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The Essentials of Connectivity

Comcast's Internet Essentials Program and a Playbook for Expanding Broadband Adoption and Use in America

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Executive Summary

Low levels of broadband adoption among some groups remain a stubborn problem in the United States. One particularly at-risk group is families with school age children. Given that digital resources are increasingly critical to education, families without Internet access are at a severe disadvantage. Comcast's Internet Essentials (IE) is targeted at low-income families with school-age children who do not have home broadband service.

This report explores how homes that have recently signed up for Comcast's IE service travel the path to becoming engaged online users. It does this in a unique way: an in-depth survey of 1,969 Comcast IE users who signed up for the service in the latter part of 2013. The survey found that the population of IE customers is relatively poorer, more Latino, more female, and somewhat better educated than the population at-large without broadband at home.

This landmark survey offers lessons for all of America on how to increase broadband adoption and use. The key findings are:

Institutions are important drivers in encouraging non-broadband users to adopt broadband, with schools having a preeminent role.

- Children and teachers are highly influential in encouraging families to get broadband:
  - 98% of families said they got IE because their kids needed it for school.
  - 91% said their children influenced their decision to get IE.
  - 60% said teachers at their child's schools influenced their decision to get IE.
- Other institutions exerted influence through expectations:
  - 83% said their child's school expected that students have online access at home.
  - 65% said that banks and financial institutions expect them to have home Internet access.
  - 53% said that health insurance companies expect that they have home Internet access.
  - 50% said that government agencies expect that they have home Internet access.
  - 49% said that their job or employer expects that they have home Internet access.
- Recommendation: Institutions should partner with the full spectrum of broadband adoption initiatives to encourage broadband adoption among client populations.

Social networks are an important ingredient to broadband adoption and engaged use.

- 50% say that all or most of the people in their community have Internet access at home.
- 40% say that all or most of the people in their community have "on the go" mobile access.
- Those who say that most of the people they know have home access are *much more* likely to use the Internet several times a day than those who do not – by a 66% to 51% margin.
- Those who have many home Internet users in their community are more likely to say the Internet helps "a lot" in most areas of their lives, such as staying in touch with family, looking for work, or accessing government services.
- Recommendation: Libraries, schools, and non-profits should create spaces where new users can find the "social effect" that hastens the path to engaged online use.

Training makes a difference in how people engage with the Internet, but there needs to be a variety of training resources to "meet users where they are" in their Internet adoption process.

- 29% took advantage of *either* Comcast IE's in-person *or* online training resources, and these users are significantly more likely to say the Internet helps their kids with school work, how they access government services, and look for or apply for jobs.
- 48% say that the most helpful way to learn new things is to teach themselves through reading or online videos and another 30% say it is through their children.
- Recommendation: Broadband adoption programs should collaborate with online learning resources such as those available at Khan Academy or PowerMyLearning.org that can help with education and digital skills.

Broadband adoption programs are an important resource for economic advancement for new home Internet users.

- 68% said a reason for getting broadband access at home was to get health and medical information online.
- 62% said they needed it to look for or apply for jobs.
- 90% said the Internet helps them "a lot" or "somewhat" to do schoolwork.
- 69% said the Internet helps them "a lot" or "somewhat" to stay in touch with family, friends, and neighbors.
- 59% said the Internet helps them "a lot" or "somewhat" to get access to government services.
- 57% said the Internet helped them "a lot" or "somewhat" for job searches.
- Recommendation: Stakeholders focused on economic and community development must make appropriate investments to facilitate broadband adoption at home.

The technology context of new home Internet users is important to understand in program design.

- New Comcast IE customers have experience with technology:
  - 72% have used the Internet from places other than home before getting IE.
  - 50% once had home Internet service at some point in the past.
  - 85% have desktop or laptop computers.
  - 57% have smartphones.
  - 36% have tablet computers.
- 34% said they had given no consideration to getting home Internet service in the 12 months prior to getting service through IE.
- Recommendation: Stakeholders should undertake periodic community and user needs assessments to facilitate dialogue on what strategies work to close broadband adoption gaps.

Part I

A Playbook for Broadband Adoption and Use

In 2010, the National Broadband Plan (NBP) challenged stakeholders in the public and private sectors to tackle a stubborn problem — closing the remaining gap in home broadband adoption in the United States. The puzzle the NBP identified was clear: Why, when 95% of Americans have access to at least one wireline broadband provider, did just 65% actually take service?[1] To address this 30 percentage point puzzle, the NBP recommendations focused on capacity-building. Public-private partnerships were to use public awareness campaigns to help non-users understand the benefits of service. Government agencies were, as they transitioned to digital service delivery, to use that as a lever to draw non-broadband users online. The National Telecommunications and Information Administration (NTIA), as it began its broadband adoption programs, was also to develop resources to improve the digital literacy of non-users.

In this context, the Comcast Internet Essentials (IE) program emerged as a large-scale initiative to address the broadband adoption gap for an especially at-risk population: low-income families with school-age children who qualify for free- or reduced-priced school lunches. The creation of IE was a voluntary commitment in the 2011 acquisition by Comcast of NBCUniversal. IE was first offered on May 11, 2011 and this commitment applied for a period of three school years. IE as it is offered today gives qualifying families a $9.95 broadband Internet service plan, access to training resources on how to use the Internet, and the chance to purchase a $150 computer. Today's IE is different from the initial offering in 2011 because Comcast has expanded speeds and eligibility several times and made a number of other enhancements to the program. On March 4, 2014, Comcast announced that it has extended IE beyond the three school years of its voluntary commitment.

After several years of operation, IE offers a unique opportunity to see how, in practice, the process of trying to get people online works. This report investigates the issue through a landmark survey of 1,969 Comcast IE customers who signed up for service in the latter part of 2013. This survey is unique because it focuses exclusively on individuals and families who have moved from being non-adopters to adopters and it assesses their adoption and engagement pathways. This is one of the only, if not the only, surveys on broadband adoption to do that. The survey explored what drew IE customers to service and what has engaged them in becoming active (or not) online users, yielding lessons on how to accelerate the process of drawing non-users to broadband.

The research, in other words, serves as a playbook for all of America on how to connect a greater share of the population with high-speed Internet at home.

The elements of the playbook are:

I. Institutions are important drivers in encouraging non-broadband users to purchase service, with schools having a preeminent role.

With school age children as IE's priority, it is no surprise that nearly all respondents (98%) said they the purchased IE service because their children needed it for school. A similar number (91%) say that their children played an influential role the decision to get IE service. Schools — teachers specifically — were important too, as 60% of IE users said a teacher at their child's school influenced their decision to get service. Some 83% of IE users said they believed their child's school *expected* that students have online access at home. Other community institutions mattered too; 31% said either their local public library or another community organization influenced their decision to get service.

Expectations from other institutions are part of the equation as well. Among IE users:

- 65% said that banks or other financial institutions expect them to have Internet access at home;
- 53% said that health insurance companies expect that they have home Internet access.
- 50% said that government agencies expect that they have home Internet access.
- 49% said that their job or employer expects that they have home Internet access.

These expectations suggest that these institutions see benefits to having a connected population of the clients and citizens they serve.

Recommendation for Action

As institutions increasingly integrate online means into how they deliver their services, they should partner with existing broadband adoption initiatives, such as Comcast IE, to encourage service adoption among client populations. This means ensuring that training is available for users to learn how to take advantage of online service delivery.

II. Social networks are an important ingredient to broadband adoption and engaged use.

When families purchase IE high-speed service at home, they become one more node on the Internet in communities, neighborhoods, and broader contexts of extended families and friends. Whether others in their social universe have broadband turns out to matter a great deal in how IE customers engage with the Internet.

- 50% of respondents say that all or most of the people in their community have Internet access at home and 40% say that all or most of the people in their community have "on the go" online access on a mobile device.
- The half of respondents who say most of the people they know have home access are *much more* likely to use the Internet several times a day than those who do not — by a 66% to 51% margin.
- IE customers who have many home Internet users in their community are more likely to say the Internet helps "a lot" in most areas of their lives, such as staying in touch with family and friends, looking for work, or accessing government services.

Recommendation for Action

Exposure to other people in their communities who have access to broadband at home will facilitate more engaged use of broadband by recent adopters. Although stakeholders cannot snap a finger to increase the pool of online users in adopters' lives, community organizations can serve as a bridge. Trusted community organizations such as libraries, schools, non-profits, and governments should create spaces where new broadband users can find the "social effect" that hastens the path to engaged online use, especially in relation to functions that empower personal economic well-being. This is one of the ways in which broadband adoption can drive community-level economic development.

III. Training makes a difference in how people engage with the Internet, but there needs to be a variety of training resources to "meet users where they are" in their Internet adoption process.

The IE offer comes with in-person and online training resources and the data show that the training helps users become more frequent and engaged users. Some 17% of IE customers said they have used in-person training and 23% used the Internet Essentials Online Learning Center; this means 29% of IE customers used at least one of the two training resources offered by IE. Among those who use the training, they are significantly more likely to say the Internet has improved how their children do school work, how they stay in touch with family and friends, and how it helps them look for or apply for jobs.

Yet all learning does not take place in a formal training environment. Half (48%) of IE respondents say that when they want to learn new things online, the most helpful way is for them to teach themselves through reading or online videos. Another 30% rely on their children.

Recommendation for Action

When broadband access is coupled with targeted training, adopters are more likely to transition from being mere adopters to those who use broadband to empower personal economic and social well-being. Broadband adoption programs should incorporate digital literacy and other training to ensure adopters become more empowered in that way. Since recent broadband adopters show a preference for online training and half like to learn on their own, a priority on Web-based resources, such as Khan Academy or PowerMyLearning.org, makes sense. Training should also involve working with place-based institutions — such as schools and community organizations — to ensure that they can direct users to curated online learning resources.

IV. Broadband adoption programs are an important resource for economic advancement for new home Internet users.

With its emphasis on reaching families with school-age children, IE is at its core about education. But in important ways, this serves as a conduit to opening up IE families to the skills to participate in the 21st century economy. When asked why they started using the Internet:

- 62% of respondents said they needed it to look for or apply for jobs;
- 57% said the Internet helped them "a lot" or "somewhat" for job searches.

