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**BROADBAND ADOPTION AMONG LOW-INCOME HOUSEHOLDS:  
INSIGHTS FROM CONNECTED NATION RESEARCH**

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A well-recognized and significant barrier to the adoption and use of broadband technology is related to income. Across the board, households with lower incomes subscribe to broadband at a lower rate than higher-income households. The presence of an “Affordability Gap” can have a significant effect upon economic growth and opportunity – with the economy moving increasingly online, ensuring that every American has digital skills is crucial to economic growth, education, and workforce development.

But how much of a barrier is affordability? What is the most efficient and effective way of bridging the Affordability Gap? How many non-adopting households would be motivated to adopt broadband through low-cost incentive programs or targeted discounts? Is there any defining demographic characteristic of this community that would allow policymakers to efficiently target such initiatives?

One idea for targeted intervention is to focus upon low-income households with children. Research has indicated that all other things being equal, households with children are significantly more inclined to adopt broadband than the population as a whole. This research indicates that other commonly cited barriers to broadband adoption, such as awareness and relevance, may not be as prominent. In addition, the lack of broadband for a substantial number of our nation’s schoolchildren affects the education and social welfare of the society as a whole.

Connected Nation research generally supports this view and provides some guideposts to scoping and bridging the Affordability Gap. In particular, our surveys across multiple states and territories suggest that nationwide, approximately 2.9 million households that have annual incomes below \$25,000 with children present do not own a home computer, and 5.5 million do not subscribe to home broadband service. We also estimate that there are 3.9 million households with children who qualify for free and reduced-cost lunches in the National School Lunch Program (NSLP) who do not own a computer, and 8.1 million of these households do not subscribe to home broadband service.

Table 1. The Technology Adoption Gap Among Households with Children

	Total	Without Computer	Without Broadband
<b>Low-Income Households (&lt;\$25,000/yr) with Children</b>	9 million	2.9 million	5.5 million
<b>Households with School Lunch Program Eligible Children</b>	16.8 million	3.9 million	8.1 million

Source: Connected Nation survey estimates, U.S. Census Bureau, U.S. Dept. of Agriculture

Moreover, our research shows that this demographic group has an adoption rate that is significantly lower than the national average and that this group is far more likely to cite “affordability” and “cost” as reasons for not having broadband or a computer. As a result, affordability programs and initiatives targeting low-income households with children have the potential to be efficient and effective methods of bridging the Affordability Gap.

Connected Nation surveys are delving deeper into the precise reasons people do not adopt broadband and, more importantly, what changes might spur adoption. Questions such as price points and responsiveness to digital literacy training or other initiatives are being explored in depth in these surveys.

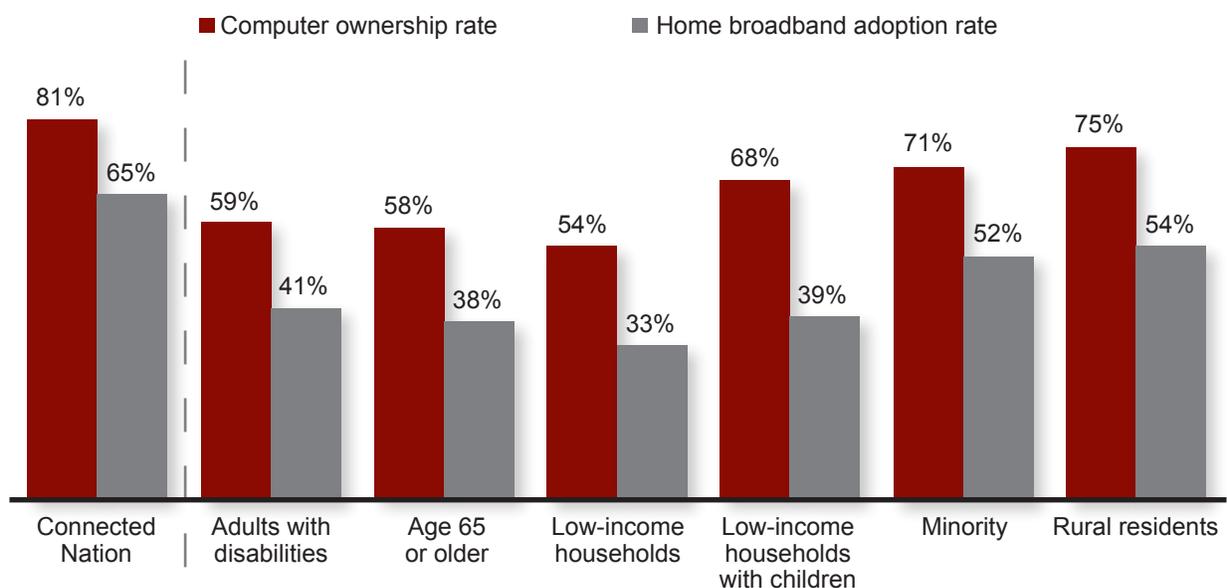
## Estimating the Adoption Gap for Low-Income Households with Children

