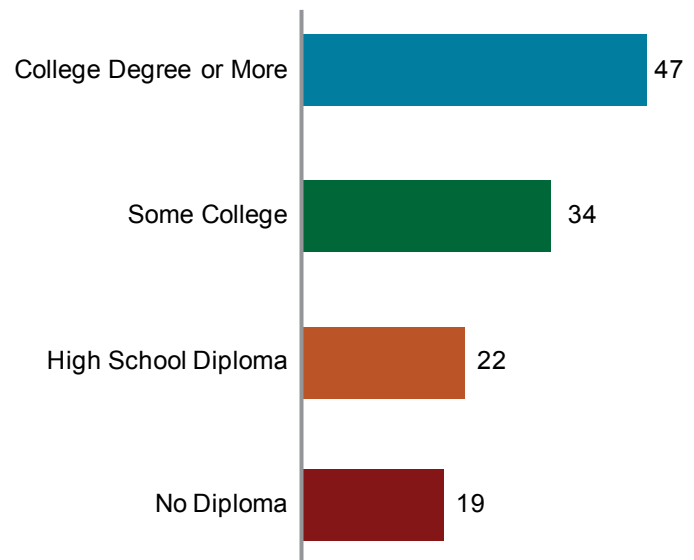
¹³ For example, the odds of employment rose by 4 percentage points between ages 25 and 36 and then gradually declined every year after. Women who have never married were around 3 percentage points less likely to be employed than similarly-situated males, while married women were over 18 percentage points less likely to be employed compared with married men. Higher levels of education were also associated with increased likelihood of employment, with college graduates having been nearly 14 percentage points more likely to be employed than adults lacking a high school diploma. Persons with disabilities were approximately 27 percentage points less likely to be employed than their peers without disabilities. Finally, despite controlling for a wide range of factors, the model predicts that race and ethnicity still correlated with employment outcomes. Relative to whites, African Americans were nearly 5 percentage points less likely to be employed.

Healthcare

In addition to assisting Americans in advancing their careers, the Internet may also improve healthcare outcomes among its users. Going online to research information on health plans or practitioners, for example, is a relatively common activity, reported by 35 percent of Internet users. Given the Internet's considerable strength as an information source, using it for this purpose may enable individuals to make better choices about their healthcare options.¹⁴

As with employment-centric tasks, use of the Internet for this type of healthcare research was significantly more common among some demographic groups than others. Thirty-seven percent of Internet users between ages 25 and 44 reported looking up health plans or practitioners online, and 35 percent of those between 45 and 64 did so. Yet only 29 percent of those users ages 65 and older researched health plans or practitioners online. The data also suggest significant disparities based on population density. Thirty-seven percent of Internet users living in urban¹⁵ areas used the Internet to research health plans or practitioners, compared with only 26 percent of those living in rural areas. Differences in income and education also reveal gaps in utilizing the Internet for healthcare research. Only 19 percent of Internet users lacking a high school diploma went online for healthcare research, compared with 22 percent of high school graduates, 34 percent of those with some college credit, and 47 percent of college graduates (see Figure 6). Similarly, while 48 percent of users with annual family incomes of \$100,000 or more used the Internet for this purpose, only 24 percent of those with incomes below \$25,000 per year reported researching healthcare information online.

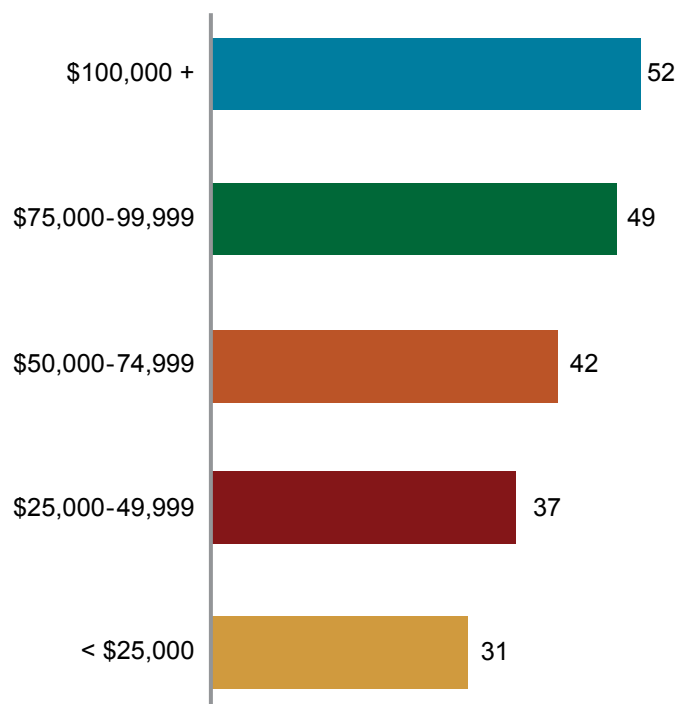
Figure 6: Researching Health Plan or Practitioner Information Online by Education, Percent of Internet Users Age 25+, 2011



¹⁴ For example, Hale (2012) suggests that “the Internet has the potential to alleviate social disparities in health by providing greater access to health information and other health-related resources.”

¹⁵ 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 a population of between 10,000 and 50,000 (OMB, 2009).

Figure 7: Researching Medical Treatment Information Online by Family Income, Percent of Internet Users Age 25+, 2011



Internet users also went online to find health information for self-diagnosis or treatment, with 42 percent of users engaging in this activity. While finding medical information online is no substitute for consulting a trained medical professional, reputable online sources may complement traditional healthcare services by assisting Americans in properly treating minor ailments and determining when to seek professional medical attention. As with researching health plan and practitioner information, using the Internet for self-diagnosis or treatment was far more common among certain groups of Internet users. For example, while only 31 percent of Internet users with annual family incomes below \$25,000 went online to research medical treatment, 52 percent of those with family incomes of \$100,000 or more reported using the Internet for this purpose (see Figure 7).

As is the case with other online activities,

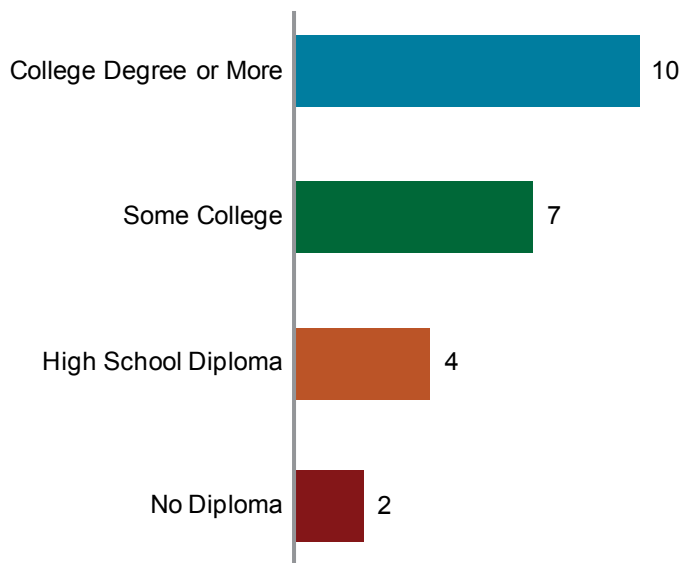
groups with differing education levels also exhibit similar disparities. Fifty-one percent of Internet users with college degrees went online to research health information for self-diagnosis or treatment, compared with 42 of users with some college credit, 30 percent of those with high school diplomas, and just 22 percent of those without a high school diploma. White and Asian American Internet users were more likely to engage in this online activity (44 percent and 40 percent, respectively) compared with African Americans (33 percent) and Hispanics (32 percent). Perhaps surprisingly, the rate at which Americans used the Internet for medical research did not vary dramatically based on age group; 42 percent of Internet users between 25 and 44, 42 percent between 45 and 64, and 38 percent ages 65 and older reported conducting this type of research online.

While researching health plans and finding medical information were relatively common online activities, the 2011 CPS Supplement data suggest that Internet users are far less likely to interact electronically with their healthcare professionals. Only 7 percent of Internet users reported going online to access medical records, participate in video conferencing with a doctor, or take advantage of remote procedures such as heart rate monitoring. Although these activities were not common among any demographic groups, a few interesting trends are apparent. For example, Internet users living in urban areas were twice as likely to participate in online healthcare activities (sometimes known as “telemedicine”¹⁶); 8 percent of users in urban areas reported engaging in these activities,

¹⁶ Some experts also refer to these activities as examples of “telehealth.” The American Telemedicine Association considers “telehealth” and “telemedicine” to be synonymous, while acknowledging that others in the field “have parsed out unique definitions for each word” (ATA, 2012).

compared with 4 percent of their rural counterparts. The relatively low uptake of telemedicine in rural areas suggests that it has not yet reached its potential, especially given that some experts consider telemedicine particularly important in rural areas where medical professionals may be miles away (Harrison & Lee, 2006). Disparities based on income and education also applied to remote healthcare activities. While 11 percent of Internet users with family incomes of \$100,000 or more engaged in telemedicine activities, only 4 percent of those in the under \$25,000 bracket reported such activities. Telemedicine was also much more common among users with college degrees, at 10 percent, than those with no high school diploma, at 2 percent (see Figure 8). Perhaps less predictably, few racial disparities were evident in utilization of telemedicine, although Asian American Internet users (11 percent) were significantly more likely to undertake such activities than whites (7 percent), African Americans, or Hispanics (each 6 percent). In contrast to the other two healthcare-related activities discussed above, telemedicine remains in its infancy.

Figure 8: Using Telemedicine Online by Education, Percent of Internet Users Age 25+, 2011



Although it is beyond the scope of this report to attempt to estimate the Internet's effect on health policy challenges, it is clear that Internet users find utility in going online to get information about health insurance and providers, as well as to assist in self-diagnosis and treatment of health issues. Such activities may allow Internet users to leverage online information to make more-informed choices about their healthcare.

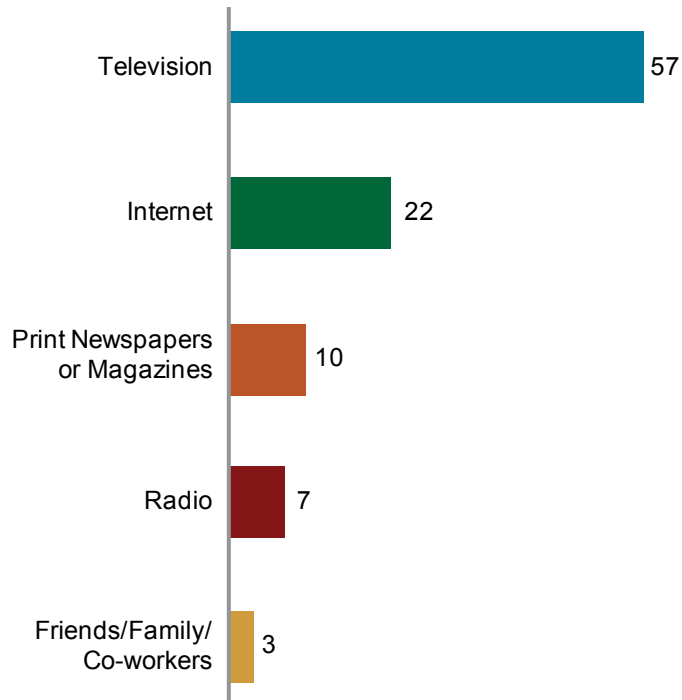
Civic Engagement

While the benefits of increased employment and improved healthcare are readily understood, the concept of civic engagement may be less familiar. For several decades, social scientists have used civic engagement to refer to a range of activities through which people participate in their communities. In his landmark study of social capital, Robert Putnam recognizes several forms of civic engagement, including political activity, family and neighborhood connections, and organizational membership (Putnam, 2000). Many believe that civic engagement boosts trust, cooperation between neighbors, and participation in the country's institutions. Given Putnam's observation that the American tradition of civic engagement is important to the nation's well-being, Internet applications that stimulate greater involvement in civic life and strengthen democracy merit further study.

As a communications and information tool, the Internet has great potential to influence civic engagement. For example, 56 percent of Internet users went online to obtain news or other information. In view of research suggesting that media attentiveness may help predict civic engagement (Jennings & Zeitner, 2003), it is encouraging that most Internet users found utility in

going online to learn about current events. Although television remained the primary source of news for more than half of Americans who go online, 22 percent cited the Internet as their primary source (see Figure 9). And among Internet users who do go online for at least *some* news, about the same percentage chose the Internet as their primary source as cited television (39 percent relying on the Internet as their primary source versus 42 percent for television).

Figure 9: Primary Source of News or Other Information, Percent of Internet Users Age 25+, 2011

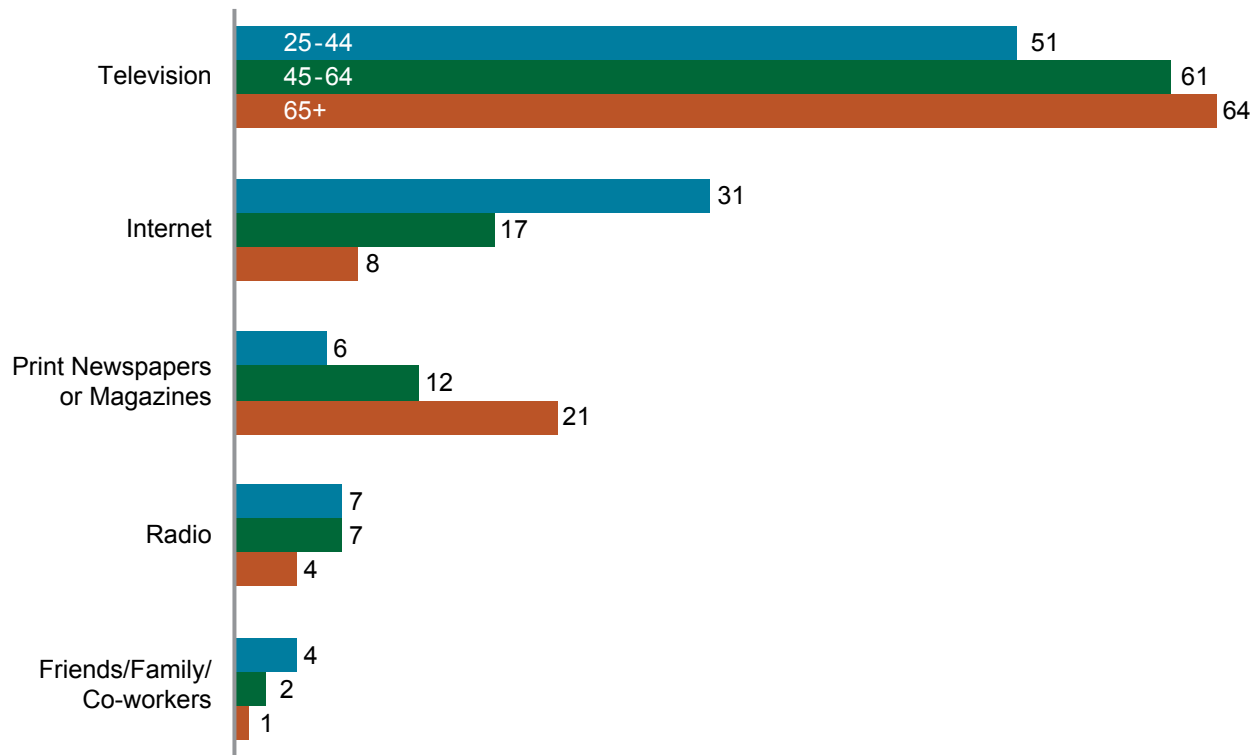


Although the Internet had yet to surpass television as America's primary news medium in 2011, certain groups of Internet users were more likely than others to report that going online was their primary means of learning about current events. Age is a particularly strong predictor of whether an Internet user reported this behavior, with younger individuals being far more likely to use the Internet as their primary news source. While 31 percent of Internet users between 25 and 44 did so, only 17 percent of those between 45 and 64 and 8 percent of those ages 65 and older primarily went online to get their news. Older Americans who used the Internet were more likely to turn primarily to television or print media for news or other information (see Figure 10). The survey results show significant racial differences in the Internet's prominence as a news source; one-third of Asian American Internet users primarily went

online for news, compared with 23 percent of whites and 17 percent of both African Americans and Hispanics. Additionally, male Internet users were more likely than women to have listed the Internet as their primary news source (25 percent vs. 19 percent), and Internet users in metropolitan areas did so more frequently than nonmetropolitan dwellers (23 percent vs. 17 percent). Finally, income and education once again revealed significant disparities. While 29 percent of Internet users with family incomes over \$100,000 and 31 percent of users with college degrees used the Internet as their primary means of obtaining news, only 16 percent of those with family incomes below \$25,000 and 8 percent of those without a high school diploma did so.

