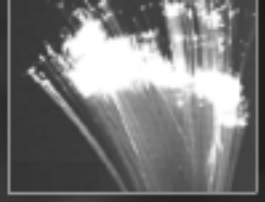

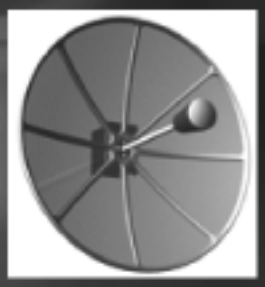

A Nation Online:

Entering the Broadband Age

September 2004

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
National Telecommunications and Information Administration

A Nation Online:
ENTERING THE BROADBAND AGE

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Economics and Statistics Administration
National Telecommunications and Information Administration

FOREWORD

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Under Secretary for Economic Affairs
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Michael D. Gallagher
Assistant Secretary and Administrator
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A Nation Online: Entering the Broadband Age is the sixth report released by the U.S. Department of Commerce examining the use of computers, the Internet, and other information technology tools by the American people. Based on the U.S. Census Bureau's Current Population Survey of 57,000 households containing 134,000 persons, this report provides broad-based and statistically reliable information on the ways that information technologies in general, and broadband more specifically, are transforming the way we live, work, and learn.

This year, we have chosen to focus on broadband technologies because now, more than ever before, high-speed connections promise to enhance our Nation's productivity and economic competitiveness, improve education, and expand health care for all Americans. High-speed networks provide the power to erase geographic, economic, and cultural gaps. With high-speed connections, American workers can find jobs; small businesses can have global markets; rural doctors can consult with specialists; and students can take classes that are taught from across the country.

Because of the significant promise of this technology, President Bush has set out a bold vision for broadband in America, establishing a national goal for "universal, affordable access for broadband technology by the year 2007."[1] Detailing the many benefits of the technology, the President noted that "[t]he spread of broadband will not only help industry, it [will] help the quality of life of our citizens."[2] We hope that this report and its successors will contribute to the ongoing discussion surrounding this important goal by highlighting the growing use of high-speed access across the Nation.

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[1] See Remarks by President Bush on Homeownership, Expo New Mexico, Albuquerque, New Mexico, March 26, 2004, available at *http://www.whitehouse.gov/news/releases/2004/03/20040326-9.html.*

[2] Remarks of President Bush on Innovation, U.S. Department of Commerce, Washington, D.C., June 24, 2004, available at *http://www.whitehouse.gov/news/releases/2004/06/20040624-7.html.*

A Nation Online:

ENTERING THE BROADBAND AGE

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EXECUTIVE SUMMARY

As the Internet increasingly affects the daily lives of Americans and the U.S. economy, one of the greatest changes in recent years has been the rapid uptake of broadband technologies. Between the Census Bureau's Current Population Surveys conducted in September 2001 and October 2003, the number of households with Internet connections grew by 12.6 percent. The data reveal that a transition is underway from dial-up to high-speed Internet connections. The use of high-speed Internet connections grew significantly between 2001 and 2003 and more than offset the decline in dial-up users. For this reason, this report focuses on what Americans are doing with their high-speed connections.

The dramatic uptake of broadband technologies has fueled the Nation's rising use of the Internet.

- The proportion of U.S. households with broadband Internet connections more than doubled from 9.1 percent in September 2001 to 19.9 percent in October 2003.
- In 2001, two-thirds of broadband households used cable modem service (66.4 percent). By October 2003, cable modem households dropped to 56.4 percent and 43.6 percent of broadband households were using other types of connections.
- Meanwhile, the proportion of dial-up households declined from 40.7 percent to 34.3 percent.

The report finds that broadband users are more likely to use the Internet more frequently and in a wider variety of ways.

- Among Internet users, those with broadband connections at home are more likely to be daily Internet users (66.1 percent) than those with dial-up service (51.1 percent).
- Persons with broadband at home also engage in more types of activities online, particularly in the areas of entertainment, banking, purchasing products or services, and obtaining information.

In addition, broadband usage is lower in rural than urban areas.

- A lower percentage of Internet households have broadband connections in rural areas (24.7 percent) than in urban areas (40.4 percent).
- Rural households with dial-up connections are significantly more likely than their urban counterparts to list "Not Available" as the reason they do not have a higher speed Internet connection (22.1 percent to 4.7 percent, respectively).

A NATION ONLINE: ENTERING THE BROADBAND AGE

INTRODUCTION

With computers now almost as common in American homes as cable television service, the Internet continues to expand in importance as a communication, information, entertainment, and transaction tool. One sure sign of growing reliance on this medium is the dramatic jump in high-speed, or broadband, Internet connections.[3] The number of households willing to pay a premium over the cost of a basic dial-up connection for broadband access more than doubled between September 2001 and October 2003, growing from 9.9 million to 22.4 million. Underlying this growth is an evolution in the way people are connecting to the Internet. One in five (19.9 percent) U.S. households and over one-third (36.5 percent) of Internet households now have a high-speed connection, while the number of U.S. households using dial-up service declined by almost 13 percent between 2001 and 2003. *(See Data Note)*

Data Note

The data in this report are from special supplements to the Census Bureau's monthly Current Population Survey (CPS). The most recent of these large-scale surveys of computer and Internet use (approximately 57,000 households in the latest supplement) were conducted in September 2001 and October 2003. The 2001 data (previously published in *A Nation Online*, February 2002) have been adjusted to reflect the 2000 Census-based weights and provide for a more accurate comparison with the 2003 data.

Also, in the CPS supplements, respondents were asked about specific connection technologies rather than connection speeds. In 2003, broadband connectivity was calculated to include those using digital subscriber lines (DSL), cable modems, satellite, and fixed wireless Multi-Media Distribution Systems (MMDS). This question was more limited in 2001, where broadband was defined as the combination of DSL and cable modem. This means that the proportion of households with broadband is understated in 2001 relative to 2003. However this understatement is slight in that the proportion of U.S. households with satellite and MMDS was only 0.4 percent in 2003. The Federal Communications Commission defines higher-speed Internet services (commonly known as "broadband") as services and facilities with speeds of over 200 kbps in at least one direction. See *In the Matter of Local Competition and Broadband Reporting, Report and Order*, CC Docket No.99-301, 15 FCC Rcd 7717, 7730 (2000).

[3] This report focuses primarily on broadband usage. Tables covering a variety of demographic breakdowns of overall computer and Internet use for September 2001 and October 2003, such as income, education, race/ethnicity, disability, and age, are provided in the Appendix and on the web at *www.esa.doc.gov* and *www.ntia.doc.gov*.

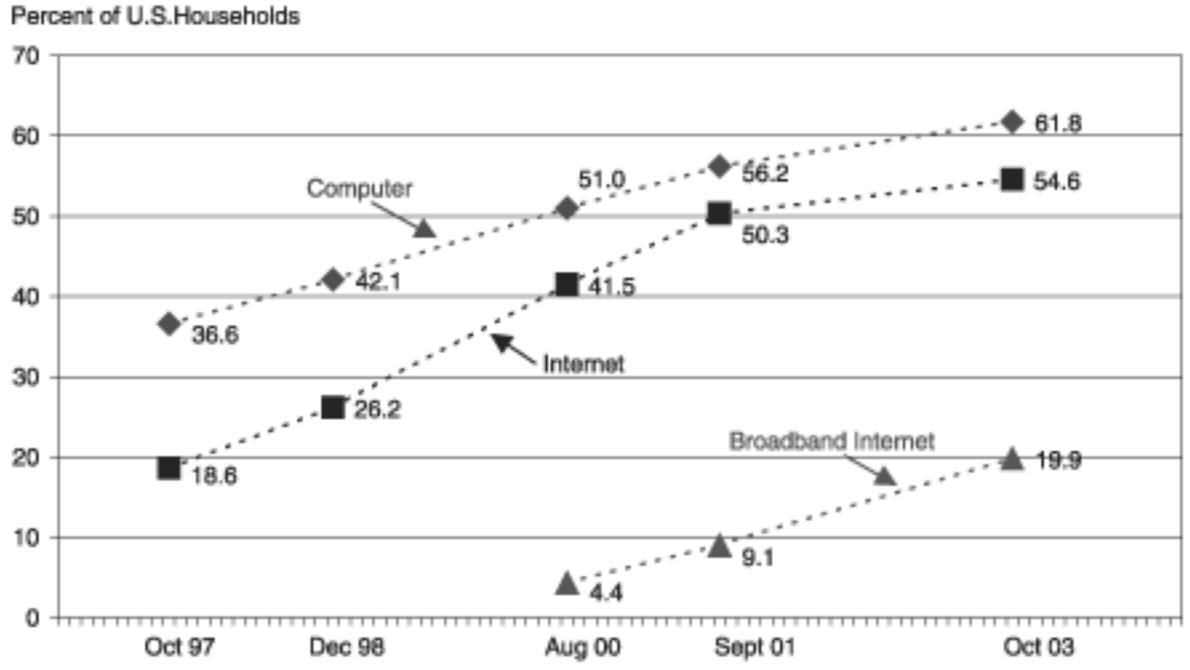
These high-speed connections are becoming ever more central to accessing and relaying information quickly. Because of broadband's increasing popularity, this report focuses on the growth of home broadband usage and the ways in which broadband users differ from dial-up users. The report finds that those with broadband at home are more intensive Internet users. Persons with broadband at home are more likely than other Internet users to use the Internet frequently and engage in a wider variety of online activities, such as entertainment and information gathering.

