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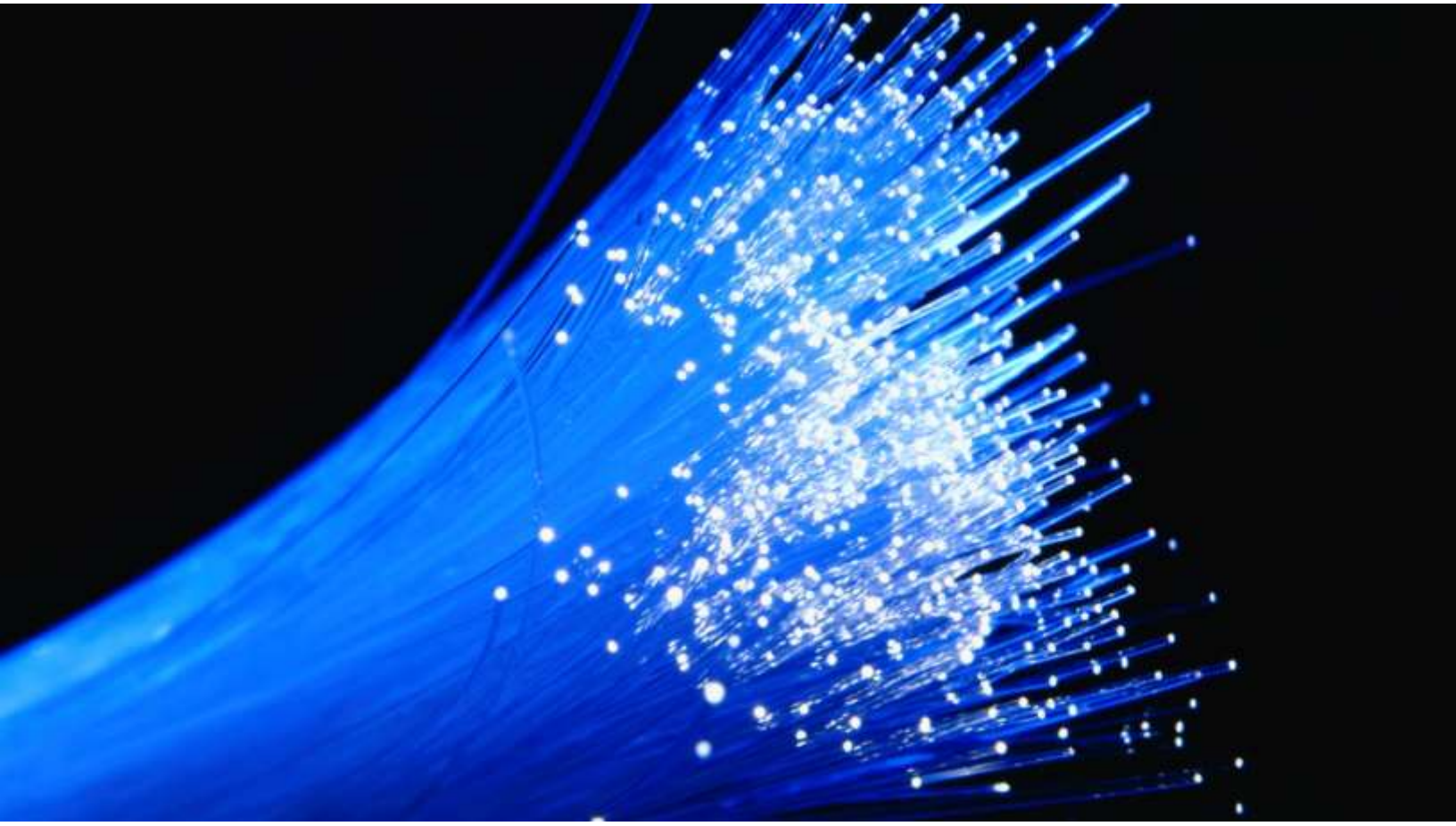

Community Development Authority Residential Internet Survey Report

Prepared for the City of Madison, WI
September 2020

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Executive Summary

As part of its efforts to perform a comprehensive evaluation of broadband gaps affecting low-income and other populations, the City of Madison and its Community Development Authority (CDA) commissioned a mail survey of CDA housing residents. The survey was intended to gather basic data about the types of services to which CDA residents subscribe, their use of these services (including subsidized programs such as Spectrum Internet Assist), and their willingness to switch to alternatives. Moreover, the survey was designed to provide insights about CDA residents' ability to make effective use of broadband and computers and to identify any barriers to doing so—whether that involved access to broadband, access to well-functioning devices, or skills. To this end, the survey asked residents to provide information about ownership of and ability to maintain computers, and to assess their ability to perform a broad range of tasks online.

In terms of the residential broadband access gap, 44 percent of respondents reported that they do not subscribe to residential internet service and 25 percent have neither a residential internet subscription nor a mobile subscription. At the same time, for those who do have subscriptions, there appears to be significant underutilization of existing low-cost subsidy programs for which many CDA residents may be eligible. But regardless of how today's unconnected residents may acquire or access broadband, their ability to make effective use of that resource will be limited until many of the residents obtain reliable devices and develop better skills. Many experience problems at least monthly with their computing devices, and 64 percent said that if their computer stopped functioning, they would not be able to fix or replace the device for months or even longer.

Similarly, many respondents reported that they lack skills in making use of online resources. For example, approximately half of respondents disagreed or strongly disagreed that they knew how to purchase groceries online. Nearly one-third disagreed or strongly disagreed that they knew how to recognize false information online and find credible sources. Of the respondents who cared for children, about one-third did not agree or strongly agree that they possessed the skills to assist children in completing homework online—and only about half agreed or strongly agreed that they knew how to set up parental controls or filters. But significant interest exists in overcoming these and other gaps; for example, 39 percent strongly agreed they would like to attend training sessions to learn how to better use broadband and computers.

The Covid-19 pandemic accentuated these challenges. For example, at the time of survey, 31 percent of respondents used the internet for educational purposes, compared to 19 percent before the pandemic. Among the small number of responses that came from households with children, 94 percent used the internet for educational purposes, compared with 56 percent before the pandemic. But the gaps will persist once the pandemic recedes.

This report documents the survey process, discusses methodologies, and presents results intended to assist the CDA in developing strategies to close the identified gaps.

Key Findings

Key findings are here presented thematically in three subsections: broadband access gaps, device utilization gaps, and skills gaps. These and other findings are presented in greater detail in the body of the report.

Broadband Access Gaps

The survey found substantial gaps in acquisition of residential internet access services, but also that relatively few residents are taking advantage of available subsidized programs from Spectrum and, to a lesser extent, AT&T. The following are key findings.

- **Substantial percentages of residents do not have a home internet connection.** About 44 percent reported not having a home internet connection; 42 percent reported not having cellular/mobile phone with internet service; and 25 percent reported having neither form of service at home. Those who lacked either form of service tended to be older.

- **Almost half of those with internet service are Spectrum customers.** Of those with internet service, nearly one-half (49 percent) said they have Spectrum as their internet service provider, and 18 percent use AT&T/TDS (DSL) or AT&T mobile. Further detail on companies and technologies reportedly used by respondents are provided in the body of the report.

- **CDA residents may be significantly underutilizing existing broadband subsidy programs.** Only 15 percent of Spectrum subscribers who responded participate in the Spectrum Internet Assist program, while 65 percent of the AT&T customers who responded participate in the Access from AT&T program.

- **Some CDA residents who need internet access at home for work are not using services that are likely to always suffice for telework.** Among internet users who report only using mobile phone service, dial-up, or satellite internet services, 17 percent say they need home internet service for their job.

- **Nineteen percent of all respondents only use a smartphone for home internet access.** This may limit their ability to fully utilize online services at home.

- **Most respondents say they find broadband unaffordable.** Just 17 percent of respondents agreed or strongly agreed that the market currently provides high-speed internet at prices they can afford, while 62 percent disagreed or strongly disagreed, suggesting a need for affordable broadband internet among a large segment of respondents.

- **CDA residents are very price sensitive.** Just 22 percent of respondents are willing to pay a premium for access to high-speed internet. Willingness to purchase high-speed internet for $10 a month is high (64 percent were extremely willing) but this willingness drops sharply at higher price points.

- **Despite these various gaps, most respondents do use the internet.** Most (80 percent) respondents access the internet from any location, including a range of locations outside the home.

Device Utilization Gaps

With respect to respondents' computer device ownership and their self-assessment of their skills in using, maintaining, and potentially repairing these devices, the survey revealed that CDA survey respondents face significant challenges. The following are key findings.

- **Many respondents do not have a computer with internet access in the home.** Four in 10 respondents have no internet access or report having internet access but no laptop, desktop, or tablet computer.

- **Most households have experienced frequent issues with their computing devices not working properly.** Six in 10 respondents with internet access have experienced trouble with their computer not working properly; four in 10 experience problems at least monthly.

- **More than half of respondents may have trouble maintaining their computers.** Fifty-two percent disagreed or strongly disagreed that they know how to troubleshoot issues with technology.

- **A great majority would not be able to quickly replace non-working computers.** One-fourth of respondents said they could not replace their computer in the foreseeable future if it became unusable, and another 39 percent said it would take one to six months to replace them. Adding these two datapoints, 64 percent of CDA respondents are at risk of not being able to use broadband for very long periods because of computer problems, rather than residential internet connectivity problems.