The Internet's increasing role in keeping Americans informed of current events prompts examination of whether obtaining news online promotes civic engagement. Several studies suggest a positive association between various dimensions of Internet use and civic engagement (Jennings & Zeitner, 2003; Moy, Manosevitch, Stamm, & Dunsmore, 2005; Tolbert & McNeal, 2003). The CPS Supplement dataset offers one proxy for civic engagement – whether respondents discussed current events with friends, family, or co-workers. Although talking about the news with others was rarely an individual's primary means of obtaining such information, 41 percent of Internet users reported engaging in conversations about the news, compared with just 24 percent of non-users. The CPS data

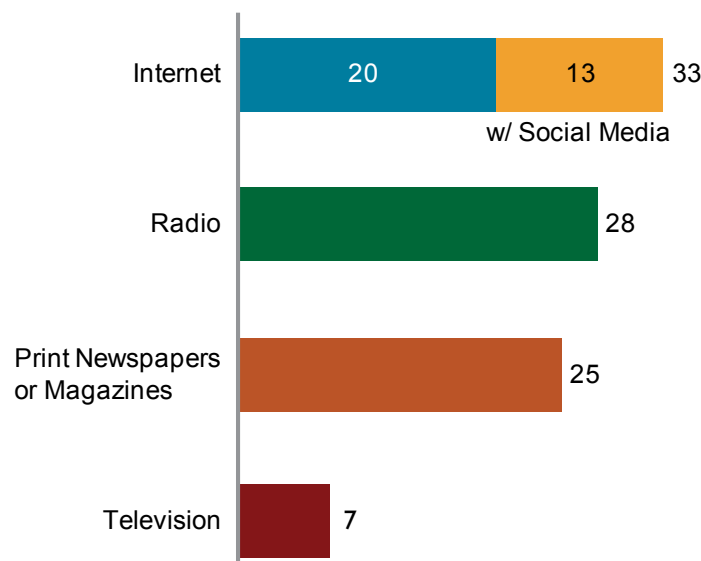
Figure 10: Primary News Source by Age Group, Percent of Internet Users Age 25+, 2011



may provide evidence as to whether Internet use, or specifically using the Internet to obtain news, affects the probability that an individual talks about the news with others. Similar to the above analysis of the relationship between Internet use and employment, multivariate regression techniques enable assessing the marginal effects of going online on discussing the news with others when controlling for demographic and other variables. Appendix B presents details of the model (see Table B2).

After accounting for demographic and geographic differences, as well as for use of other news sources, the data demonstrate that Americans who obtained news online were 20 percentage points more likely to discuss the news with friends, family, or co-workers. Interestingly, the model attributes this very powerful correlation to using the Internet for news in particular. In contrast to the earlier analysis of employment, which suggests that merely being an Internet user is associated with increased likelihood of having a job, Internet users did not exhibit increased civic engagement compared with their non-using peers unless they actually obtained news online. Additionally, Americans who engaged in social networking to obtain news or other information were 13 percentage points more likely to discuss the news with others than those who did not use social networking for news. In total, someone who obtained news through social networking sites was 33 percentage points more likely to talk about current events with others than peers who either did not use the Internet or did not utilize it to learn about current events.

Figure 11: Marginal Effects of News Sources on Discussing News, Percentage Point Increase for Persons Age 25+, 2011



The use of traditional media sources for news also appears to correlate with increased propensity to talk about the news with friends, family, or co-workers (see Figure 11). Americans who listened to the radio for news were particularly likely to discuss current events, as they did so at a rate 28 percentage points greater than their non-listening peers. Similarly, those who turned to print media for news were 25 percentage points more likely to talk about the news with others. Watching news on television, however, was associated with a much more modest increase in the probability of discussing current events, as it only boosted the odds by 7 percentage points. These marginal effects are cumulative; Americans who utilized multiple news sources were also

more likely to also discuss the news with others. This finding raises the question of how much of the observed effects are due to the various media types themselves, and how much may be attributable to general attentiveness to current events. In other words, individuals who make use of multiple news sources may be more likely to engage in conversations about the news, irrespective of the specific media upon which they depend. Furthermore, utilizing various forms of media appears to have a greater effect on discussing the news with others than demographic factors.¹⁷

While these findings suggest an association between obtaining news, regardless of source, and talking about the news with friends, family, or co-workers, the results also suggest a positive role for the Internet in encouraging this form of civic engagement. Intuitively, it makes sense that people who talk about the news also stay informed about it through other means, but the model implies that the propensity for someone to engage in such conversations varies based on the news sources they consult. It is encouraging that the Internet may be significantly more effective than television and closer to traditional print media and radio in encouraging civic engagement, particularly in light of the Internet's increasing prominence as a news medium. However, as is true of the earlier regression model examining Internet use and employment, these findings alone cannot establish a causal relationship between online news consumption and civic engagement. The model may not control

¹⁷ Income had no statistically significant impact on this aspect of civic engagement, and the predicted effects of education were small and only partially significant. A few factors exhibited clearer relationships with discussing the news; women were 3 percentage points more likely than men to discuss current events when holding other variables constant, disabled persons were 2 percentage points more likely to do so than their non-disabled counterparts, and non-citizens were 2 percentage points less likely than citizens to engage in this activity. The comparatively muted observed effects based on demographic factors highlight the importance of general media attentiveness in predicting whether an individual discussed current events with others. However, some of those factors – especially education – might have correlated with an individual's propensity to obtain news information from any source, so the model may underestimate their importance.

for important factors influencing civic engagement due to a lack of available data in the CPS.¹⁸ That said, to the extent that obtaining news and other information online might foster increased community participation and social capital, and lead to a more informed electorate, the Internet may strengthen the country's democratic character by encouraging Americans to participate actively in shaping the nation's future.

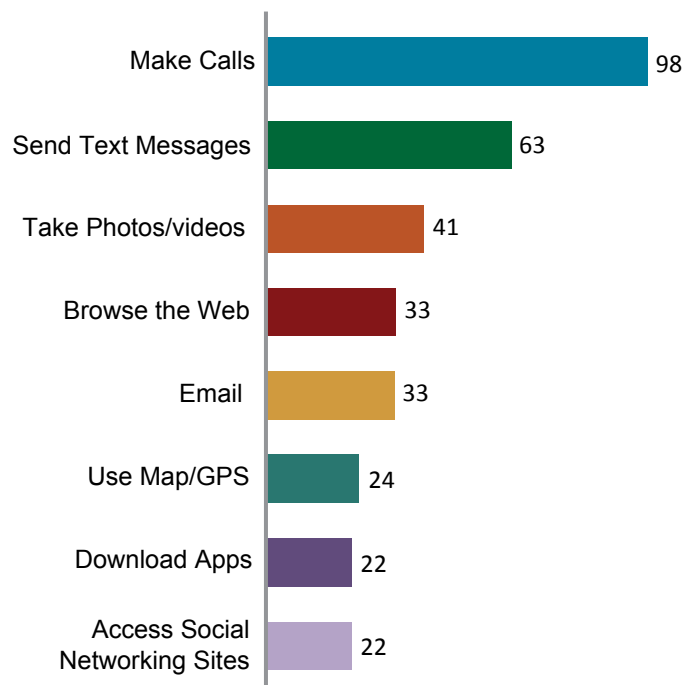
Mobile Devices

American mobile phone users employ their devices in a variety of ways, as seen in Figure 12. Second in popularity only to making phone calls, 63 percent of users indicated that they sent text messages using their mobile phones. However, with the proliferation of higher quality supplementary features in mobile phones, these devices have become more than a dedicated method of voice or text communication. One-third (33 percent) of mobile phone users browsed the Web with their phones, and the same proportion checked and sent emails using their phones. Furthermore, a little under a quarter of phone owners accessed social networking sites, used GPS and maps, and downloaded applications with their devices (see Figure 12).

Perhaps not surprisingly, younger generations tended to use mobile phones for purposes beyond placing calls. In fact, among mobile phone users under 30 years old, 85 percent used their phones to send text messages and 57 percent browsed the Web with their mobile devices. Those under 30 years old were also the biggest social media users, with 46 percent using their phones to access social networks like Facebook and Twitter compared to 18 percent of those over 45 years old. While some might find high usage by younger people unsurprising, some seniors used their mobile phones for non-call related activities as well. One in four mobile phone users ages 65 and older reported sending text messages, and 9 percent of seniors used their phones to browse the Web.

Slightly more men used a mobile phone than women (87 percent compared to 84 percent, respectively), and men were more likely to use their phones for more specialized activities. Thirty-six

Figure 12: Activities for Which Americans Use Mobile Phones, Percent of Mobile Phone Users Age 25+, 2011



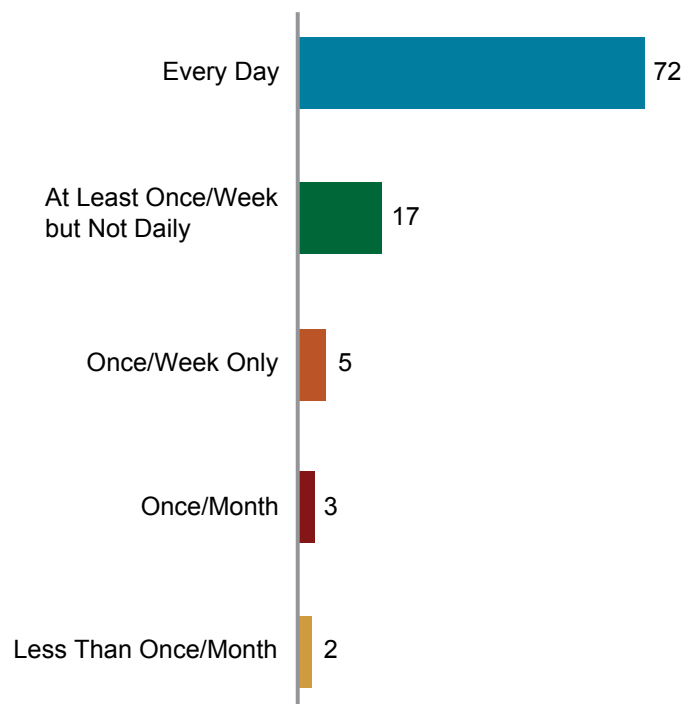
¹⁸ For example, academic research on civic engagement suggests that regular attendance at religious services and other religiously affiliated activities may increase community involvement (Smidt, 1999). There may also be other unknown variables omitted from the model that affect the likelihood of discussing current events.

percent of men said they used their phone to browse the Web, compared to 31 percent of women. Similarly, 36 percent of men reported using their mobile phones to check email, compared with 31 percent of women. Among mobile phone users, Asian Americans were more likely to use their phones to browse the Web and check email (40 and 41 percent, respectively) than whites (33 percent for each activity) and Hispanics (32 and 31 percent, respectively).

Regular Internet Use

The CPS Supplement results suggest that Americans find great utility in Internet use, as 72 percent of Internet users usually went online every day. An additional 17 percent reported using the Internet at least once per week but not on a daily basis, and the remainder engaged in less frequent use (see Figure 13). The majority of Internet users used the Internet daily irrespective of demographic group, although there were some notable disparities. For example, while 80 percent of Asian American Internet users and 74 percent of their white counterparts went online every day, only 63 percent of African Americans and 64 percent of Hispanics were daily users. Education is an especially prominent source of disparities. While 84 percent of college graduates who went online used the Internet daily, only 72 percent of users with some college credit, 60 percent of those with high school diplomas, and 51 percent of those who did not complete high school reported going online every day. Similarly, 86 percent of Internet users with family incomes of \$100,000 or more were daily users, but only 59 percent of those with family incomes below \$25,000 used the Internet daily. A significant gap in usage habits existed between Internet users in urban areas and their more rural counterparts, as 73 percent of online Americans living in urban areas went online daily, compared with 66 percent of rural dwellers. When combining daily users with those who go online at least once per week, it is clear that the Internet

Figure 13: Frequency of Internet Use, Percent of Internet Users Age 25+, 2011

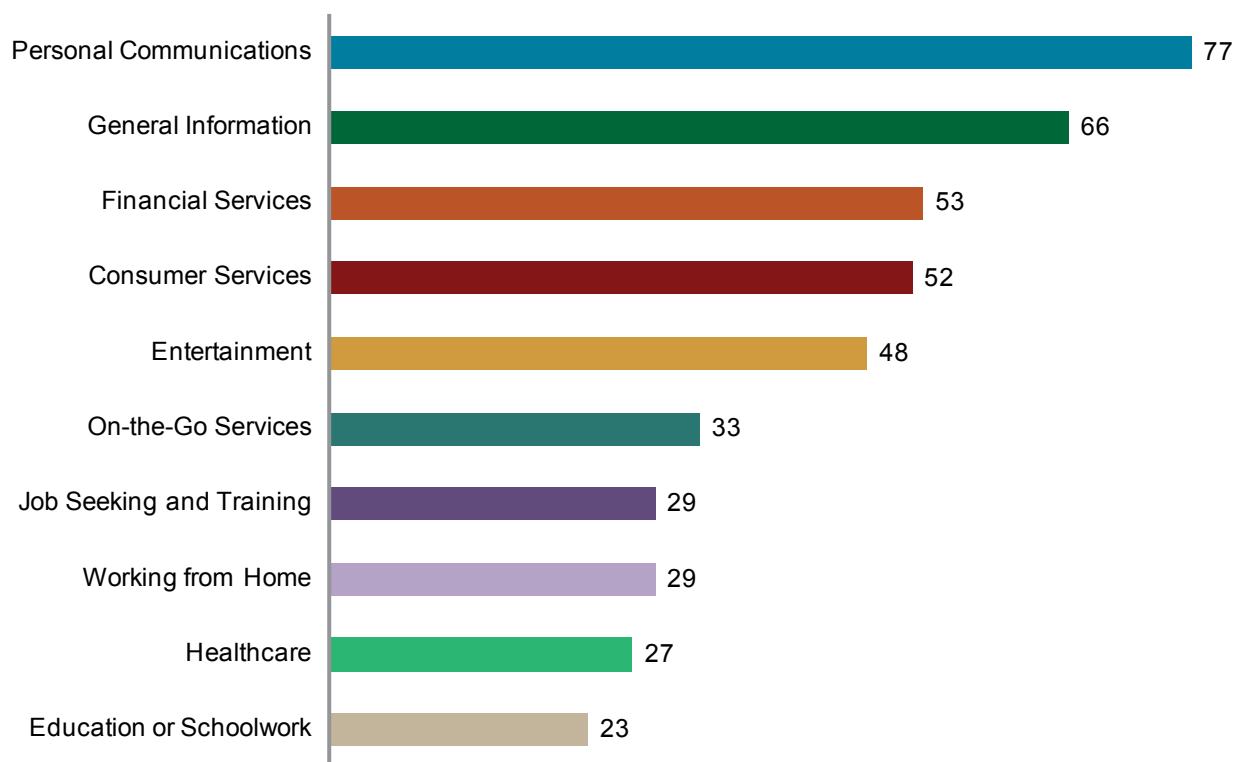


touches the lives of at least 91 percent of American Internet users on a regular basis. That said, further research into the frequency of Internet use might help determine whether certain factors, such as devices used to go online and locations of Internet use, may affect the benefits people derive from the Internet.

Besides going online frequently, most users also relied on the Internet for certain aspects of their daily lives. In addition to asking a series of questions about various activities Americans undertake using the Internet, the Census Bureau also gathered data on situations in which users consider the

Internet an important tool. In other words, while other data show how commonly Internet users go online for activities like job searching and healthcare research, it is also possible to assess to what extent Internet use is essential to performing such functions. Consistent with the Internet's strength as a communications and information tool, large majorities of users stated they relied on it for personal communications (77 percent) and general information (66 percent). Over half of all users relied on the Internet for financial services such as online banking (53 percent), and for shopping and other consumer services (52 percent). Additionally, nearly half of users depended on the Internet for entertainment, and one-third relied on it for on-the-go services such as real-time maps, directions, and destination information (see Figure 14).

Figure 14: Activities for Which Americans Rely on the Internet, Percent of Internet Users Age 25+, 2011



The data on frequency of Internet use and reliance on it for a range of activities appear to support the hypothesis that the Internet has become integral to American life. Going online has the potential to enrich both individual lives and entire communities, and increasingly ubiquitous mobile devices have further enhanced the significance of the Internet in Americans' lives. Having considered the benefits of Internet use, the next questions include who connects to the Internet, what motivates use and non-use of the Internet, and how these findings may impact the Administration's goal of universal adoption.