Online access at home also permits families to communicate with institutions that help in their everyday lives, such as health care and government.

- 68% of respondents said a reason they got broadband at home was to get health and medical information online;
- 59% said the Internet has helped them "a lot" or "somewhat" to get access to government services.

Recommendation for Action

Stakeholders interested in economic and community development must prioritize the role of online access for all citizens in carrying out their missions. Investments in initiatives to facilitate broadband adoption and use are key complements to programs aimed broadly at economic and community development. This opens up to low-income communities the same kinds of economic and social benefits to which so many others have access.

V. The technology context of new home Internet users is important to understand in program design.

A key takeaway from the survey of IE users is the variety of backgrounds with information and communications technologies (ICTs) that they bring to the program:

- 72% of respondents said they used the Internet from someplace other than home before getting IE service; 27% did not.
- Half of respondents said they had home Internet service at some point in the past prior to getting IE service, while the other half said they had *never* had Internet service at home before having IE service.
- 34% of IE customers said they had given no consideration to getting home Internet service in the 12 months prior to getting service through IE.
- At the same time, many have access to modern ICT gadgets. Some 85% have desktop or laptop computers, 57% have smartphones, and 36% have tablet computers.

These differences impact what users need from broadband adoption programs. Those who have not had home Internet service in the past, or who have not recently given any consideration to getting service, are more likely to use — and need — digital literacy and other training. They are also less likely to say they prefer to learn about the Internet on their own (40% say this) and are more likely than those who had service once to say they turn to a child to learn about the Internet.

Recommendation for Action

Stakeholders should undertake periodic community and user needs assessments to understand the technology perspectives of communities that require interventions to encourage broadband adoption and use. This will not only help improve program design, but also facilitate ongoing dialogue among providers and communities on how ICTs can positively impact the economic and social prospects for low-income communities.

Survey Methodology

This report is based on a January 2014 telephone survey of 1,969 Comcast Internet Essentials customers who have started IE service in the prior six months. The survey was conducted by Princeton Survey Research Associates International; respondents had the option of having the interview conducted in English or Spanish. The margin of error for results based on the entire sample is +/- 2.2 percentage points.

Author's Preface

For the author, this report reflects continuation of work started more than four years ago, when he worked at the Federal Communications Commission on the development of the National Broadband Plan. One of the memorable phrases from the NBP is that the Plan is "in beta and always will be." For those interested in the National Broadband Plan's key objectives — increasing broadband adoption and use, improving deployment of the nation's broadband infrastructure, using broadband for national purposes — this means periodically revisiting and revising what the plan recommended.

It is in that spirit that this research is undertaken — looking at what is happening in the broadband environment, drawing lessons, and suggesting improvements. Comcast's IE program represents an important — and large — pillar of how America is going about getting all households online. NTIA's Broadband Technology Opportunities Program (BTOP), which was funded by the 2009 American Reinvestment and Recovery Act and built out a "broadband adoption infrastructure" that has reached hundreds of thousands of homes is another example. NTIA's indispensable "Broadband Adoption Toolkit" had drawn together important lessons from BTOP.

Now, with more than two years of work under its belt and its extension beyond the voluntary commitment already announced, IE is an example of how public and private action can be brought to bear on a problem that has important implications for low-income communities and the nation's economic and social health. It is also an opportunity to deepen understanding of how to increase broadband adoption and use, and utilize that understanding for the benefit of all others engaged in this endeavor. The objectives here are to:

- Develop a data-driven record for understanding how to address a key challenge in the broadband ecosystem — how to move the dial on home broadband adoption for the poorest families in society.
- Improve on how, as a nation, we get more homes online using the Internet in ways to improve their lives and in particular, give Americans who have the greatest challenges in participating in the 21st century economy the tools and the support to help do that.

In developing recommendations to promote broadband adoption and use, the NBP recognized that government could not alone tackle the problem — public-private partnerships are necessary. Internet Essentials is one example of that. This report offers a playbook for all stakeholders in the public and private sectors to continue to make investments on how to connect more Americans with broadband at home and help them to use it in their economic, educational, and personal lives. Consider this report, at least with respect to the broadband adoption and use, as Broadband Plan 2.0.

Part II

Introduction: The Path to Internet Essentials

The year 2010 marked the release of the U.S. National Broadband Plan (NBP), an ambitious effort to chart a future course for the use of high-speed Internet to improve societal and economic outcomes in the United States. The NBP focused on the quality and reach of broadband networks, how the country could use them for so-called national purposes (e.g., better health care and education), and how to increase rates of broadband adoption and use.

That year also marked a distinct point in the adoption path for broadband-at-home in the United States as home broadband adoption reached 68%.[2] After a decade of rapid adoption in the general population, data indicated that growth in home broadband subscriptions had slowed. Part of that was due to the severe economic downturn the country was experiencing. Additionally, the natural course of adoption rates of new technologies had something to do with it; typically when two-thirds of the population has a new technology, reaching the last third of "hard to reach communities" is a more protracted path.

The other part of the broadband story at that time was an inflection point on how our society thought about broadband and other information and communications technologies (ICTs). By 2010, plenty of telecom and Internet policymakers and stakeholders were accustomed to touting the economic benefits of broadband and the need to increase broadband adoption for equity reasons. What changed around 2010 was the understanding of how the Internet could improve performance and efficiencies in nearly every corner of our society, particularly when it comes to contributing to economic growth. High speed networks and powerful, portable computing devices could improve how we educate children. These same digital assets could help people manage their health better and governments deliver services more cheaply and effectively. Stakeholders came to see broadband as having a more central role to many key functions, making it problematic to have a significant portion of the population not using it.

It was this evolving context that new initiatives have emerged to draw more Americans to broadband adoption and use. The American Recovery and Reinvestment Act of 2009 invested $450 million in public computing centers and sustainable broadband adoption initiatives through the Commerce Department's National Telecommunications and Information Administration. These grants, which attracted additional funding from partners in the private and non-profit centers, have reached more than 500,000 people through community-based initiatives.[3] Comcast's IE program developed in this context too, aiming to draw online households with school-age children that are eligible for the free or reduced-price school lunch program.

This report examines how recent Comcast IE customers have traveled the path to having high-speed Internet service at home. The IE program was a voluntary commitment in the 2011 acquisition by Comcast of NBCUniversal, with the commitment being that the IE program run for three school years starting on May 11, 2011. The concept of industry-led efforts to reach non-broadband adopting populations including IE originated in 2009 with the cable industry's "Adoption Plus" initiative.[4] IE provides for eligible households:

- A $9.95 per month Internet connection at 5 megabits per second downstream and 1 Mbps upstream.
- A $149.99 computer.
- Free Internet training online, in-person, or in print.

Since its inception, IE has signed up 300,000 families for service or about 1.2 million people. For more history on IE and in particular how it has evolved from the program that was announced as part of the NBCUniversal transaction, please see Appendix I for an overview that Comcast has produced.

Closing Access Gaps: Understanding the Role of Poverty in Online Access

Just as so many stakeholders have updated their understanding of how broadband can impact society, the debate about the digital divide has evolved — and must continue to do so. Research and scholarship in the past dozen years has pushed stakeholders to see online access as about more than just access and fairness, as important as they continue to be. The discourse has expanded to view the digital divide as a difficult — though not intractable — problem that requires sustained interventions and widespread participation from stakeholders in the public and private sectors. It also calls for deep understanding of the circumstances of non-users that drive non-adoption. To see why, some background on the evolution of the digital divide debate will help.

The digital divide debate inherited a universal service policy framework that placed the social dimensions of the issue in terms of access to service. From the early days of the Bell Telephone System, universal service was about ensuring widespread network deployment and, later, making telephone service affordable to Americans. In establishing the Federal Communications Commission in 1934, the Communications Act stated as its goal "to make available, so far as possible, to all the people of the United States, a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges."[5] Elaborate regulatory mechanisms developed to make sure the price for telephone would be low enough so that more and more Americans would purchase service.

As discussion of the National Information Infrastructure (NII) unfolded in the 1990s, traditional universal service values shaped how policymakers talked about the need for available and affordable advanced information tools. Discussion of the information "haves" and "have nots" from the Clinton Administration's 1993 Information Infrastructure Task Force (IITF) focused on closing gaps in network access and end-user devices for individuals and, importantly, for public institutions such as schools and libraries. Although initiatives of that era did discuss the need to train teachers on how to use the Internet in the classroom, a good deal of policy discourse involved watching metrics on device adoption (back then desktop computers) and consumer purchases of modems to connect to the Internet.[6]

By the turn of the 21st century, community-based efforts in many parts of the country sought to close the digital divide by reaching into mainly low-income neighborhoods. The Community Technology Center (CTC) movement created places in communities where people could go for services that many could not afford at home. Libraries and schools were also part of the equation in this era as access points. CTCs had the dual advantage of opening access to many people who might otherwise not have ways to get online, but also exposing stakeholders behind these initiatives to the challenges and nuances of introducing new technology to largely low-income populations.

From this work came an appreciation that adoption of ICTs had more dimensions than simply ensuring the availability of networks, inexpensive service offerings, and cheap access devices.

An early call for reformulation of the digital divide debate came in the early 2000s from Lisa Servon, now of the New School for Social Research. She argued that measures to address the digital divide had to include training on how to use the technology, since the problem is "much more complex than a mere lack of computers." Servon noted that access gaps would close, with falling prices for electronic devices and services resulting in more low-income people purchasing these goods. Yet "entrenched gaps" in usage would remain unless training programs and content were developed for specific groups.[7] Qualitative research that the Social Science Research Council (SSRC) conducted for the National Broadband Plan noted that, among poor Americans not using broadband, lack of high-speed service adoption at home "tracks closely with socio-economic inequality" and that access barriers tend to be multiple in nature.[8] More recent research from scholars at Temple University

centers on the structural barriers poor women in Philadelphia face to Internet access. Gilbert and Masucci find that contextual factors such as sexism, inequality, and challenges in poor women's daily lives are all crucial in devising approach to draw them to sustained technology use.[9]

Empirical research also demonstrates the role of poverty and broader social context in explaining the adoption of broadband, computers, and the Internet. In study of computer adoption using 1997 data, Goolsbee and Klenow found that people were more likely to have a computer at home if they live in areas where others have adopted and if a large share of family and friends had a computer.[10] A Gates Foundation study in 2003 found that, even when controlling for income, people living in low-income areas are less likely to be computer or Internet users. That is, a low-income person who happens to live in a middle income area with high uptake is more likely to use the Internet than a person at the same low level of income that lives in a poor (low adopting) area.[11] This same neighborhood effect has been found more recently in Chicago and in a survey conducted by the Joint Center for Political and Economic Studies.[12] Finally, research from the mid-2000s found that, in the relatively early stages of broadband's rollout as a consumer service, socio-economic factors (particularly income) explained broadband uptake more than price sensitivity, even when controlling for service availability.[13] This research indicates how problems with broadband adoption in low-income communities are intimately bound up in other problems that are markers of poverty, such as low high school graduation rates and health outcomes. Efforts to increase broadband adoption in these communities must understand the structural problems of poverty.