Skills Gaps in Using Broadband and Computers

Residents reported significant challenges with respect to their ability to perform basic functions online and avoid harms. Respondents also expressed interest in improving those skills. Key findings include:

- **Many CDA residents may be vulnerable to online harms and disinformation.** When asked if they knew how to recognize and avoid a phishing attack, 40 percent disagreed or strongly disagreed. And nearly one-third (32 percent) disagreed or strongly disagreed that they knew how to recognize false information online and find credible sources of information.

- **About half of respondents lack skills in doing basic tasks on the internet.** Approximately one-half of respondents disagreed or strongly disagreed that they know how to purchase

groceries and food online. A similar proportion indicated doubts about skills; for example; 58 percent of respondents strongly disagreed that they knew how to create their own personal website.

- **Caregivers report that children under their care lack broadband skills.** While the sample size of respondents who had children living at home was small (21) just five of these respondents strongly agreed that their children are sufficiently skilled in computer use to complete their homework on their own, while six agreed. The other ten were neutral (6) or strongly disagreed (4) with this statement.

- **Many caregivers don't all have adequate skills to help their children close this gap.** Only nine of those 21 respondents strongly agreed that their computer skills are good enough to help their children complete their homework, and another five agreed.

- **Older residents in particular have less confidence in their ability to use the internet.** Respondents ages 55 and older were less likely to agree that they are skilled in various uses of the internet. Respondents under age 55 expressed some agreement with statements about their internet skills, particularly creating/managing social media profile, bookmarking a website, and accessing their bank account online.

- **Respondents are interested in becoming more confident in using computers, smartphones, and the internet.** Specifically, 45 percent of respondents strongly agreed that they would like to become more confident in using computers and related technology, and 39 percent strongly agreed they would like to attend training.

- **Residents have some interest in getting help learning how to navigate around the negative aspects of internet use.** Respondents were less likely to agree that their children have the skills to identify false or misleading information or that they can recognize and avoid online financial scams or predators. Some respondents are interested in learning how to identify risks for the children in their care (13 of 21 agreed or strongly agreed), or that they know how to set up parental controls or filters online (11 of 21 agreed or strongly agreed).

Survey Process

CTC and its partner market research firm, Clearspring Research, in close coordination with the City of Madison and CDA staff, managed the survey project, including development of the questionnaire, mailing and data entry coordination, survey data analysis, and reporting of results. A copy of the survey instrument is included in Appendix A.

CTC developed the draft survey instrument and the City provided revisions and approved the final questionnaire. The City also provided a list of households to which the survey packet would be mailed.

A total of 883 survey packets were mailed first-class in July to residents of the City of Madison's CDA housing. Recipients were provided with a postage-paid business reply mail envelope in which to return the completed questionnaire.

A total of 165 useable surveys were received by the date of analysis, providing a response rate of 18.7 percent. The margin of error for aggregate results at the 95 percent confidence level for 165 responses is ±6.9 percent. That is, for questions with valid responses from all survey respondents, one would be 95 percent confident (19 times in 20) that the survey responses lie within ±6.9 percent of the target population as a whole (CDA housing residents).

The survey responses were entered into SPSS[1] software and the entries were coded and labeled. SPSS databases were formatted, cleaned, and verified prior to the data analysis. Address information was merged with the survey results using the unique survey identifiers printed on each survey. The survey data was evaluated using techniques in SPSS including frequency tables, cross-tabulations, and means functions. Statistically significant differences between subgroups of response categories are highlighted and discussed where relevant.

The following sections summarize the survey findings.

[1] Statistical Package for the Social Sciences (http://www-01.ibm.com/software/analytics/spss/)

Survey Results

The results presented in this report are based on analysis of information provided by 165 residents of the City of Madison's CDA housing. Unless otherwise indicated, the percentages reported are based on the "valid" responses from those who provided a definite answer and do not reflect individuals who said "don't know" or otherwise did not supply an answer because the question did not apply to them. Key statistically significant results ($p \leq 0.05$) are noted where appropriate.

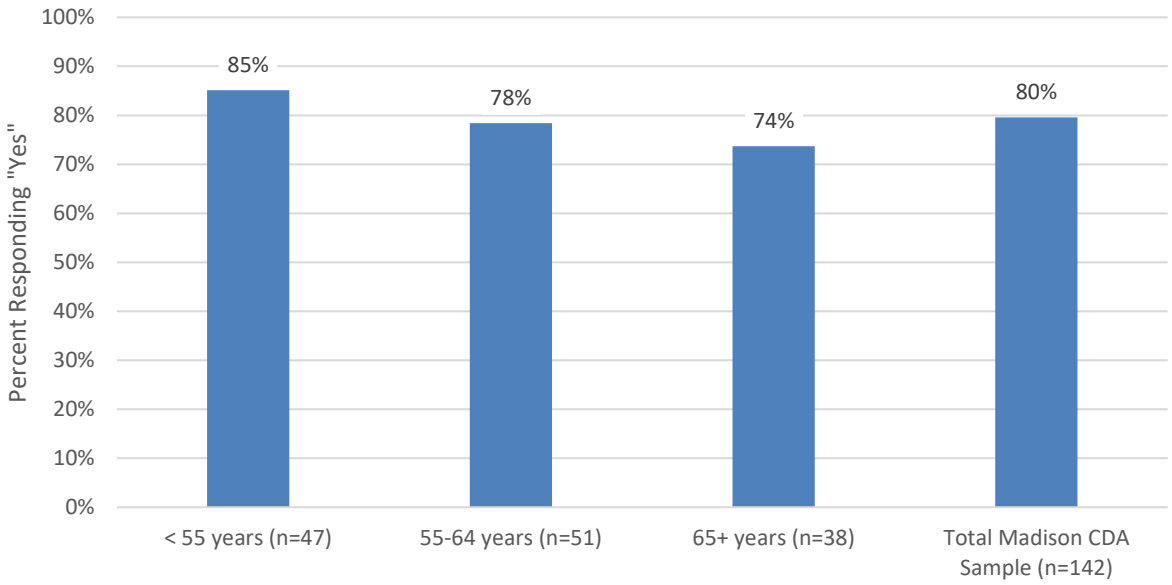
Internet Connection and Use

Respondents were asked about their use of the internet, including home internet connection types and providers, use of the internet for various activities, and satisfaction and importance of features related to internet service. This information provides valuable insight into residents' need for various internet and related communications services.

Internet Usage

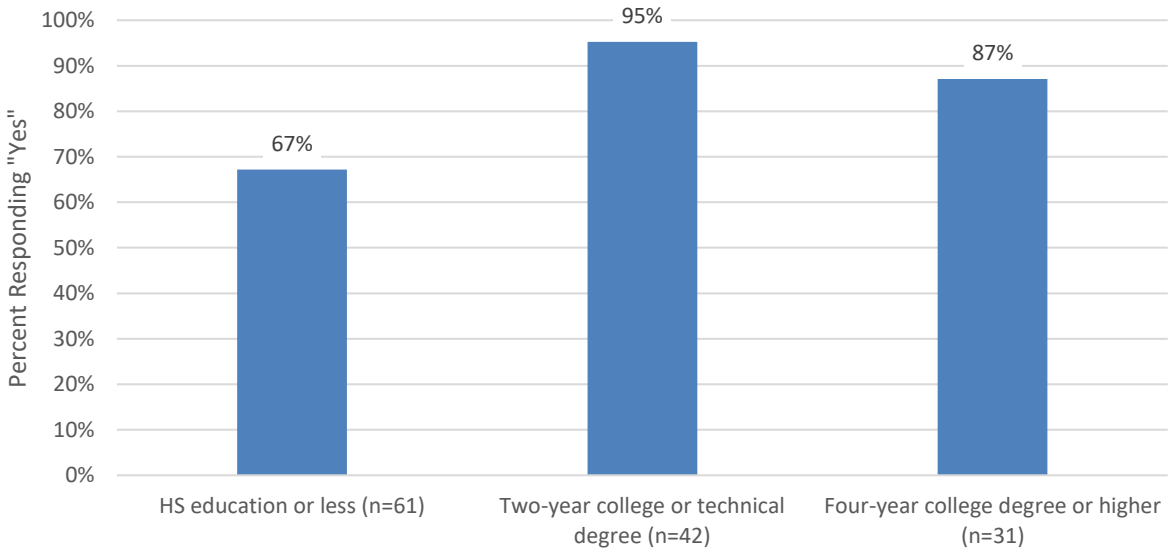
Eight in 10 respondents make some use of the internet, on any device from any location, as shown in Figure 1. Usage of the internet is high across all age cohorts.

Figure 1: Internet Usage by Respondent Age



Internet usage is lower among those with a high school education or less compared with more educated respondents (see Figure 2).

Figure 2: Internet Usage by Education



Almost all respondents with home internet service or a smartphone do personally access the internet. Approximately one-fourth of respondents without internet service at home access the internet from other locations. Agreement with reasons for not accessing the internet are highlighted in Figure 3 and Figure 4. Cost is the leading barrier to internet access, with more than one-half of those who do not access the internet strongly agreeing that a connection is too expensive. (Keep in mind that figures are based on a small subset of respondents; just 31 to 35 individuals rated the various factors.)