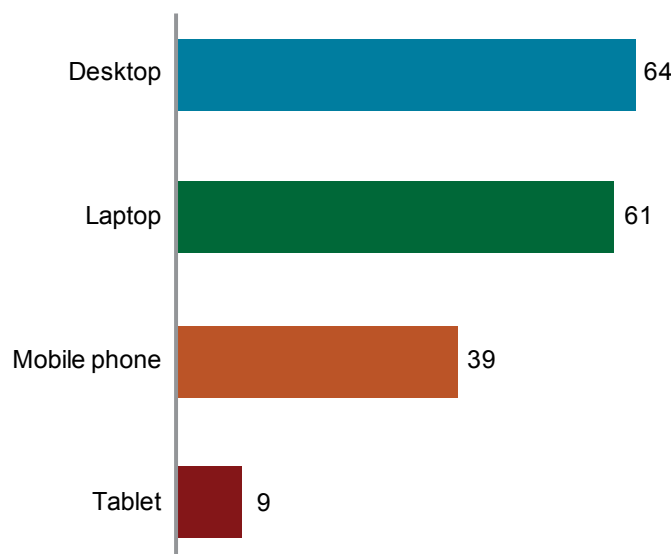
3. Adoption

Technology has changed in remarkable ways since the U.S. Census Bureau first administered the CPS Computer and Internet Use Supplement in 1994. At that time, policymakers focused on achieving universal telephone subscribership, but the increasing popularity of home computers and modems caused them to begin questioning the impact on communities not connected to the “National Information Infrastructure” (“NII”), as these technologies were then known. Today, ever faster and more advanced means of communication continue to capture the imagination. For example, as noted above and more fully discussed below, a large percentage of households access the Internet using mobile devices, either alone or in combination with some type of personal computer. Moreover, as the number of people using the Internet has increased over time, the technologies used to go online have changed dramatically. While home Internet users relied almost exclusively on dial-up connections during the 1990s, today the vast majority of connected households utilize broadband technologies.

Devices of Choice to Access the Internet

In 2011, the majority of American households owned at least one personal computer. Seventy-six percent of households reported having a desktop, laptop, or tablet computer at home.

Figure 15: Type of Device Used to Access the Internet, Percent of Internet Users, 2011



As seen in Figure 15, the most common devices people used to access the Internet at any location was a desktop computer (64 percent), followed closely by laptops (61 percent). More than a third of Internet users indicated they accessed the Internet from a mobile phone (39 percent). Tablets were not yet a widespread means of going online for most users in 2011, with only 9 percent saying they accessed the Internet using a tablet.

Table 2 provides more detail on the characteristics of people who used only a personal computer, only a mobile device, or both to access the Internet. People who only accessed the Internet from a smartphone or tablet were younger, on average, than those who only used

a personal computer. Compared to Internet users with higher family incomes, those with family incomes below \$25,000 were more likely to use only a mobile device to access the Internet. Twenty-nine percent of persons with family incomes below \$25,000 used both, compared to 53 percent of those in the \$100,000 and above category. A similar pattern held when looking at educational attainment, with less educated users more likely to use only a mobile device. While the incidence of using only a mobile device for Internet access tended to decrease for the higher income and more

educated users, and the prevalence of both types of devices tended to increase for higher income and higher educated Internet users, the pattern was different for those Internet users who only used a personal computer. The likelihood of using only a personal computer to go online decreased as family incomes exceeded \$50,000, possibly because more educated, wealthier individuals tended to use both their personal computer and a mobile device to go online. While geographic location made little difference for those who used only a mobile device, Internet users in rural locations were more likely to use a personal computer only. The biggest difference by geographic location was for those who used both types of technology to access the Internet – 41 percent of urban dwellers compared to 31 percent of rural dwellers.

Table 2: Personal Characteristics by Type of Device Used to Access the Internet, Percent of Internet Users, 2011

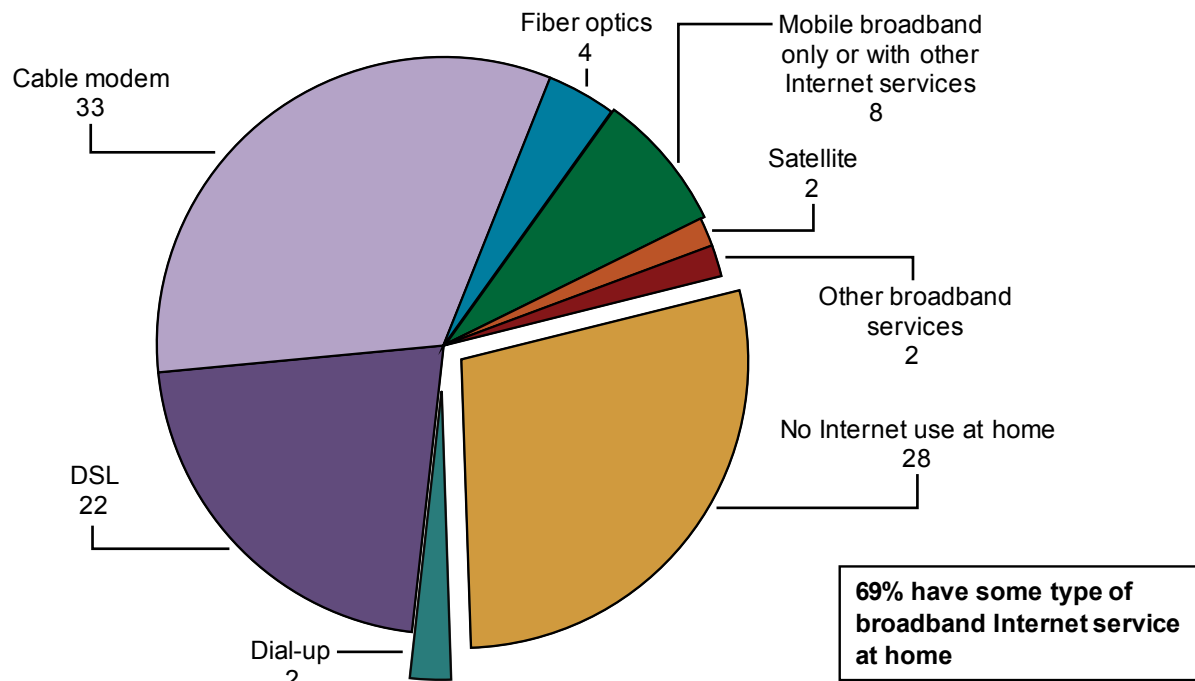
	Mobile Device Only (Mobile Phone, Tablet)	Personal Computer Only (Desktop, Laptop)	Both
All Internet Users	3%	54%	39%
Mean Age (years)	32	39	35
Income < \$25,000	6%	57%	29%
Income \$25,000-\$49,999	4%	59%	32%
Income \$50,000-\$74,999	2%	56%	38%
Income \$75,000-\$99,999	2%	53%	43%
Income \$100,000 or more	1%	44%	53%
No high school diploma	5%	56%	33%
High school diploma	5%	59%	31%
Some college	3%	50%	44%
College degree or more	1%	45%	52%
Rural	3%	61%	31%
Urban	3%	52%	41%
White	2%	54%	40%
African American	5%	50%	40%
Hispanic	5%	53%	37%
Asian American	2%	53%	43%

Note: Approximately 4 percent of surveyed Internet users did not specify any devices used to access the Internet.

Internet Technologies

The types of technology that households have adopted to access the Internet have changed over time. Dial-up has steadily declined, from 11 percent in 2007 to just 2 percent in 2011, so that virtually all households that use the Internet at home now do so via broadband technologies.¹⁹ A little over a quarter (28 percent) of households do not have Internet access at home, but 69 percent of households have some type of broadband Internet service at home (see Figure 16), compared to only half (51 percent) of households in 2007. Some types of broadband technology – such as DSL and cable modem – are well-established, while more recent innovations include fiber optics and mobile broadband. Of the high-speed Internet technologies, cable modem was the most popular with 33 percent of households, followed by 22 percent of households using DSL.

Figure 16: Home Internet Adoption by Type of Technology, Percent of Households, 2011²⁰



Income significantly differentiates which households use the Internet at home, as well as the types of technologies they adopted. Just under half (46 percent) of households with incomes of less than \$25,000 access the Internet at home. However, the figure rises dramatically for the other

¹⁹ 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 0.46 percentage points.

²⁰ Note that Figure 16 refers only to mobile broadband adoption **at 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.

income categories. Two-thirds (68 percent) of households earning \$25,000-\$49,999, 86 percent of households earning \$50,000-\$74,999, 92 percent of households earning \$75,000-\$99,999, and 95 percent of the highest income households have Internet access at home.

Only 14 percent of households with family incomes below \$25,000 used DSL, compared to about one-quarter (ranging from 22 to 27 percent) of households in all other income brackets. Mobile broadband, either alone or in combination with other technologies, was not commonly reported regardless of family income, with only 11 percent of households with income \$100,000 or greater using it. The most popular technology type for those households in the highest income category was cable modem, with an adoption rate of 46 percent.

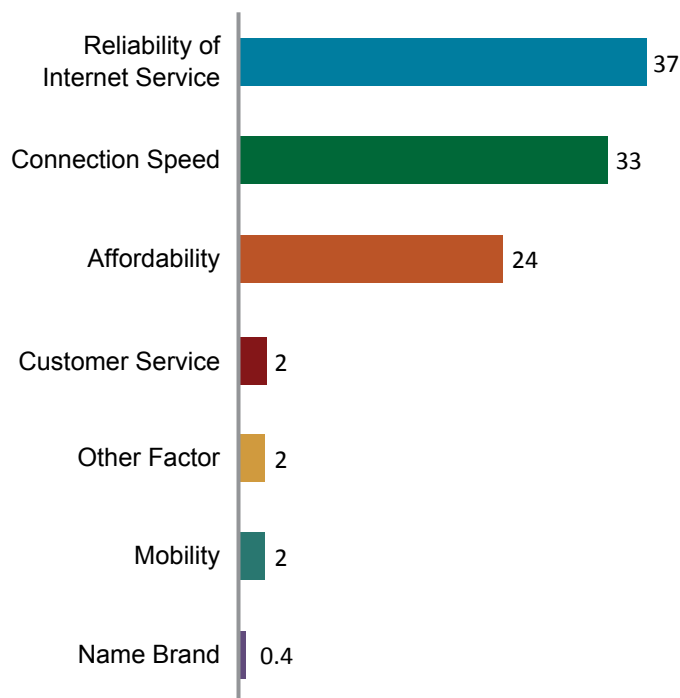
NTIA awarded approximately \$3.5 billion for **BTOP Comprehensive Community Infrastructure (“CCI”)** projects to deploy new or improved broadband Internet facilities (e.g., laying new fiber optic cables or upgrading wireless towers) and connect “community anchor institutions” such as schools, libraries, hospitals, and public safety facilities. As of March 2013, BTOP CCI grantees had deployed about 86,000 miles of new or upgraded network infrastructure. Once completed, these CCI project networks will help to ensure sustainable community growth and provide the foundation for enhanced household and business broadband Internet services. For more information about BTOP, visit NTIA's BroadbandUSA website at <http://www2.ntia.doc.gov>.

Motivating Factors for Home Internet Service and the Cost of Broadband

Among households using the Internet at home, 37 percent indicated they considered reliable service the most important factor motivating their choice of an Internet service provider (see Figure 17). In other words, households wanted assurance their service would be available to them whenever they needed it. Connection speed closely followed reliability, with one-third (33 percent) of households identifying speed as the most important factor. Almost one-quarter (24 percent) of households deemed affordability the most important factor in selecting their providers.

The types of Internet technologies that households adopt provide different benefits and shortcomings. Figure 18 depicts the breakdown of which factors households

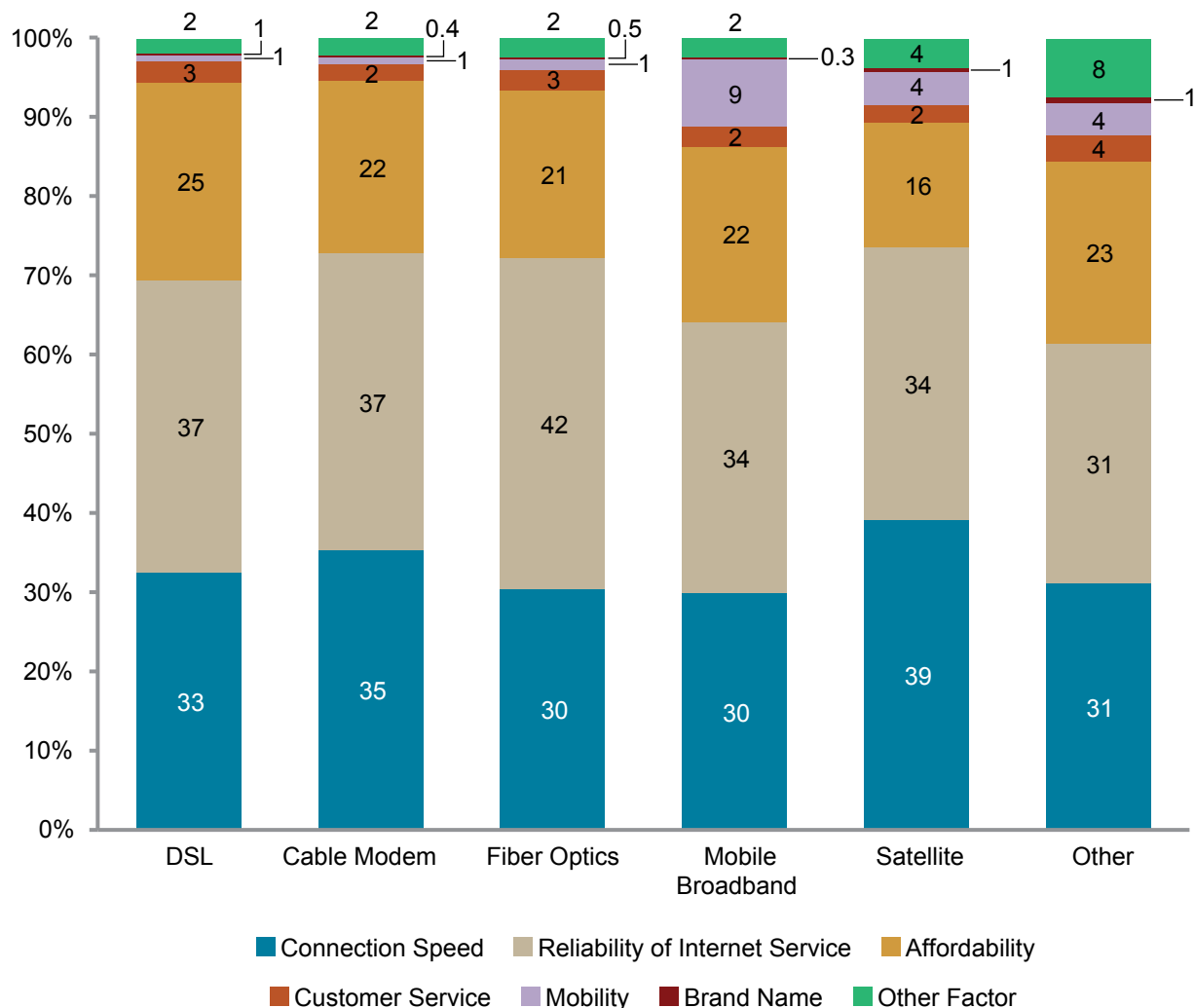
Figure 17: Most Important Factors for Home Internet Service, Percent of Online Households, 2011



deem most important by technology type. Affordability is a much more important factor for dial-up users than for broadband users – 48 percent of dial-up users indicated they were most concerned about the cost of Internet service, compared to 24 percent overall. Similarly, and not surprisingly, dial-up users valued connection speed less than Internet-using households at large – 15 percent as compared to 33 percent of all such households.

Among satellite users, connection speed was the most important factor. Of the various Internet connection technologies, satellite is not especially fast, but for communities that lack a wired broadband option (such as DSL or cable), satellite is much faster than the alternative dial-up technology. As depicted in Figure 18, more than a third (39 percent) of satellite users considered connection speed the most important factor, the highest percentage of any technology type to indicate connection speed as most important, and 6 percentage points higher than connected households as a whole. Cable modem users also valued connection speed more than the average for online households, with 35 percent indicating it as the most important factor. Predictably, mobility was an important factor for users of mobile broadband technology, with 9 percent of

Figure 18: Most Important Factors for Home Internet Service by Technology Type, Percent of Online Households, 2011



mobile broadband users considering it the most important factor, compared to only 2 percent of all Internet-adopting households. While that might seem low considering the untethered nature of mobile broadband is a fundamental characteristic of the technology, it is reasonable to assume that mobility is more of an expected factor than the most important. At 34 percent, a plurality of mobile broadband users indicated they thought reliability of Internet service to be the most important factor. Forty-two percent of fiber optics users thought reliability was the most important factor, compared to 37 percent of all Internet adopters as presented in Figure 17.

In areas served by multiple Internet service providers, households have the ability to switch if they are not satisfied with their current service. Figure 19 depicts the main reasons why households that switched Internet service providers did so. Thirty-eight percent of those households specified that they switched to less expensive services, followed by 30 percent of households that changed because their new provider offered faster connection speeds. Although reliability was the most important factor for households when choosing a provider, only one in ten households (10 percent) indicated that they had switched providers for reliability reasons.

Since affordability was the most-cited factor for households switching providers, how much households said they pay for their Internet service is a key question. Figure 20 lists the cost of high-speed Internet per month by technology type for those households subscribing to Internet service as a standalone (non-bundled) product. Over a third (36 percent) of households with broadband Internet reported they paid between \$30 and \$44 per month. Only 6 percent of households with broadband reported paying less than \$15 per month, while 16 percent reported that they paid \$60 or more per month. Satellite users appear to have spent the most for their Internet per month, with 31 percent reporting paying \$60 or greater. On the other hand, DSL using households were least likely to pay \$60 or more for Internet service, and 70 percent of DSL users paid less than \$45 per month.