Research conducted for the National Broadband Plan extended understanding of non-adoption by examining in detail the barriers to non-adoption. That work found adoption barriers to be multiple in nature, while also determining, in the midst of multiple reasons for non-adoption, which factors loomed largest. In "Broadband Adoption and Use in America," the methodological approach to asking non-broadband users why they do not have service essentially let them check more than one box on a menu of possible reasons for not having broadband. That approach found that, among non-broadband users, when asked to choose more than one reason for not having broadband, 51% say the monthly cost is too expensive, 32% say they are not comfortable using a computer, 35% say they worry about bad things that can happen online, 32% say they cannot afford a computer, 25% say there is nothing online they want to see, and 24% say the Internet is a waste of time.[14]

When asked subsequently to identify the main reason they do not have broadband, reasons for non-adoption sort into three categories:

- Cost: 36% of non-broadband adopters cited a cost-related reason, such as 15% who cited monthly access fee, 10% who cited computer cost, 9% who cited activation fee, and 2% who cited a combination of reasons.
- Digital Literacy: 22% cited factors pointing to digital literacy including 10% who said they were worried about bad things that could happen online, and 12% who said they were not comfortable with computers.
- Lack of relevance: 19% of non-adopters said they did not find online content compelling enough to purchase service. This means they thought the Internet was a "waste of time," that there was nothing worth seeing online, or that offline alternatives for getting information sufficed for them.[15]

Since the NBP, research on non-broadband adoption has continued to find these same patterns for non-adoption. Research conducted for the Partnership for Connected Illinois in 2012 found that, for Illinois residents, non-broadband users cited multiple reasons for not having service and, when asked about the main reason, 29% of non-broadband adopters cited a cost related reason (16% cited the monthly access fee and 9% cited the cost of the computer), 17% cited the lack of relevance and 13% cited digital literacy.[16] NTIA's large-scale surveys on non-Internet use find that, when asked only to cite the main reason they do not have the Internet at home, 48% of respondents cite broadband's lack of relevance to them, 28% say it is too expensive, and 13% say they do not have a computer (or an adequate one).[17] The Pew Research Center, in asking the question in a way similar to NTIA, finds that 34% of non-internet users cite lack of relevance, 32% cite usability issues, and 19% cite cost which was made up of 13% saying they do not have a computer and 6% saying it is too expensive.[18]

Beyond shaping discourse about drivers to non-broadband adoption, the FCC research showed the complex nature behind the decision not to have service. The plural nature of reasons for non-adoption was most striking. Respondents could, and did, identify a main reason for not having service, but that was in the context of

multiple reasons (most designated three) they cited. Expected reasons for not having service, such as the cost (which included different cost elements), relevance and digital literacy clearly came into play. Non-broadband users, it turned out, occupied a range of different terrains when pressed for reasons underneath their choice not to have service. The research showed that, particularly to those hoping that pulling a single lever (such as lowering prices or offering free computers) would accelerate broadband adoption, the problem was indeed multi-dimensional.

This report builds on the FCC's 2010 and subsequent research but, importantly, extends it beyond issues such as consumer preference or even levels of skills. Although those things shape ICT adoption choices, the social context for non-broadband using Americans is important too. For the population of (mostly) poor non-broadband users, poverty understandably influences decisions on what services to purchase, the means of gathering information, and how to address day-to-day needs. Broadband can help in many ways, but it is often just not a realistic option.

By understanding non-adoption a problem nested in the context of the larger ones many low-income families face, initiatives to address non-adopters' needs have to focus on building their capacity for sustained adoption and use, not one-off efforts to procure service. This means "meeting people where they are" as opposed to top-down approaches that seem to demand that non-adopters conform to a single solution.[19] Worthwhile broadband adoption programs should foster not just digital skills, but also the wherewithal for clients to engage in:

- Problem-solving: to troubleshoot household and personal technology.
- Deepening engagement: so that people use digital resources to address issues in their lives pertaining to education, health care, and many others.
- Ongoing learning: The willingness to adapt to and be participants in discourse about a rapidly changing Internet environment that calls for high levels of trust that goes with sharing personal data with emerging applications.

A final element in considering Internet use among non-adopting population is that, in many cases, the digital divide is less an impenetrable barrier and more of a line that people cross from time-to-time. Research has shown that there is churn in the population of broadband users, that is, broadband service is something some have had in the past but have given up for some reason. A 2009 Pew Research Center study found that, at the onset of the recession, some 17% of low-income respondents had cut back on Internet service due to tight home finances. This finding is consistent with other research that shows that, during the Great Recession, there was a dramatic decline in all consumption components including (unlike past recessions), non-durable goods such as broadband.[20] Similarly, the 2010 FCC national survey found that 17% of non-broadband users had had home Internet service in the past; among non-broadband users with school age children *and* low-incomes, that figure was 35%. SSRC's qualitative study of low-income people without Internet access at home used the term "un-adopters" to describe the 24% of people in the SSRC focus groups who had broadband service at home at some point, but had to disconnect service (usually for financial reasons).[21]

The survey on which this report is based sought to understand not just who IE customers are or whether they like the service. It also explores the context of their lives, their past experience (if any) with broadband and other ICTs, their reasons for subscribing to broadband through IE, and their attitudes about broadband's usefulness to them. In approaching the research this way, the objective is to develop actionable insights for all stakeholders interested in increasing broadband adoption and use in the United States.

IE Customers: Reaching Low-Income Families through Their Kids' Schools and Connecting — and Reconnecting Many — to Home Internet Service

Finding One: Demographic Overview. The population of IE customers is relatively poorer, more Latino, more female, and more educated than the population at-large without broadband at home.

Because the IE program targets families with school age children who are eligible for free or reduced priced lunches (meaning their household income does not exceed 130% of the poverty level), IE customers are going to be poorer and younger than the general population. The survey conducted for this report interviewed 1,969 Comcast IE customers who had signed up for home broadband service via IE in the prior 6 months. Appendix II contains a detailed methodological account of the survey. This makes the sample gathered for this report truly

Table 1: Comparing IE customers to national data on families with school-age children lacking home broadband

	Comcast IE customers	Families with school age children without broadband at home
Gender		
Male	24%	44%
Female	76	56
Race/Ethnicity		
White	19%	25%
African American	20	21
Latino	52	38
Age		
18-29	20%	24%
30-49	68	56
50-64	10	15
65+	1	4
Income		
Under $20K	54%	35%
$20K to $50K	35	28
$50 to $75K	2	10
$75K to $100K	*	5
Over $100K	*	5
Education		
High school grads or less	60%	70
Some college	26	21
College +	13	9

* = less then 1%

distinctive — one of the only, if not *the* only — sample of recent broadband adopters who have been part of a structured program to bring them online.

Demographically, IE customers look very different from the typical family with school age children without broadband. In the table below, it is worth noting that the column labeled "families with school age children without broadband at home" includes families whose household incomes exceed 130% of the poverty level. Data in that column is based on combining publicly available Pew Research Center data from 2012-13 to have enough cases (239) of families with school age children without broadband to permit comparisons.

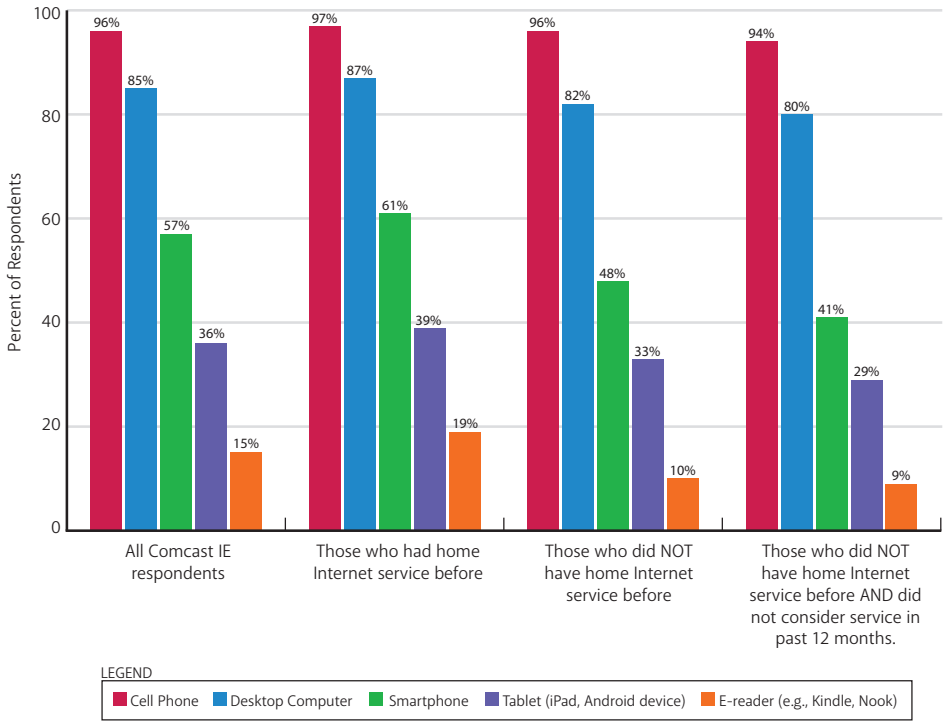
The average household size for respondents in the Comcast IE survey is four, which means the typical respondent has a household income under $20,000 per year to support four people. This compares to the U.S. government's definition of the poverty level for a family of four, which is approximately $23,000 per year.