Figure 3: Reasons for Not Using the Internet (Mean Ratings)

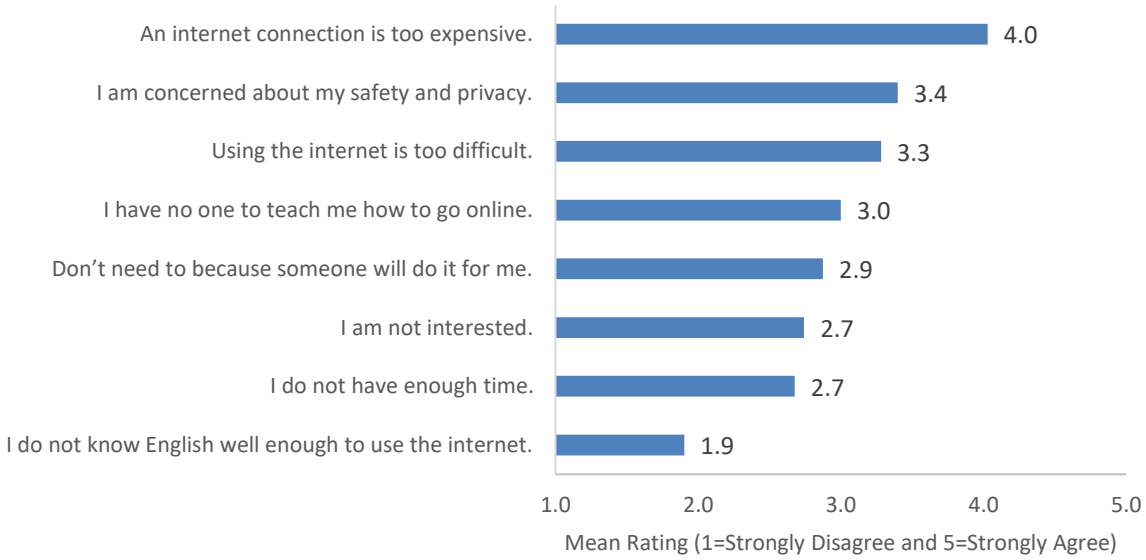
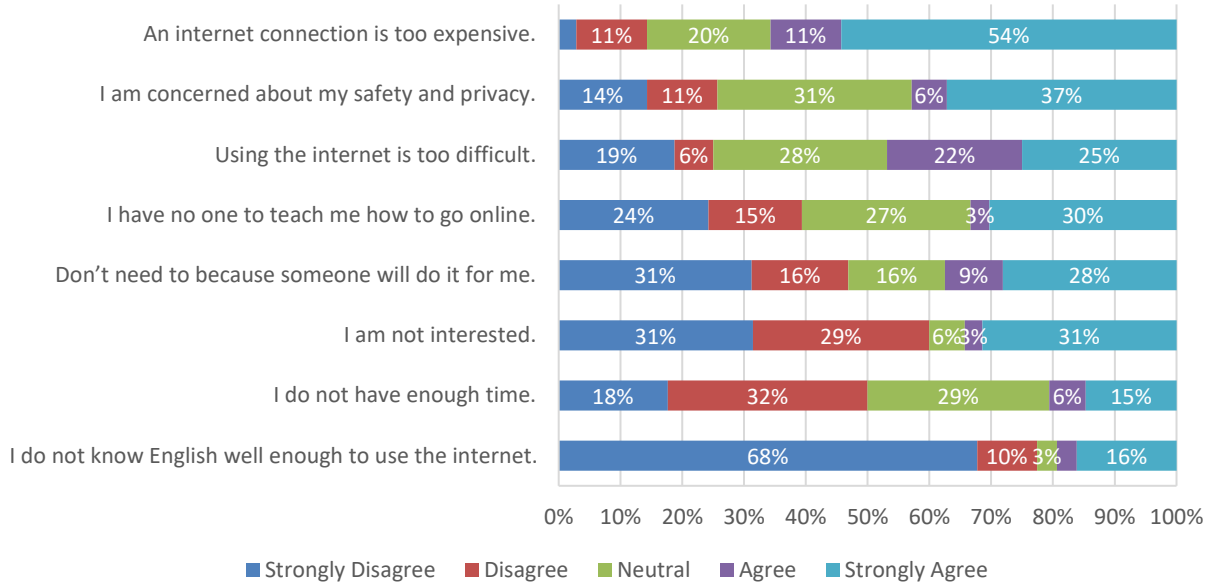


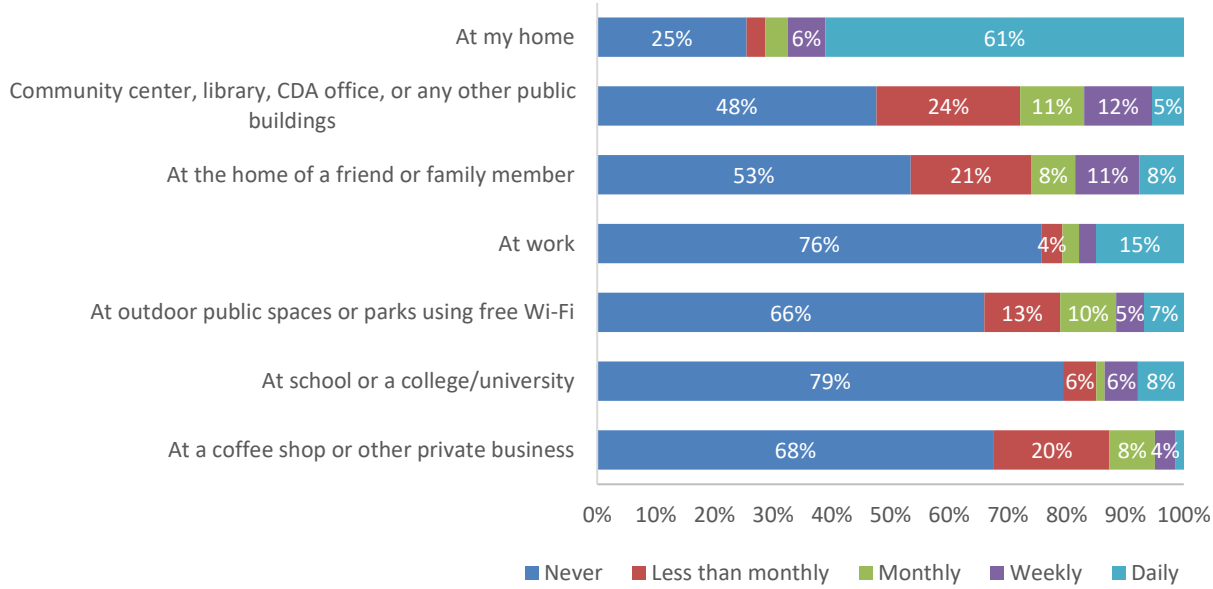
Figure 4: Reasons for Not Using the Internet



Internet Use by Location

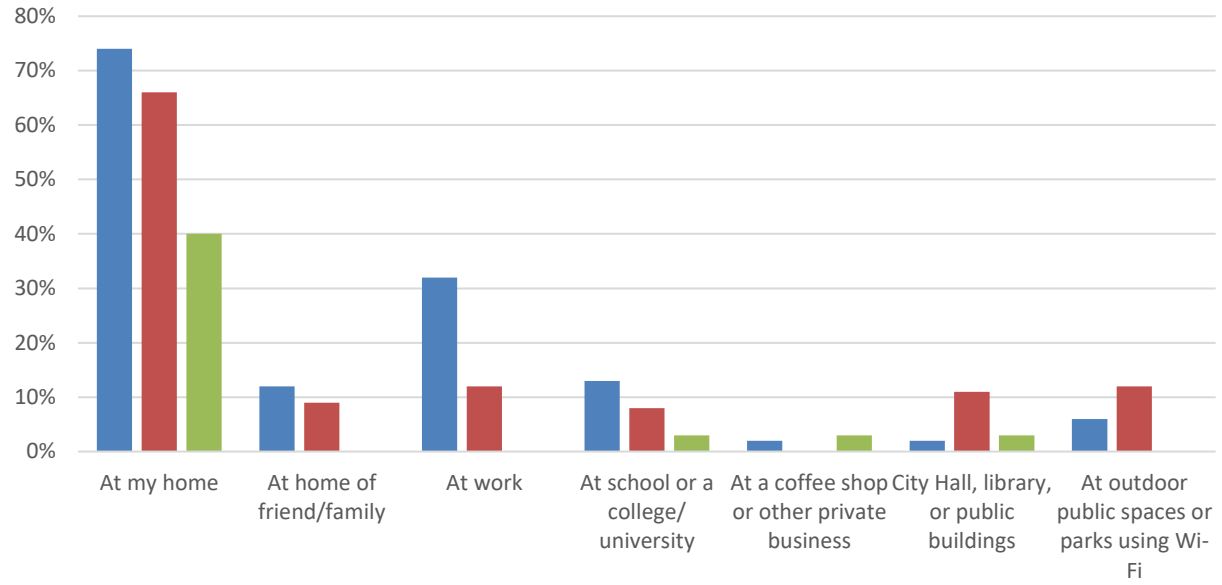
Respondents were also asked to indicate how often they use the internet in various locations. As shown in Figure 5, six in 10 respondents use their internet at home daily. More than one-fourth of respondents use the internet at a public building or at the home of a friend or family at least monthly. Other locations are used less frequently, with the majority of respondents saying that internet use at school, work, outdoor public spaces, or private businesses never happens.

Figure 5: How Often Use the Internet in Various Locations



Respondents ages 65+ are less likely than younger respondents to make daily use of the internet at home, at work, at school or a college/university, or at outdoor public spaces or parks (see Figure 6).