It has been well-documented through several studies that households with lower incomes subscribe to broadband at a lower rate than higher-income households. The Federal Communications Commission study *Broadband Adoption and Use in America* found that low-income households (those with incomes less than \$20,000 a year) have a 40% home broadband adoption rate.<sup>1</sup>

Similarly, according to the Pew Internet & American Life Project's "Home Broadband 2010" report, 45% of households in the lowest income bracket (less than \$30,000 a year) subscribe to home broadband service.<sup>2</sup> And finally, the National Telecommunications and Information Administration's *Exploring the Digital Nation: Home Broadband Internet Adoption in the United States* found that 35.8% of low-income households (those earning less than \$25,000 a year) subscribe to home broadband service.<sup>3</sup>

Connected Nation's research surveys, conducted in 2010 in a dozen states and Puerto Rico, demonstrate similar findings, indicating that low-income households have the lowest broadband adoption rates among particularly vulnerable demographic groups, and that these households are among the least likely to own a home computer (figure 1).

Figure 1.  
Technology Adoption by Demographic



It is one thing, however, to identify a broadband technology adoption gap, but quite another to diagnose its causes and to design cures. Connected Nation research surveys go one step further and contain detailed demographic information that can help policymakers analyze adoption gaps and design targeted programs to bridge them. Recently, policymakers have begun to focus upon the broadband and technology adoption gap among low-income families with schoolchildren. This adoption gap has an obvious impact upon educational opportunities, economic growth, and social welfare in American communities.

1 [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-296442A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf).

2 <http://www.pewinternet.org/Reports/2010/Home-Broadband-2010.aspx>.

3 [http://www.ntia.doc.gov/reports/2010/ESA\\_NTIA\\_US\\_Broadband\\_Adoption\\_Report\\_11082010.pdf](http://www.ntia.doc.gov/reports/2010/ESA_NTIA_US_Broadband_Adoption_Report_11082010.pdf).

Connected Nation research can help policymakers estimate the size of this vulnerable population and also explore the adoption barriers relevant to that demographic. Connected Nation identifies “low-income” households as those having median annual household incomes below \$25,000. Based on recent American Community Survey estimates from the United States census, 23.8% of American households fall into this income bracket.<sup>4</sup> This suggests that among the 118 million households across the United States and Puerto Rico, 28.1 million would be considered “low-income” by this definition. If the technology adoption rates from Connected Nation states/territories are applied to the entire nation, there are 12.9 million low-income households that do not own a home computer and 18.8 million that do not subscribe to home broadband service.

Connected Nation’s state-level research indicates that nearly one-third (32%) of low-income households have children at home. Were this figure to be applied to all 28.1 million low-income households nationwide, there would be approximately 9 million low-income households with children across the United States and Puerto Rico. If one applies the home computer ownership rate (68%) and home broadband service adoption rate (39%) to this figure, it is reasonable to estimate that approximately 2.9 million low-income households with children do not own a home computer and 5.5 million do not subscribe to home broadband service.

While this is a fairly straightforward estimate, it does not take into account household size, which can have a significant impact on family budgets. For this reason, the National School Lunch Program takes into account household size in determining children’s eligibility for free or reduced-cost school lunches. In order to truly identify and understand the characteristics of households with school-aged children for which affordability may be a factor, we have devised a method that would estimate the number of households that qualify for the NSLP that do not own a computer or adopt broadband.