Figure 19: Main Reason for Switching Internet Service Providers, Percent of Switching Households, 2011

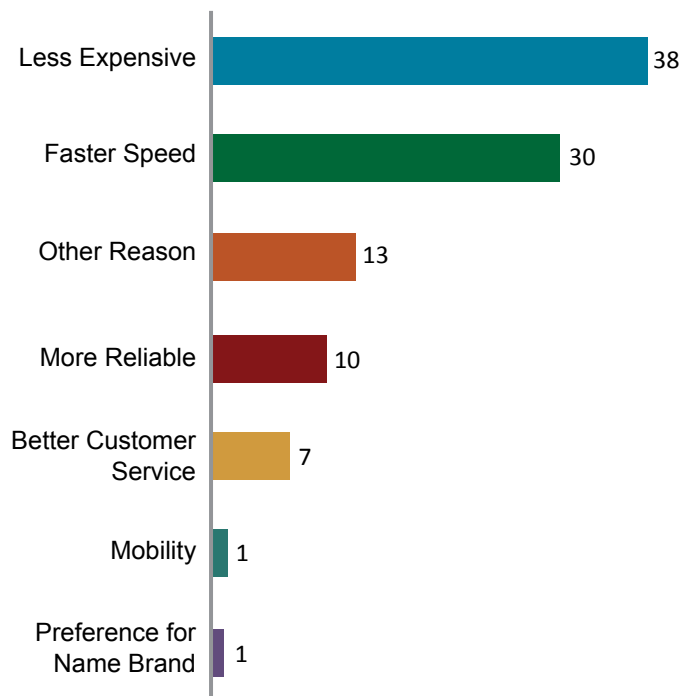
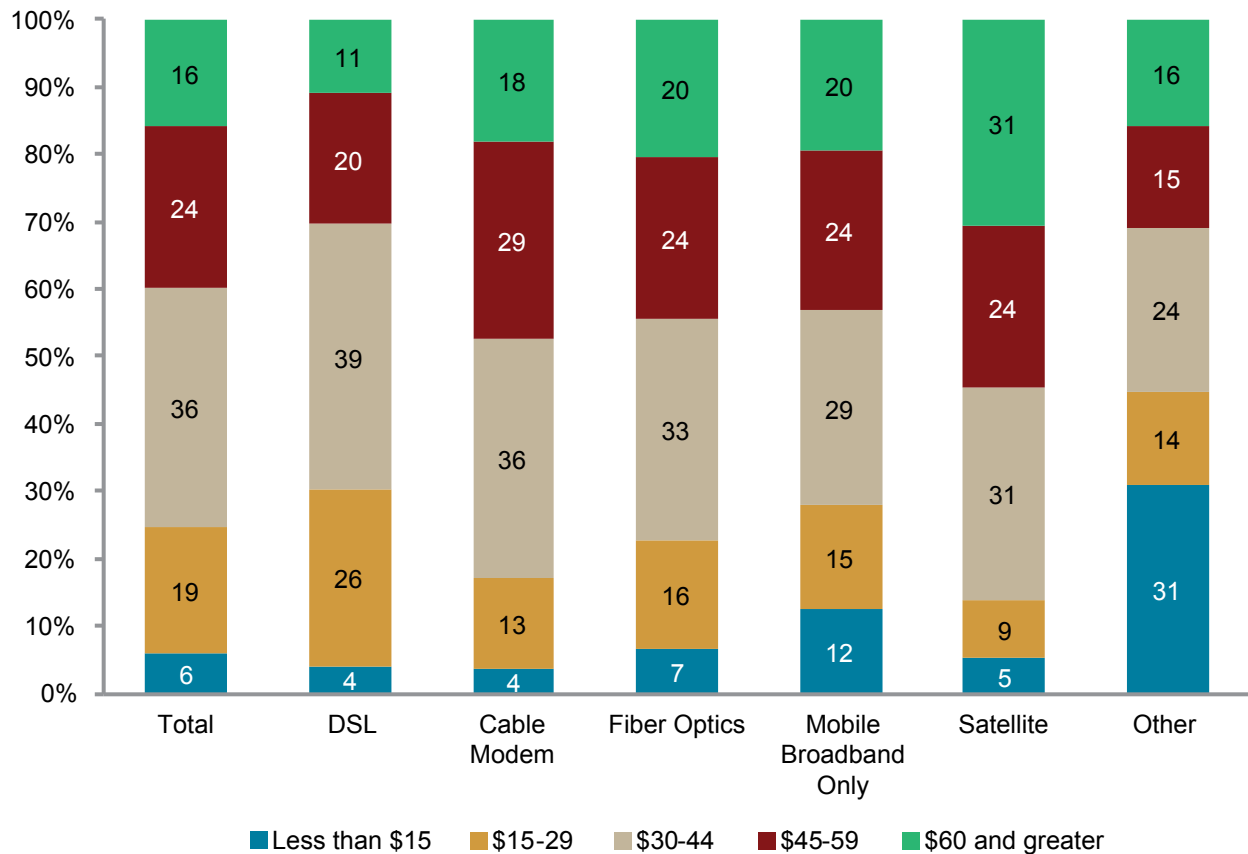
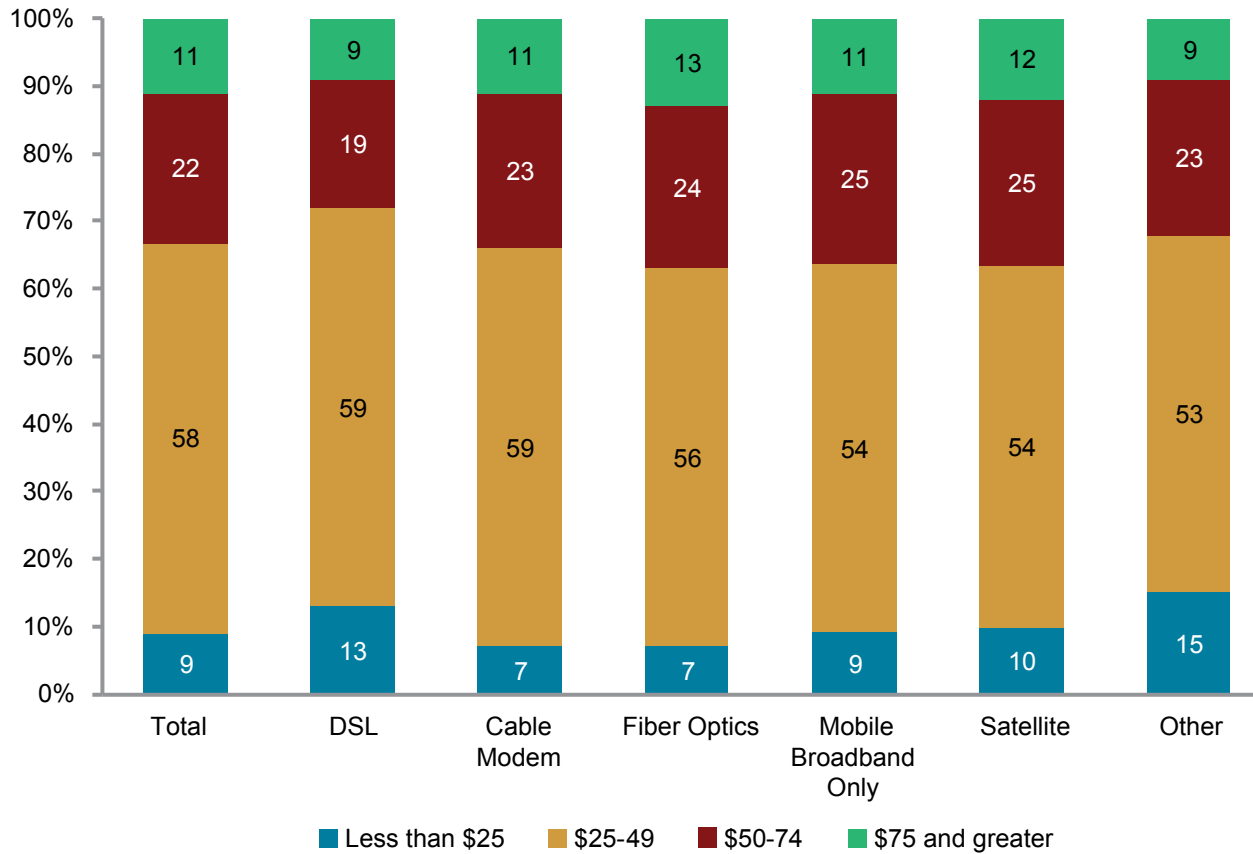


Figure 20: Cost of Broadband Internet per Month by Technology Type, Percent of Online Households Subscribing to Non-Bundled Internet Service, 2011



Two-thirds (66 percent) of households with broadband Internet service pay for their subscription through a bundled package. Fifty-eight percent of households with broadband Internet reported paying between \$25 and \$49 per month for the Internet portion of their service bundle (see Figure 21). Only 9 percent of households with broadband responded that they paid less than \$25 per month for the Internet portion of their bundle, while just 11 percent reported paying \$75 or more per month. Fiber optics users spent slightly more money on their Internet per month, with 13 percent paying \$75 or more for the Internet portion of their bundle. DSL users had the smallest percentage of households that paid \$75 or more with just 9 percent, and 72 percent paid less than \$50 per month for the Internet portion of their service bundle. Because the prices paid by households for broadband Internet service and for service bundles are self-reported, the data may be subject to reporting error. The results may also be influenced by unknown behavioral factors, such as subscribers to bundled services preferring faster speeds or being upsold to more expensive plans.

Figure 21: Cost of Broadband Internet Portion of “Bundle” per Month, Percent of Online Households Subscribing to Bundled Internet Service, 2011



Computer and Broadband Internet Adoption by Demographic Characteristics and Geography

Demographic and geographic characteristics of U.S. households likely play a large role in determining a household's likelihood of owning at least one computer. These characteristics also may shed light on overall computer ownership and broadband adoption rates for U.S. households.

Table 3: Home Computer, Internet, and Broadband Adoption by Demographic Characteristics and Geographic Location, Percent of Households, 2011

	Computer Ownership	Internet Use	Broadband Adoption
All households	76%	72%	69%
Family Income			
Income < \$25,000	52%	46%	43%
Income \$25,000-\$49,999	73%	68%	65%
Income \$50,000-\$74,999	89%	86%	84%
Income \$75,000-\$99,999	93%	92%	90%
Income \$100,000 or more	95%	95%	93%
Householder Education			
No high school diploma	43%	37%	35%
High school diploma	65%	61%	58%
Some college	82%	77%	75%
College degree or more	92%	90%	88%
Metropolitan Status			
Rural	67%	62%	58%
Urban	77%	74%	72%
Householder Race and Ethnicity			
White	80%	76%	74%
African American	62%	57%	55%
Hispanic	63%	58%	56%
Asian American	85%	83%	81%
Household Type			
Households with school-age children	84%	81%	79%
Households without school-age children	73%	69%	66%
Householder Age			
16 to 44 years	82%	79%	77%
45 to 64 years	79%	76%	73%
65 years and older	56%	52%	49%
Householder Disability Status			
Has a disability	53%	48%	46%
Does not have a disability	79%	76%	73%

Table 3 demonstrates how demographic characteristics and geographic location can influence the propensity for computer ownership, Internet use, and broadband adoption for households. Low-income and less educated households have well below average computer ownership and broadband rates. Less than half (43 percent) and only about a third (35 percent) of households headed by someone with less than a high school diploma have a computer at home or broadband access, respectively. Furthermore, fewer non-Asian minority households adopted broadband Internet in 2011 (55 percent of African American and 56 percent of Hispanic households), compared to all

households in the United States (69 percent) and to white and Asian American households (74 percent and 81 percent, respectively). Households headed by someone with a disability also had lower levels of computer and Internet use.

Households with school-age children were more likely than households without children in school to own a computer (84 percent, compared to 73 percent) and adopt broadband (79 percent, compared to 66 percent). Households headed by someone under the age of 45 had higher rates of home computer ownership (82 percent) and broadband adoption (77 percent), compared to their older counterparts.

Among all households, those located in an urban area were more likely to own a computer and adopt high-speed Internet than rural households. As indicated previously, 76 percent of all U.S. households owned at least one computer, and 69 percent had some form of broadband technology. Urban households had higher rates of computer ownership (77 percent) compared to their rural counterparts (67 percent). As for broadband use, urban households similarly had higher adoption rates (72 percent) compared to rural households (58 percent).

Compared to the national figure, white and Asian American households had higher computer ownership rates in both urban and rural areas, while African Americans, Hispanics, and American Indian and Alaska Native (“AIAN”) households had lower ownership rates in both areas. In addition, for African American and AIAN households, there was a pronounced gap between urban and rural computer ownership, with a difference in computer ownership rates for urban and rural African American households of 16 percentage points, and 25 percentage points for AIAN households (see Table 4). Less than two-fifths of rural Hispanic, African American, and AIAN households reported having broadband Internet, and just 57 percent of urban African American households had high-speed Internet in 2011. While only about half of urban and rural households earning less than \$25,000 owned a computer (53 percent and 47 percent, respectively), computer ownership was only slightly less than the national rate for households with family incomes between \$25,000 and \$50,000. By contrast, households with incomes of \$50,000 and greater reported very high rates of computer ownership. Compared to the national broadband adoption figure, rural broadband use for households with incomes less than \$25,000 was particularly low (36 percent) compared to their counterparts with incomes of at least \$100,000 (86 percent). However, both urban and rural households with incomes above \$50,000 adopted broadband at rates higher than the national adoption figure for each location. Lastly, there was a positive relationship between educational attainment and computer ownership and broadband adoption for both urban and rural households. Broadband adoption was quite low for rural households headed by someone without a high school diploma (27 percent), but grew with educational attainment to 80 percent among householders with a college degree or more.

Table 4: Household Computer Ownership and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, Income, and Education, Percent of Households, 2011

Household Characteristic	Computer Ownership		Broadband Adoption	
	Urban	Rural	Urban	Rural
All Households	77%	67%	72%	58%
Race and Ethnicity				
White	82%	71%	77%	61%
African American	64%	48%	57%	35%
Hispanic	64%	51%	58%	39%
Asian American	85%	86%	81%	81%
American Indian and Alaska Native	69%	44%	60%	33%
Family Income				
Less than \$25,000	53%	47%	45%	36%
\$25,000-\$49,999	74%	69%	67%	59%
\$50,000-\$74,999	90%	85%	85%	77%
\$75,000-\$99,999	94%	91%	91%	83%
\$100,000 or more	96%	92%	94%	86%
Education				
No high school diploma	45%	36%	37%	27%
High school diploma	66%	61%	60%	51%
Some college	82%	78%	77%	68%
College degree or more	93%	88%	89%	80%

Table 5 depicts the relationship of race and ethnicity, income, and geographic location to the propensity for computer ownership and broadband adoption in households in 2011. Rural African American and Hispanic households with annual family incomes below \$25,000 reflected the lowest computer ownership rates (37 percent and 40 percent, respectively) and broadband adoption rates (26 percent and 31 percent, respectively). There was a large geographic gap for white households with incomes below \$25,000 – just over half (51 percent) of white urban households reported broadband adoption, compared to just 38 percent of white rural households.

Table 5: Household Computer Ownership and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, and Income, 2011

Household Characteristic	Computer Ownership		Broadband Adoption	
	Urban	Rural	Urban	Rural
All Households	77%	67%	72%	58%
White				
Less than \$25,000	59%	50%	51%	38%
\$25,000-\$49,999	77%	71%	70%	61%
\$50,000-\$74,999	91%	86%	86%	79%
\$75,000 or more	96%	92%	94%	85%
African American				
Less than \$25,000	45%	37%	37%	26%
\$25,000-\$49,999	67%	63%	59%	45%
\$50,000-\$74,999	87%	74%	82%	58%
\$75,000 or more	88%	69%	86%	69%
Hispanic				
Less than \$25,000	44%	40%	36%	31%
\$25,000-\$49,999	66%	51%	58%	36%
\$50,000-\$74,999	84%	81%	81%	66%
\$75,000 or more	89%	71%	86%	60%

Table 6 contains data on computer use and broadband adoption by race and ethnicity, educational attainment, and geographic location. Similar patterns emerge when examining educational attainment and family income. In 2011, less than a quarter (24 percent) of African American rural households headed by someone without a high school diploma said that they owned a computer, compared to 67 percent of all rural households, and 76 percent of all U.S. households. Concerning broadband service, only 16 percent of African American rural households headed by someone without a high school diploma used high-speed Internet at home. In general, for each geographic and demographic category, the difference in computer ownership rates and broadband adoption rates for householders without a high school diploma compared to those with a high school diploma was between 10 and 20 percentage points.