The report also examines the geographic differences in broadband adoption and the reasons why some Americans do not have high-speed service. The distribution of high-speed usage across economic and demographic categories, for the most part, follows the same patterns of variation that have been observed in the past in overall Internet use. One major difference, however, is in the pattern of geographic dispersion. Although the rate of Internet penetration among rural households (54.1 percent) is similar to that in urban areas (54.8 percent), the proportion of Internet users with home broadband connections remained much lower in rural areas than in urban areas.

ACCESS AND USE

By far the greatest growth in household connectivity in the last two years has been in the use of broadband technologies. Computer ownership and Internet connections in the home continued to increase between September 2001 and October 2003, albeit at slowing rates (Figure 1).

Figure 1: Percent of Households with Computers and Internet Connections, Selected Years, 1997-2003*



**Note: 2001 and 2003 reflect 2000 Census-based weights and earlier years use 1990 Census-based weights.*

The proportion of U.S. households with computers reached 61.8 percent in 2003, and 87.6 percent of those households used their computers to access the Internet. As a result, 54.6 percent of U.S. households had Internet connections (54.1 percent in households with a personal computer or laptop, plus an additional 0.5 percent using a mobile telephone or some other home Internet access device). Household Internet connections increased only four percentage points in the 25 months between the two most recent surveys, compared to an almost nine percentage-point increase during the 13 months separating the previous two surveys (August 2000 and September 2001).

Although the growth of the percentage of overall home Internet connections slowed, dramatic changes occurred in the relative distribution of the various types of Internet connections. Between September 2001 and October 2003, the number of households with Internet connections grew by 6.9 million. However, the percentage of households with high-speed Internet or broadband connections more than doubled, increasing from 9.1 to 19.9 percent of all U.S. households (Figure 1), or by 12 million households. Dial-up connections actually declined by 12.7 percent, or 5.6 million households, during the period. These factors suggest that a transition is underway as Internet households move from dial-up service to faster broadband connections. As shown in Table 1, the increase in Internet totals was due to growth in both of the major high-speed connection technologies: DSL and cable.

Further, it is worth noting that broadband's rate of diffusion is outpacing that of many popular technologies in the past, such as video cassette recorders (VCRs), the Internet, and personal computers (PCs) (Figure 2).

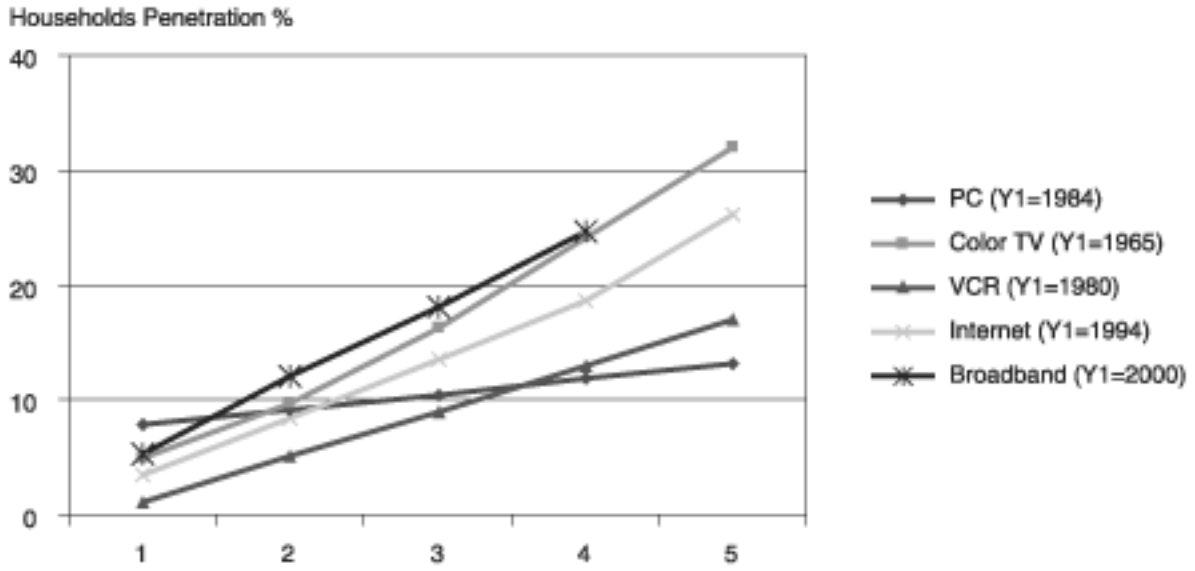
Another significant change over the last two years has been in the selection of broadband technologies. Initially, cable modems were the leading broadband

Table 1: Home Internet Connections by Technology, 2001 and 2003
(Millions of Households)

	2001	2003	Percent Change
Dial-Up	44.2	38.6	-12.7%
DSL	3.3	9.3	181.8%
Cable	6.6	12.6	90.9%
Other*	0.5	0.9	80.0%
Number of Households with Internet	54.6	61.5	12.6%
Total Number of Households	108.6	112.6	3.7%

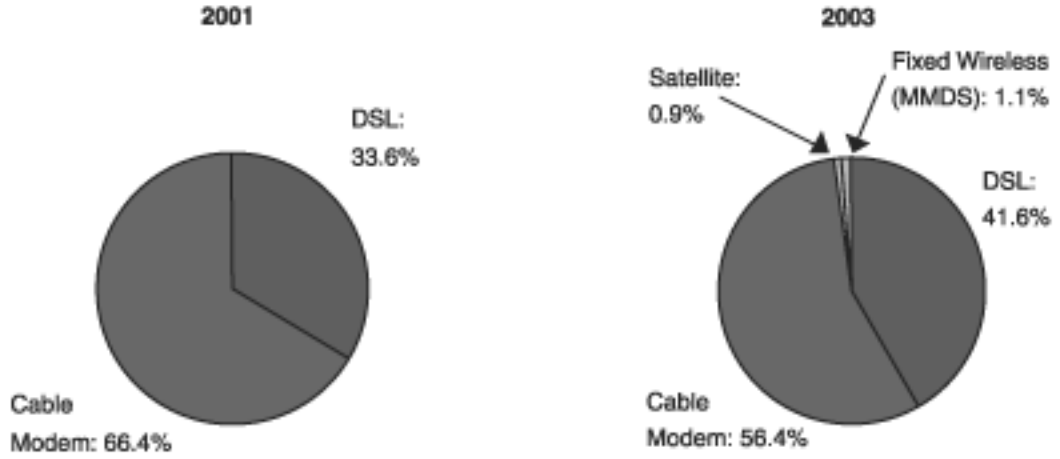
** "Other" includes 0.4 million households with satellite and MMDS broadband in 2003.*
The 2003 individual home connection numbers do not add up to the category total due to rounding.

Figure 2: Household Diffusion of Popular Technologies in the U.S. After Reaching Five Percent Threshold



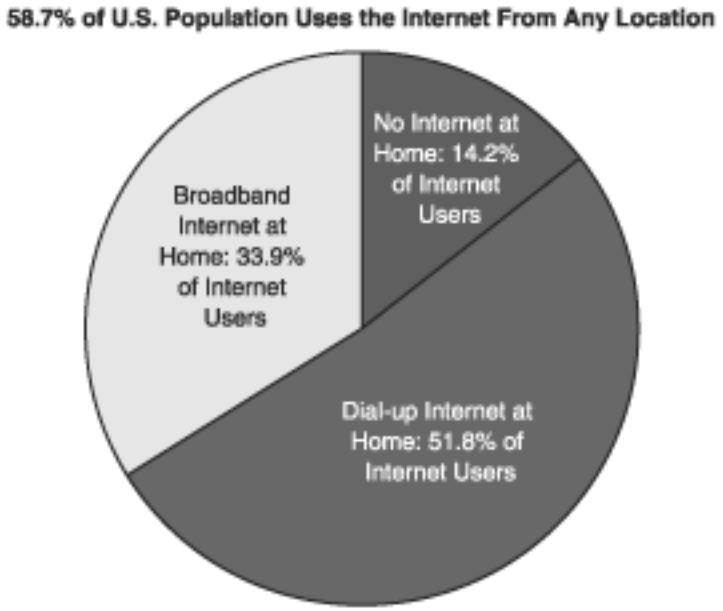
Source: OECD, Information Technology Outlook, 2004.