To be eligible for the NSLP, a household with children must earn 185% or less than the national poverty rate, which is based on a household’s annual household income and the number of people living in the household.<sup>5</sup> This eligibility threshold for the NSLP ranges from approximately \$27,000 for a household of two, to more than \$62,000 for a household of seven in the lower 48 states and the District of Columbia. According to the USDA, in fiscal year 2009 more than 31.3 million children received free or reduced lunches, and with an average of 1.86 children in every household with children present, we estimate that there are approximately 16.8 million households with children eligible for the NSLP.<sup>7</sup>

When we apply these criteria to our survey results, we find that there is a significant and substantial broadband and computer adoption gap among households with children who are at or near the eligibility limit for the NSLP (figure 2).<sup>8</sup>

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4 Source: 2005-2009 American Community Surveys 5-Year Estimates.  
[http://factfinder.census.gov/servlet/DTable?\\_bm=y&-geo\\_id=01000US&-ds\\_name=ACS\\_2009\\_5YR\\_G00\\_&-lang=en&-redoLog=false&-mt\\_name=ACS\\_2009\\_5YR\\_G2000\\_B19001&-format=&-CONTEXT=dt](http://factfinder.census.gov/servlet/DTable?_bm=y&-geo_id=01000US&-ds_name=ACS_2009_5YR_G00_&-lang=en&-redoLog=false&-mt_name=ACS_2009_5YR_G2000_B19001&-format=&-CONTEXT=dt).

5 Source: 2010 Connected Nation Residential Technology Assessments.

6 <http://www.fns.usda.gov/cnd/lunch/aboutlunch/NSLPFactSheet.pdf>.

7 Source: <http://www.fns.usda.gov/cnd/lunch/aboutlunch/NSLPFactSheet.pdf> (for the number of children receiving free and reduced lunches) and <http://www.census.gov/population/socdemo/hh-fam/tabST-F1-2000.pdf> (for the average number of children per household with children).

8 Data from the 2010 Connected Nation Residential Technology Assessments regarding households with children eligible for the NSLP do not include survey respondents from Alaska or Puerto Rico, as poverty guidelines that determine NSLP eligibility are different in those jurisdictions than in the lower 48 states plus the District of Columbia.

Figure 2.  
Technology Adoption Rates

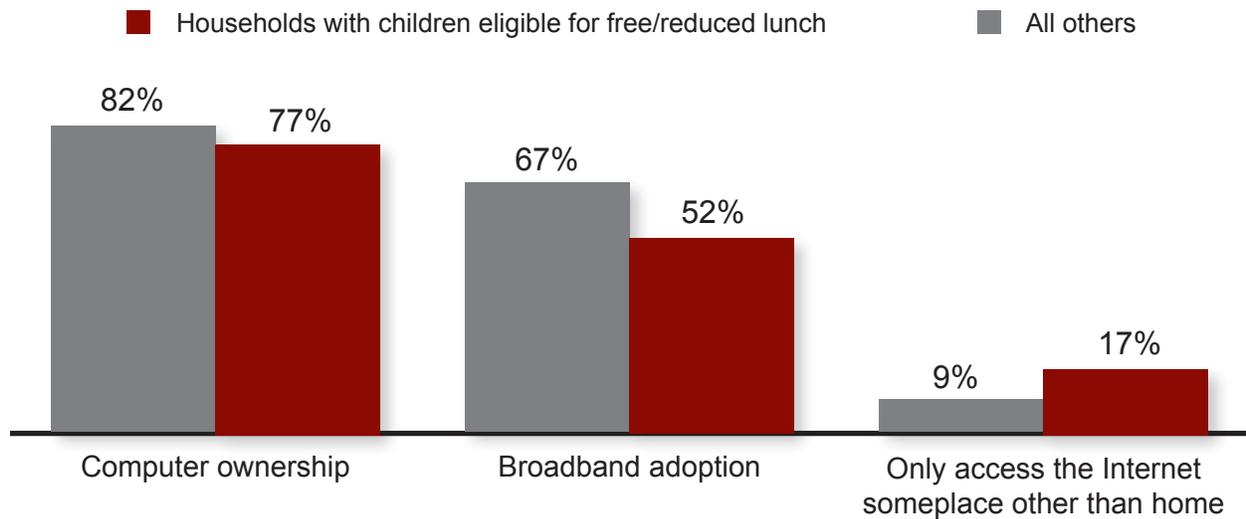


Figure 2 also shows that these qualifying households are substantially more likely to access the Internet from places other than home – almost double the rate of all other households. This suggests that among this group, the relevance and importance of broadband is evident, but that there is a recognized need for Internet access at the home. Stated simply, the demand for broadband is there, but the means to obtain it at home seems to be lacking.

By applying these computer and broadband adoption rates to our estimate of the number of NSLP-qualifying households, we can estimate the number of NSLP households that currently do not have access to these technologies at home. In particular, we estimate that approximately 3.9 million households with NSLP-eligible children do not own a computer, and 8.1 million do not have broadband service at home.