Finding Two: Half of IE customers had home Internet in the past and a substantial share have smartphones or tablet computers.

When thinking about IE customers' circumstances as they have become home broadband users, it is important to understand the differences in online experience and assets that they bring. Past experience with home Internet use is a first marker. Half (50%) of respondents said that, before they had Comcast IE service, they had Internet service at home at some point in the past. Many Comcast IE users interviewed for this survey also had thought about getting broadband at home in the previous 12 months. When asked whether they had considered subscribing to broadband in the past 12 months:

- 28% considered it very seriously.
- 26% considered it somewhat seriously.
- 6% considered it not too seriously.

Table 2: Technology assets of IE customer



- 1% considered it not at all seriously.
- 34% said they had not considered it.

Of the one-third (34%) of respondents who had not at all considered getting service in the prior 12 months, 59% had never had broadband service before. This means that 20% of all respondents, before Comcast IE, had *never* had Internet service at home *and* had not considered subscribing in the past year.

Even with these differences in prior online experience, Comcast IE customers in this study are not disconnected from modern ICT gear.

Finding Three: IE customers overwhelmingly got service for kids and their school work, but expectations from other parts of society helped drive the adoption decision.

To understand respondents' reasoning for subscribing to Comcast IE, the survey asked directly why people bought service, the influential factors behind the decision, and whether outside expectations played a role. Given that IE is targeted to educators and families with children eligible for free or reduced-price lunches, it is not surprising that education tops the list of reasons cited for getting Comcast IE. When asked their reasons for getting service:

- 98% said their children needed it for school work.
- 68% said to get health and medical information online.
- 63% said they wanted access to music, movies, news, and entertainment like online games.
- 62% said they needed the Internet to find jobs and apply for them.
- 62% said they wanted the Internet to stay in touch with people via email or social media.
- 61% said they needed the Internet to get government and social service information.

As to what groups influenced their decision to get home Internet service through the IE program:

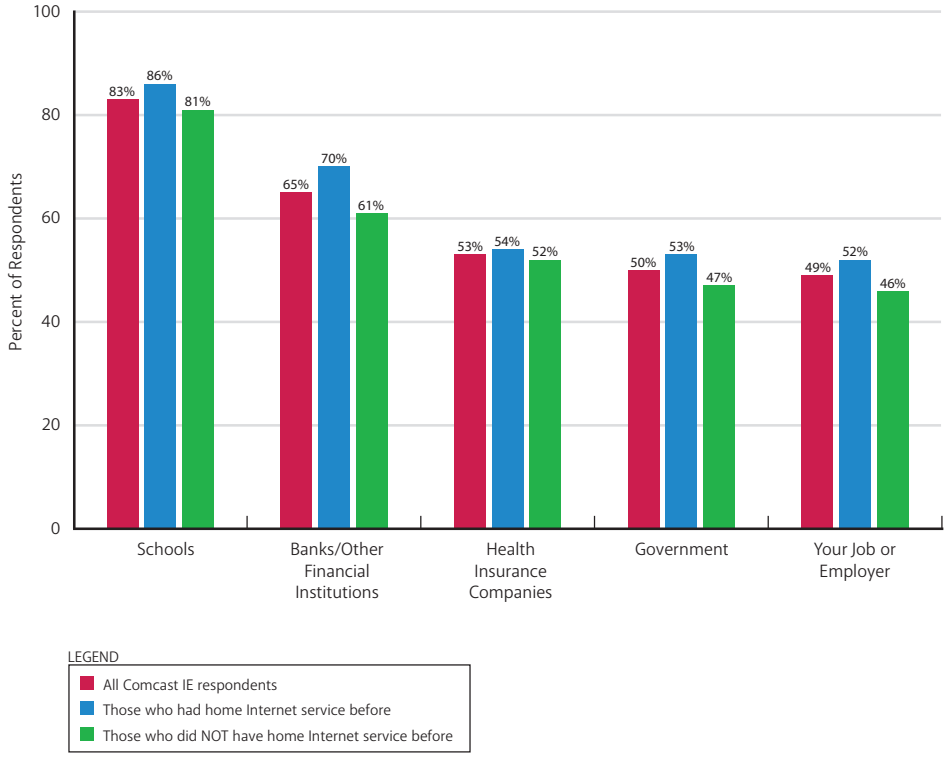
- 91% said their children influenced their decision.
- 60% said teachers at their child's school.
- 34% said family members or friends.
- 23% said public libraries.
- 18% cited community organizations.
- 16% said co-workers.

Those who had *not* had home Internet service in the past were somewhat more likely to say that their children or their teachers had something to do with the decision, with 93% saying their children drove the decision and 64% citing a child's teacher.

The other part of the equation was expectations. The survey probed whether Comcast IE customers had encountered people or institutions who presumed they had online access readily available at home. Again education rose to the top; 83% of respondents said that they believed that schools expected them to have online service at home. But other institutions had expectations about home Internet access for respondents, particularly in the financial sector. Whether a respondent had had online service in the past before IE or not shaped the degree to which respondents said they encountered the expectation that they should have online access from home.

In sum, Comcast IE customers have education in mind when asked about their motivation for and reasoning behind subscribing to broadband through IE. At the same time, other reasons are important. People see health care information as an important reason to have home broadband service, and that is in part driven by expectations that health insurance providers expect this. A similar dynamic is at work for government and social services, with consumer desire buttressed by institutional expectations. Comcast IE customers also share the same motivations for online access that so many of us take for granted, such as communicating with family and friends and using the Internet for entertainment.

Table 3: Institutions' expectations that people have home Internet
For each of the following groups, do they expect to be able to communicate at home via the Internet? (% yes)



Even though educational purposes are the main drivers behind getting access, it is important to note other factors that come into play for many IE users. One-third (34%) said family and friends influenced their decision to get service and 16% of co-workers did. Community institutions came into play as well. Nearly one-quarter of IE respondents (23%) said a public library influenced their decision to purchase broadband service via IE and 18% said community organizations had an influence. Overall, 31% of IE respondents cited *either* a public library *or* a community organization as an influential factor behind getting IE — a figure on par with the influence of family and friends.

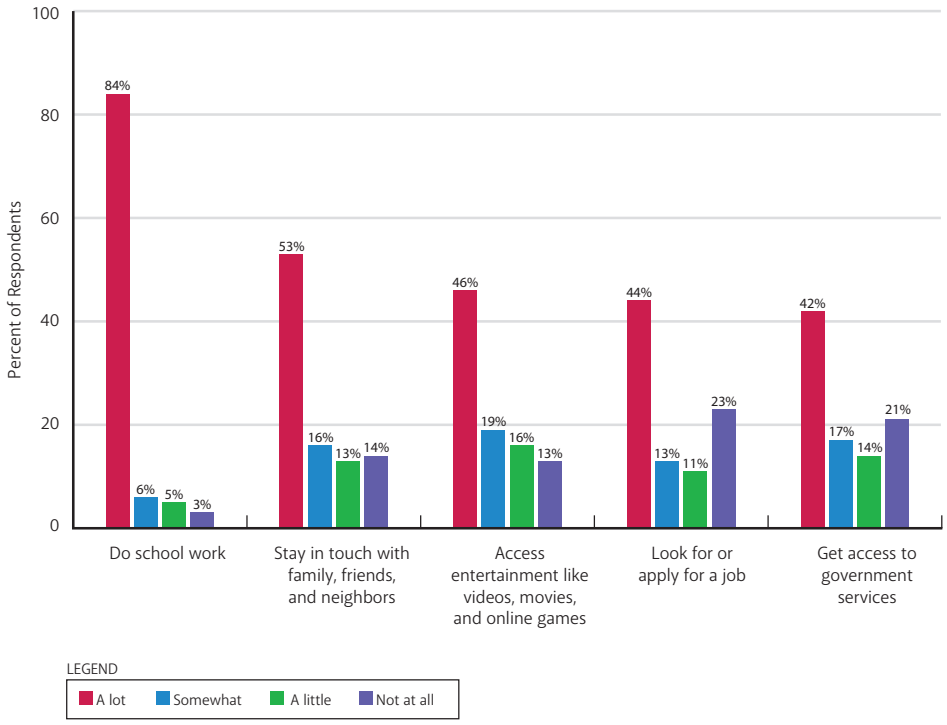
What Engages IE Customers with Broadband Once They Have Service

Finding Four: Users find the Internet helps children a lot with school work — and in other ways too.

Once people have made the decision to subscribe to broadband through the IE program, the questions become how much they use it and what fosters an important goal of any effort to promote broadband adoption — a pool of new broadband users who take advantage of broadband's benefits.

For the most part, once people get broadband via IE they use it; 84% of respondents said that either they or others in the household use the Internet at home using their IE service at least occasionally, with 15% saying they do not, at least occasionally, use the service. The 15% who say they do not use IE is not an insignificant minority of users; a section below explores in detail this group of users who use the service infrequently. Among those who use IE, however, use tends to be frequent. Three in five (59%) say they access the Internet several times a day and another 22% say they do so about once a day.

Table 4: Customers perspectives on how home access impacts their lives
Since you have had Comcast's Internet Essentials high-speed service at home, how much, if at all, do you think the Internet has helped you or someone in your household with each of the following?