Figure 3: Preferences in Broadband Technologies, 2001[4] and 2003 (Percent of Broadband Households)



[4] The 2001 CPS supplement included an "other" category for Internet access devices, which would have included some broadband access such as satellite and MMDS mixed in with other non-dial-up, low bandwidth technologies such as personal digital assistants (PDAs) and mobile telephones. Because it is not possible to identify the broadband technologies in this category, all of the "other" category are excluded for the 2001 estimates.

Figure 4: Individual Internet Use by Type of Home Internet Connection, 2003 (Ages 3 and Over)



technology used to connect to the Internet. Competing technologies, most notably DSL, have gained significant acceptance. Between 2001 and 2003, the number of DSL users nearly tripled. This gain has eroded the substantial market share lead that cable modems enjoyed in 2001. Of the 18.2 percent of U.S. Internet households that had higher-speed Internet capability in 2001, almost two-thirds used cable modems. As shown in Figure 3, DSL's share has grown over time, although cable still retains a higher market share.

These data measure the presence of computers and Internet connections in the home rather than focusing on the individuals in the home who actually use the Internet. Not everyone in a home with Internet access uses the Internet, however. Furthermore, people without home Internet access may use the Internet at another location, such as school, work, or a public library. Figure 4 shows that 14.2 percent of Internet users—or 8.4 percent of the U.S. population—lack home Internet access and use the Internet elsewhere.

ONLINE BEHAVIOR

Frequency of use and the number and type of online activities in which people engage vary substantially by whether they have Internet access at home and by the type of home Internet connection. For example, almost one-third (31.9 percent) of Americans access the Internet on a daily basis. Ninety percent of these frequent users have Internet access in their homes. As shown in Table 2, people without Internet access at home are not only much less likely to be Internet users in general, they are also much less likely to be frequent users.

The greater number of online activities in which individuals engage, the higher the likelihood they will have broadband at home. Even though the "frequency of use" variable refers to Internet use from any location, those individuals with broadband in the home are more likely to be daily Internet users (66.1 percent) than those with dial-up at home (51.2 percent).

People with broadband in the home also engage to a greater degree in certain online activities. Figure 5 shows the percent of Internet users engaging in

Table 2: Frequency of Persons' Internet Use by Home Internet Connection Technology, 2003
(Percentage of Use)

	Uses the Internet at least once day	Uses the Internet at least once a week but not every day	Uses the Internet at least once a month but not every week	Uses the Internet less than once a month	Total
No Internet Access at Home	38.2	36.6	13.5	11.7	100.0
Dial-up Internet Access at Home	51.2	36.3	8.0	4.5	100.0
Broadband Internet Access at Home	66.1	26.7	4.7	2.6	100.0

Figure 5: Online Activities, 2001 and 2003 (Percent of Internet Users 15 and Over)

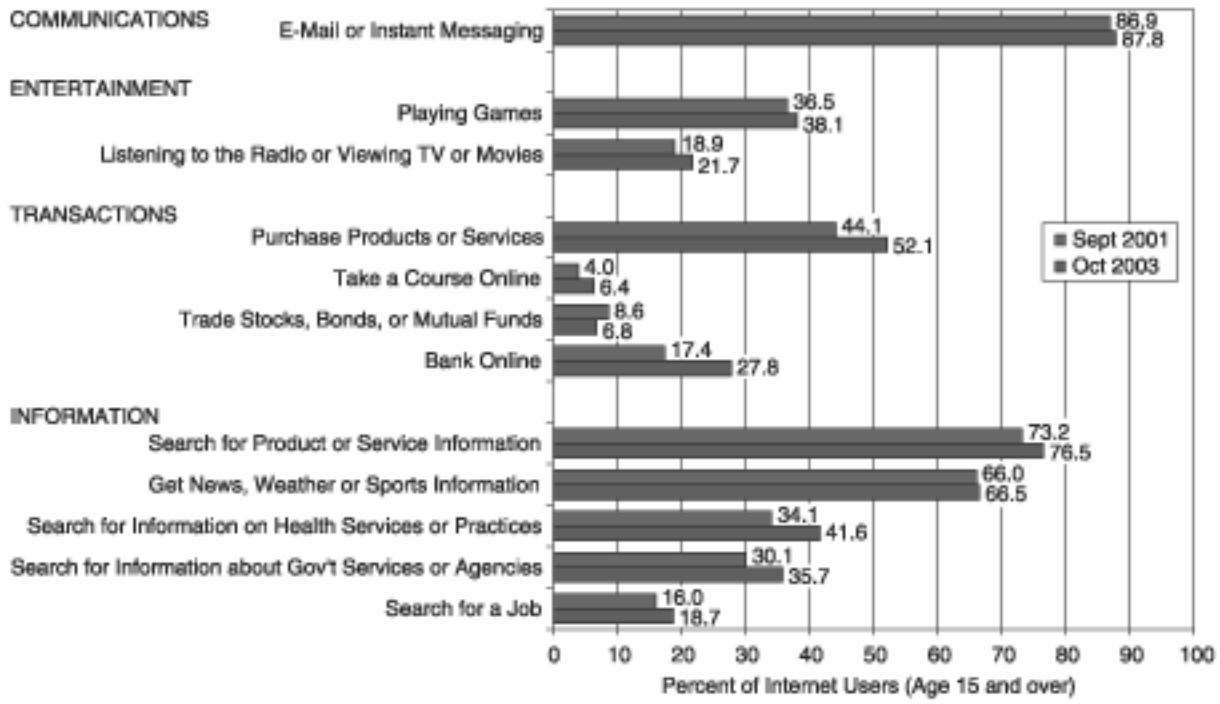
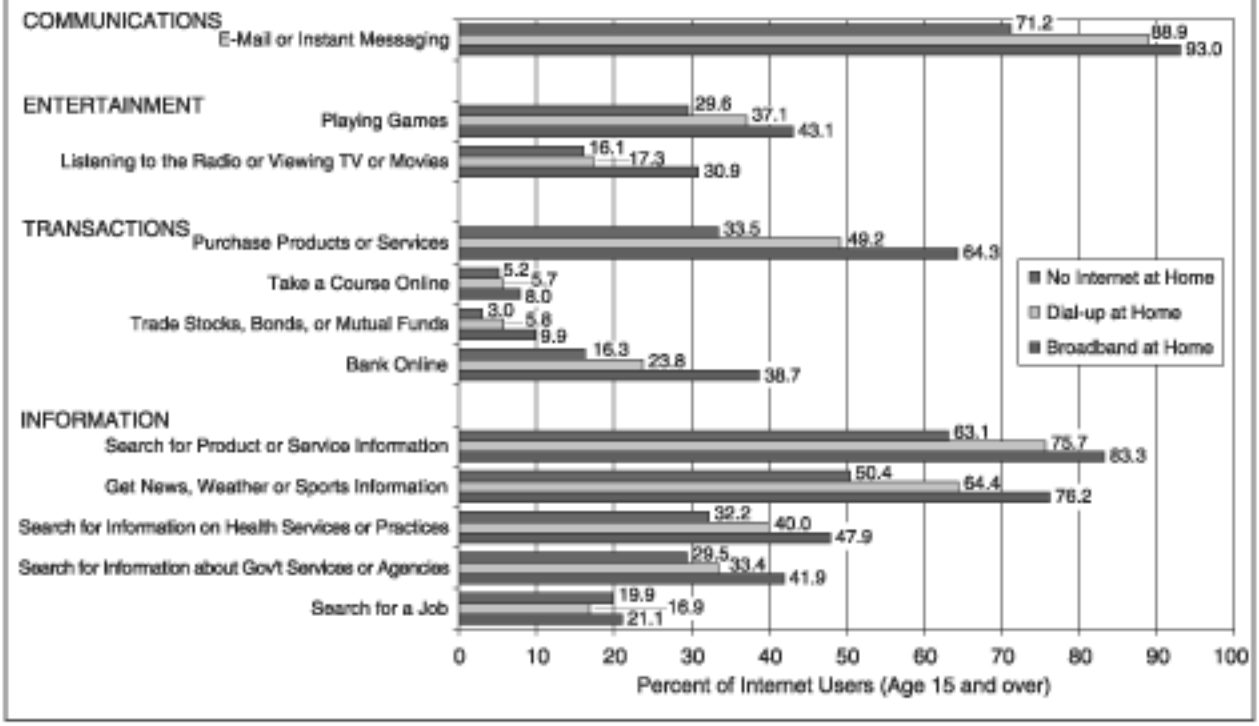


Figure 6: Online Activities by Type of Home Internet Connection, 2003 (Percent of Internet Users 15 and Over)



some common online activities in September 2001 and October 2003. These activities have been grouped into four broad categories: communications, entertainment, transactions, and information. Figure 6 shows activities by percent of Internet users in each of three home connection types (no Internet at home, home dial-up access, and home broadband access). As discussed below, individuals who go online for entertainment, banking, purchasing products or services, or obtaining information, are more likely to have broadband at home than those with dial-up service.