Based on these two estimates, any program that is designed to serve low-income households with children should be prepared to work with 2.9-3.9 million households that do not own a computer and 5.5-8.1 million households that do not subscribe to home broadband service.

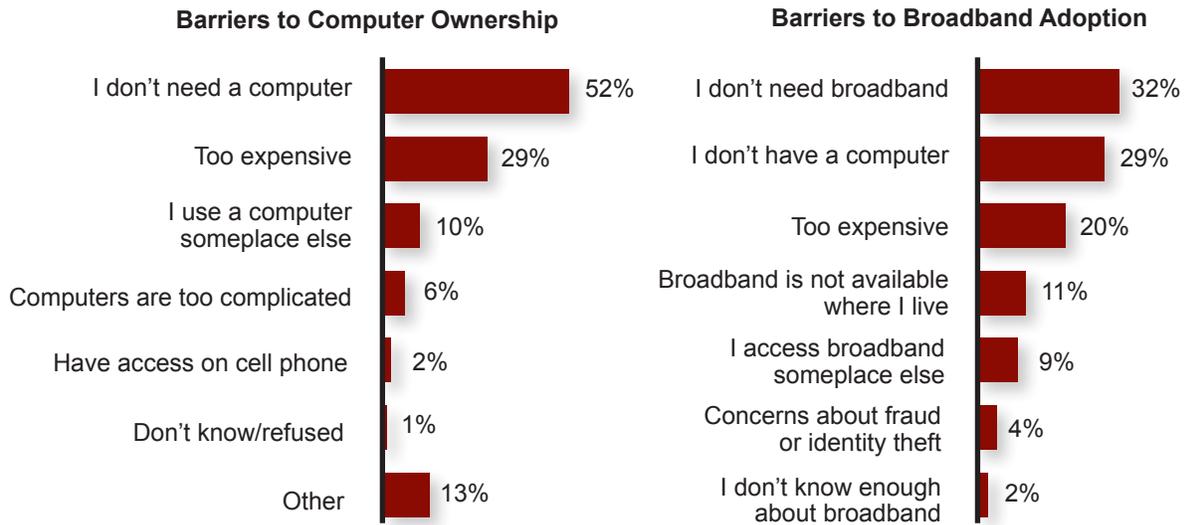
#### Cost as a Barrier to Technology Adoption Among Low-Income Households

Establishing the number of low-income households with children that do not own a computer or subscribe to broadband is only the first step of the equation. The next step is determining how much of a barrier affordability is for those families. In other words, if affordability were removed as a barrier, how would that impact the technology adoption rates among low-income households with children?

Connected Nation research indicates that of all households lacking a home broadband subscription, approximately 20% report that they do not subscribe to home broadband service because of “cost” or “affordability” issues (figure 3).<sup>9</sup> There is a similar Affordability Gap for computer ownership, with 29% of all homes without a computer citing the cost of purchasing a computer as a barrier.<sup>10</sup>