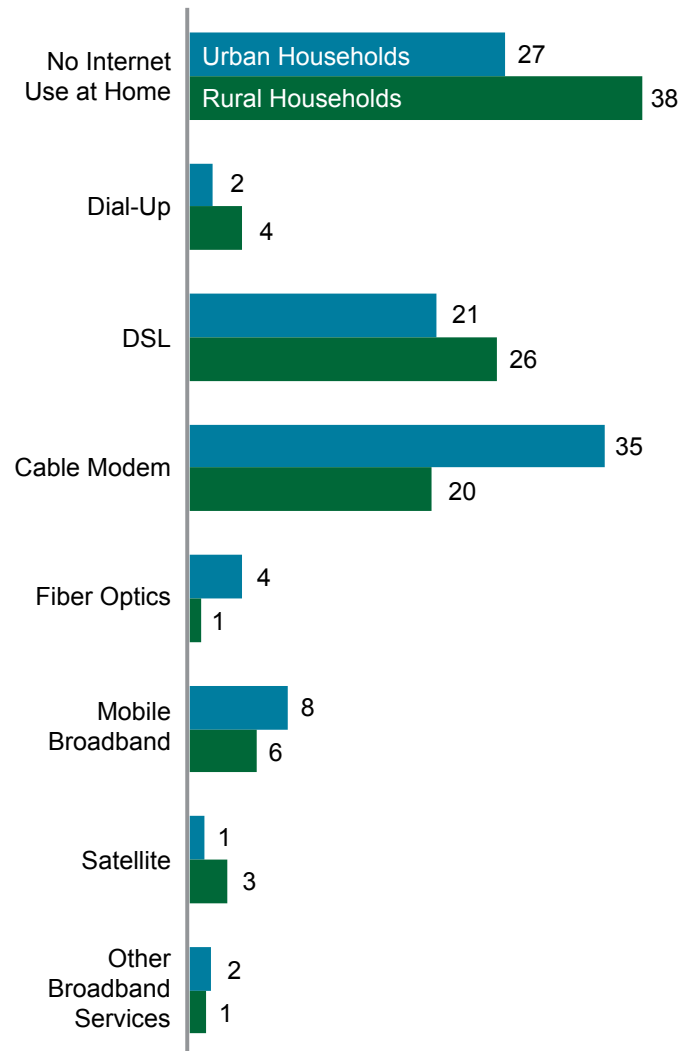
Table 6: Household Computer Ownership and Broadband Internet Adoption by Urban/Rural Location, Race, Ethnicity, and Education, 2011

Household Characteristic	Computer Ownership		Broadband Adoption	
	Urban	Rural	Urban	Rural
All Households	77%	67%	72%	58%
White				
No high school diploma	49%	39%	41%	29%
High school diploma	70%	64%	64%	54%
Some college	85%	79%	80%	70%
College degree or more	94%	89%	90%	81%
African American				
No high school diploma	34%	24%	28%	16%
High school diploma	53%	41%	46%	29%
Some college	71%	69%	64%	54%
College degree or more	88%	87%	83%	63%
Hispanic				
No high school diploma	46%	37%	36%	26%
High school diploma	61%	48%	56%	36%
Some college	80%	76%	73%	60%
College degree or more	86%	84%	81%	78%

As the tables above show, geographic location matters considerably to broadband adoption rates. Figure 22 demonstrates how the types of Internet technology vary for urban and rural households. The urban-rural gap in Internet use at home was 11 percentage points in 2011, with 27 percent of urban households and 38 percent of rural households indicating they did not use the Internet at home (compared to 28 percent for all U.S. households). While dial-up use was low regardless of location, cable modems were much more common in urban households (35 percent), and DSL and satellite were slightly more common in rural households (26 percent and 3 percent, respectively).

There was also considerable variation in computer ownership and Internet use among states (see Figure 23). The proportions of households with a computer at home ranged from 65 percent in Mississippi to 85 percent in Washington. Average home broadband adoption ranged from 53 percent in Mississippi to 80 percent in Washington.²¹

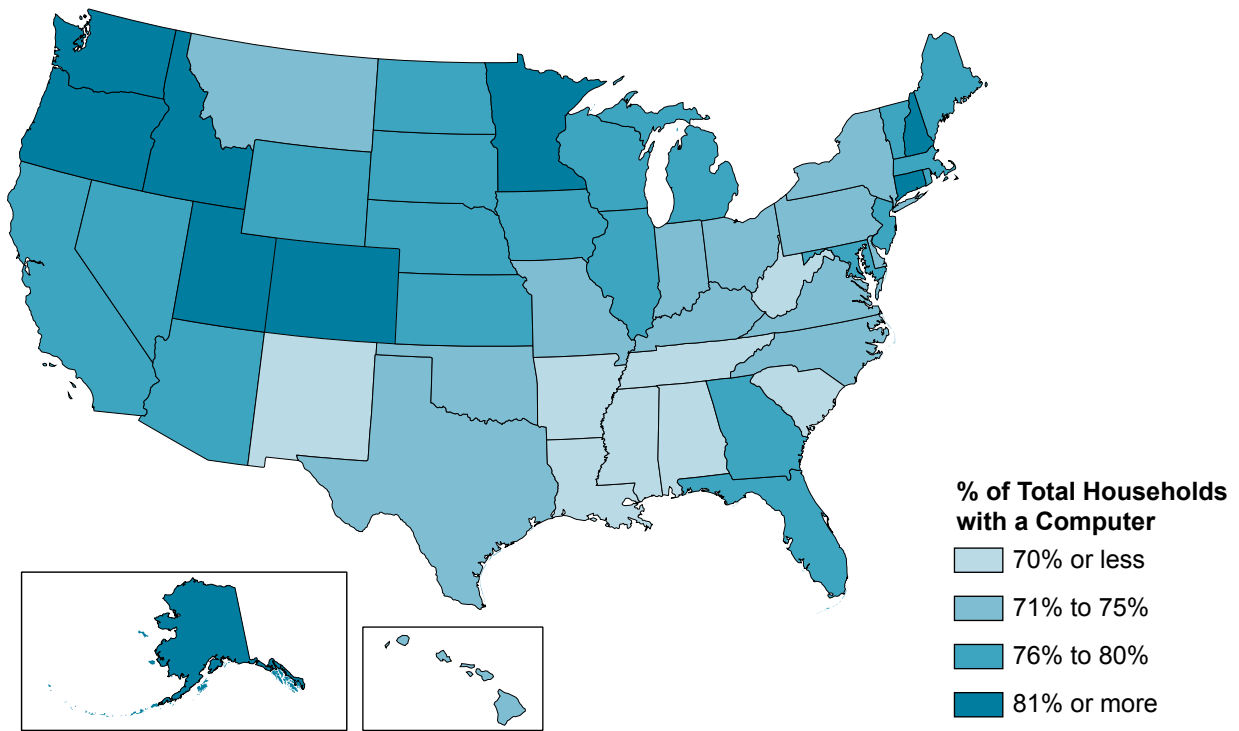
Figure 22: Internet Connection Type by Urban and Rural Location, 2011



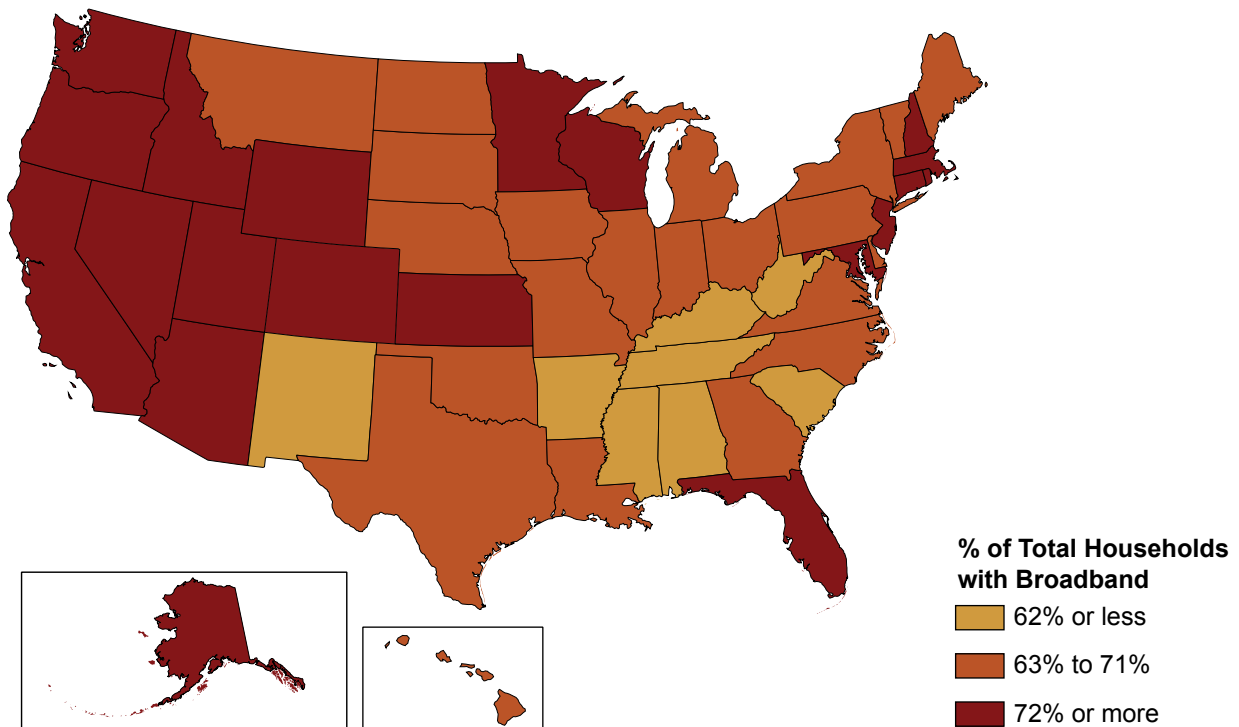
²¹ States are ordered by estimated average household broadband adoption rate for ease of understanding and not as a specific ranking. Rates for broadband, dial-up, and computer use should be understood in the context of their associated confidence intervals, set forth in Appendix B, Tables B3 and B4.

Figure 23: Computer and Internet Use by State (by Household Broadband Adoption Rate)

Household Computer Ownership by State, Rounded to Nearest Percentage Point, 2011



Household Broadband Internet Adoption by State, Rounded to Nearest Percentage Point, 2011

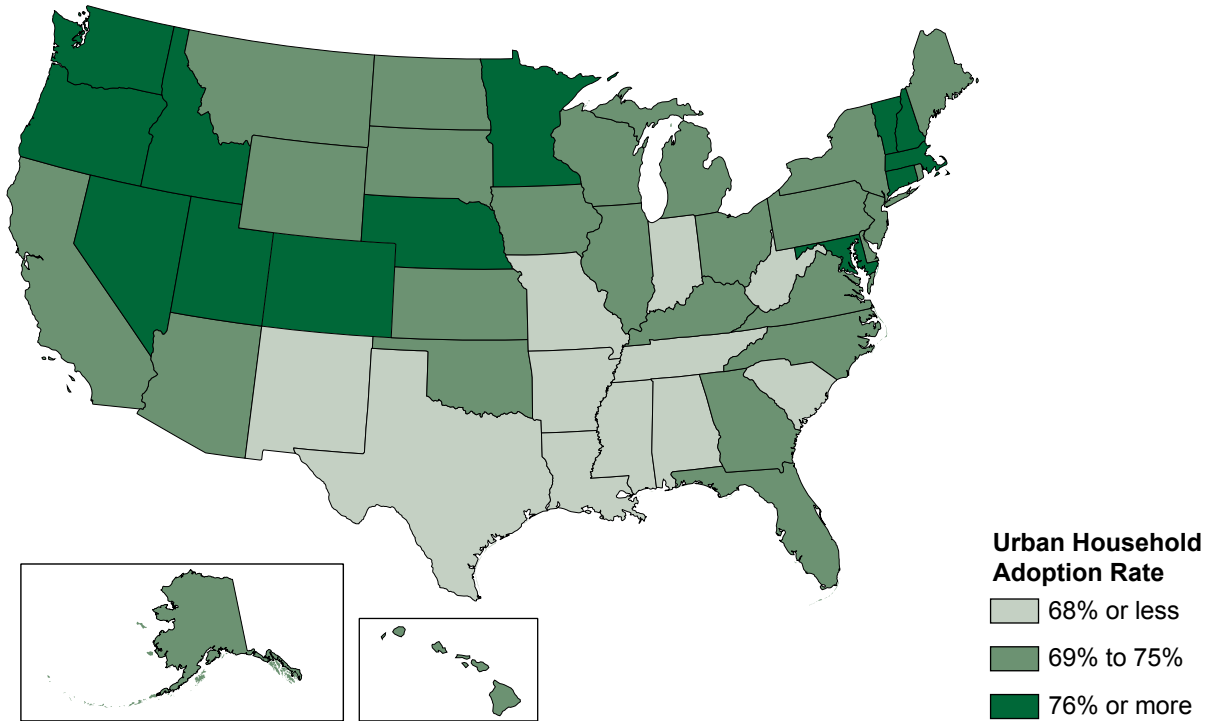


Within state boundaries, policymakers have focused considerable attention on relative rates of broadband use in rural versus urban areas. As Table 3 demonstrated, broadband adoption rates tend to be higher in urban locations than rural locations. Figure 24 depicts broadband adoption rates in urban and rural locations by state. The size of the urban-rural gap ranged from just 1 percentage point in Delaware, to 29 percentage points in Virginia. Alaska had the lowest estimated rural broadband adoption rate at 41 percent, while New Hampshire had the highest estimated rural broadband adoption rate at 75 percent.²²

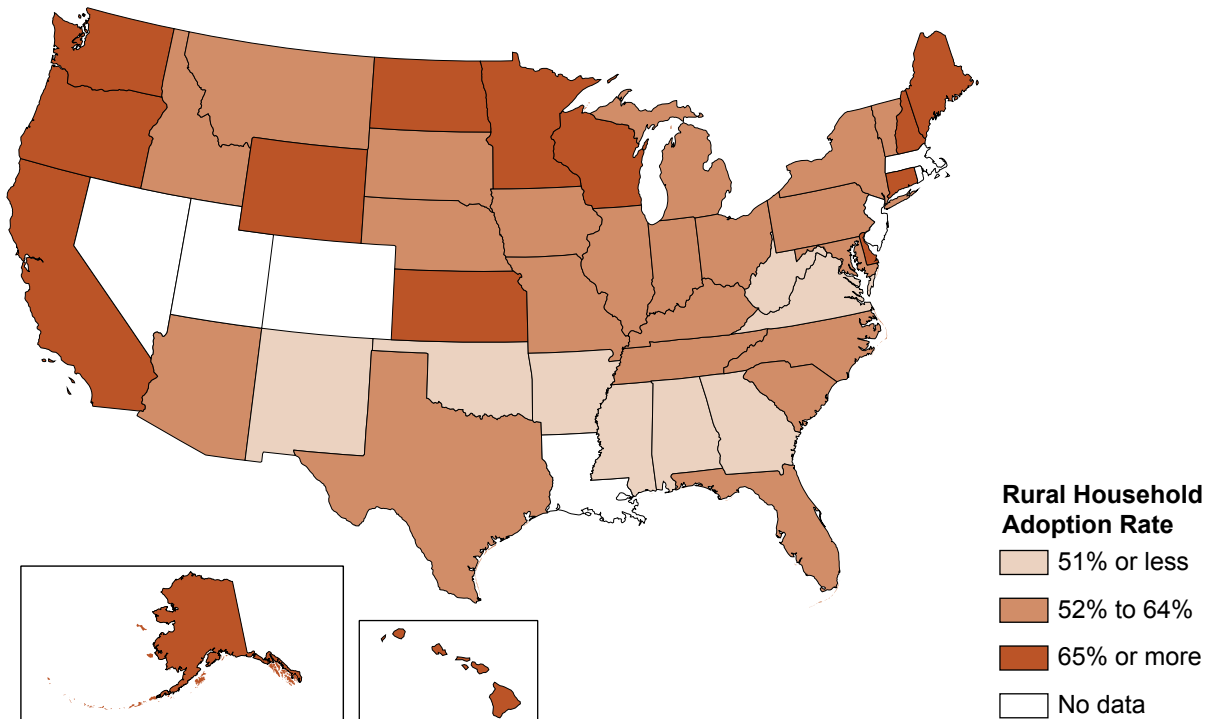
²² The following states were not included in this discussion due to insufficient data for rural areas in the CPS: Colorado, Louisiana, Massachusetts, Nevada, New Jersey, Rhode Island, and Utah. The District of Columbia had no rural areas. Estimated adoption rates should be understood in the context of their associated confidence intervals, set forth in Appendix B, Table B5.