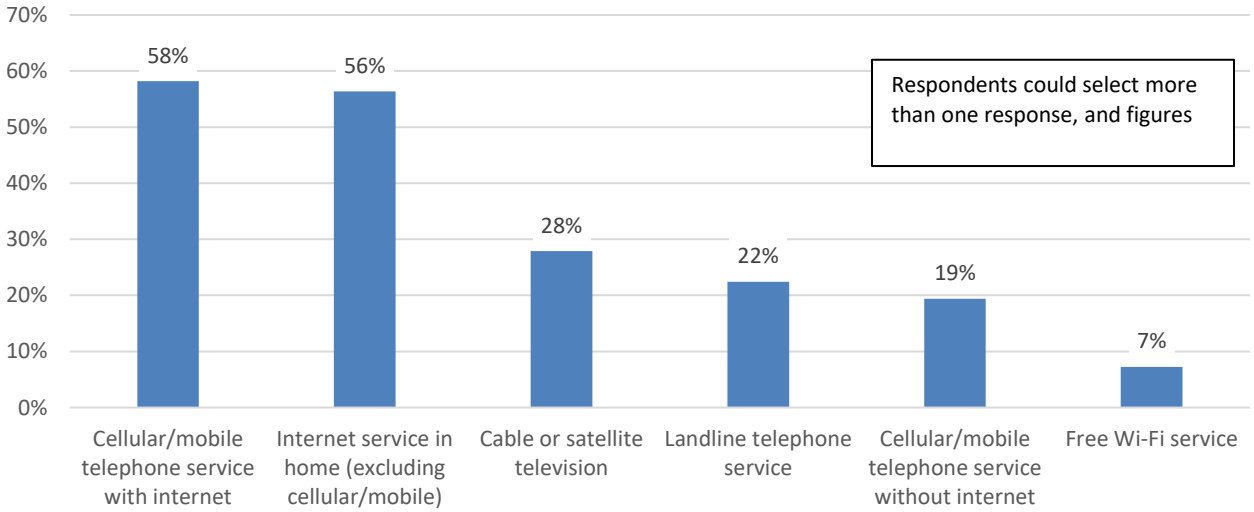
Figure 6: Daily Use of the Internet by Respondent Age



Communications Services

Saturation of communications services currently purchased for the household is illustrated in Figure 7.

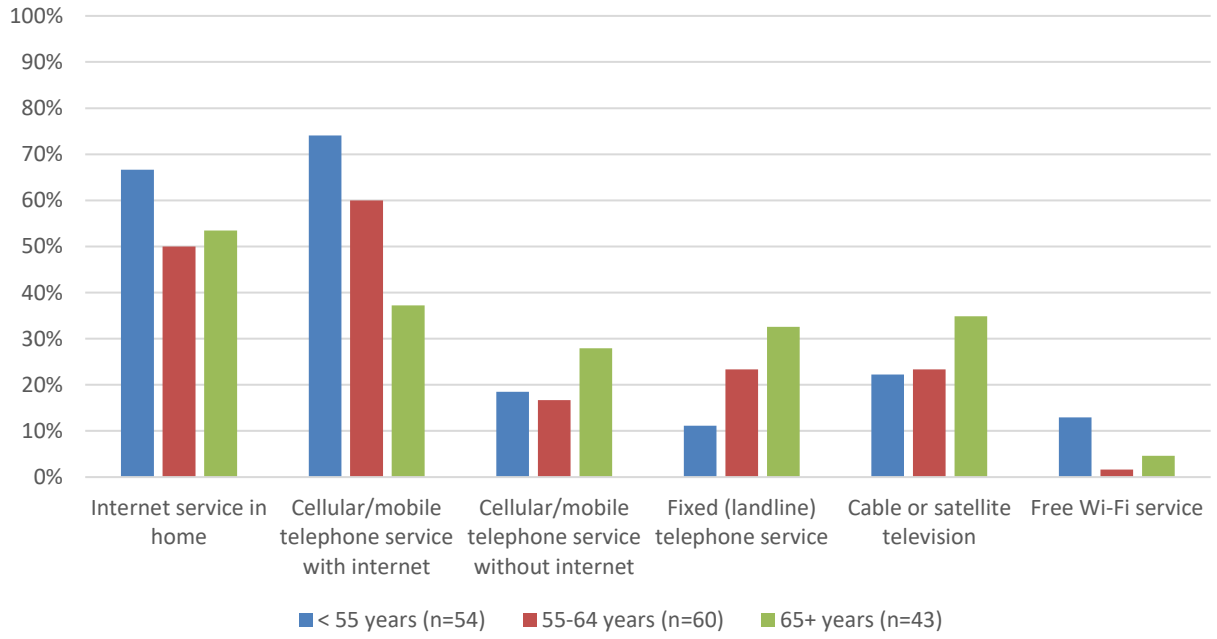
Figure 7: Communication Services Purchased



Overall, 75 percent of respondents indicated having some internet access—either a home connection or via smartphone. Specifically, 58 percent have cellular/mobile telephone service with internet and 56 percent have internet service in the home. Fewer households have cable/satellite television service, landline telephone service, cellular/mobile telephone service without internet, and free Wi-Fi service.

Respondents ages 65+ are less likely than younger respondents to purchase cellular/mobile telephone service with internet and are more likely to purchased landline telephone service (see Figure 8).

Figure 8: Services Purchased by Respondent Age



As discussed previously, most respondents have some internet access, including 39 percent who have both home internet service and a cellular/mobile telephone service with internet (smartphone). Only 56 percent of respondents have a home internet connection. Total internet access by demographics is illustrated in Table 1.

Table 1: Internet Access by Key Demographics

	No Internet Service	Home Internet Connection	Smartphone	Both Home/ Smartphone	Total Internet Access	*Total Count*
TOTAL	**25%**	**17%**	**19%**	**39%**	**75%**	***165***
Respondent Age						
18 to 54 years	19%	7%	15%	59%	81%	*54*
55 to 64 years	23%	17%	27%	33%	77%	*60*
65 years and older	33%	30%	14%	23%	67%	*43*
Education						
HS education or less	31%	15%	15%	39%	69%	*72*
Two-year college or technical degree	11%	19%	23%	47%	89%	*47*
Four-year college degree +	22%	19%	22%	36%	78%	*36*
Race/Ethnicity						
White, non-Hispanic	24%	18%	18%	41%	76%	*80*
Black	19%	17%	23%	42%	81%	*48*
Biracial/Multiracial/Other	31%	19%	15%	35%	69%	*26*
Gender Identity						
Identify as female	23%	13%	17%	46%	77%	*99*
Identify as male	26%	22%	22%	29%	74%	*58*
Disability						
Yes	24%	20%	18%	38%	76%	*119*
No	22%	8%	19%	50%	78%	*36*
Total Household Size (Adults + Children)						
1	29%	16%	23%	33%	71%	*119*
2	7%	19%	11%	63%	93%	*27*
3	0%	17%	0%	83%	100%	*6*
4 or more	40%	20%	0%	40%	60%	*5*
Children in Household						
No Children in HH	25%	16%	21%	38%	75%	*139*
Children in HH	17%	22%	6%	56%	83%	*18*

Importance of Communication Services

Respondents were asked to indicate the importance of various communication services to their household, using a scale where 1 is "Not at All Important" and 5 is "Extremely Important." The mean importance of various service aspects is illustrated in Figure 9, while detailed responses are illustrated in Figure 10.

Figure 9: Importance of Communication Service Aspects (Mean Ratings)

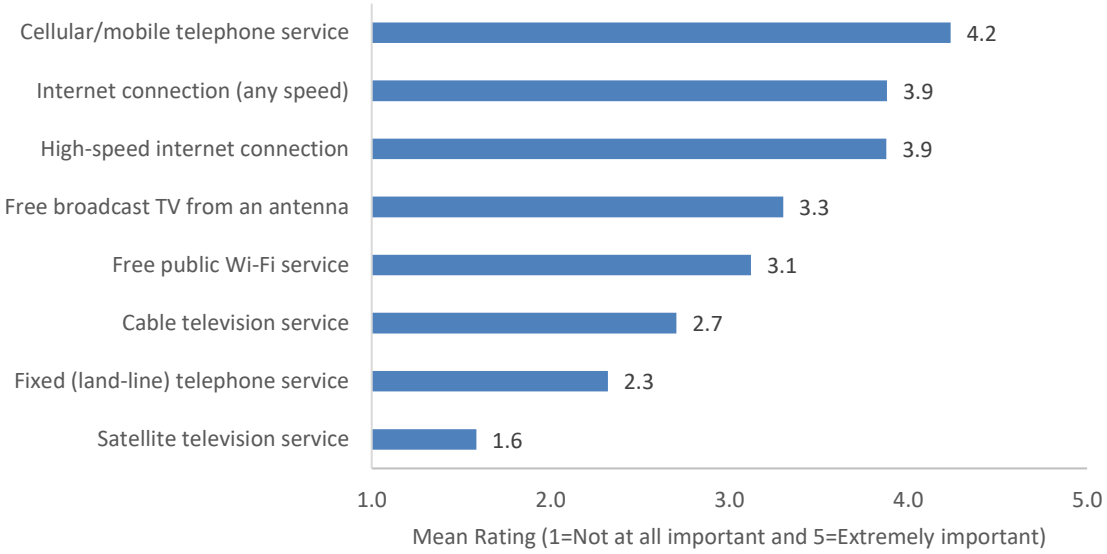
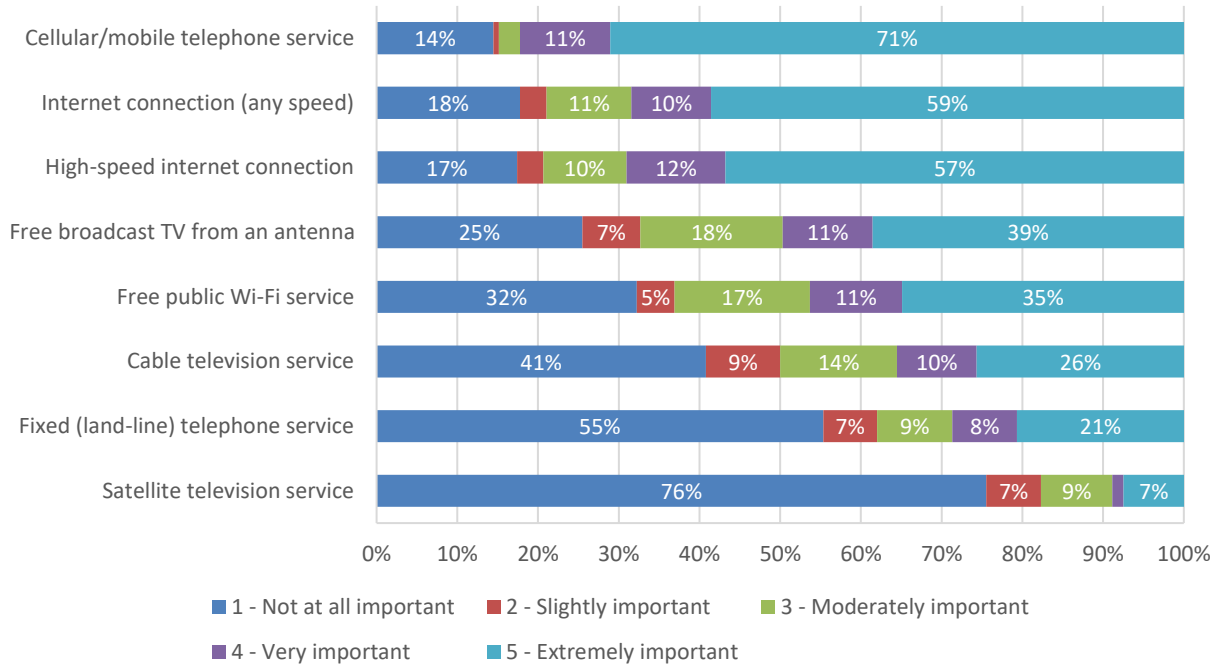