9 Source: 2010 Connected Nation Residential Technology Assessment.  
10 Ibid.

Figure 3.  
Barriers to Technology Adoption

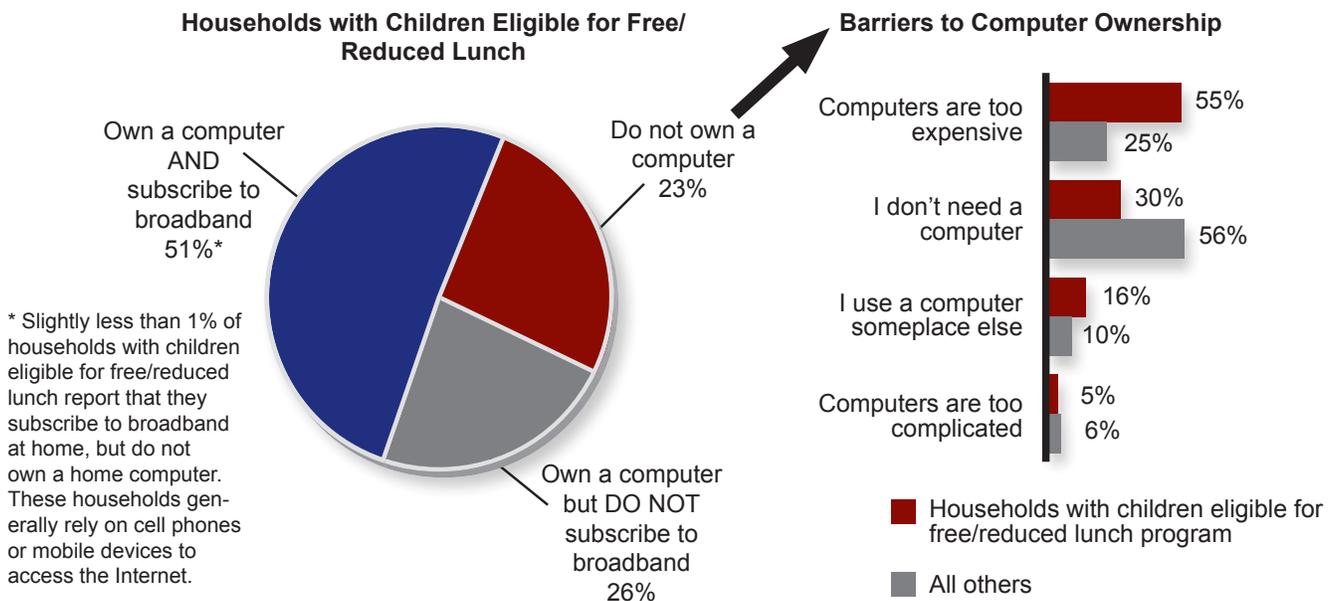


As the above graphic shows, cost and affordability are important barriers to adoption, but not necessarily the largest.

However, when one examines the specific demographic groups identified above, the picture changes dramatically. Low-income households with children that do not adopt broadband by far cite cost and affordability as their reason for not adopting broadband and computer technology – particularly among households without a computer.

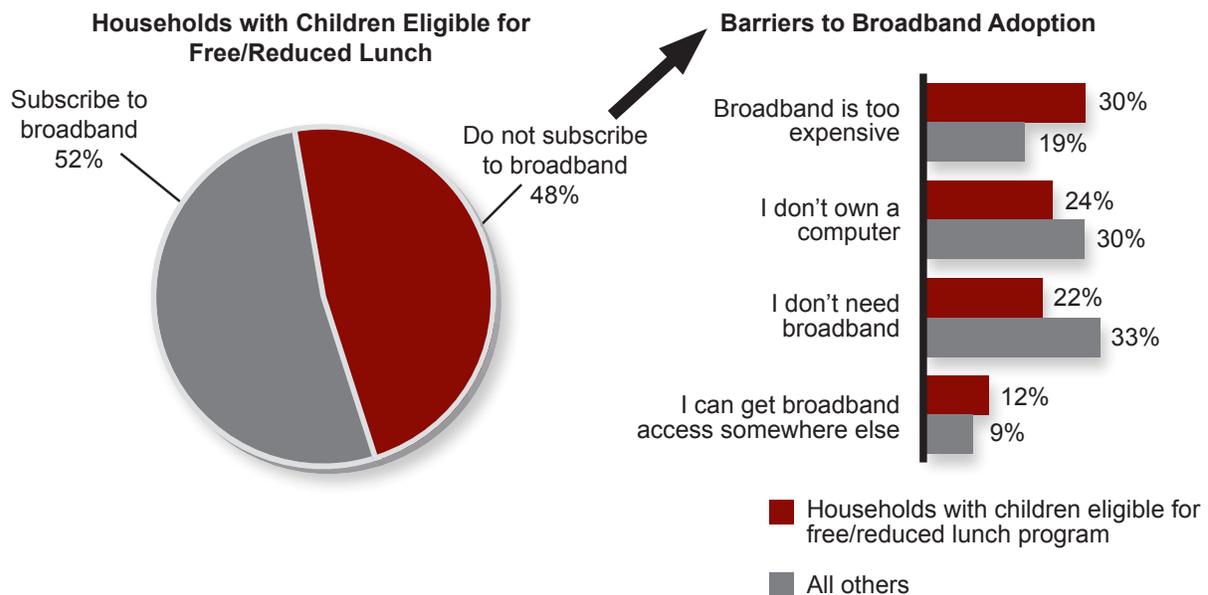
Connected Nation research estimates that 55% of households with children who are eligible to participate in the NSLP cite cost as a barrier to computer ownership. These households are more than twice as likely as all other households to cite cost as a reason why they do not have a computer in the home.

Figure 4.  
Barriers to Computer Ownership Among Households With NSLP-Eligible Children



Similarly, Connected Nation research finds that households with children who qualify for free or reduced-cost lunches are more than fifty percent more likely than other households to cite cost as the barrier to broadband adoption.