Figure 24: Broadband Internet Use in Urban and Rural Locations (by Overall Household Adoption Rate)

Broadband Internet Use in Urban Locations by State, Rounded to Nearest Percentage Point, 2011



Broadband Internet Use in Rural Locations by State, Rounded to Nearest Percentage Point, 2011



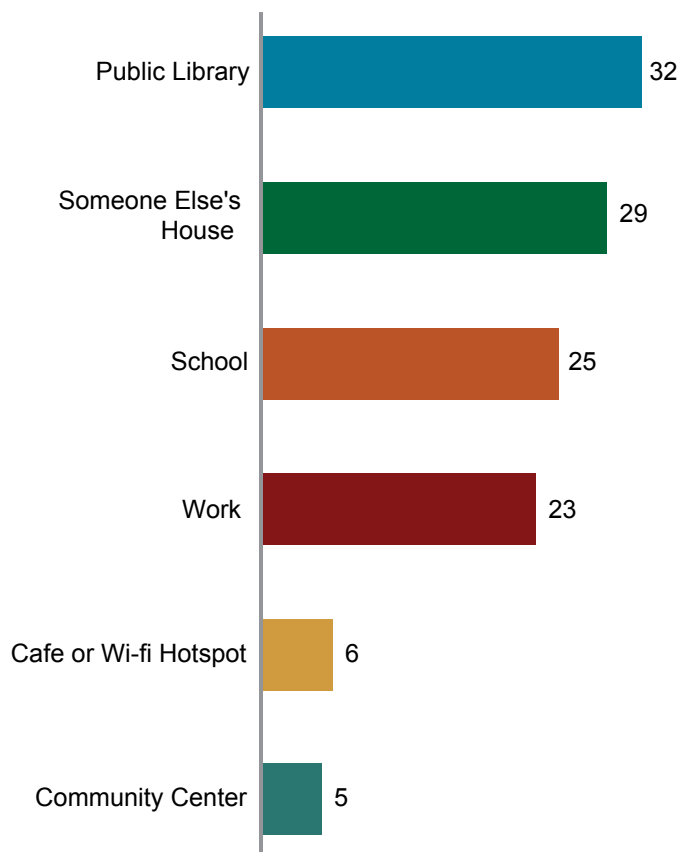
Adoption Outside the Home

Nine out of ten people (92 percent) who said they accessed the Internet used it from home. However, those Internet users who do not have a computer at home may go online at another person's house, work, public libraries, and other places that offer an Internet connection. As seen in Figure 25, about a third of such users (32 percent) reported using the Internet at a public library. Internet users without a computer at home were also likely to go online at someone else's house (29 percent), school (25 percent), or their place of work (23 percent).

4. Non-Adoption at Home

Despite the declining cost of computers, the proliferation of mobile devices and services, and the availability of wired broadband Internet service to 93 percent of Americans (NTIA & FCC, 2013),²³ many individuals remain disconnected from the digital world. Whether by choice or by circumstance, in 2011 about 30 percent of the 119 million American households represented in the CPS did not use broadband at home. Data show that the digital divide continues to narrow, but a significant gap remains. As in past years, survey respondents identified a variety of reasons for not connecting to the Internet where they live (see Figure 26). These reasons – discussed in rank order based on responses from the 2011 survey's total U.S. households without residential broadband or dial-up service – may provide important insights into effective strategies for promoting universal connectivity.

Figure 25: Internet Use Locations Outside the Home, Percent of Internet Users Without a Computer at Home, 2011



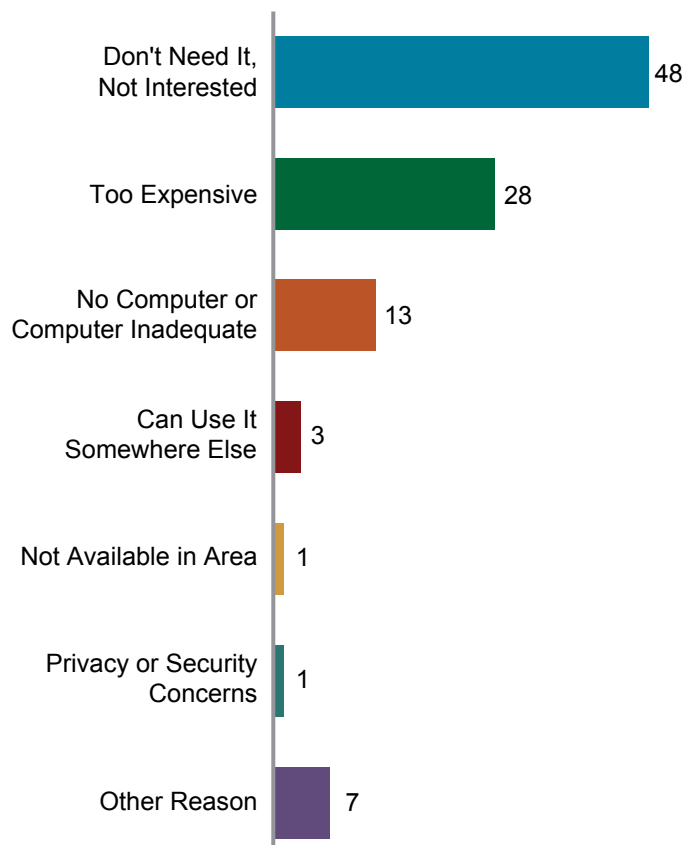
²³ If all broadband technologies are included that approximate the FCC's speed threshold for broadband at 3 megabits per second download and 768 kbps upload, including mobile broadband, then the coverage increases to 98 percent of the population (NTIA & FCC, 2013).

NTIA Broadband Adoption Toolkit: BTOP grantees received about \$452 million of Recovery Act funding to develop new broadband subscribers by expanding access to public computer centers and training individuals to use the technology. As of March 2013, BTOP investments have yielded 41,000 new workstation installations, more than a half million new broadband subscribers, and 4.2 million newly trained broadband users who received more than 12.3 million hours of training. Based on the extensive experience of BTOP projects in about 100 communities across the nation, NTIA released in May 2013 a toolkit of practical ideas and resources grantees have used successfully to help overcome barriers that prevent Americans from adopting broadband at home. The toolkit is available at http://www2.ntia.doc.gov/files/toolkit_042913.pdf.

No Need or Interest

In 2011, 48 percent of all households that did not use the Internet at home reported that they primarily had no need for or interest in going online. Fifty-two percent of households that have never used the Internet at home stated they lacked a reason to do so, while 34 percent of dial-up users stated they did not need residential high-speed Internet service, though presumably the

Figure 26: Main Reason for Non-Use of the Internet at Home, Percent of Households Not Online at Home, 2011



latter group found sufficient utility in accessing the Internet at slower speeds. Approximately 20 percent of former home Internet users cited a lack of need or interest as the most important reason for discontinuing their use.

With respect to income, households lacking an Internet connection with annual family incomes of at least \$100,000 were the most likely (at 53 percent) to express disinterest in using the Internet at home, compared to only 45 percent of those households with incomes less than \$25,000. In addition, 8 percent of those highest earning households without Internet at home reported that they could go online elsewhere. By contrast, only 2 percent of non-adopting households reporting annual incomes below \$25,000 said they could use the Internet at locations other than home.

Householder age also pointed to strong differences in perceptions about the necessity of home Internet service. Sixty-seven percent of users 65 years and older cited a lack of need as the reason for not

using the Internet at home, compared to 26 percent of those between ages 16 and 44 and 46 percent of those between the ages of 45 and 64. Disability status was also a factor. Fifty-one percent of householders with a disability who did not use the Internet at home stated they had no need to use it, which represented a 3-percentage point decline from 54 percent in 2010. While reasons for the decrease are not clear, the result may point to a developing trend of increased home Internet use by persons with disabilities.

White households (53 percent) and Asian American households (56 percent) replied most often that they did not need to go online at home. Non-Asian minority households, however, were less likely to cite a lack of need as a reason for not using home Internet services, with only 40 percent of African American households and 39 percent of Hispanic households responding they did not need or want to use the Internet at home (see Figure 27).

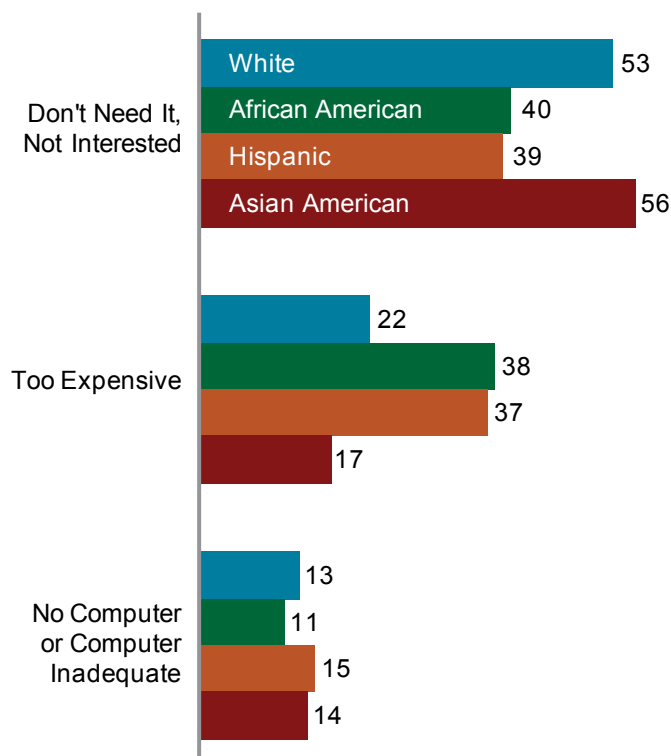
The presence of school-age children appears to have affected households' views about the importance of adopting the Internet in the home. Families without children living at home were more than twice as likely as those with children to cite lack of interest as the primary reason they did not have residential Internet service (52 percent compared to 26 percent). This gap narrowed significantly for dial-up households explaining why they did not use broadband at home, with 36 percent of those without children citing no need or interest for home high speed Internet service, while only 23 percent of dial-up households with children answered similarly.

These data may aid researchers and policymakers in assessing whether children's use of the Internet in schools and libraries has resulted in increased home broadband adoption, as children's exposure helps demonstrate its relevance to family members unfamiliar with the technology. Such findings are consistent with research on this topic from other countries, including a recent study in Portugal suggesting that "school broadband use contributes directly to a higher adoption rate in households with children" (Belo & Ferreira, 2012). Studies in this field may bolster justification for the FCC's goal of "upgrading and modernizing" the universal service support mechanism for schools and libraries, popularly known as the E-rate program (FCC, 2010).

Communication Service for the Deaf, Inc. ("CSD")

received a \$15 million BTOP grant to increase broadband adoption by deaf and hard of hearing people. CSD's Project Endeavor seeks to cultivate an estimated 16,000 new broadband subscribers throughout the U.S. and its territories by offering discounted broadband service, specialized computers, and technology training. In addition, CSD is providing online employment courses, sign language interpretation, captioned video services, and other content and functionalities designed to advance the educational, employment, and healthcare interests of project participants. More information on this grant can be found at <http://www.ntia.doc.gov/press-release/2010/commerce-departments-ntia-announces-recovery-act-investment-expand-broadband-inte>.

Figure 27: Main Reason for Non-Use of the Internet at Home by Race, Percent of Households Not Online at Home, 2011



percent of rural households without the Internet at home expressed that they had no need for, or interest in, such use compared to 47 percent of urban households that held that view.

Expense

In the nine months between the 2010 and 2011 CPS data collections, the percentage of households responding that the expense of Internet service prevented them from using it at home increased to 28 percent in 2011 from 24 percent in 2010. Further, 37 percent of dial-up customers cited the high cost of broadband to explain why they had no such service at home. Former home Internet customers were the most price-conscious. By a margin of two to one, previous users cited expense as the predominant reason they discontinued service at 41 percent, compared to 20 percent who no longer accessed the Internet at home because they did not need the service. In reverse order, but by a similar margin, 26 percent of households that had never accessed the Internet at home identified cost as their main concern, while 52 percent of such households reported they did not need the service (see Figure 28).

Householder employment status also significantly impacted whether the household lacked residential Internet service because of a belief the service was unnecessary. By a margin of 35 percentage points, non-adopting households in which the head was not in the labor force, such as retirees, homemakers, and discouraged job seekers who have ceased searching for work were most likely to cite no need or desire to use the Internet (57 percent), compared to 22 percent of households led by an unemployed householder. Thirty-nine percent of employed householders without Internet at home stated they had no need for home online connectivity, and they were twice as likely as their unemployed counterparts to have cited the ability to use the Internet elsewhere (6 percent compared to 3 percent).

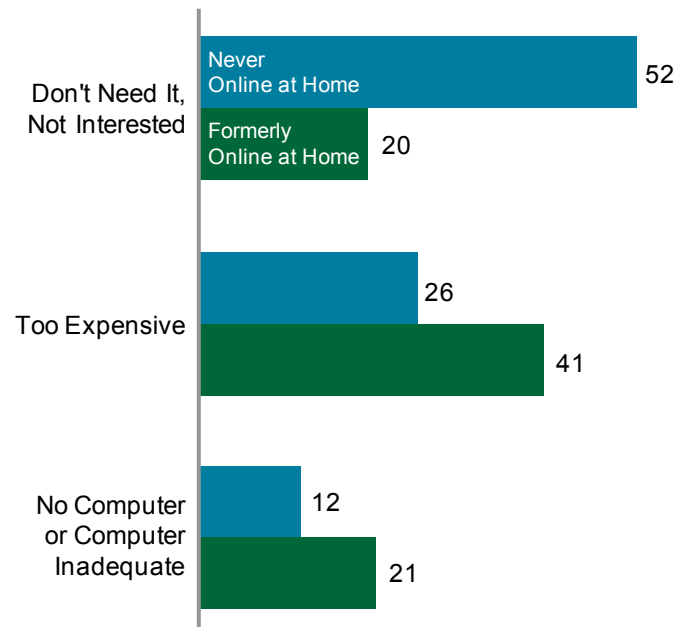
In addition, place of household residence affected opinions about the need or desire to access the Internet at home. Fifty

Not surprisingly, family income levels are also associated with different reasons for non-use of the Internet at home. Thirty-two percent of households with annual income below \$25,000 cited the high cost of Internet service, compared to 18 percent of those of householders with annual incomes above \$50,000. For households that once, but no longer, used the Internet at home because of the expense, the figure soared to 51 percent of those with annual incomes less than \$25,000.

Each year, the Census Bureau develops poverty thresholds based on family size and economic conditions in the calendar year to calculate the income at which a family would be classified as living in poverty that year. In 2011, the Census Bureau established weighted average poverty thresholds ranging from \$11,484 to \$23,021 for families of one to four members (U.S. Census Bureau, 2012). Using these benchmarks, but without regard to family size, as general approximations of poverty thresholds, almost 52 percent of all households without any home Internet at all or with only dial-up service had annual incomes less than \$25,000 in the July 2011 CPS survey. While federal poverty guidelines are complex and vary by program – making it infeasible

The Lifeline Program for Low-Income Consumers offers discounts on landline or pre-paid wireless telephone service to consumers with income at or below 135 percent of the federal Poverty Guidelines or enrolled in certain federal assistance programs. As part of its effort to modernize this universal service program, the FCC has established a \$14 million pilot program to field test use of Lifeline subsidies to increase broadband adoption among nearly 75,000 low-income consumers without such service. The 18-month pilot program consists of 14 projects in 21 states and Puerto Rico that must provide participating consumers with subsidized standalone or bundled broadband service for 12 months using wired or wireless technologies.

Figure 28: Main Reason for Non-Use of the Internet at Home by Previous Home Use, Percent of Households Not Online at Home, 2011



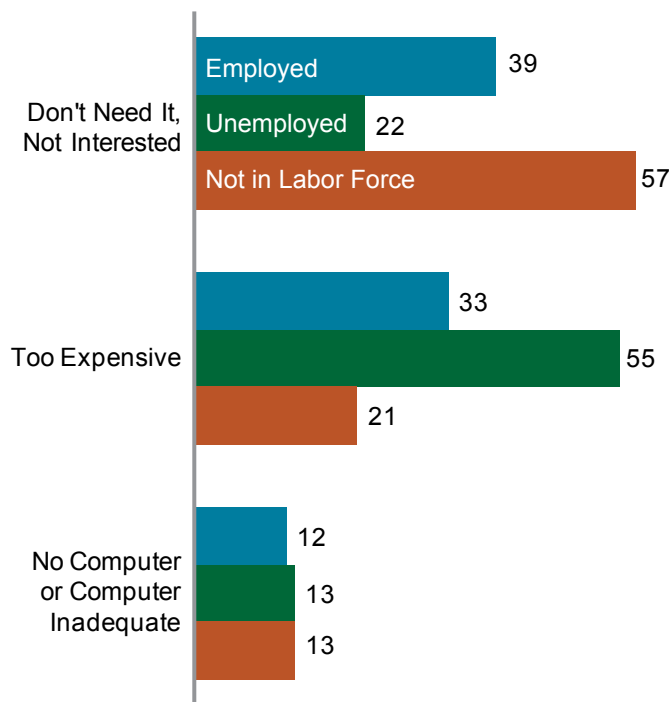
to identify those households in the CPS sample that were living in poverty – the CPS data do reveal that 62 percent of households responding that the affordability of Internet service was the primary deterrent to their home Internet use also reported incomes below \$25,000. Moreover, among households in that income group, 51 percent of former users ceased using the Internet at home because the service became too expensive, and 30 percent of those who have never connected to the Internet in their homes cited high costs.

The importance of expense as a primary reason for not using the Internet at home diminished as the householder's age increased. Households of those between ages 16 and 44 were most likely to cite this reason at 47 percent of non-users, while only 10 percent of 65 and older such households did so.