COMMUNICATIONS

E-mail remains the most prevalent online activity, with 87.8 percent of Internet users sending and receiving e-mail or instant messaging.[5] As shown in Figure 5, the percentage of Internet users who e-mail remained virtually unchanged between 2001 and 2003. Additionally, Figure 6 shows that those with dial-up and broadband service at home, as well as those without Internet access at home, are using the Internet for e-mail at substantial levels. The survey did not ask about Voice over Internet Protocol (VoIP), an emerging application, although future surveys will do so.

[5] The survey did not distinguish between e-mail and instant messaging.

ENTERTAINMENT

The use of the Internet for entertainment is substantially more likely among those with broadband. As shown in Figure 6, the proportion of Internet users with home dial-up connections who listen to the radio or view TV or movies on the Internet is almost one-half of those with broadband connectivity (17.3 percent versus 30.9 percent, respectively). In fact, dial-up users are more like those without the Internet at home in terms of the extent of their use of the Internet for entertainment.

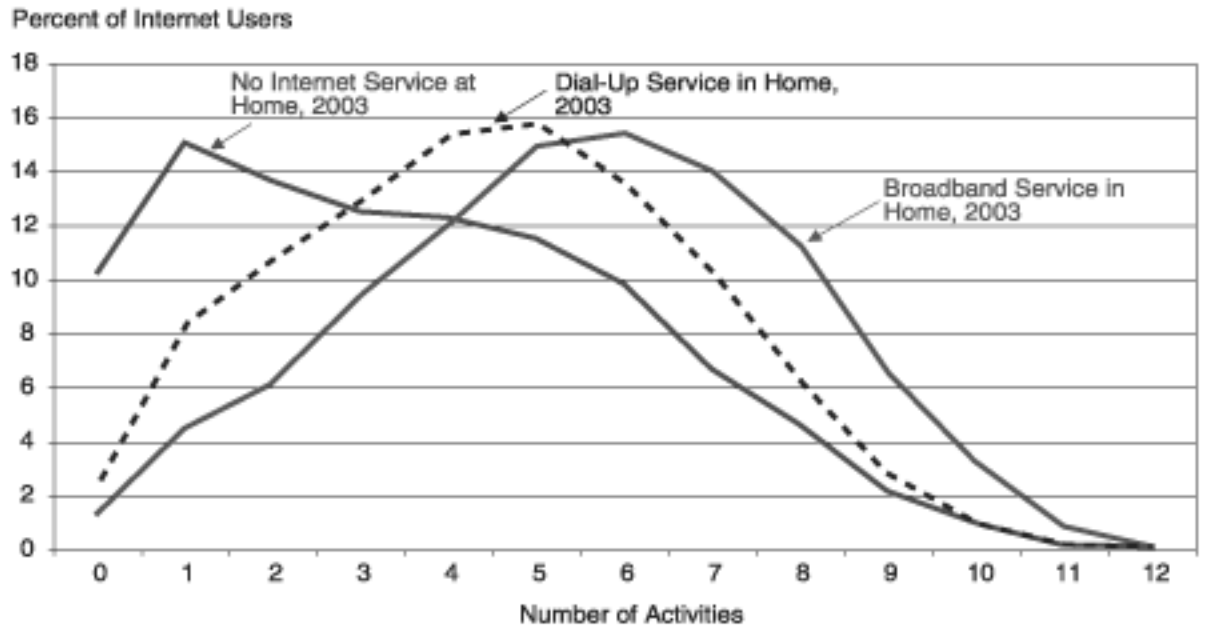
TRANSACTIONS

Two of the activities with the greatest growth between 2001 and 2003 were online purchases of goods and services (e-commerce) and online banking. As Figure 5 demonstrates, the proportion of Americans engaging in e-commerce has grown substantially—8.0 percentage points—over the 2001-2003 period. Online banking grew by 10.4 percentage points, more than any other activity considered. Both e-commerce and online banking are also areas where substantial differences exist between usage levels of home dial-up and broadband users.

INFORMATION

A large majority of Internet users go online for information. They most often search for product or service information, frequently as a precursor to online or conventional commerce. In general, usage rates for dial-up and broadband users are similar in this area. A significant portion of home dial-up Internet users (40.0 percent) and nearly a majority of broadband Internet users (47.9 percent) use the

Figure 7: Activity Intensity by Type of Home Internet Connection, 2003



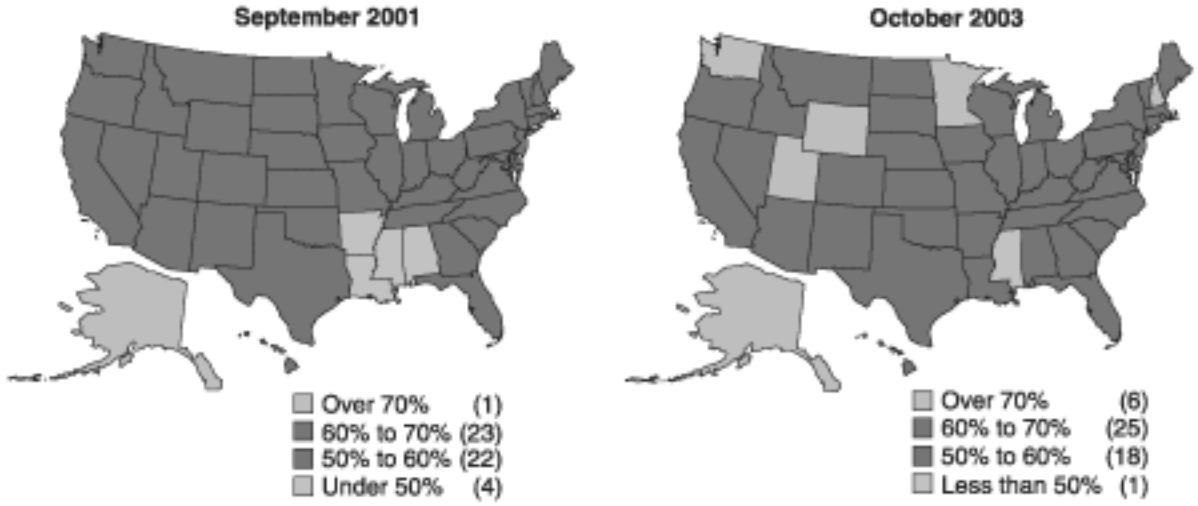
Internet to research health services and related issues. News, weather, and sports is the only information category where a difference of over 10 percentage points exists between dial-up and broadband users: 64.4 and 76.2 percent, respectively. The number of information searches about government services or agencies also grew between 2001 and 2003, with substantial differences existing in this e-government activity between those with broadband Internet at home and those without.

Internet users with broadband at home are more likely than those with dial-up or no home Internet connection to engage in each of the specific activities discussed above. Additionally, they are more likely to engage in the highest number of online activities. As shown in Figure 7, 15.0 percent of Internet users with no Internet at home engage in only one of the 12 activities considered. The proportion of Internet users with Internet in the home that engage in only one activity is much smaller—8.3 percent of those with home dial-up service and 4.5 percent of those with broadband. At the other end of the distribution, 22.1 percent of Internet users with broadband at home engage in eight or more activities. The comparable figures are 10.6 percent for those with dial-up at home and 8.2 percent for users without Internet at home.