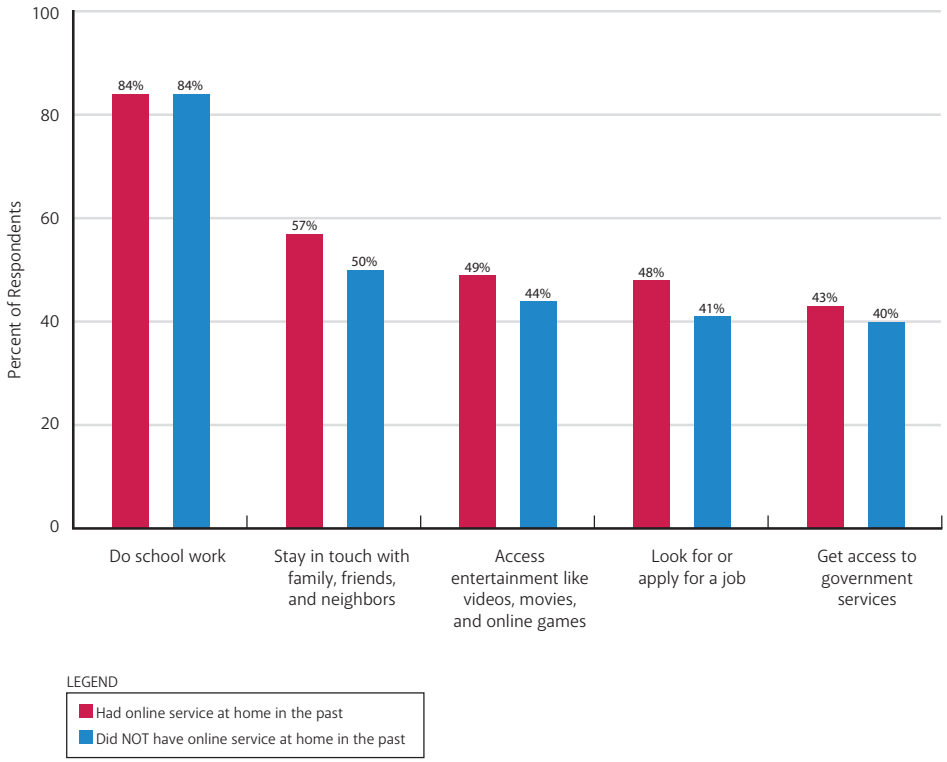


When asked to rate how much the Internet has helped them or their household in various areas in their lives, it is not a surprise that school work leads, with an overwhelming majority of 84% saying broadband has helped with school work a lot.

Yet the Internet has been helpful to households in more ways than school work. More than half say it has helped them a lot in staying in touch with others, and four in nine respondents rate the Internet very highly when thinking about its impact on access to entertainment, job search, or accessing government services. As Table 5 below shows, those who had home Internet access in the past reported, with exception of school work, somewhat higher levels of impacts of IE on different aspects of their lives.

Table 5: Customers perspectives on how home access impacts their lives — comparing past home online users to those without

Since you have had Comcast's Internet Essentials high-speed service at home, how much, if at all, do you think the Internet has helped you or someone in your household with each of the following?



Finding Five: The Role of Training. Relatively few use it, but it is effective for those who do, and those who do not use it are more likely to have had Internet access at home in the past or people close to them have Internet or mobile Internet access. Those who took advantage of training are more likely to help them a lot in utilizing the Internet in various activities.

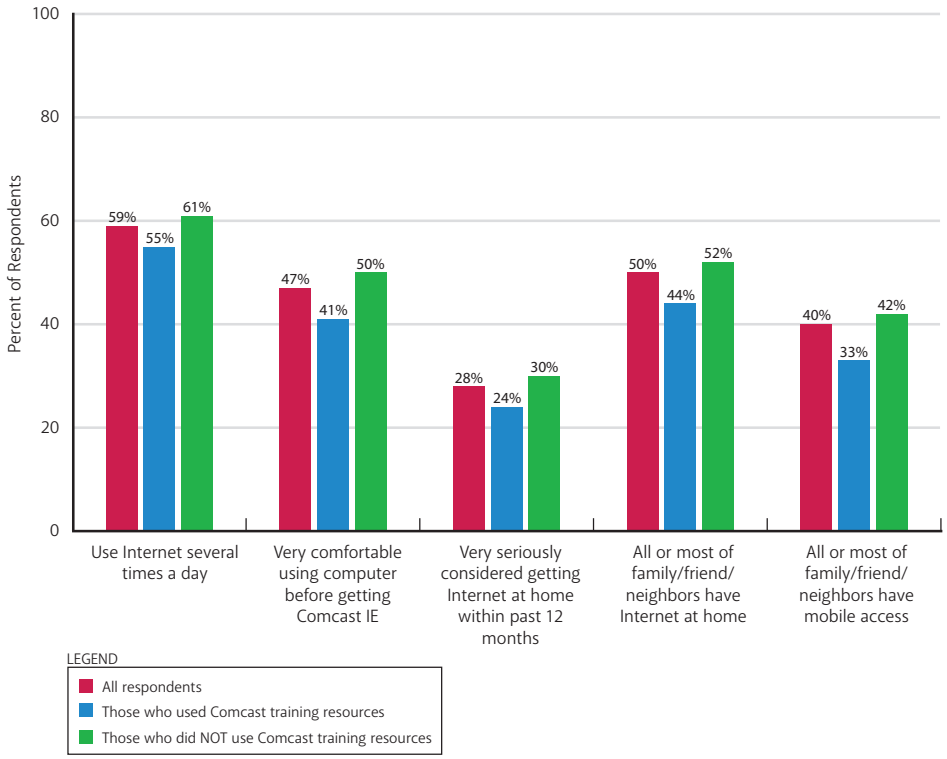
Customers who qualify for the IE offer can take advantage of several features in addition to the $9.95 monthly price for service. They can receive in-person training, online training at the Internet Essentials Online Learning Center, and the low-cost ($150) computer available at initial enrollment in the program. Among all respondents:

- 23% used the Internet Essentials Online Learning Center.

- 17% purchased the low-cost computer.
- 13% took advantage of in-person training on how to use the Internet.

Combining the two modes of training, 29% of IE customers received some training on how to use the Internet after signing up for IE (that is, they *either* used the online learning center *or* had in-person training through IE). On the survey's measures of intensity of online use or comfort with the Internet, those who sought out training from Comcast rated lower than those who did not seek training. Prior online experience is the main reason behind this. For the 29% who received Comcast Internet training, 41% had Internet service at home in the past, compared with 53% for remaining respondents. Table 6 shows results for all respondents, those who used Comcast training, and those who did not.

Table 6: The impact of training on measures of online capability and engagement

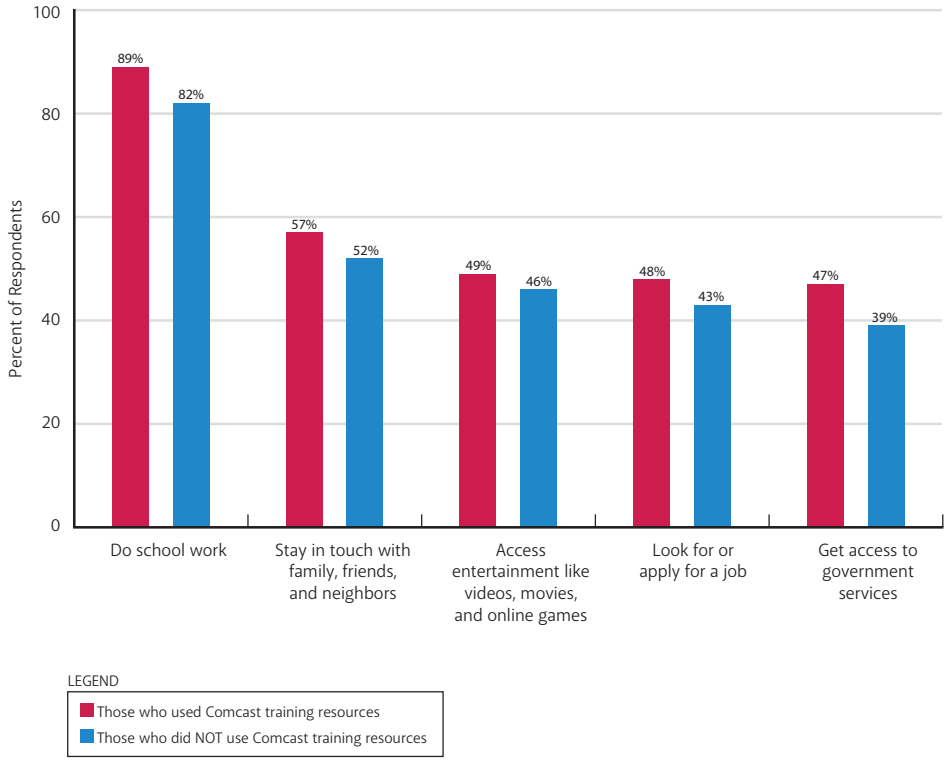


As the table shows, IE customers who did not take advantage of Comcast training are somewhat more distant from the Internet by all the measures — less frequency of use, lower comfort with computers, less likely to have considered getting broadband, and somewhat fewer people around them with access.

The picture changes when inquiring about people's attitudes about whether the Internet helps them in various facets of their lives.

Table 7 shows that, down the line, those who took advantage of the training that Comcast offers are more likely to help them a lot in the listed areas of their lives. Although the size of the differences vary, collectively they are statistically significant. The correlation between having received training and saying that the Internet helps a lot for a greater range of activities is significant, even when holding constant other respondent attributes, such as past home Internet service, level of education, gender, family size, and income. This pattern does not mean that the training is the causal factor behind the higher perceived level of the Internet's impact for those who took advantage of Comcast IE training programs. Nonetheless, the pattern clearly indicates that the training has an impact, whether by giving people the skills to put the Internet to work for them or by simply sparking enthusiasm for the Internet among some respondents who might already have that disposition.

Table 7: Online training and users' perspectives of Internet's impact on their lives
Since you have had Comcast's Internet Essentials high-speed service at home, how much, if at all, do you think the Internet has helped you or someone in your household with each of the following? (% who says Internet helps "a lot")



This analysis shows that people who take advantage of Comcast IE training need it and benefit from it. Their need is evident by their relative distance from the Internet. They are less likely to have had Internet service in the past and begin online service with IE less comfortable with computers. Those who sought training also have fewer people around them with online access than others IE customers. Importantly, however, the training has payoffs through its positive impacts on their attitudes toward the Internet.

Finding Six: The Social Effect. Those with lots of Internet users around them do more online and are more likely to say the Internet helps them with job search, community engagement, and accessing government services.

One objective of this research was to put online access in the context of where people live and their circumstances. For most part, respondents said they were satisfied with their neighborhood, its safety, and its public services. Fully 83% were satisfied with their neighborhood, 88% were satisfied with the quality of their libraries, hospitals, and transportation services, and 88% were satisfied with the safety of their children's schools.

In terms of online access and people they know, IE customers said that online access at home was common for people they knew. When asked whether all or most of the people in their community (including family, friends, and neighbors) had online access at home:

- 50% said that all or most of them did.