Figure 10: Importance of Communication Service Aspects



Cellular/mobile telephone and internet services are very important to respondents, while television services and landline telephone service are significantly less important. Specifically, 71 percent of respondents said cellular/mobile phone service is extremely important, and 59 said an internet connection of any speed is important. More than one-half (57%) of respondents said high-speed internet is extremely important.

Figure 11 and Figure 12 illustrate the importance of internet services and mobile telephone service by the age of the respondent and by race. The importance of internet services is slightly lower for those ages 65+ and white, non-Hispanic respondents compared with their counterparts.

Figure 11: Importance of Communication Services by Respondent Age

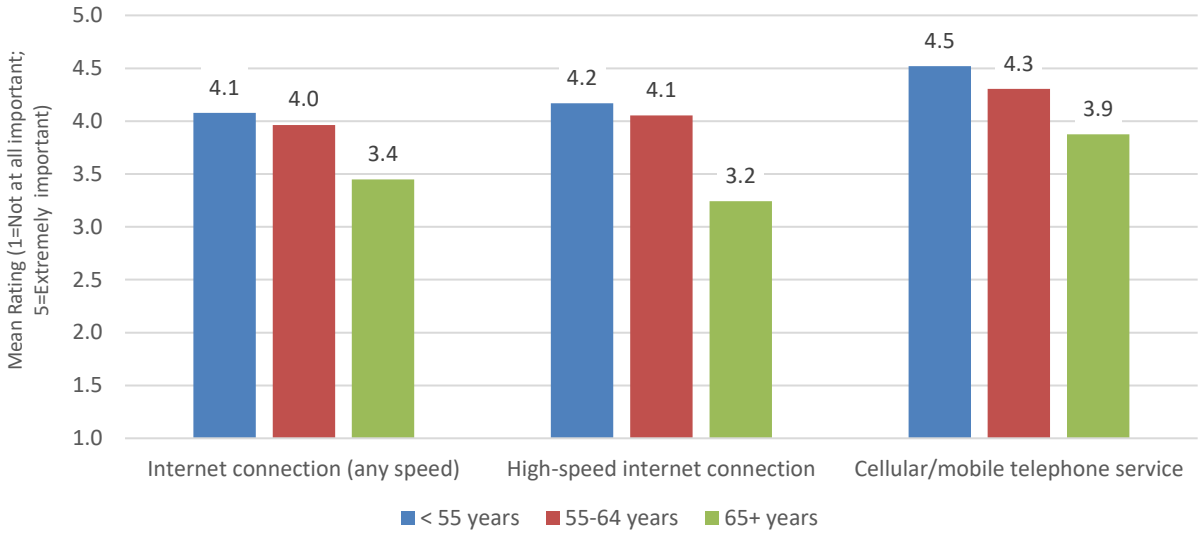
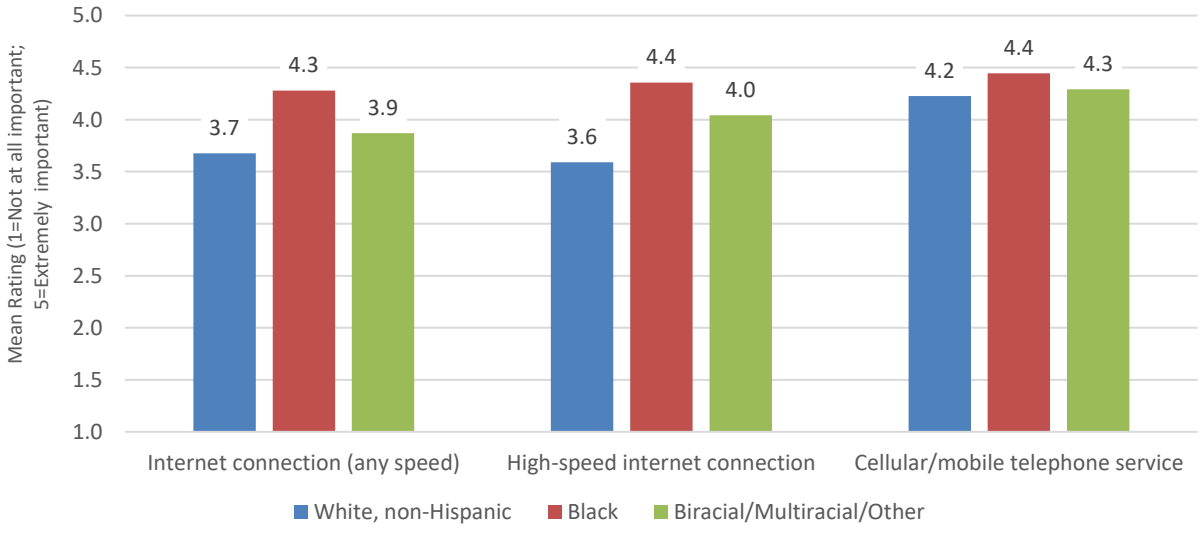


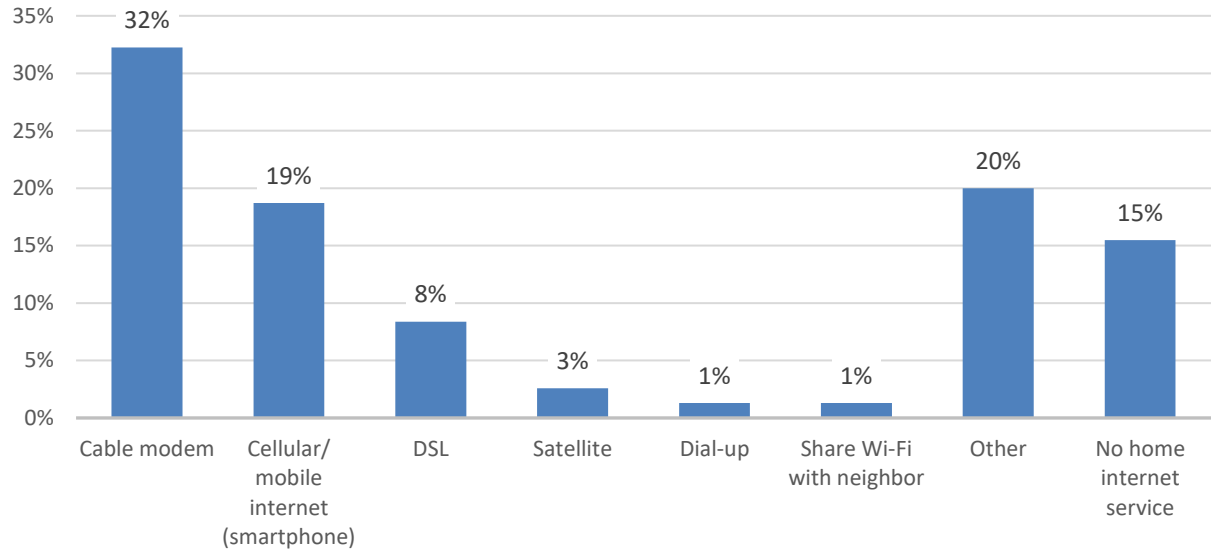
Figure 12: Importance of Communication Services by Race