EFFECT OF GEOGRAPHY

The proportion of Internet users in the population grew in every state between 2001 and 2003, although the levels and rates of change have not been uniform. As shown in Figure 8, the number of states where less

Figure 8: Distribution of Internet Use Across the States, 2001 and 2003 (Internet Use by State Population, Ages 3 and Over)[6]



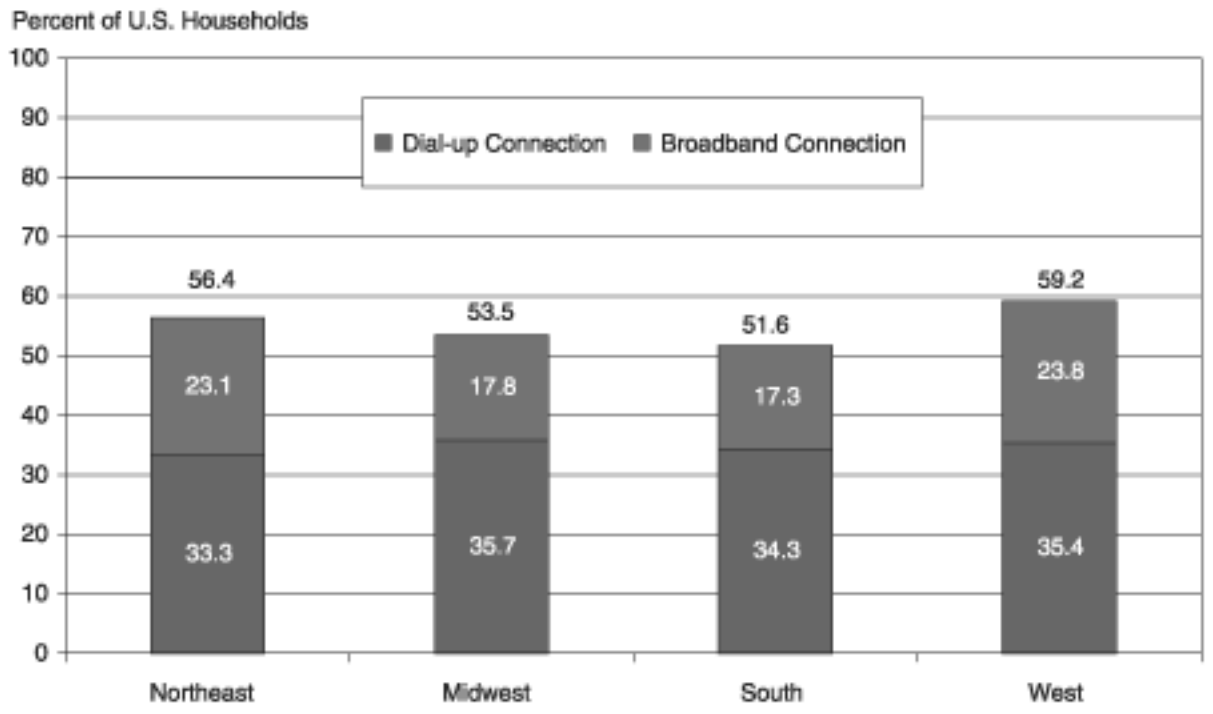
[6] Because states can have very different confidence intervals, states were assigned to a category based on whether the upper confidence bound includes the break point. For example, a state with a point estimate of 59.0 percent would be included in the 60 percent to 70 percent range because the confidence range of the estimate is 57.2 percent to 62.0 percent. See Appendix, Table 3 for the individual state and the District of Columbia confidence intervals.

than half of the population uses the Internet declined from four to one, while the number of states where over 70 percent of the population uses the Internet grew from one to six.

In general, home broadband adoption rates vary in ways similar to overall Internet adoption rates, although there are some important geographic differences. As shown in Figure 9, rates of dial-up usage are roughly the same across geographic regions. However, broadband rates are higher in the West and Northeast than in the South and Midwest.

As shown in Table 3, broadband connections at home are less prevalent in rural America (24.7 percent) than in urban areas (40.4 percent), particularly in central cities (40.9 percent).[7] The 2003 CPS supplement found that in rural areas, subscribership for both cable modems (14.3 percent) and DSL (9.2 percent) is lower than national averages (20.6 percent and 15.2 percent, respectively).[8] While broadband usage has

Figure 9: Type of Home Internet Connection by Region, 2003



Note: Broadband includes DSL, cable modem, fixed wireless (MMDS), and satellite.

[7] The "urban" category includes those areas classified as having a population density of at least 1,000 persons per square mile and a total population of at least 50,000, as well as cities, villages, boroughs (except in Alaska and New York) towns (except in the six New England states, New York, and Wisconsin), and other designated census areas having 2,500 or more persons. A "central city" is the largest city within a "metropolitan" area as defined by the Census Bureau. Additional cities within the metropolitan area can also be classified as central cities if they meet certain employment, population, and employment/residence ratio requirement. All areas not classified by the Census Bureau as urban are defined as rural and generally include communities of less than 2,500 persons.

[8] Each geographic designation has a minimal number of additional broadband households with satellite and fixed wireless (MMDS), but the samples for these technologies are too small to be statistically reliable.

Table 3: Type of Home Internet Connection by Rural/Urban, 2003
(Percent of Households with Internet)

	Total US	Rural	Urban	Central City
Dial-up	62.8	74.7	58.9	58.4
Cable Modem	20.6	14.3	22.6	21.1
DSL	15.2	9.2	17.2	19.1
Satellite and Fixed Wireless (MMDS)	0.7	1.2	0.6	0.7
Other	0.8	0.7	0.8	0.8

grown significantly in all areas since the previous survey, the rural-urban differential continues. However, wireless technologies such as satellite and MMDS are promising technologies for increasing broadband use in rural areas. They are better suited at present than cable or DSL for providing high-speed Internet access in areas where population density is low. Even at this early stage of wireless deployment, rural households are slightly more likely than urban households to have satellite or MMDS.

This situation is not new. As explained in the April 2000 report co-authored by the Departments of Agriculture and Commerce, cable modem and DSL technologies are less likely to serve rural areas for varied reasons. Cable modem service may not extend to remote customers, who often do not have cable systems built out to their homes. Additionally, the cost of building out cable modem service is higher in rural and remote areas, where the subscriber base is low. DSL is similarly hampered by distance as loops extending more than 15,000 to 18,000 feet from the central switching office are less likely to be able to support DSL-based advanced services without significant cost increases. The report concluded that "[t]he deployment of both technologies declines with population density. [C]able modems and DSL services, although increasingly available in rural towns, are still far more available in larger metropolitan areas.... As a result, residents in rural areas will generally be the last to receive service."[9]

The difficulty that residents of rural areas face in obtaining broadband is illustrated in the reasons that dial-up households give for not having moved to higher-speed service. As shown in Figure 10, dial-up Internet households most often cite "Don't Need/ Not Interested" (44.1 percent) and "Too Expensive" (38.9 percent) as the main reasons they do not have

[9] *Advanced Telecommunications in Rural America: The Challenge of Bringing Broadband Service to All Americans*, pp. 17, 23 (April 2000) (available at *www.ntia.doc.gov/reports/ruralbb42600.pdf*). The report noted that other types of technologies, including satellite, third generation (3G) wireless, and MMDS have the capability to provide broadband service to rural areas and may provide promising alternatives in the years to come. In addition to these technologies, the Federal Communications Commission is currently reviewing the potential for broadband to be delivered over electrical powerlines, which now extend to almost every home.

Figure 10: Main Reasons for No High-Speed Internet Use at Home, 2003

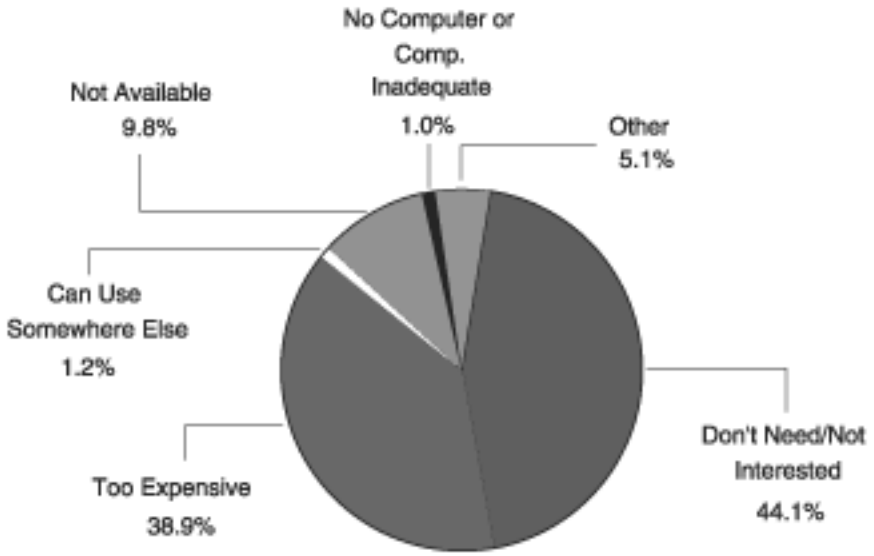
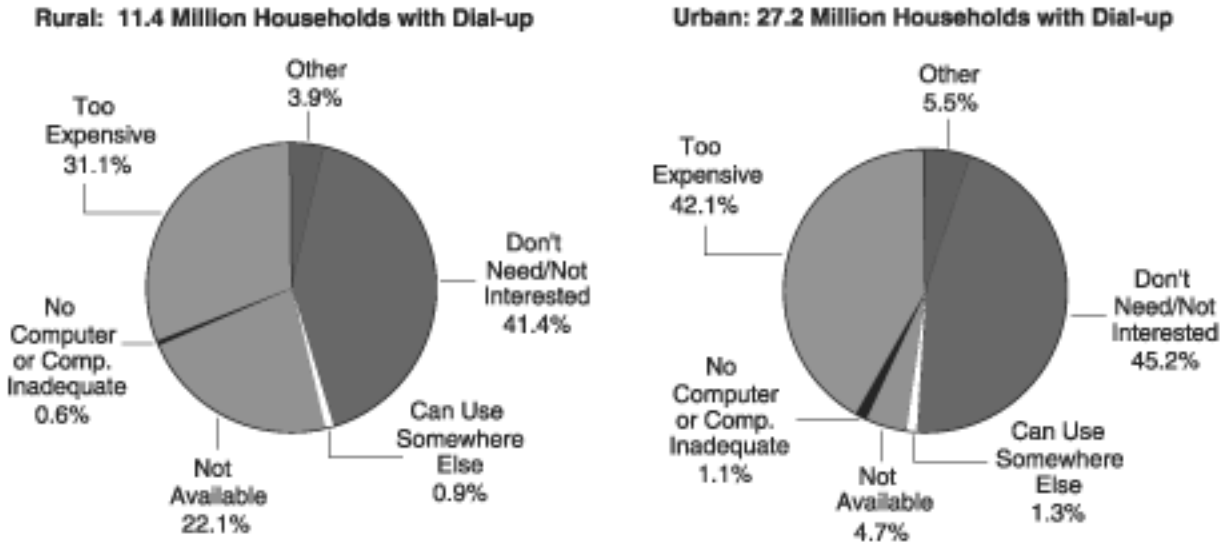