- 25% said that some of them did.
- 17% said that only a few or none did.

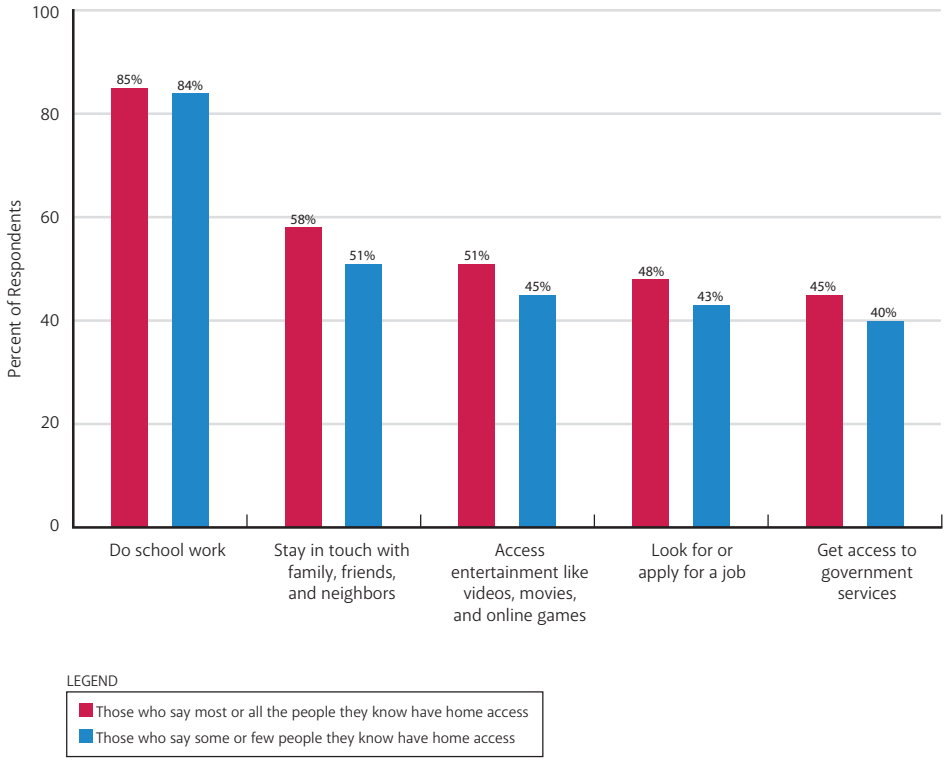
When asked whether people in their community had "on the go" access using a mobile device:

- 40% said that all or most of them did.
- 27% said some did.
- 22% said only a few or none did.

Whether respondents say most or all of people in their community have home access turns out to have a strong influence on measures of online use and impacts. For those who say all or most people they know have home access, 66% say they use the Internet through home IE service several times a day. For those who say that only some or very few of the people they know have home access, 51% use the Internet several times a day.

The pattern repeats itself when looking at how respondents view the Internet's impact on their lives now that they have service at home, as Table 8 shows.

Table 8: Past home service and users' perspectives on Internet's impacts
Since you have had Comcast's Internet Essentials high-speed service at home, how much, if at all, do you think the Internet has helped you or someone in your household with each of the following? (% who says Internet helps "a lot")



The "social effect," that is, being surrounded by many people who also have home Internet access, has significant impacts on the frequency with which respondents use the Internet and how they see its impacts. The notable exception pertains to school work, suggesting the strong educational orientation of IE is successful in overcoming social factors that may influence impacts. The social effect is embedded in other factors as well.

For instance, among those who report the "social effect" are more likely to have had home Internet service in the past than those who did not by a 56% to 43% margin. That said, the "social effect" is statistically significant when holding other factors constant, such as past Internet use, household income, education, whether the household had Comcast in-person or online training, race, and employment status. Unquestionably, then, the results indicate that the nature of people's social networks factors into the IE adoption proposition, just as prior research cited above found in other contexts.

It is worth noting that mobile has the same positive association with frequency of online use and perceptions of the Internet's impacts; those who say most or all of the people they know have mobile Internet access are more likely to say they use the Internet several times a day and say it impacts their lives "a lot" in areas noted. The size of the effect is somewhat smaller than that for home Internet access.

The Hardest-to-Reach IE Users

We found that 15% of the poorest and least educated IE customers are less engaged with the Internet. For these users, poverty weighs heavily on online engagement patterns, suggesting that broad-based interventions from stakeholders are needed for this "hardest to reach" group.

Even though they have gone to the effort to get Comcast IE service, 15% of respondents say, when asked if they or any members of their households access the Internet using Comcast IE at least occasionally, that they do not. This suggests that they are at best infrequent users of their home Internet service. They are also, on measures of socio-economic status and online behaviors and attitudes, different from the 84% of IE customers who answered the question affirmatively.

Although the group of self-identified infrequent IE users is somewhat more Latino than others, the notable differences are education and poverty. Nearly two-thirds of infrequent IE users live in homes whose annual

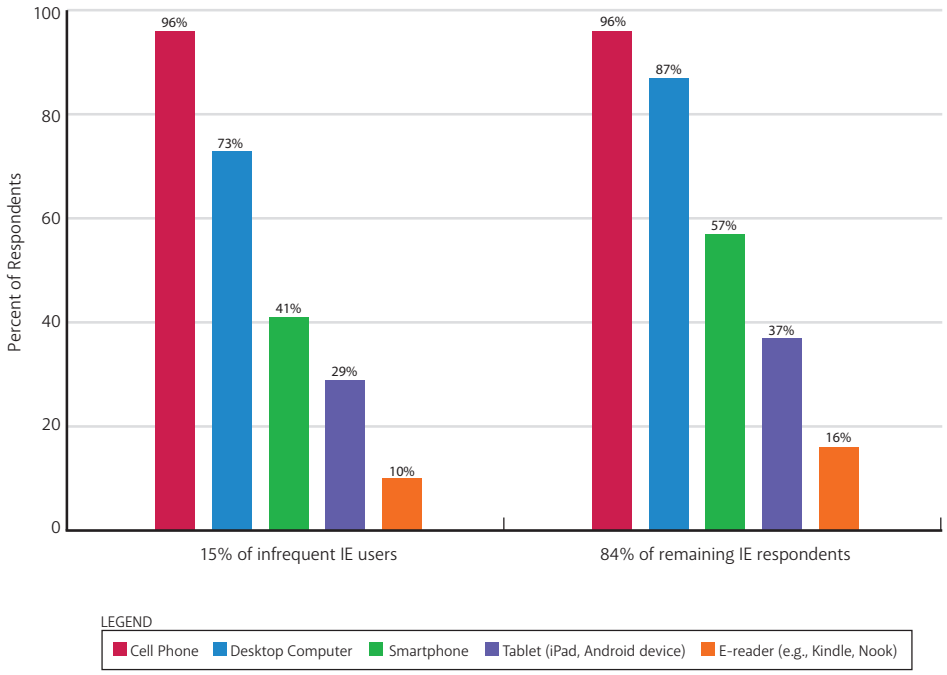
Table 9: Demographic comparisons by frequency of online use

	15% of infrequent IE users	84% of remaining IE respondents
Gender		
Male	23%	24%
Female	77	76
Race/Ethnicity		
White	12%	20
African American	21	20
Latino	56	51
Age		
18-29	19%	21
30-49	67	68
50-64	10	10
65+	2	1
Income		
Under $20K	64%	52%
$20K to $50K	26	36
$50 to $75K	1	2
$75K to $100K	1	1
Over $100K	*	*
Education		
High school grads or less	74%	58%
Some college	14	28
College +	9	14

* = less then 1%

incomes are $20,000 or below compared with half for IE-users. Three quarters (74%) have no more than a high school degree compared with 58% of others. Nonetheless, infrequent IE users do have access devices, though at significantly lower rates (cell phones excepted) than others.

Table 10: Tech assets by frequency of online use



Infrequent IE users are by other measures also less engaged with the Internet than other respondents. Some 42% had Internet service at home at some point in the past, against the 50% average, and 61% used the Internet someplace other than home in the past versus the 72% average. Three in eight (37%) said they were very comfortable with computers before getting IE (48% of all respondents said this) and 44% said they had not thought about getting home Internet service in the year prior to IE compared with 34% of all respondents.

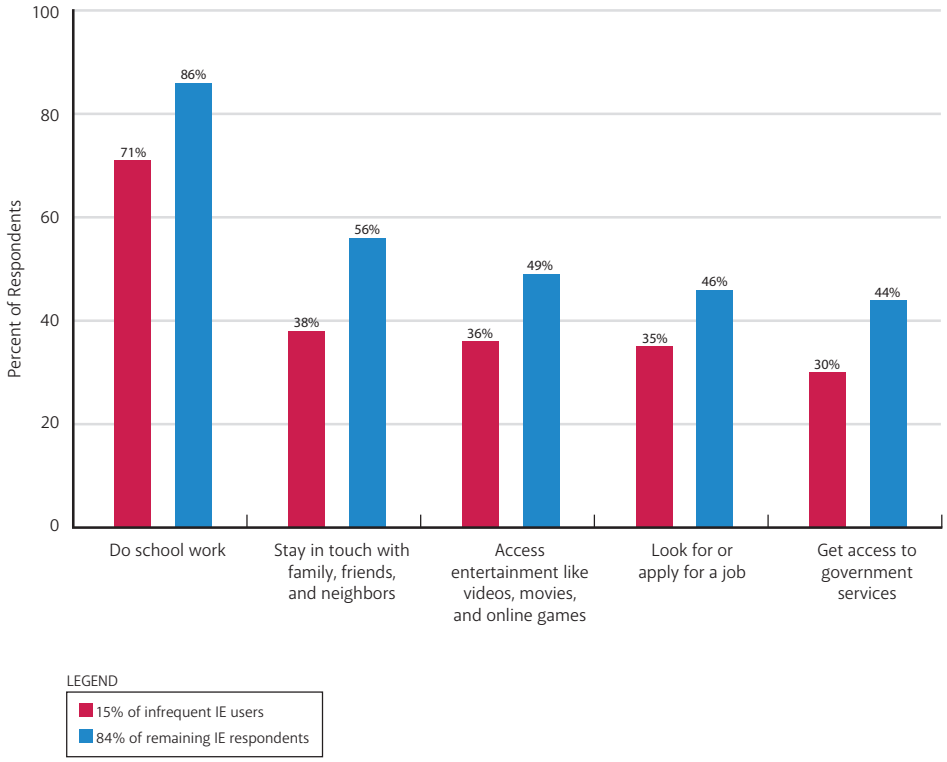
Lower levels of Internet use translate into lower-than-average responses when it comes to what drew them to online use and how they view the Internet's impacts. When asked why they decided to subscribe to home service through IE, the group of infrequent users that said they do not use it for access answered as follows:

- 97% said their children needed it for school work.
- 61% said it was to help them get health or medical children online.
- 61% said it was to get access to entertainment.
- 60% said it was to look for or apply for jobs.
- 54% said it was to get access to government information.
- 52% said it was to stay in touch with others via email or social media.