Internet Services Purchased

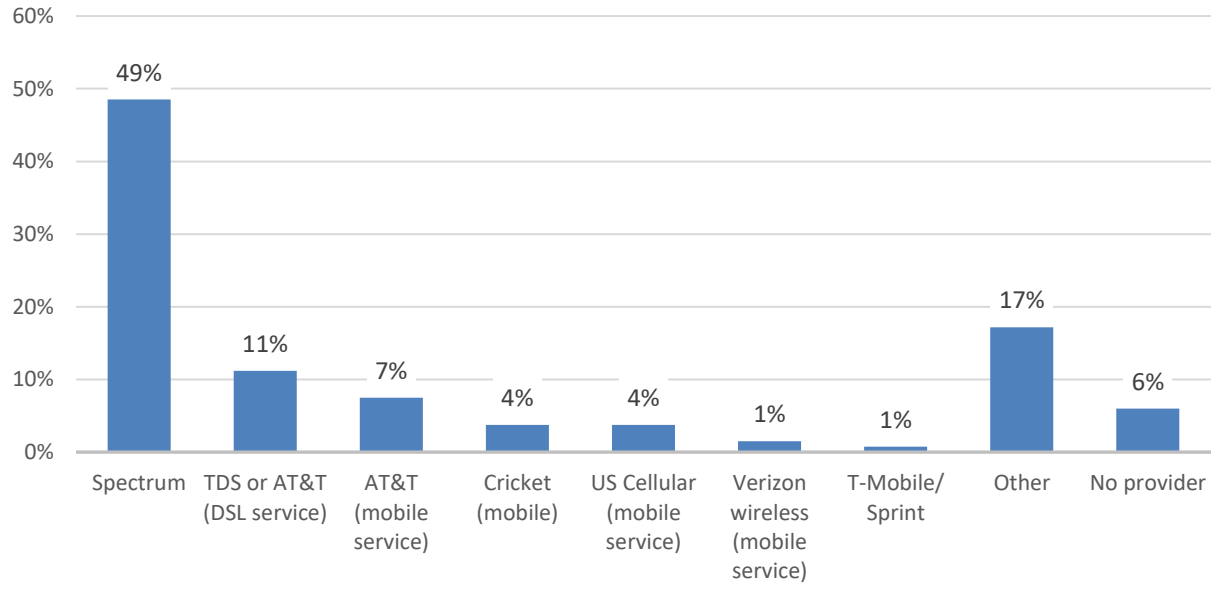
As shown in Figure 13, a majority of homes (85 percent) reported having home internet service, compared with 75 percent reporting internet access via a home connection or via a smartphone in Question 1. Cable modem (32%) is the leading internet service used, followed by cellular/mobile (19%) and DSL (8%). Other connection types represent much smaller shares of the market.

Figure 13: Primary Home Internet Service



As illustrated in Figure 14, approximately one-half of respondents with internet service subscribe to Spectrum (cable service).

Figure 14: Primary Internet Service Provider



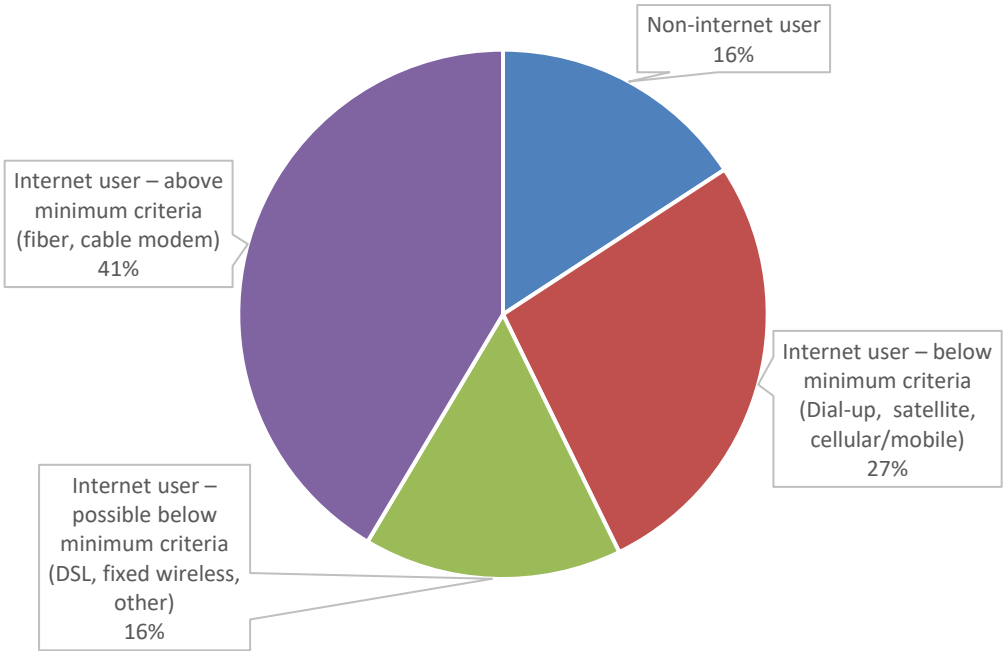
Respondents were segmented into connectivity groups based on type of internet service:

1. No internet service
2. Below minimum criteria (Dial-up, satellite, cellular/mobile)
3. Possible below minimum criteria (DSL, fixed wireless, other)
4. Above minimum criteria (fiber, cable modem)

Although most households have internet access, 43 percent have service that is below or possibly below the minimum criteria (see Figure 15).

Those with service below the minimum criteria rated the importance of high-speed internet somewhat lower than did those with service above the minimum criteria. Still, high-speed internet service is very important on average to those with below minimum criteria connection.

Figure 15: Internet Connectivity Groups



Internet Service Aspects

Home internet subscribers were asked to evaluate their satisfaction with various internet service aspects. This was compared with importance ratings given for these same aspects. The importance and satisfaction levels among internet users are compared in the following tables and graphs.

Importance

Respondents were asked to rate their levels of importance and satisfaction with various internet service aspects. Respondents rated connection reliability, cost, and online privacy as the most important aspects, with at least three-fourths saying each aspect is extremely important, as shown in Table 2. Six in 10 respondents rated connection speed as extremely important.

Table 2: Importance of Internet Service Aspects

Service Aspect	Mean	Percentages
Speed	4.2	5% 5% 12% 18% 60%
Reliability	4.7	4% 5% 9% 82%
Cost	4.6	5% 6% 10% 79%
Online privacy	4.5	7% 9% 9% 76%

1 - Not at all important; 2 - Slightly important; 3 - Moderately important; 4 - Very important; 5 - Extremely important

Satisfaction

Overall, respondents are moderately to very satisfied with aspects of their internet service, as shown in Table 3. Approximately four in 10 respondents were extremely satisfied with connection speed and reliability, and three in were extremely satisfied with online privacy. Although 27 percent of respondents said they were extremely satisfied with cost of service, another 23 percent said they were not at all satisfied.

Table 3: Satisfaction with Internet Service Aspects

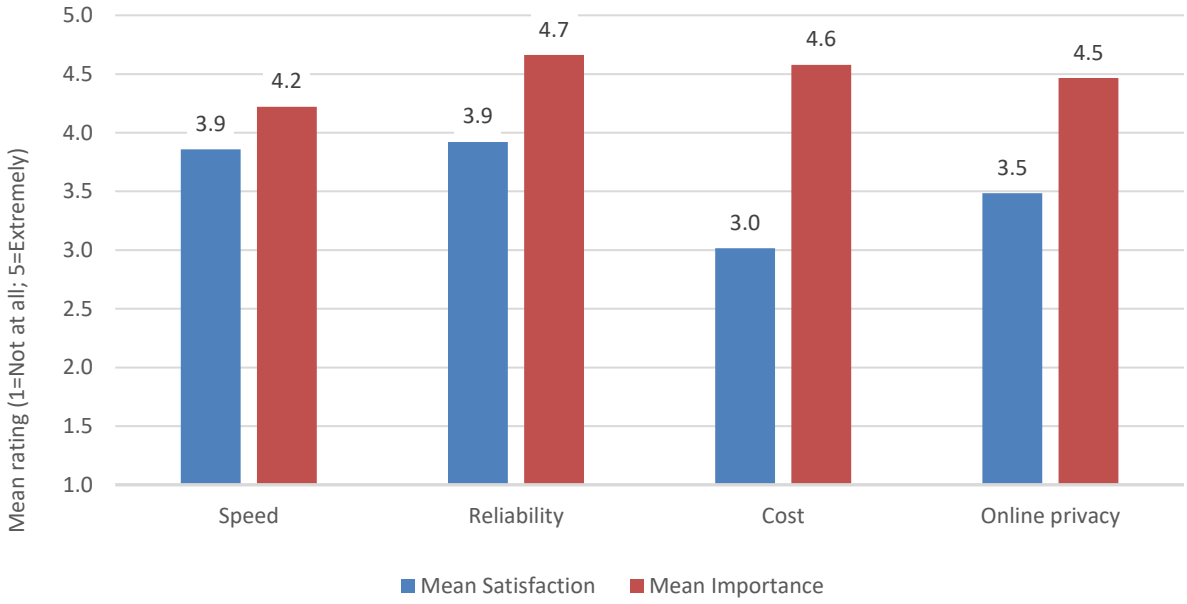
Service Aspect	Mean	Percentages
Speed	3.9	8% 5% 20% 28% 39%
Reliability	3.9	8% 5% 17% 28% 43%
Cost	3.0	23% 16% 27% 8% 27%
Online privacy	3.5	13% 7% 27% 22% 30%

1 - Not at all satisfied; 2 - Slightly satisfied; 3 - Moderately satisfied; 4 - Very satisfied; 5 - Extremely satisfied

Performance

Comparing respondents' stated importance and satisfaction with service aspects allows an evaluation of how well internet service providers are meeting the needs of customers (see Figure 16). Aspects that have higher stated importance than satisfaction can be considered areas in need of improvement. Aspects that have higher satisfaction than importance are areas where the market is meeting or exceeding customers' needs. However, it should be cautioned that the extremely high level of importance placed on some aspects (such as reliability) may make it nearly impossible to attain satisfaction levels equal to importance levels.