The proportion of African American and Hispanic households that stated they did not use the Internet in their homes because it was too expensive registered at 38 percent and 37 percent of non-adopters, respectively. These two groups experienced the largest increase in this response from 2010, when 30 percent of African American non-using households and 35 percent of their Hispanic counterparts reported cost as the most important reason for not accessing the Internet at home. Twenty-two percent of white non-adopting households explained cost as their main reason for no residential Internet service. Asian American households lacking home Internet service were least likely at 17 percent to say that cost kept them from accessing the Internet at home.

The presence of school-age children living in a household appeared to be a dividing factor for reasons why households did not use residential Internet. Only 24 percent of non-adopting households without school-age children determined that home Internet access was not affordable compared to 49 percent of such households with children under 18 years old.

Figure 29: Main Reason for Non-Use of the Internet at Home by Employment Status, Percent of Households Not Online at Home, 2011



A significant gap existed between non-using households with employed (33 percent) and unemployed (55 percent) householders who explained their lack of home Internet service as primarily a matter of cost. By contrast, only 21 percent of households lacking home Internet in which the householder was out of the labor force responded that the expense of residential Internet service was the main reason for not using it (see Figure 29). While 29 percent of non-using urban households identified price as their main reason for no residential Internet service, only 25 percent of their rural counterparts did so.

Lack Adequate or Any Computer

Approximately 13 percent of households without home Internet services cited their lack of an adequate computer or any computer at all as their main reason for not accessing the Internet at home. This represents a 2-percentage point decline from 2010, when 15 percent of such households offered this explanation. Income did not appear to be a significant factor influencing households' responses about the lack of a computer as the main reason for no home Internet use, with only 3 percentage points separating non-adopting households earning less than \$25,000 at 13 percent from those with incomes of \$100,000 or more at 10 percent. It is interesting to note, however, that of all the unconnected households without a computer or a well-functioning one, 57 percent earned less than \$25,000 annually and 30 percent earned between \$25,000 and \$50,000, while only 13 percent of such households citing this reason reported incomes exceeding \$50,000 per year.

Hispanic households with home Internet service identified the lack a computer or an inadequate one as the primary reason for not using the Internet at home most often at 15 percent, while their African American counterparts did so least often at 11 percent. Fifteen percent of non-using households headed by a person with a disability stated they did not own a computer or one that worked well enough to access the Internet at home compared to 12 percent of those whose head of household was not disabled.

Interestingly, 21 percent of former residential Internet users cited not having a suitable computer as the primary reason for not accessing the Internet in their homes. In addition, examining former home Internet users by racial and ethnic category shows that 32 percent of Asian American and 26 percent of Hispanic households in this group responded that not having an adequate computer was their main reason why they no longer accessed the Internet at home. Yet, only 20 percent of white and 21 percent of African American households in this category gave this reason to explain why they no longer went online in their homes.

Connect 2 Compete ("C2C") is an initiative of the cable industry, national retailers, non-profit organizations, and others to close the digital divide. Families with children participating in the National School Lunch Program may subscribe to high-speed Internet service for \$9.95 per month and purchase for \$150 a refurbished laptop or desktop computer, including software and a 90-day warranty and technical support. They may also obtain in-person or online digital literacy training.

Other Reasons

In 2011, 7 percent of householders without home Internet service stated they lacked a connection primarily for "other reasons." Although respondents reported a range of other reasons, the data do not reveal discernible patterns in the responses. Among households in which residents formerly went online at home, 13 percent stopped for "other reasons." By comparison, 6 percent of households that had never used the Internet at home offered this explanation.

Internet Access at Other Locations

Three percent of households without Internet at home cited the ability to go online at locations other than their homes. African Americans and Asian Americans were slightly more likely to do so, with 4 percent of each group reporting they could use the Internet elsewhere, than white and Hispanic households at 3 percent each.

More than any other group, non-using households headed by someone with a college degree or higher could use the Internet elsewhere but not at home (7 percent), compared to 1 percent of such householders without a high school diploma. Heads of households between 16 and 44 years old were six times more likely than those ages 65 and older to cite the ability to go online at other locations as the main reason for not using the Internet at home (6 percent compared to 1 percent). Similarly, 6 percent of employed non-using householders reported they could use the Internet elsewhere, compared to 1 percent of householders not in the labor force. Non-adopting households with school-age children were more likely than those without them to cite the ability to use the Internet at other locations (5 percent compared to 3 percent).

Lack of Service Availability

One percent of non-using householders responded they did not access the Internet at home because service was not available in their area, while the figure was 2 percent for rural residents. Twenty-one percent of dial-up users stated they did not use broadband at home because high-speed Internet service was unavailable in their area, which was the third most popular response among this group behind expense and no need or interest in the service.

Privacy or Security Concerns

Only 1 percent of non-using households expressed concerns about privacy or security, which was the least common reason for not using the Internet at home in 2011.

5. Conclusion

The Internet has become integral to daily life in the United States, as users increasingly depend on continuous access to a wide range of online capabilities. Looking at Americans' online activities for the first time in eight years revealed some interesting developments. In October 2003, CPS data showed that personal communications, such as email, and general information were the most popular activities; by July 2011, financial services and entertainment had also become very common online activities. Focusing on 2011, unemployed Internet users proved to be nearly twice as likely to search for work online as their employed counterparts. On the other hand, the historically more-connected young, those more highly educated, and urban dwellers were more likely to research healthcare information online than older persons, the less educated, and rural residents. Mobility in communications and reliance on the Internet in daily life are increasingly common, led by younger Americans, but growing in importance to older generations. Internet use outside the home helped meet the needs of unconnected households. For those who have not yet adopted the Internet, digital

literacy training and low-cost Internet service options are helping ensure that affordable broadband is available to all Americans and that they are skilled users.

In light of the growing range of valuable online activities, individuals who lack connectivity find themselves at a significant disadvantage compared with their peers. Today more than nine out of ten households are located in areas with at least some level of high-speed Internet service available. However, broadband adoption continues to lag availability; currently about seven out of ten households nationally have online connectivity, and there is variability among demographic groups and geographic locations.

Regarding adoption, disparities persist as home broadband use by low-income, less-educated, African American, Hispanic, senior, disabled, or rural households lagged behind other groups and the national average. However, there is good news regarding a narrowing “digital divide” as demand for broadband increases, particularly among at least some groups that in the past had been among the least connected. For example, householders age 65 and older experienced an increase in broadband adoption from 2010 to 2011 of 4 percentage points (45 percent to 49 percent). Broadband use among households headed by someone with a disability also saw an increase in adoption during that time period, specifically 3 percentage points (from 43 percent to 46 percent). During the same nine-month span, rural households in aggregate gained connectivity by one point (from 57 percent to 58 percent).

On the other hand, in July 2011, some 30 percent of the 119 million American households did not use broadband at home. The three main reasons for non-use of the Internet at home reported in the 2011 CPS survey include “don’t need it/not interested” (48 percent), “too expensive” (28 percent), and “no computer/computer inadequate” (13 percent). Variations on these percentages occurred among those who never used or formerly used the Internet at home (e.g., former home Internet-using households valued cost more highly). Overall among non-using households, a lack of service availability was not one of the key obstacles to using the Internet at home except for one group: Twenty-one percent of dial-up users stated they did not use broadband at home because it was not available in their area.

Continued growth of the Internet economy requires policymakers to understand the nature and extent of users’ online activities, and armed with this knowledge, craft policies that prompt broadband availability and adoption. The Department of Commerce will continue reporting such developments through ongoing data collection and analysis, and will continue to implement policies and initiatives that promote Americans’ continued ability to benefit from engaging online with friends, employers, medical professionals, and many others.

References

- American Telemedicine Association (ATA). (2012). Telemedicine frequently asked questions (FAQs). Retrieved from <http://www.americantelemed.org/learn/what-is-telemedicine/faqs>
- Bausman, K., & Goe, W. R. (2004). An examination of the link between employment volatility and the spatial distribution of property crime rates. *The American Journal of Economics and Sociology*, 63(3), 665-695. Retrieved from <http://search.proquest.com/docview/217675407>
- Belo, R., & Ferreira, P. (2012). Spillover effects of broadband in schools and the critical role of children. *2012 TPRC*. doi:10.2139/ssrn.2032097
- Brynjolfsson, E., Yu (Jeffrey) Hu, & Smith, M. D. (2003). Consumer surplus in the digital economy: Estimating the value of increased product variety at online booksellers. *Management Science*, 49(11), 1580-1596. Retrieved from <http://search.proquest.com/docview/213234771>
- Bureau of Labor Statistics (BLS). (2009). How the government measures unemployment. Retrieved from http://www.bls.gov/cps/cps_htgm.htm
- Choo, S., Mokhtarian, P. L., & Salomon, I. (2005). Does telecommuting reduce vehicle-miles traveled? An aggregate time series analysis for the U.S. *Transportation*, 32(1), 37-64. doi:10.1007/s11116-004-3046-7
- Crandall, R., Lehr, W., & Litan, R. (2007). The effects of broadband deployment on output and employment: A cross-sectional analysis of U.S. data. *Issues in Economic Policy*, (6). Retrieved from <http://www.brookings.edu/views/papers/crandall/200706litan.pdf>
- Economics and Statistics Administration (ESA), & National Telecommunications and Information Administration (NTIA). (2011). *Exploring the digital nation: Computer and Internet use at home*. Retrieved from <http://www.esa.doc.gov/Reports/exploring-digital-nation-computer-and-internet-use-home>
- Federal Communications Commission (FCC). (2010). *Schools and libraries universal service support mechanism and a national broadband plan for our future* (CC Docket No. 02-6, GN Docket No. 09-51, FCC 10-175). Retrieved from <http://www.gpo.gov/fdsys/pkg/FR-2010-12-03/pdf/2010-29386.pdf>
- Federal Communications Commission (FCC). (2011). *Telephone subscribership in the United States*. Retrieved from <http://www.fcc.gov/document/fcc-releases-telephone-subscribership-report-0>
- Federal Communications Commission (FCC). (2012a). Lifeline reforms saved more than \$210 million in 2012, beating target; FCC announces 14 pilot projects to increase broadband adoption using a portion of savings from Lifeline reform [Press release]. Retrieved from http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db1219/DOC-318059A1.pdf

- Federal Communications Commission (FCC). (2012b). *Ninth broadband progress notice of inquiry* (GN Docket No. 12-228, FCC 12-91, ¶ 3). Retrieved from <http://www.fcc.gov/document/fcc-launches-ninth-inquiry-broadband-availability>
- Gillett, S., Lehr, W., Osorio, C., & Sirbu, M. A. (2006). Measuring broadband's economic impact. *MIT Communications Futures Program*. Retrieved from http://cfp.mit.edu/publications/CFP_Papers/Measuring_bb_econ_impact-final.pdf
- Hale, T. (2012, August 16). Is there such a thing as an online health lifestyle? Proceedings from the American Sociological Association Annual Meeting. Denver, CO.
- Harrison, J. P., & Lee, A. (2006). The role of e-Health in the changing health care environment. *Nursing Economics*, 24(6), 283-288. Retrieved from <https://www.nursingconomics.net/ce/2008/article12283289.pdf>
- International Telecommunication Union (ITU). (2011). Share of Internet users in the total population. In *The World in 2011: ICT Facts and Figures*. Retrieved from <http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf>
- Jennings, M. K., & Zeitner, V. (2003). Internet use and civic engagement: A longitudinal analysis. *Public Opinion Quarterly*, 67(3), 311-334. doi:10.1086/376947
- Moy, P., Manosevitch, E., Stamm, K., & Dunsmore, K. (2005). Linking dimensions of Internet use and civic engagement. *Journalism and Mass Communication Quarterly*, 82(3), 571-586. doi:10.1177/107769900508200306
- National Telecommunications and Information Administration (NTIA). (2011). *Digital nation: Expanding Internet usage*. Retrieved from <http://www.ntia.doc.gov/report/2011/digital-nation-expanding-internet-usage-ntia-research-preview>
- National Telecommunications and Information Administration (NTIA), & Federal Communications Commission (FCC). (2013). Broadband statistics report: Access to broadband technology by speed. *National Broadband Map* (June 2012 data). Retrieved from <http://www.broadbandmap.gov/download/Technology%20by%20Speed.pdf>
- The Nielsen Company. (2012). America's new mobile majority: A look at smartphone owners in the U.S. *nielsenwire*. Retrieved from <http://blog.nielsen.com/nielsenwire/?p=31688>
- Office for National Statistics. (2012, August 24). Internet access – Households and individuals, 2012. Retrieved from <http://www.ons.gov.uk/ons/rel/rdit2/internet-access---households-and-individuals/2012/index.html>
- Office of Management and Budget (OMB). (2009). *Update of statistical area definitions and guidance on their uses* (OMB Bulletin No. 10-02). Retrieved from <http://www.whitehouse.gov/sites/default/files/omb/assets/bulletins/b10-02.pdf>

- Pew Internet & American Life Project (Pew Internet). (2012, March 1). Nearly half of American adults are smartphone owners. Retrieved from <http://pewinternet.org/Reports/2012/Smartphone-Update-2012/Findings.aspx>
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon & Schuster.
- Rains, S. A. (2008). Health at high speed: Broadband Internet access, health communication, and the digital divide. *Communication Research*, 35(3), 283-297. doi:10.1177/0093650208315958
- Romm, J. (2002). The Internet and the new energy economy. *Resources, Conversation and Recycling*, 36(3), 197-210. doi:10.1016/S0921-3449(02)00084-8
- Smidt, C. (1999). Religion and civic engagement: A comparative analysis. *Annals of the American Academy of Political and Social Science*, 565(1), 176-192. doi:10.1177/000271629956500112
- Stenberg, P., Morehart, M., Vogel, S., Breneman, V., Cromartie, J., & Brown, D. (2009). *Broadband Internet's value for rural America*. Retrieved from <http://www.ers.usda.gov/publications/err-economic-research-report/err78.aspx>
- Tolbert, C. J., & McNeal, R. S. (2003). Unraveling the effects of the Internet on political participation? *Political Research Quarterly*, 56(2), 175-185. doi:10.1177/106591290305600206
- U.S. Census Bureau. (2012). Poverty thresholds by size of family and number of children (2011). Retrieved from <http://www.census.gov/hhes/www/poverty/data/threshld/index.html>
- The White House, Office of the Press Secretary. (2011, February 10). *Remarks by the President on the national wireless initiative in Marquette, Michigan*. Retrieved from <http://www.whitehouse.gov/the-press-office/2011/02/10/remarks-president-national-wireless-initiative-marquette-michigan>
- The White House, Office of the Press Secretary. (2012, June 13). We can't wait: President Obama signs executive order to make broadband construction faster and cheaper [Press release]. Retrieved from <http://www.whitehouse.gov/the-press-office/2012/06/13/we-can-t-wait-president-obama-signs-executive-order-make-broadband-const>

Appendix A: Data and Methodology

This report uses data from the July 2011 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 (July 2011) CPS Computer and Internet Use Supplement, a special supplement to the CPS that periodically gathers information on Internet use.

The July 2011 Computer and Internet Use Supplement asked each surveyed household whether someone in that household used or owned a computer, as well as who in the household used the Internet, and the devices and locations from which they did so (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.

New to the Computer and Internet Use supplement this year was a group of questions primarily concerning Internet usage habits.²⁴ These questions were asked of the household respondent about his/her Internet and computer use. Since one person in each household responded and that person was not randomly selected, a special set of weights was created to properly tally these variables. Care should be used when analyzing these data because the respondents are not evenly distributed across the sample based on age. This is why Section 2 only examines the population ages 25 and older.

About 53,500 household records comprise our sample, representing 119.3 million American households. We analyze computer and Internet use at the household and person levels and their association with characteristics such as age, family income, household size and composition, and geographic location. When conducting household-level analysis, we use information for the household as proxies for characteristics like education, race, ethnicity, age, disability status, and foreign-born status. In this report we use the words “adoption,” “use,” “utilization,” and “access” interchangeably to indicate that a household reported having Internet access.

Prior to October 2010, 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 July 2011 data serve to update these trends. The data from the July 2011 CPS make it possible to continue 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.

²⁴ The specific questions used in the July 2011 survey instrument are available at <http://www.census.gov/prod/techdoc/cps/cpsjul11.pdf>.