With the exception of their child's need for the Internet for school work and their need to look for or apply for jobs, infrequent IE users lag the average by several percentage points in the each of the remaining motives.

Significantly larger gaps are evident when comparing how IE users and infrequent users rate the impact of the Internet on different aspects of their lives.

Table 11: Users' perspectives on Internet impacts — by frequency of online use
Since you have had Comcast's Internet Essentials high-speed service at home, how much, if at all, do you think the Internet has helped you or someone in your household with each of the following? (% who says Internet helps "a lot")



Other Key Findings

Finding Seven: Comcast IE computer offer. Few use the computer they had a chance to purchase at the initial IE offer.

The third pillar in the Comcast IE program is a low-cost computer offer of $150. Some 17% of Comcast IE customers in this survey said they used a computer purchased as part of the Comcast IE program to go online. Note that this is different from what percentage of respondents *purchased* the computer. This rate of usage of the computer is the same whether a respondent had home Internet service before IE or not, or say they do not use IE to go online at home. For many of the households who use the computer purchased in connection with IE, this adds to their access assets. For these households, nearly half (47%) have a smartphone (compared to 57% of all respondents), one-third (35%) of those who purchased a computer with their IE package also have a tablet computer (compared to 36% for everyone), and 15% have an e-reader (matching the responses for everyone). As with Comcast IE training resources, the low-cost computer is associated with higher rates of respondents saying the Internet helps "a lot" for school work, job search, staying touch with others, accessing entertainment, and learning about government services.

Finding Eight: How they learn online. People mostly prefer to learn on their own, though people who never had service often call on their children to learn new things.

Although the in-person and online training that Comcast IE offers plays an important role for nearly one-third of IE customers, understanding the ways in which people learn to do things online is also important. When asked to identify the *most helpful* way for them to learn new things online, here is what IE customers said:

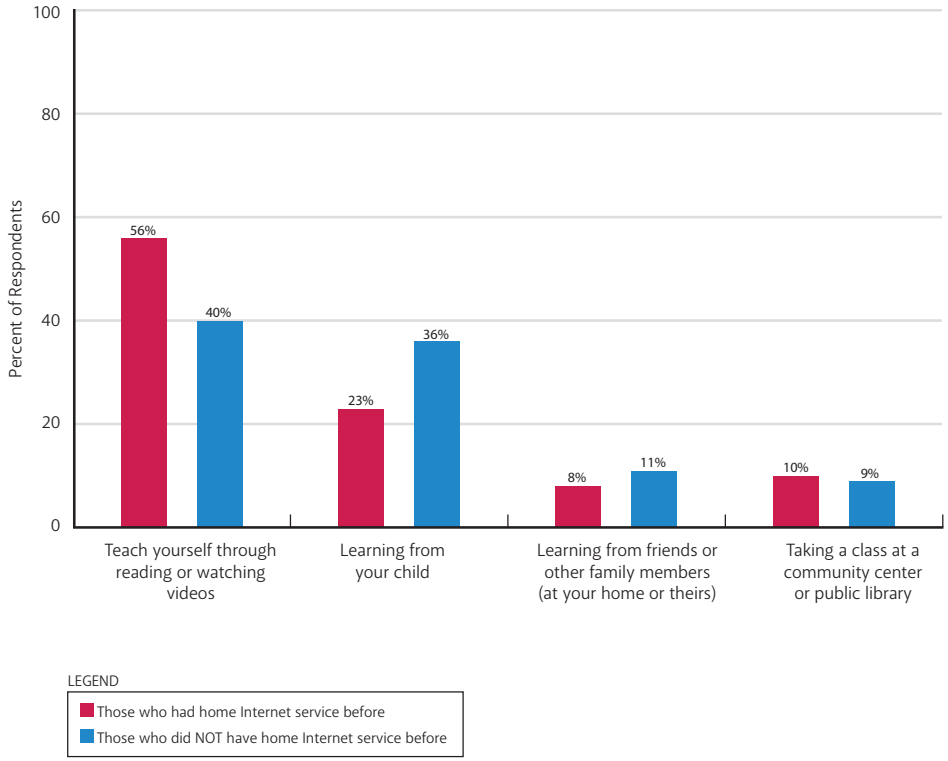
- 48% said it was teaching themselves by reading or watching videos online.
- 30% said they learned from their child.
- 9% said they learned from friends.
- 9% pointed to classes from a community center or public library.

There were sharp differences in responses to this question depending on whether respondents had online service at home in the past or not. A majority of those who have had Internet service at home in the past say they find learning on their own most helpful. Those who have not had Internet service at home in the past also say this, but at a significantly lower rate. But these respondents also rely on children a great deal; some 36% say they find it most helpful to find out about new things to do online from their child.

Finding Nine: Use of Internet from other places. Three-quarters of IE users have logged on from someplace other than home to use the Internet.

It is common for people who do not have Internet access at home to use the Internet elsewhere. As national surveys show, approximately 10% of Internet users do not have a home Internet subscription. They consider themselves Internet users in spite of not having home access because they use the Internet at a community center, library, work, or some other place. Use of the Internet from so-called "third places" such as libraries, community centers, or other public access points is frequent among the general population; some 26% of

Table 12: How users prefer to learn to do new things online
When learning to do new things online, which ONE of the following is the most helpful way for you to learn?



Americans say they have used the Internet from libraries, with low-income Americans and communities of color especially likely to do this. [22]

When asked whether, before they had IE, they had gone online to use the Internet at least occasionally from someplace other than their home, 72% of respondents said they had done this and 27% said they had not. This means that, before getting IE service, just more than one-quarter of all respondents were not using the Internet at least occasionally.

Finding Ten: Training on Internet and computers before having IE service. One-quarter had some prior training before having the IE service but its impact on users is not great.

The survey asked about past experience with Internet or computer training, not just whether they had taken advantage of training services offered through the IE program. When asked whether they had, before receiving the IE service, had ever had Internet or computer training:

- 23% said they had computer training.
- 16% said they had received Internet training.

Overall, 26% of respondents had past training, that is, either computer or Internet training. As noted earlier, analysis showed a positive and significant correlation between that Comcast training resources and greater reported levels of the Internet's positive impacts. The impact of past training on reported levels of impact, though positive, is not significant from a statistical perspective. This suggests that Comcast training, since it has occurred within the past six months for respondents in the survey, is helpful in part because people have had the training recently.

Giving Life to the Playbook

Since 2010, there has been steady progress in home broadband adoption rates. NTIA placed home broadband adoption at 68% in 2010, rising to 72.4% at the end of 2012. As this research shows, the persistence of this gap has to do with poverty among remaining non-adopters. Interventions, whether from IE, BTOP programs, or other initiatives can move the dial, but they too take sustained investment. That is what makes Comcast's announcement that it is continuing IE beyond the time specified in the 2011 voluntary commitment so important. Yet the scope of the non-adoption problem — over one-quarter of U.S. households at the end of 2012 — is greater than any single program.

This is why the "playbook" called for here is important. Next-generation Internet applications will impact more and more corners of our lives and many of them — such as education, job training, and government services — have inherently public purposes. The first step to giving life to the playbook is leadership. This must come not only from government — at all levels — but also the private and philanthropic sectors. As a nation, it is time to fully engage in increasing broadband adoption among our nation's poorest households. The research in this report shows the problem is solvable with the right resources directed at it.

Appendix I: Background on Internet Essentials

Context

As the nation's largest residential broadband service provider, Comcast is dedicated to bridging the digital divide by narrowing the broadband opportunity gap. We have wired over 99% of our service area for broadband, ensuring that families have access to the Internet no matter where they live. We have invested, and continue to invest, substantially in digital literacy training and increasing public access to broadband in the local communities we serve, including Boys & Girls Clubs of America, the League of United Latin American Citizens (LULAC) Tech Center, FIRST Robotics Competition, Easter Seals, and most recently, Khan Academy.

In the summer of 2011, Comcast launched its own broadband adoption program for low-income families in the United States. While Internet Essentials was one of our voluntary commitments in connection with the Comcast-NBCUniversal transaction, that commitment grew out of a multi-year internal project that had identified low-income broadband adoption as Comcast's most important community investment priority.

Internet Essentials is the largest and most comprehensive broadband adoption program anywhere in America, providing low-cost broadband service for $9.95 a month; the option to purchase a full-service, Internet-ready computer for under $150; and multiple options for digital literacy training in print, online, and in-person.

Research consistently has shown that the barriers to broadband adoption involve a complex mix of low digital literacy, perceived lack of relevance of online content, and the need for low-cost, good quality computers and Internet service. Internet Essentials was designed to address all of these critical hurdles to broadband adoption.