Figure 11: Main Reasons for No High-Speed Internet Use at Home Rural/Urban, 2003



higher speed access at home. Only 9.8 percent cited that high-speed service was not available.

However, there are major differences in the responses between rural and urban households. Figure 11 shows that while only 4.7 percent of urban Internet households believed that broadband was not available, 22.1 percent of rural Internet households surveyed believed that they did not have broadband available to them.

Indeed, differences in availability may account for much of the disparity in broadband use between rural and urban areas. For example, if dial-up households citing "Lack of Availability" as the primary reason for not having higher-speed access were added to those currently having broadband, then rural and urban households would have broadband Internet connections in roughly the same proportion (41.2 percent and 43.1 percent for rural and urban, respectively).

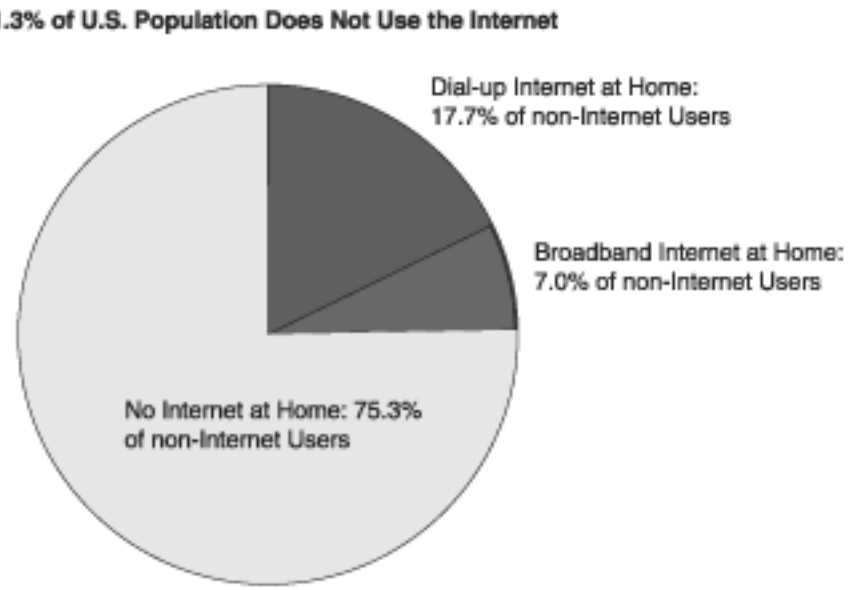
REASONS FOR NON-USE

When asked, the reasons given for why some Americans choose not to use the Internet or broadband technologies extend beyond issues of geography. Many Americans—41.3 percent of the total U.S. population—still do not use the Internet from any location. But, only 32.4 percent of U.S. households do not contain at least one person who uses the Internet. The key reasons given by those households that have never connected to the Internet at home suggest problems of cost/value and availability, including: "Don't Need/Not Interested" (41.6 percent), "Too Expensive" (22.9 percent), and "No or Inadequate Computer Available" (22.5 percent). Affordability and computer availability are even more important for those who had Internet service but discontinued it. Major reasons for discontinuing home Internet use include "No or Inadequate Computer Available" (27.5 percent), "Too Expensive" (27.2 percent), and "Don't Need/Not Interested" (18.4 percent).

Many of those who do not use the Internet employ other communications devices and entertainment media although their usage rates trail those of Internet users. For example, 48.3 percent of households that do not have Internet have cable TV versus 59.9 percent of Internet households. And 31.1 percent of households that do not have Internet have cell phones versus 67.7 percent of Internet households.

Indeed, a certain percentage of Americans remain non-users even when there is already someone in their household using the Internet at home. Figure 12 shows that almost one-quarter (24.7 percent) of non-Internet users live in a household that has an Internet connection. Additionally, seven percent of the non-Internet users live in a household with broadband access. Therefore, it appears that regardless of availability or affordability, a certain percentage of Americans likely will remain non-users, just as five to six percent of households have consistently declined home telephone service since the early 1990s.

Figure 12: Non-Internet Users by Availability of Internet in the Home, 2003 (Ages 3 and Over)



CONCLUSION

The Internet facilitates an ever-growing range of activities and applications such as educating children; accessing information from across the globe; connecting with people, governments, and organizations; obtaining information about health care; conducting price comparisons; bidding on contracts; and widening entertainment choices. As the volume and complexity of the Internet's content has grown, so has the need for high-speed access technologies. In light of this trend, it will become increasingly important for Americans to have affordable access to broadband service.

The report demonstrates that broadband use is growing swiftly, and that broadband technologies are expanding the range and frequency of Internet use. Yet, not all geographic locations in the United States are using high-speed services to the same degree. Future surveys will enable us to track our progress in ensuring that all Americans have access to this important information technology.

Methodology

This report utilizes data from the Department of Commerce's U.S. Census Bureau, taken from the Census Bureau's October 2003 Current Population Survey (CPS) of approximately 57,000 sample households. The survey took place during the week of October 19 through 25, 2003, and generated response rates of 92.7 percent for the basic CPS, with 93.7 percent of the CPS respondents answering the School Enrollment and Internet and Computer Use Supplement (i.e., 86.9 percent of the CPS sample answered the supplement).

The households surveyed were selected from the 1990 Decennial Census with coverage in all 50 states and the District of Columbia. The sample is continually updated to account for new residential construction. The Census divided the United States into 2,007 geographic areas, each typically comprised of a county or several contiguous counties. A total of 754 geographic areas were selected for the 2003 CPS survey.

For each household, Census Bureau interviewers spoke to a person (called the "respondent") who was at least 15 years old and was considered knowledgeable about everyone in the household. For purposes of collecting data at the household level (such as type of connection to the Internet), the respondent provided information pertaining to the "householder" or "reference person," who is an adult in the household who either owns or has signed for the rent on the residence. For purposes of collecting data at an individual level, the respondent provided responses for himself or herself and proxy responses for all other members of that household age 3 and older. The survey, therefore, provided information on 134,189 individuals (age 3 and older).

The procedure used in developing estimates for the entire civilian noninstitutional population for the Current Population Survey (CPS) involves the weighting of sample results to independent estimates of the population by sex, age, race, and Hispanic/non Hispanic categories. These independent estimates are developed by using civilian noninstitutional population counts from the decennial censuses and projecting them forward to current years using data on births, deaths, and net migration. Estimates in this report from the September 2001 CPS have been updated from those presented in the previous *A Nation Online* report. The 2001 estimates in this report are based on population control benchmarks consistent with Census 2000, whereas the previous report's estimates were based on benchmarks consistent with the 1990 census. Weighting the estimates with 2000 population controls, instead of the 1990 census controls used in the previous report, had very little effect on Internet, broadband, or computer connectivity in 2001.

The Census Bureau cross-tabulated the information gathered from the CPS according to specific variables, such as income, race, education level, household type, and age as well as by geographic categories, such as rural, urban, and central city, plus state and region. The sample was too small to support statistically significant statements about

some questionnaire items which only rarely drew positive responses.