Figure 16: Importance of and Satisfaction with Internet Service Aspects



The difference between importance and satisfaction of home internet aspects is also presented in the "gap" analysis table (see Table 4). The largest gap between importance and performance is for cost of service, followed by online privacy, reliability, and speed. The lower satisfaction levels could indicate a desire for improved service offerings or a willingness to switch internet service providers if needs are not being met.

Table 4: Internet Service Aspect "Gap" Analysis

	Mean Satisfaction	Mean Importance	GAP < = >	Customer Expectations
Cost	3.0	4.6	-1.6	Not Met
Online privacy	3.5	4.5	-1.0	Not Met
Reliability	3.9	4.7	-0.7	Not Met
Speed	3.9	4.2	-0.4	Not Met

Personal Computing Devices

Respondents were asked to indicate the number of personal computing devices they have in the home. As might be expected, almost all (96 percent) respondents with internet access (either home connection or smartphone) have at least one personal computing device.

Four in 10 respondents have three or more personal computing devices, including 16 percent with at least five devices. More than one-half of respondents have one or two devices (see Figure 17).

Those less than age 55 have more devices in the home compared with older respondents (see Figure 18). A small number of respondents have multiple household members (most live alone) and appear to have more devices on average (but this is based on a very small number of respondents).

Figure 17: Number of Personal Computing Devices

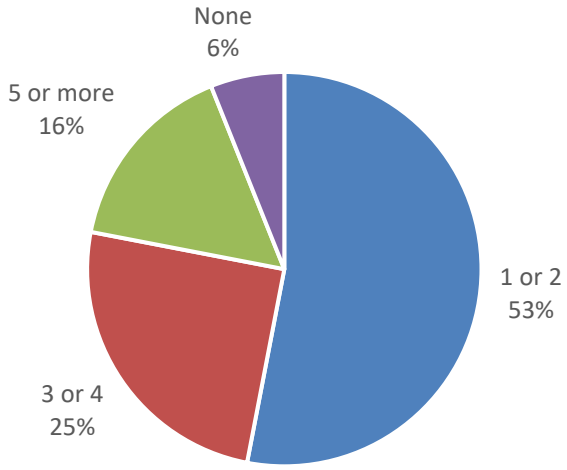
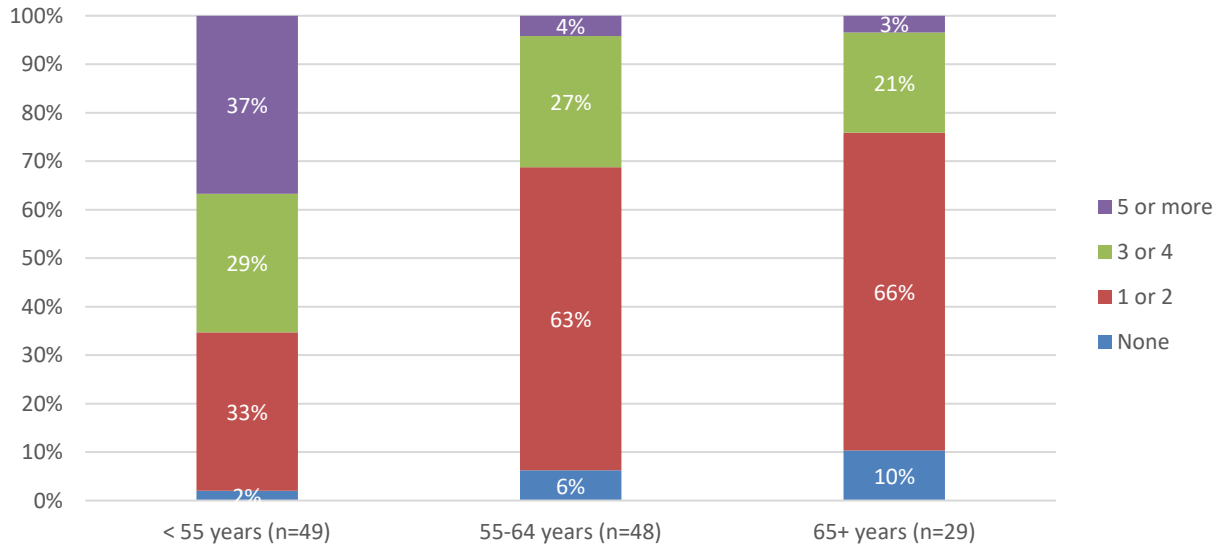


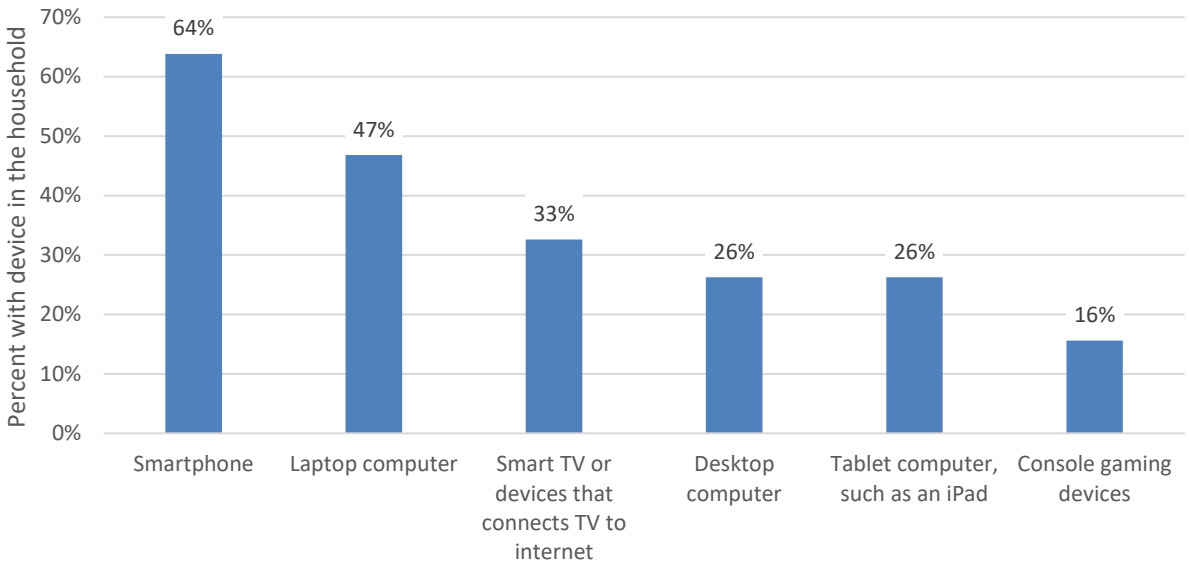
Figure 18: Number of Personal Computing Devices in Home by Respondent Age



Devices in the Home

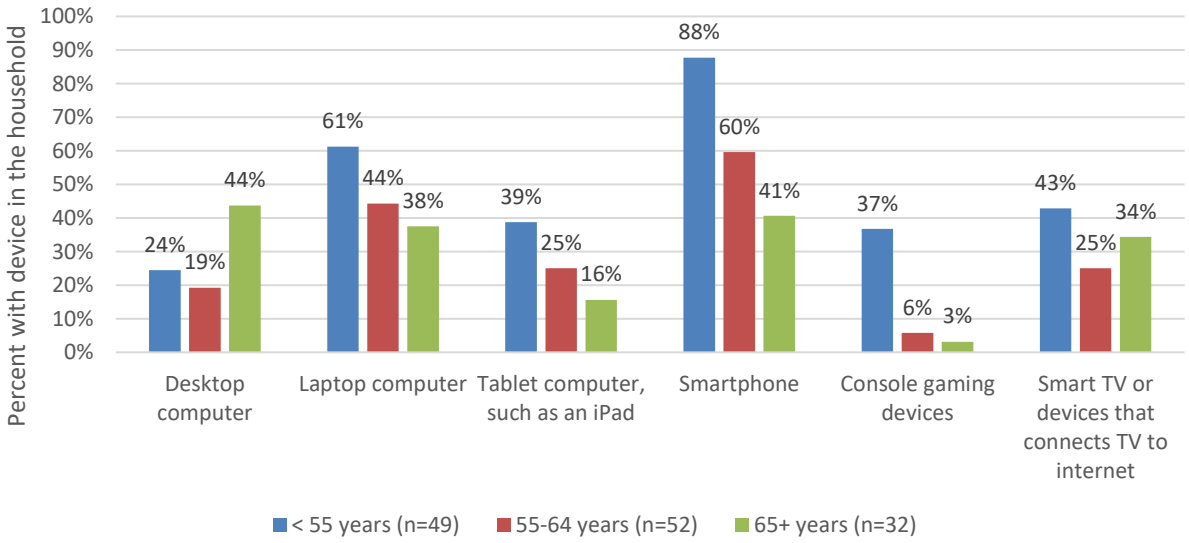
Availability of devices is relatively high in households with internet access, with respondents selecting an average of 2.2 types of devices in the home and only nine percent not selecting any device. Use of smartphone is highest, with 64 percent of internet users having one, followed by laptops (47%). One-third of respondents with home internet have a Smart TV and 26 percent have a desktop computer (see Figure 19).