Core Program Enhancements

The implementation of Internet Essentials has gone far beyond our letter of voluntary commitment to the Federal Communications Commission (FCC). We have expanded and strengthened the program so many times, and in so many different ways, that it barely resembles our initial vision. In two and a half years since the launch, we have connected more than 300,000 families, or 1.2 million low-income Americans, to the Internet at home. We continue to make core enhancements to the program based on feedback from our customers and our school and community partners. These enhancements include:

- **Expanded Eligibility** — Expanded the eligibility criteria twice, first by extending eligibility to families with children eligible to receive free or reduced price school lunches (initial launch was free lunches only), and then by including parochial, private, cyberschool, and homeschooled students. As a result, nearly 2.6 million families in the Comcast footprint nationwide are eligible for Internet Essentials, which is 30% more than the initial estimated eligible population.
- **Increased Speed** — Increased the broadband speeds twice for Internet Essentials customers, from 1.5 Mbps to 3 Mbps in January 2012, and then again to 5 Mbps downstream in September 2013.
- **Streamlined Enrollment** — Implemented an instant approval process for families whose students attend any of the Provision 2 or NCES-validated schools with 70% or more NSLP participation across the Comcast footprint.
- **Created an Online Application** — Created a convenient online application on InternetEssentials.com and InternetBasico.com in English and Spanish that can be accessed through any Internet-enabled computer, tablet, or smartphone. Since the launch of our online application, we have found that 60 percent of visitors to InternetEssentials.com and InternetBasico.com are from a mobile device. In order to

accommodate the growing use of smartphones and other mobile devices, we will be optimizing the English and Spanish online application form so that families can complete the Internet Essentials online application form easily via a mobile device and upload eligibility documentation through the website, for a streamlined enrollment process.

- **Bulk and On-Site Registration** — Launched a program that gives third parties, such as schools and CBOs, the ability to purchase Internet Essentials service and equipment in bulk for families in their community. Comcast also held on-site registration during Internet Essentials events all over the country.
- **Introduced Internet Essentials Opportunity Cards** — Comcast's community partners are now able to help connect low-income families to the Internet by purchasing Opportunity Cards that can be used toward the cost of paying for Internet Essentials service. We have given away opportunity cards, in addition to notebooks, to hundreds of families across our footprint at nearly every public event in which we convene our school and community partners.
- **Enhanced e-Learning Tools** — Launched a revamped version of our online Learning Center to provide families with enhanced and dynamic content, including new interactive content in Spanish.
- **More Language Options** — Translated several Internet Essentials materials (e.g., one-page flyer, tri-fold flyer, poster, consumer brochure, and letter to parents) into 12 languages beyond English and Spanish, including: Arabic, Oromo, Somali, Tibetan, Mandarin Chinese, Haitian Creole, Portuguese, Hmong, Korean, Vietnamese, Polish, and Russian.
- **Easier Account Transfers** — Updated the "transfer of service" process for Internet Essentials customers to allow them to have their service transferred to a new home address in a Comcast service area without having to re-apply for Internet Essentials.

Internet Essentials-sponsored Digital Literacy Training

The third pillar of our broadband adoption program addresses the need to increase the set of digital and computer skills through in-person training at public computing centers and non-profits in the digital literacy, education and technology space. Since 2011, we have invested more than $165 million in cash and in-kind support to help close the digital divide, reaching more than 1.6 million people through our non-profit digital literacy partners.

Our training model has also dramatically changed since the launch of the Internet Essentials, which has been informed by experience, feedback from attendees, and subject matter expertise from our partners. In the first six months of the program, we developed a curriculum based on what we believed was best-in-class digital literacy training, and worked with our local community based organizations to deliver the modules. Attendance at these initial training sessions was limited, as most people didn't expect to receive digital literacy training from these partners.

In 2012, we moved to a sponsorship model and worked with local partners who were experts in the field in delivering their own digital literacy curricula. We sponsored partners in major markets where we provide service, and after six months of implementing the new model, attendance had increased by 65% compared to the previous six months. This is the model that continues today, and our 64 community-based organizations include numerous public libraries, Boys & Girls Clubs, city recreation centers, local affiliates of the Urban League, technology learning centers and many more.

Program Milestones

Internet Essentials has grown into a nationwide collaborative centered on connecting families to the Internet at home and supporting non-profit partners that build the digital literacy infrastructure of the communities we serve. Our more than 8,000 partners are the cornerstone of our success and include: non-profit organizations, community-based organizations, other technology companies, libraries, school districts, teachers and superintendents, members of faith-based organizations, mayors, congress people, governors, senators, and state and locally elected officials. Our other program milestones through the end of 2013 include:

- Comcast and its community partners have provided support for free digital literacy training and education for more than 1.6 million people.

- Broadcast more than 3.6 million PSA spots, valued at nearly $48 million.
- Sold more than 23,000 subsidized computers at less than $150 each.
- Distributed more than 33 million Internet Essentials brochures for free.
- Welcomed more than 1.8 million visitors to the Internet Essentials websites in English and Spanish and the Online Learning Center
- Fielded more than 1.9 million phone calls to our Internet Essentials call center.
- Offered the program in more than 30,000 schools and 4,000 school districts, in 39 states and the District of Columbia.

Appendix II: Methodology

The Comcast Internet Essentials Wave 1 Survey obtained telephone interviews with a representative sample of 1,969 recent subscribers to the Comcast Internet Essentials program, which provides low-cost home Internet to parents of school-age children who receive free or reduced price lunch. The survey was conducted by Princeton Survey Research Associates International (PSRAI). Interviews were done in English and Spanish by Princeton Data Source from January 8 to February 1, 2014. The margin of sampling error for the complete set of data is ±2.2 percentage points. Details on the design, execution and analysis of the survey are discussed below.

Sample and Contact Procedures

Sample was provided by Comcast and included 12,000 records. Four records were identified as duplicates and dropped by PSRAI. From the remaining records, PSRAI drew a simple random sample of 10,000.

Interviews were conducted from January 8 to February 1, 2014. As many as five attempts were made to contact every sampled telephone number. Sample was released for interviewing in replicates, which are representative subsamples of the larger sample. Using replicates to control the release of sample ensures that complete call procedures are followed for the entire sample. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. Each phone number received at least one daytime call when necessary.

Statistical Inference

The survey's margin of error is the largest 95% confidence interval for any estimated proportion based on the total sample — the one around 50%. For example, the margin of error for the entire sample is ±2.2 percentage points. This means that in 95 out every 100 samples drawn using the same methodology, estimated proportions based on the entire sample will be no more than 2.2 percentage points away from their true values in the population. It is important to remember that sampling fluctuations are only one possible source of error in a survey estimate. Other sources, such as respondent selection bias, questionnaire wording and reporting inaccuracy, may contribute additional error of greater or lesser magnitude.

Response Rate

Table A.1 reports the disposition of all sampled telephone numbers ever dialed from the original sample. The response rate estimates the fraction of all eligible sample that was ultimately interviewed. At PSRAI it is calculated by taking the product of three component rates:[25]

- Contact rate — the proportion of working numbers where a request for interview was made;
- Cooperation rate — the proportion of contacted numbers where a consent for interview was at least initially obtained, versus those refused;
- Completion rate — the proportion of initially cooperating and eligible interviews that were completed.

Thus the response rate was 27 percent.

Table A.1: Sample Disposition

9997	Total Numbers Dialed
39	Non-residential
34	Computer/Fax
1142	Other not working
8782	Working numbers
87.8%	**Working Rate**
123	No Answer / Busy
2845	Voice Mail
13	Other Non-Contact
5801	Contacted numbers
66.1%	**Contact Rate**
1866	Callback
1496	Refusal
2439	Cooperating numbers
42.0%	**Cooperation Rate**
79	Language Barrier
354	Screen out/Not an IE customer
2006	Eligible numbers
82.2%	**Eligibility Rate**
37	Break-off
1969	Completes
98.2%	**Completion Rate**
27.3%	**Response Rate**

Endnotes

1. The 95% figure is an estimate developed by the National Broadband Plan, see "Connecting America: The National Broadband Plan," Federal Communications Commission 2010, at p. 20 for availability of terrestrial, fixed broadband infrastructure at speeds of at least 4 Megabits per second. The FCC's subsequently released "Eight Broadband Progress Report" (August 2012) finds that 94% of Americans have access to at least one wireline broadband provider at 4 Mbps. See: http://www.fcc.gov/reports/eighth-broadband-progress-report.
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    See also, Mossberger, K. & Tolbert, C. (2009). Digital Excellence in Chicago: A Citywide View of Technology Use. Available at: http://www.cityofchicago.org/dam/city/depts/doit/supp_info/DEI/Digital_Excellence_Study_2009.pdf

13. Kenneth Flamm and Anindya Chaudhuri, "An Analysis of the Determinants of Broadband Access." Telecommunications Policy, Volume 31, Issue 6-7, July 2007.
14. The data underlying these figures are from the 2010 FCC survey conducted in connection with the NBP. The author has combined findings from the three categories of non-adopters identified in the 2010 report: non-Internet users (22%), dial-up users (6%), and people who do not have home Internet service but go online from other places such as libraries (6%). The combined figures were not reported in the 2010 FCC report, but were in John B. Horrigan, "Adoption of Information and Communication Service in the United States: Narrowing Gaps, New Challenges." Knight Foundation, August 2013. Available online at: http://knightfoundation.org/media/uploads/media_pdfs/DigitalAccessUpdateFeb2014.pdf, page 23.
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17. "Exploring the Digital Nation: America's Emerging Online Experience." National Telecommunications and Information Administration and Economic and Statistics Administration, p. 36. Available online at: http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_-_americas_emerging_online_experience.pdf. Please note that the "too expensive" question as determined by the NTIA is the sum of: (a) cost of the computer and/or hardware; (b) cost of installing Internet service; (c) cost of monthly Internet service; and (d) some other cost. The NTIA does not provide separate metrics on these factors and therefore, the "too expensive" question is the sum of the impact of all four factors.
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25. PSRAI's disposition codes and reporting are consistent with the American Association for Public Opinion Research standards.

About the Author

John B. Horrigan, PhD, is an independent communications and technology policy consultant. Horrigan's work focuses on consumers' adoption and use of information and communications technologies, as well as ICTs' impacts on states and localities.

Horrigan has served in senior positions at the Pew Research Center, the Joint Center for Political & Economic Studies, and TechNet. At the Federal Communications Commission in 2009-10, he led development of the broadband adoption and usage portion of the National Broadband Plan. Among his recent work is the report: "Broadband and Jobs: African Americans Rely Heavily on Mobile Access and Social Networking in Job Search" and "Adoption of Information and Communication Service in the United States: Narrowing Gaps, New Challenges." At TechNet, he authored "Preparing America's 21st Century Workforce" and the 2012 "State Broadband Index."

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