All statistics in the survey are subject to sampling error, as well as non-sampling error such as survey design flaws, respondent classification and reporting errors, data processing mistakes and undercoverage. In some cases in the report, numbers may not add up to the total due to rounding. The Census Bureau has taken steps to minimize errors in the form of quality control and edit procedures to reduce errors made by respondents, coders, and interviewers. Ratio estimation to independent age-race-sex-Hispanic population controls partially corrects for bias attributable to survey undercoverage. However, biases exist in the estimates when missed people have characteristics different from those of interviewed people in the same age-race-sex-Hispanic group.

Given the size of the sample, calculated standard errors are small. For example, our estimate that 61.8 percent of households have a computer (Figure 1) has a standard error of 0.20, which, when multiplied by 1.645, yields a 90-percent confidence interval of 61.5 to 62.1 percent. However, as the population under consideration becomes smaller, the confidence interval widens. For example, the width of the 90-percent confidence interval for many states exceeds 5 percentage points. See Source and Accuracy Statement for more details, available at *http://www.bls.census.gov/cps/bsrcacc.htm*.

The data used in this report are freely available in a Public Use File maintained by the Census Bureau. See *www.census.gov*.

Appendix Table 1: Internet Use from Any Location by Individuals Age 3 and Older, September 2001 and October 2003 and Living in a Home with Internet Broadband Age 3 and Older, October 2003

	Internet Users (Percent)		Lives in a Broadband Household (Percent)
	Sept. 2001	Oct. 2003	Oct. 2003
TOTAL POPULATION	55.1	58.7	22.8
Gender			
Male	55.2	58.2	23.9
Female	55.0	59.2	21.8
Race/ Ethnicity[a]			
White[b]	61.3	65.1	25.7
White Alone	n/a	65.1	25.7
Black[c]	41.1	45.6	14.2
Black Alone	n/a	45.2	13.9
Asian Amer. & Pac. Isl.[d]	62.5	63.1	34.2
Asian Amer. & Pac. Isl. Alone	n/a	63.0	34.7
Hispanic (of any race)	33.4	37.2	12.6
Employment Status			
Employed[e]	66.6	70.7	26.0
Not Employed (unemployed or NLF)[e]	38.0	42.8	16.1
Family Income			
Less than $15,000	25.9	31.2	7.5
$15,000 - $24,999	34.4	38.0	9.3
$25,000 - $34,999	45.3	48.9	13.4
$35,000 - $49,999	58.3	62.1	19.0
$50,000 - $74,999	68.9	71.8	27.9
$75,000 & above	80.4	82.9	45.4
$75,000 - $99,999[f]	n/a	79.8	36.8
$100,000 - $149,999[f]	n/a	85.1	49.3
$150,000 & above[f]	n/a	86.1	57.7
Educational Attainment[g]			
Less Than High School	13.7	15.5	5.9
High School Diploma / GED	41.1	44.5	14.5
Some College	63.5	68.6	23.7
Bachelor's Degree	82.2	84.9	34.9
Beyond Bachelor's Degree	85.0	88.0	38.0
Age Group			
Age 3 - 4	17.6	19.9	22.0
Age 5 - 9	41.0	42.0	24.1
Age 10 - 13	66.7	67.3	25.8
Age 14 - 17	76.4	78.8	28.3
Age 18 - 24	66.6	70.6	25.5
In School	85.4	86.7	33.8
Not In School	54.0	58.2	19.0
Age 25 - 49	65.0	68.0	25.9
In Labor Force	68.4	71.7	26.8
Not in Labor Force	47.1	49.7	21.1

	Internet Users (Percent)		Lives in a Broadband Household (Percent)
	Sept. 2001	Oct. 2003	Oct. 2003
Age 50 +	38.3	44.8	15.9
In Labor Force	58.0	64.4	22.6
Not in Labor Force	22.2	27.6	10.1
Location of the Person's Household			
Rural	54.1	57.2	
Urban	55.5	59.2	
Urban Not Central City	58.8	62.5	
Urban Central City	50.3	54.0	
Household Type In Which the Individual Lives [h]			
Married Couple w/Children <18 Years Old	63.5	65.3	29.3
Male Householder w/Children <18 Years Old	46.8	50.3	19.4
Female Householder w/Children <18 Years Old	46.6	51.4	14.8
Households without Children	51.8	56.7	20.7
Non -Family Household	48.3	53.1	17.3
Location of Internet Use			
Only At Home	19.0	19.0	
Only Outside the Home	11.8	11.6	
Disability Status			
Between 25 and 60 and In the Labor Force			
Multiple Disabilities	54.8	58.9	14.2
Blind or Severe Vision Impairment	56.2	63.7	21.6
Deaf or Severe Hearing Impairment	59.6	72.1	25.8
Difficulty Walking	60.5	64.2	22.4
Difficulty Typing	62.8	64.4	26.0
Difficulty Leaving Home	73.2	67.8	20.8
None of these Disabilities	67.0	71.0	27.4
Between 25 and 60 and Not In the Labor Force			
Multiple Disabilities	25.5	27.9	10.9
Blind or Severe Vision Impairment	40.3	40.0	14.4
Deaf or Severe Hearing Impairment	30.9	47.9	25.6
Difficulty Walking	26.3	33.1	11.9
Difficulty Typing	28.8	34.3	8.9
Difficulty Leaving Home	24.0	26.1	12.0
None of these Disabilities	47.0	52.5	23.4
Over Age 60			
Multiple Disabilities	6.7	8.3	5.9
Blind or Severe Vision Impairment	9.6	23.0	11.0
Deaf or Severe Hearing Impairment	18.7	23.6	6.2
Difficulty Walking	17.3	20.7	6.6
Difficulty Typing	13.5	26.1	9.6
Difficulty Leaving Home	7.5	10.5	6.3
None of these Disabilities	26.4	34.2	10.9

Notes:

n/a = Not Available

[a] In 2003 respondents were able to choose multiple racial categories. Thus, 2003 race data are not strictly comparable with data from previous surveys.

[b] For 2003, "White" should be read as "White alone or in combination with other racial categories, non-Hispanic."

[c] For 2003, "Black" should be read as "Black alone or in combination with other racial categories, non-Hispanic."

[d] For 2003, "Asian Amer. & Pac. Isl." should be read as "Asian American and Pacific Islanders alone or in combination with other racial categories, non-Hispanic."

[e] Age 16 and Older. NLF=Not in the labor force.

[f] The October 2003 Current Population Survey had income categories above $75,000 that were not previously available.

[g] Age 25 and older.

[h] The male and female categories refer to family households where a spouse is not present.

Appendix Table 2: Non-Internet Use from Any Location by Individuals Age 3 and Older, September 2001 and October 2003

	Non-Internet Users (Percent)	
	Sept. 2001	Oct. 2003
TOTAL POPULATION	44.9	41.3
Gender		
Male	44.8	41.8
Female	45.0	40.8
Race/ Ethnicity[a]		
White[b]	38.7	34.9
White Alone	n/a	34.9
Black[c]	58.9	54.4
Black Alone	n/a	54.8
Asian Amer. & Pac. Isl.[d]	37.5	36.9
Asian Amer. & Pac. Isl. Alone	n/a	37.0
Hispanic (of any race)	66.6	62.8
Employment Status		
Employed[e]	33.4	29.3
Not Employed (unemployed or NLF)[e]	62.0	57.2
Family Income		
Less than $15,000	74.1	68.8
$15,000 - $24,999	65.6	62.0
$25,000 - $34,999	54.7	51.1
$35,000 - $49,999	41.7	37.9
$50,000 - $74,999	31.1	28.2
$75,000 & above	19.6	17.1
$75,000 - $99,999[f]	n/a	20.2
$100,000 - $149,999[f]	n/a	14.9
$150,000 & above[f]	n/a	13.9
Educational Attainment[g]	n/a	
Less Than High School	86.3	84.5
High School Diploma / GED	58.9	55.5
Some College	36.5	31.4
Bachelor's Degree	17.8	15.1
Beyond Bachelor's Degree	15.0	12.0
Age Group		
Age 3 - 4	82.4	80.1
Age 5 - 9	59.0	58.0
Age 10 - 13	33.3	32.7
Age 14 - 17	23.6	21.2
Age 18 - 24	33.4	29.4
In School	14.6	13.3
Not In School	46.0	41.8
Age 25 - 49	35.0	32.0
In Labor Force	31.6	28.3
Not In Labor Force	52.9	50.3