Appendix B: Statistical Tables

Table B1: Marginal Effects from Regression of Employment on Internet Use and Demographic and Geographic Characteristics, Persons Age 25+, 2011

Variable	Coefficient Estimate	Standard Error
Internet User	0.0588 **	0.0050
Internet at Home	0.0282 **	0.0054
Female	-0.0284 **	0.0056
Married, Spouse Present	0.0778 **	0.0061
Married, Spouse Absent	0.0389 *	0.0157
Widowed	0.0209 *	0.0084
Divorced	0.0328 **	0.0061
Separated	0.0210 †	0.0119
Female and Married, Spouse Present	-0.1584 **	0.0070
Education: High School Diploma	0.0585 **	0.0057
Education: Some College	0.0831 **	0.0061
Education: College Degree or More	0.1401 **	0.0057
Age	0.0220 **	0.0006
Age Squared	-0.0003 **	0.0000
Race: African American	-0.0499 **	0.0059
Race: Hispanic	0.0231 **	0.0056
Race: Asian American	-0.0263 **	0.0082
Race: Other	-0.0412 **	0.0120
Others Employed in Household	0.1000 **	0.0049
Household Size	-0.0299 **	0.0028
Related School-Age Children at Home	0.0340 *	0.0135
Household Size When Related School-Age Children at Home	0.0008	0.0037
Lives in Owned Home	0.0294 **	0.0045
Disabled	-0.2655 **	0.0050
Foreign-Born Non-Citizen	-0.0006	0.0070
Metropolitan Status: Urban	-0.0048	0.0043
Metropolitan Status: Unidentified	0.0244	0.0160
Region: Midwest	0.0041	0.0048
Region: South	-0.0039	0.0044
Region: West	-0.0236 **	0.0057
Constant	0.2540 **	0.0182
Sample Size	89,498	
Estimated Age 25+ Population Size	201,474,711	
R ²	0.3046	

† indicates 90 percent confidence that the marginal effect is nonzero ($p < 0.1$).

* indicates 95 percent confidence that the marginal effect is nonzero ($p < 0.05$).

** indicates 99 percent confidence that the marginal effect is nonzero ($p < 0.01$).

Note: Data for whites, African Americans, and Asian Americans do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

Table B2: Marginal Effects from Regression of Discussing News With Others on Internet Use, Media Use, and Demographic and Geographic Characteristics, Persons Age 25+, 2011

Variable	Coefficient Estimate	Standard Error
Internet User	-0.0004	0.0070
Internet at Home	-0.0196 **	0.0070
News Sources: Social Media	0.1293 **	0.0074
News Sources: Internet	0.2018 **	0.0057
News Sources: Television	0.0708 **	0.0061
News Sources: Radio	0.2751 **	0.0052
News Sources: Print Media (Newspapers, Magazines, etc.)	0.2419 **	0.0049
Female	0.0339 **	0.0041
Family Income: \$25,000-49,999	0.0004	0.0057
Family Income: \$50,000-74,999	- 0.0021	0.0068
Family Income: \$75,000-99,999	0.0051	0.0081
Family Income: \$100,000 or More	- 0.0058	0.0076
Education: High School Diploma	- 0.0280 **	0.0073
Education: Some College	- 0.0131 †	0.0079
Education: College Degree or More	- 0.0132	0.0083
Age	- 0.0016 †	0.0008
Age Squared	0.0000	0.0000
Race: African American	- 0.0277 **	0.0067
Race: Hispanic	- 0.0309 **	0.0076
Race: Asian American	- 0.0164	0.0112
Race: Other	- 0.0134	0.0146
Household Size	- 0.0044 †	0.0025
Related School-Age Children at Home	- 0.0251 †	0.0146
Household Size When Related School-Age Children at Home	0.0066 †	0.0039
Disabled	0.0167 **	0.0062
Foreign-Born Non-Citizen	- 0.0227 *	0.0092
Metropolitan Status: Urban	- 0.0150 **	0.0053
Metropolitan Status: Unidentified	- 0.0016	0.0213
Constant	0.1120 **	0.0241
Sample Size	50,371	
Estimated Age 25+ Population Size	201,474,710	
R ²	0.3469	

† indicates 90 percent confidence that the marginal effect is nonzero ($p < 0.1$).

* indicates 95 percent confidence that the marginal effect is nonzero ($p < 0.05$).

** indicates 99 percent confidence that the marginal effect is nonzero ($p < 0.01$).

Note: Data for whites, African Americans, and Asian Americans do not include people of Hispanic origin. Persons of Hispanic origin may be of any race.

Table B3: Home Broadband and Dial-Up Internet Use by State, Percent of Households, 2011

State	Total Households	Percent	Broadband Adoption		Dial-Up Only		
			95% Confidence Interval		95% Confidence Interval		
			Lower Bound	Upper Bound	Percent	Lower Bound	Upper Bound
Alabama	1,917,329	59.3	53.1	65.3	4.5	3.1	6.5
Alaska	266,446	73.1	68.7	77.2	3.6	2.3	5.6
Arizona	2,634,043	72.1	68.2	75.8	2.3	1.4	3.9
Arkansas	1,166,405	59.9	54.5	65.1	2.3	1.5	3.6
California	12,949,021	72.6	71.2	73.9	1.9	1.5	2.3
Colorado	1,966,436	78.7	74.9	82.1	1.4	0.7	2.5
Connecticut	1,338,113	76.5	73.8	79.1	1.5	1.0	2.2
Delaware	342,274	70.4	66.3	74.1	2.1	1.2	3.5
District of Columbia	282,881	70.1	67.0	73.1	0.9	0.5	1.6
Florida	7,831,939	73.5	71.5	75.5	1.3	0.9	2.1
Georgia	3,757,808	67.0	63.5	70.2	3.1	2.4	4.1
Hawaii	438,771	70.0	65.5	74.1	1.6	0.9	2.9
Idaho	571,357	72.2	66.3	77.5	2.6	1.3	4.9
Illinois	4,921,452	70.8	68.2	73.2	1.8	1.3	2.6
Indiana	2,553,331	64.6	61.0	68.0	3.3	2.3	4.7
Iowa	1,203,115	68.1	65.1	70.9	3.6	2.2	5.7
Kansas	1,118,341	72.7	69.3	76.0	2.4	1.5	3.9
Kentucky	1,745,782	62.3	57.2	67.1	3.4	1.8	6.3
Louisiana	1,764,817	62.8	57.8	67.6	2.7	1.2	5.8
Maine	540,319	70.9	67.8	73.8	3.8	2.7	5.3
Maryland	2,121,727	75.7	73.0	78.2	1.2	0.7	2.0
Massachusetts	2,564,338	76.5	73.4	79.3	0.9	0.5	1.8
Michigan	3,899,829	68.7	66.2	71.1	4.0	3.1	5.3
Minnesota	2,107,215	76.0	73.5	78.2	2.5	1.9	3.4
Mississippi	1,128,947	53.5	47.4	59.4	2.9	1.3	6.3
Missouri	2,459,661	63.6	60.3	66.8	2.4	1.6	3.7
Montana	440,274	65.6	60.2	70.7	1.7	0.7	3.8
Nebraska	714,897	69.1	66.1	72.0	2.1	1.5	3.0
Nevada	1,037,353	74.5	71.1	77.7	0.9	0.4	2.0
New Hampshire	530,119	79.2	76.6	81.5	3.1	2.2	4.2
New Jersey	3,233,204	74.8	71.8	77.6	2.2	1.3	3.6
New Mexico	794,101	58.3	52.6	63.8	2.0	1.2	3.4
New York	7,644,991	70.8	68.5	72.9	2.1	1.6	2.9
North Carolina	3,789,718	66.8	63.5	70.0	1.6	1.0	2.6
North Dakota	282,530	70.2	65.8	74.2	0.6	0.2	1.6
Ohio	4,702,772	66.1	62.6	69.5	2.4	1.8	3.2
Oklahoma	1,481,923	62.8	57.0	68.3	3.1	2.1	4.4

State	Broadband Adoption				Dial-Up Only		
	Total Households	Percent	95% Confidence Interval		Percent	95% Confidence Interval	
			Lower Bound	Upper Bound		Lower Bound	Upper Bound
Oregon	1,498,068	76.5	73.3	79.5	2.0	1.3	3.3
Pennsylvania	5,027,347	67.9	65.5	70.2	1.8	1.2	2.7
Rhode Island	418,352	71.8	68.6	74.8	1.6	1.0	2.6
South Carolina	1,798,695	62.2	58.9	65.4	2.6	1.5	4.3
South Dakota	323,989	68.3	65.0	71.5	2.7	1.8	4.1
Tennessee	2,649,281	61.4	57.6	65.1	2.2	1.3	3.7
Texas	9,156,263	64.3	62.2	66.3	2.9	2.2	3.8
Utah	912,549	77.0	72.8	80.8	1.7	1.0	3.1
Vermont	269,441	70.4	67.0	73.5	3.9	2.8	5.5
Virginia	2,960,611	68.3	65.4	71.1	2.5	1.7	3.7
Washington	2,704,273	79.5	75.8	82.8	2.4	1.6	3.6
West Virginia	753,384	59.1	54.4	63.6	3.2	2.0	5.1
Wisconsin	2,288,041	72.5	69.0	75.7	2.1	1.3	3.4
Wyoming	231,521	72.4	69.0	75.5	1.8	0.9	3.4

Table B4: Household Computer Ownership by State, Percent of Households, 2011

State	Total Households	Percent	Computer Ownership	
			Lower Bound	Upper Bound
			95% Confidence Interval	
Alabama	1,917,329	69.2	63.5	74.5
Alaska	266,446	81.0	77.2	84.2
Arizona	2,634,043	78.2	74.7	81.4
Arkansas	1,166,405	67.7	63.1	72.0
California	12,949,021	78.4	77.0	79.8
Colorado	1,966,436	82.5	78.1	86.2
Connecticut	1,338,113	81.3	78.5	83.7
Delaware	342,274	75.3	71.7	78.5
District of Columbia	282,881	74.2	71.0	77.1
Florida	7,831,939	78.6	76.7	80.3
Georgia	3,757,808	75.5	72.4	78.4
Hawaii	438,771	72.9	68.6	76.9
Idaho	571,357	81.8	76.3	86.3
Illinois	4,921,452	76.3	74.2	78.1
Indiana	2,553,331	70.9	67.4	74.1
Iowa	1,203,115	76.0	72.9	78.8
Kansas	1,118,341	78.3	74.9	81.3
Kentucky	1,745,782	71.2	67.1	74.9
Louisiana	1,764,817	69.5	65.1	73.6
Maine	540,319	76.9	74.1	79.4
Maryland	2,121,727	80.0	77.5	82.3
Massachusetts	2,564,338	78.8	75.9	81.5
Michigan	3,899,829	75.7	73.1	78.1
Minnesota	2,107,215	81.4	79.4	83.3
Mississippi	1,128,947	64.5	58.9	69.8
Missouri	2,459,661	71.6	68.4	74.7
Montana	440,274	74.1	67.5	79.7
Nebraska	714,897	77.3	73.3	80.9
Nevada	1,037,353	77.6	74.4	80.5
New Hampshire	530,119	84.2	81.6	86.5
New Jersey	3,233,204	78.9	76.2	81.3
New Mexico	794,101	68.5	63.5	73.1
New York	7,644,991	75.3	73.3	77.3
North Carolina	3,789,718	72.6	69.7	75.3
North Dakota	282,530	76.3	73.7	78.7
Ohio	4,702,772	71.8	68.5	74.9
Oklahoma	1,481,923	72.1	66.0	77.5
Oregon	1,498,068	82.2	79.5	84.6
Pennsylvania	5,027,347	74.6	72.4	76.7

Computer Ownership				
95% Confidence Interval				
State	Total Households	Percent	Lower Bound	Upper Bound
Rhode Island	418,352	77.3	74.4	79.9
South Carolina	1,798,695	68.5	65.5	71.3
South Dakota	323,989	75.7	71.9	79.1
Tennessee	2,649,281	69.5	65.6	73.1
Texas	9,156,263	71.5	69.6	73.4
Utah	912,549	84.4	80.2	87.8
Vermont	269,441	79.3	76.4	82.0
Virginia	2,960,611	74.6	71.6	77.4
Washington	2,704,273	84.9	82.1	87.3
West Virginia	753,384	64.6	60.7	68.2
Wisconsin	2,288,041	77.0	74.1	79.7
Wyoming	231,521	79.0	76.2	81.5

Table B5: Home Broadband Use in Urban and Rural Areas by State, Percent of Households, 2011

State	Broadband Adoption in Urban Areas				Broadband Adoption in Rural Areas			
	Urban Households	Percent	95% Confidence Interval		Rural Households	Percent	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Alabama	1,426,339	65.7	60.3	70.6	490,990	40.9	25.3	58.6
Alaska	183,790	74.1	68.3	79.1	82,656	71.0	62.1	78.5
Arizona	2,330,074	74.4	70.3	78.1	303,969	54.6	39.8	68.5
Arkansas	776,048	65.0	59.4	70.2	390,357	49.8	41.9	57.7
California	12,659,938	72.8	71.4	74.1	289,082	65.6	59.2	71.4
Colorado	1,740,811	79.3	75.6	82.5	*			
Connecticut	1,284,181	76.7	74.0	79.2	53,932	72.3	53.8	85.3
Delaware	271,377	70.6	66.1	74.8	70,898	69.4	61.2	76.5
District of Columbia	282,881	70.1	67.0	73.1	**			
Florida	7,545,094	74.1	71.9	76.1	286,845	60.1	41.5	76.2
Georgia	3,187,875	70.8	67.0	74.3	569,933	45.3	39.5	51.2
Hawaii	305,722	70.7	66.0	75.1	133,048	68.2	58.2	76.7
Idaho	363,221	78.0	72.6	82.6	208,137	62.1	48.8	73.9
Illinois	4,336,566	72.3	69.7	74.7	584,886	59.5	51.8	66.9
Indiana	1,874,030	66.5	62.7	70.2	679,301	59.2	49.6	68.1
Iowa	711,472	72.5	67.3	77.2	491,643	61.6	57.1	66.0
Kansas	710,434	75.4	70.7	79.5	407,907	68.2	60.8	74.8
Kentucky	954,119	69.1	63.2	74.3	791,663	54.1	45.2	62.7
Louisiana	1,479,206	62.7	58.1	67.0	*			
Maine	273,051	74.2	69.7	78.3	267,269	67.5	63.0	71.6
Maryland	2,030,390	76.4	73.6	79.0	91,337	59.4	53.3	65.2
Massachusetts	2,492,427	76.2	73.0	79.0	*			
Michigan	3,280,129	70.2	67.3	72.9	619,700	60.9	56.0	65.7
Minnesota	1,553,179	78.5	75.4	81.3	554,036	68.9	65.8	71.9
Mississippi	484,158	59.1	51.8	66.1	644,790	49.2	40.9	57.6
Missouri	1,917,479	66.1	61.8	70.1	542,182	54.9	47.7	61.9
Montana	153,980	70.7	63.2	77.2	286,294	62.9	55.4	69.9
Nebraska	436,936	75.5	71.8	78.9	277,961	59.1	53.0	65.0
Nevada	897,711	75.8	72.2	79.1	*			
New Hampshire	323,525	81.5	78.2	84.5	206,594	75.5	71.2	79.3
New Jersey	3,233,204	74.8	71.8	77.6	*			
New Mexico	563,670	63.5	57.0	69.6	230,431	45.5	29.9	62.1
New York	6,938,860	72.5	70.1	74.8	706,131	53.5	47.1	59.8
North Carolina	2,559,400	72.7	69.3	75.9	1,230,318	54.6	47.7	61.2

State	Broadband Adoption in Urban Areas				Broadband Adoption in Rural Areas			
	Urban Households	Percent	95% Confidence Interval		Rural Households	Percent	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
North Dakota	146,074	74.5	69.3	79.2	136,456	65.5	58.6	71.9
Ohio	3,595,497	68.6	65.4	71.6	1,107,276	58.2	47.5	68.1
Oklahoma	1,021,850	68.5	63.4	73.3	460,073	50.2	43.4	56.9
Oregon	1,149,854	78.5	74.2	82.2	348,215	70.1	66.0	73.8
Pennsylvania	4,086,389	70.0	67.3	72.5	940,958	58.9	52.3	65.1
Rhode Island	418,352	71.8	68.6	74.8	*			
South Carolina	1,167,988	66.2	61.3	70.8	630,707	54.7	50.2	59.1
South Dakota	159,526	73.3	67.9	78.2	164,463	63.4	59.1	67.6
Tennessee	1,977,161	63.6	58.6	68.4	672,120	54.8	48.3	61.1
Texas	8,134,534	65.4	63.3	67.4	1,021,729	55.8	45.4	65.7
Utah	699,587	77.8	73.0	82.0	*			
Vermont	81,233	85.9	80.6	89.9	188,209	63.7	59.4	67.7
Virginia	2,489,932	73.0	69.5	76.1	470,680	43.5	31.9	55.9
Washington	2,507,665	79.9	75.4	83.8	196,609	74.5	62.8	83.5
West Virginia	435,647	65.0	59.0	70.5	317,738	51.0	44.7	57.4
Wisconsin	1,690,756	75.0	71.1	78.6	597,285	65.3	59.3	70.8
Wyoming	71,230	73.1	67.0	78.4	160,291	72.0	68.2	75.6

* Rural broadband adoption estimates for the following states were not included due to insufficient data for rural areas in the CPS: Colorado, Louisiana, Massachusetts, Nevada, New Jersey, Rhode Island, and Utah.

** The District of Columbia had no rural areas.



U.S. Department of Commerce



Economics and Statistics
Administration
www.esa.doc.gov



National Telecommunications
and Information Administration
www.ntia.doc.gov



Mixed Sources

Product group from well-managed
forests, controlled sources and
recycled wood or fiber

Cert no. SGS-COC-005059

www.fsc.org

© 1996 Forest Stewardship Council