Figure 5.  
Barriers to Broadband Adoption Among Households With NSLP-Eligible Children



The reasons for this swing are readily apparent. As other empirical research has indicated, households with school-aged children are the demographic group that is by far the most likely to adopt broadband, if all other factors are held constant.<sup>11</sup> It is reasonable to surmise that these households very vividly understand the value and relevance that broadband technology holds for educational and economic opportunity. As a result, one would expect that cost and affordability would be the principal barrier to non-adoption, as opposed to relevance or perceived value, and that is what Connected Nation's research confirms.

Using this data, Connected Nation estimates that there are approximately 2.1 million NSLP-qualifying households that do not own a computer that likely would be responsive to reduced-cost computer incentive or distribution programs. Similarly, Connected Nation estimates that there are approximately 2.4 million NSLP-qualifying households without broadband today that likely would be responsive to reduced-cost broadband service options.

### Lessons for Policymakers and Next Steps

Stated simply, parents of children understand the value of broadband – they see the relevance, and they see how important it is to their children's future. This is consistent with other empirical research. In addition, there is significant social welfare value to ensuring that all children learn and are able to use digital skills and technology.

11 George S. Ford, Thomas M. Koutsky, and Lawrence J. Spiwak, The Demographic and Economic Drivers of Broadband Adoption in the United States, Phoenix Center Policy Paper No. 31 (Nov. 2007), available at: <http://www.phoenix-center.org/pccpp/PCPP31Final.pdf>. That empirical research based upon FCC data found that the presence of a school-aged child in a household was the single-most important demographic factor in favor of a household's desire to adopt broadband technology – larger than income, age, education level, race, or urban-rural differences. As the authors note, "[t]aken together, these findings indicate that programs that focus upon low-income communities with school age children may provide the largest 'bang for the buck' in terms of increasing broadband penetration." Id. at 5.

As a result, policy initiatives directed at this group might have an appreciable effect upon adoption and use of broadband technology overall. Solving the Affordability Gap for this community would remove the primary barrier to broadband and computer technology adoption of between 2.1-2.4 million low-income households with children in America.

Connected Nation research indicates that programs and policies targeted at this population could help bridge the Affordability Gap for these households. One such program would be to utilize the qualification criteria for the free or reduced-price school lunch program as the focus point for targeted bundles of computer, service, and digital literacy training initiatives. Another option would be to expand and fully fund the FCC's e-Rate Learning-On-the-Go pilot program. This program places the school and learning in the center of the program, by allowing children to take computing devices home with them both to continue the learning experience and also to bring the benefits of broadband home to their families. In this approach, education would remain at the heart of this initiative. At the same time, such an initiative could be bundled with broadband service provider incentives and offers. Parents of children are frequently asked to buy reduced-cost magazine subscriptions, the proceeds of which benefit the school library – a similar program could be launched for take-home computing devices and bundled broadband subscriptions.

Closing all adoption gaps as quickly as possible is a national priority, especially among schoolchildren, given the significant and escalating costs of digital exclusion. But the barriers to adoption are multifaceted, so closing these gaps will require nuanced and targeted approaches.

## Survey Methodology

In 2010, Connected Nation conducted random digit dial (RDD) telephone surveys of 15,647 adults age 18 and older across thirteen jurisdictions, including Alaska, Florida, Illinois, Iowa, Kansas, Michigan, Minnesota, Nevada, Ohio, Puerto Rico, South Carolina, Tennessee, and Texas. These surveys were designed to measure technology adoption, how individuals use technology, and barriers to technology adoption among adults.

Both landline and cellular phone lines were dialed to represent all adults in these states and territories, and multiple attempts were made to each working telephone number on different days of the week and at different times of the day to increase the likelihood of contacting a potential respondent. To ensure a representative sample of respondents, quotas were set by age, gender, and county (or county equivalent) of residence, and the results were weighted to coincide with the most recent United States census population estimates. Interviews were conducted in English in every state/territory; in addition, residents in Texas, Florida, and Puerto Rico were offered the option to take the survey in Spanish. Based on the effective sample size for the entire survey sample, the margin of error = + 1.1% at a 95% level of confidence. As with any survey, question wording and the practical challenges of data collection may introduce an element of error or bias that is not reflected in this margin of error.

To view the complete results of these surveys and other Connected Nation research on broadband adoption and utilization trends, see [www.connectednation.org/research](http://www.connectednation.org/research).



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