	Non-Internet Users (Percent)	
	Sept. 2001	Oct. 2003
Age 50 +	61.7	55.2
In Labor Force	42.0	35.6
Not in Labor Force	77.8	72.4
Location of the Person's Household		
Rural	45.9	42.8
Urban	44.5	40.8
Urban Not Central City	41.2	37.5
Urban Central City	49.7	46.0
Household Type In Which the Individual Lives[h]		
Married Couple w/Children <18 Years Old	36.5	34.7
Male Householder w/Children <18 Years	53.2	49.7
Female Householder w/Children <18 Years Old	53.4	48.6
Households without Children	48.2	43.3
Non-Family Household	51.7	46.9
Disability Status		
Between 25 and 60 and In the Labor Force		
Multiple Disabilities	45.2	41.1
Blind or Severe Vision Impairment	43.8	36.3
Deaf or Severe Hearing Impairment	40.4	27.9
Difficulty Walking	39.5	35.8
Difficulty Typing	37.2	35.6
Difficulty Leaving Home	26.8	32.2
None of these Disabilities	33.0	29.0
Between 25 and 60 and Not In the Labor Force		
Multiple Disabilities	74.5	72.1
Blind or Severe Vision Impairment	59.7	60.0
Deaf or Severe Hearing Impairment	69.1	52.1
Difficulty Walking	73.8	66.9
Difficulty Typing	71.2	65.7
Difficulty Leaving Home	76.0	73.9
None of these Disabilities	53.0	47.5
Over Age 60		
Multiple Disabilities	93.3	91.7
Blind or Severe Vision Impairment	90.4	77.0
Deaf or Severe Hearing Impairment	81.3	76.4
Difficulty Walking	82.8	79.3
Difficulty Typing	86.5	73.9
Difficulty Leaving Home	92.5	89.6
None of these Disabilities	73.6	65.8

Source: U.S. Bureau of the Census, Current Population Survey supplements, September 2001, and October 2003.

Notes:
n/a = Not Available

[a] In 2003 respondents were able to choose multiple racial categories. Thus, 2003 race data are not strictly comparable with data from previous surveys.

[b] For 2003, "White" should be read as "White alone or in combination with other racial categories, non-Hispanic."

[c] For 2003, "Black" should be read as "Black alone or in combination with other racial categories, non-Hispanic."

[d] For 2003, "Asian Amer. & Pac. Isl." should be read as "Asian American and Pacific Islanders alone or in combination with other racial categories, non-Hispanic."

[e] Age 16 and Older. NLF=Not in the labor force.

[f] The October 2003 Current Population Survey had income categories above $75,000 that were not previously available.

[g] Age 25 and older.

[h] The male and female categories refer to family households where a spouse is not present.

Appendix Table 3: Internet Use by Percent of State Population, Age 3 and Older, October 2003

State	Total Population	90% Confidence Interval Lower Bound	90% Confidence Interval Upper Bound
Alabama	4,435,532	50.5	55.8
Alaska	634,207	69.3	73.8
Arizona	5,382,335	61.0	66.2
Arkansas	2,670,197	47.1	52.7
California	35,490,299	55.6	57.9
Colorado	4,489,372	63.0	67.2
Connecticut	3,441,856	64.7	69.0
Delaware	576,188	56.7	61.4
Florida	16,352,570	56.2	59.2
Georgia	8,435,441	53.7	58.8
Hawaii	1,215,507	53.4	58.7
Idaho	1,327,338	59.5	64.9
Illinois	12,697,160	56.7	60.0
Indiana	6,135,518	56.6	61.0
Iowa	2,923,456	61.2	65.8
Kansas	2,696,591	61.4	66.1
Kentucky	4,027,467	54.0	59.2
Louisiana	4,424,416	47.1	52.8
Maine	1,270,136	62.2	66.7
Maryland	5,408,755	62.8	67.3
Massachusetts	6,454,814	60.3	64.6
Michigan	10,047,160	57.1	60.7
Minnesota	5,017,883	66.8	71.1
Mississippi	2,825,852	39.7	45.5
Missouri	5,592,374	58.1	62.8
Montana	896,273	57.1	62.8
Nebraska	1,725,102	62.3	67.2
Nevada	2,126,219	53.2	57.9
New Hampshire	1,261,524	68.2	72.6
New Jersey	8,646,566	60.8	64.4
New Mexico	1,848,212	48.9	54.7
New York	19,379,829	55.5	58.0
North Carolina	8,163,417	53.0	57.2
North Dakota	628,358	62.0	67.0
Ohio	11,372,776	56.8	60.4
Oklahoma	3,427,054	52.7	57.9
Oregon	3,491,795	59.7	64.6
Pennsylvania	12,175,267	58.0	61.3
Rhode Island	1,055,249	55.6	60.0
South Carolina	4,022,423	49.8	55.0
South Dakota	752,836	61.8	66.4
Tennessee	5,715,727	53.0	58.6
Texas	21,697,942	53.2	56.0
Utah	2,360,737	67.2	71.9
Vermont	611,658	63.6	68.2

Appendix Table 3: Internet Use by Percent of State Population, Age 3 and Older, October 2003

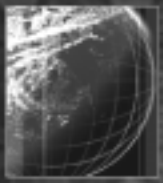
State	Total Population	90% Confidence Interval	
		Lower Bound	Upper Bound
Virginia	7,111,123	61.2	66.0
Washington, DC	793,708	57.6	63.9
Washington	6,030,976	65.7	70.3
West Virginia	1,769,062	49.0	54.0
Wisconsin	5,401,673	61.9	66.2
Wyoming	490,644	66.0	70.8

Source: U.S. Bureau of the Census, Current Population Survey supplements, September 2001, and October 2003.

Appendix Table 4: Household's Internet Connection Type, October 2003

	Total Internet Households (thousands)	Dial-Up Telephone		Cable Modem		Digital Subscriber Line (DSL)		Mobile, Phone, PDA, Pager		Satellite		Fixed Wireless (MMDS)		Other	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	61,481	38,593	62.8%	12,638	20.6%	9,335	15.2%	138	0.2%	195	0.3%	252	0.4%	329	0.5%
Family Income															
Less than 15,000	3,681	2,555	69.4%	584	15.9%	477	13.0%	9	0.2%	10	0.3%	12	0.3%	32	0.9%
15,000-24,999	3,839	2,786	72.6%	600	15.6%	418	10.9%	1	0.0%	10	0.3%	9	0.2%	15	0.4%
25,000-34,999	5,855	4,137	70.7%	921	15.7%	694	11.9%	21	0.4%	11	0.2%	27	0.5%	43	0.7%
35,000-49,999	8,867	6,213	70.1%	1,391	15.7%	1,138	12.8%	25	0.3%	25	0.3%	38	0.4%	37	0.4%
50,000-74,999	12,429	7,918	63.7%	2,531	20.4%	1,814	14.6%	24	0.2%	33	0.3%	43	0.3%	65	0.5%
75,000-99,999	7,774	4,440	57.1%	1,919	24.7%	1,321	17.0%	7	0.1%	26	0.3%	28	0.4%	33	0.4%
100,000-149,999	5,811	2,726	46.9%	1,771	30.5%	1,207	20.8%	16	0.3%	43	0.7%	28	0.5%	21	0.4%
150,000+	3,753	1,482	39.5%	1,242	33.1%	961	25.6%	14	0.4%	22	0.6%	18	0.5%	15	0.4%
Not reported	9,472	6,335	66.9%	1,680	17.7%	1,305	13.8%	21	0.2%	14	0.1%	47	0.5%	70	0.7%
Household Type															
Mar Couple a/ Child<18	19,934	11,914	59.8%	4,574	22.9%	3,205	16.1%	25	0.1%	67	0.3%	82	0.4%	67	0.3%
Male Hhldr w/ Child<18	1,229	751	61.1%	258	21.0%	204	16.6%	1	0.1%	5	0.4%	3	0.3%	7	0.6%
Female Hhldr w/Child<18	4,181	2,833	67.8%	702	16.8%	606	14.5%	12	0.3%	9	0.2%	7	0.2%	12	0.3%
Family Hhldr w/Child<18	21,852	14,323	65.5%	4,152	19.0%	3,023	13.8%	57	0.3%	83	0.4%	97	0.4%	119	0.5%
Non -Family Households	14,284	8,772	61.4%	2,952	20.7%	2,297	16.1%	43	0.3%	32	0.2%	63	0.4%	125	0.9%
Region															
Northeast	12,113	7,065	58.3%	3,339	27.6%	1,565	12.9%	27	0.2%	25	0.2%	24	0.2%	68	0.6%
Midwest	13,953	9,168	65.7%	2,752	19.7%	1,790	12.8%	31	0.2%	27	0.2%	70	0.5%	116	0.8%
South	20,927	13,782	65.9%	3,820	18.3%	3,013	14.4%	33	0.2%	74	0.4%	99	0.5%	106	0.5%
West	14,487	8,578	59.2%	2,727	18.8%	2,966	20.5%	48	0.3%	70	0.5%	59	0.4%	40	0.3%

Source: U.S. Bureau of the Census, Current Population Survey supplements, September 2001, and October 2003.



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