Figure 19: Devices Available in the Home



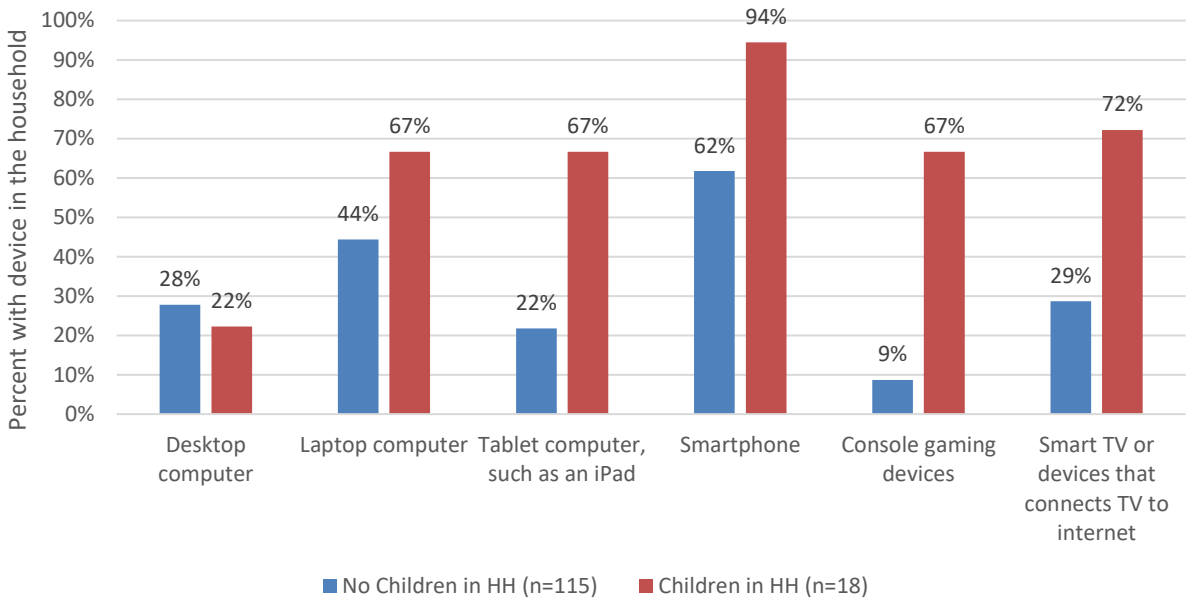
Respondents under age 55 are more likely than older respondents to have a smartphone or a console gaming device, as illustrated in Figure 20.

Figure 20: Devices Available in the Home by Respondent Age



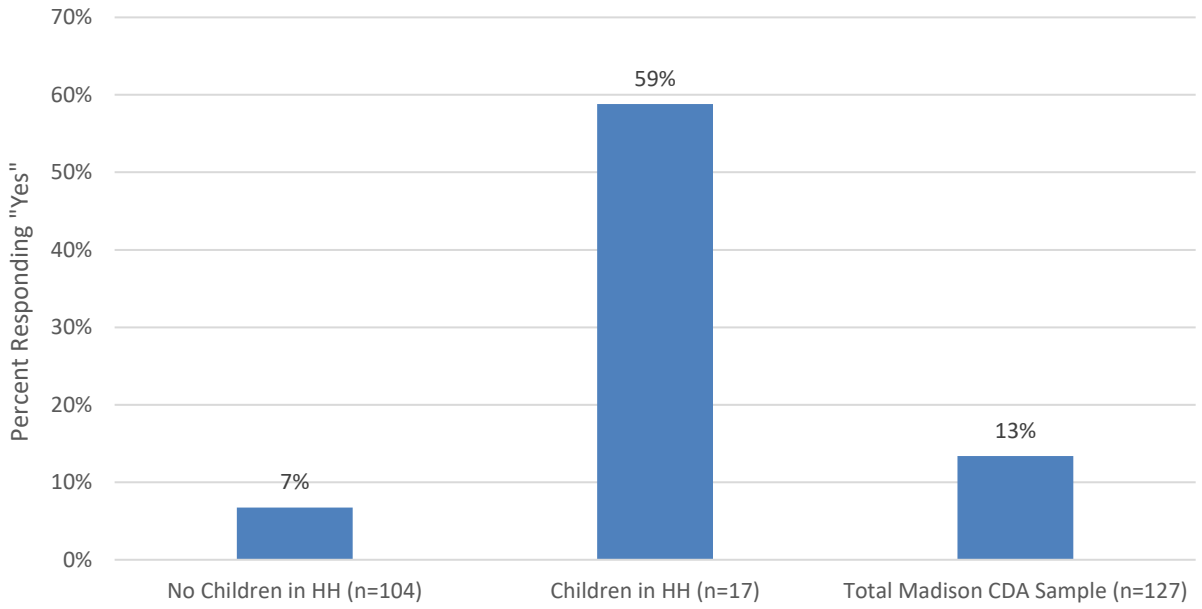
The few households with children in them make strong use of key devices, as shown in Figure 21. Almost all of the households with children have a smartphone, three-fourths have a Smart TV, and two-thirds have a laptop, tablet, or console gaming device.

Figure 21: Devices Available in the Home by Children in Household



Thirteen percent of households have a device issued by the school district, including 10 out of 17 (59%) households with children (see Figure 22).

Figure 22: Have a School District Issued Device



Respondents with home internet service were asked how often their primary computer becomes inaccessible or unusable, and how long it would take to replace the computer if it became lost or damaged beyond repair. More than one-half (57%) of respondents have had some issues with their computer (see Figure 23). One-fourth of respondents said they could not replace their computer if it became unusable, and another 39 percent said it would take one to six months to replace (see Figure 24).

Figure 23: Computer Becomes Unusable

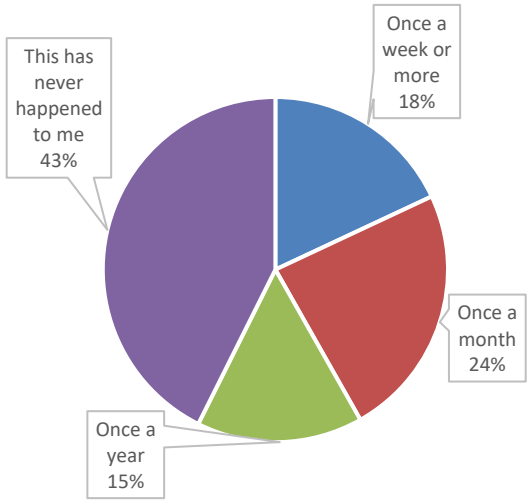
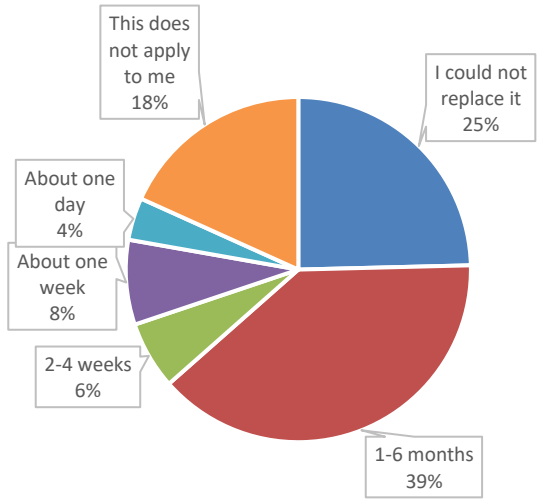


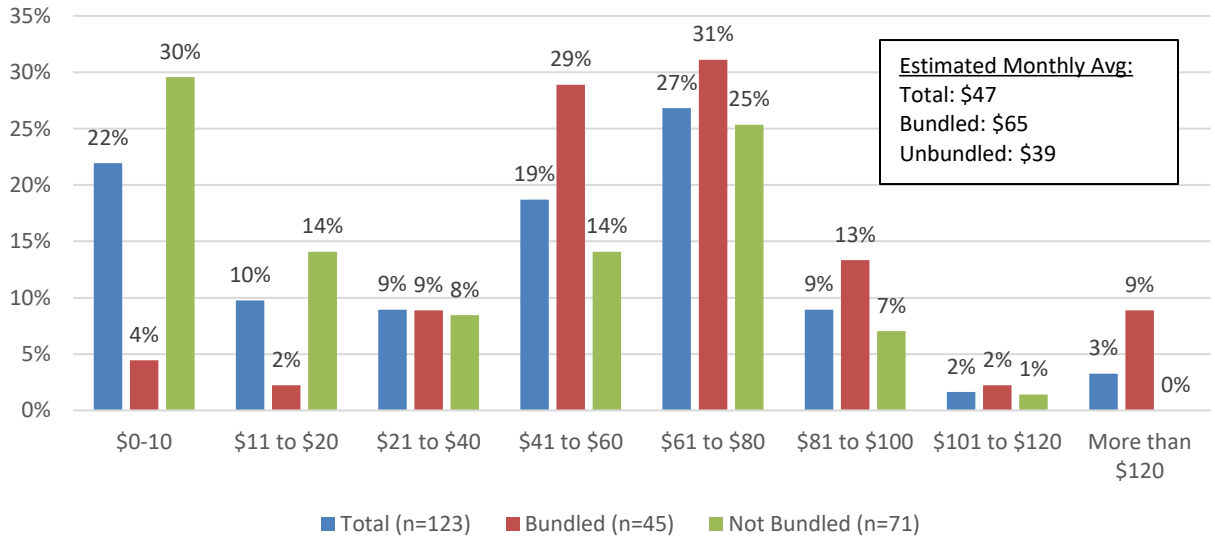
Figure 24: When Could Replace Computer



Cost of Internet Service

Respondents were asked to give the cost of their home internet service. Estimated monthly price of internet is shown in Figure 25, for customers who bundle (39%) or do not bundle (61%) internet service. The estimated monthly average cost for internet service is $47. Three in 10 respondents with unbundled internet service pay $10 or less per month.

Figure 25: Monthly Price for Internet Service



Internet Uses

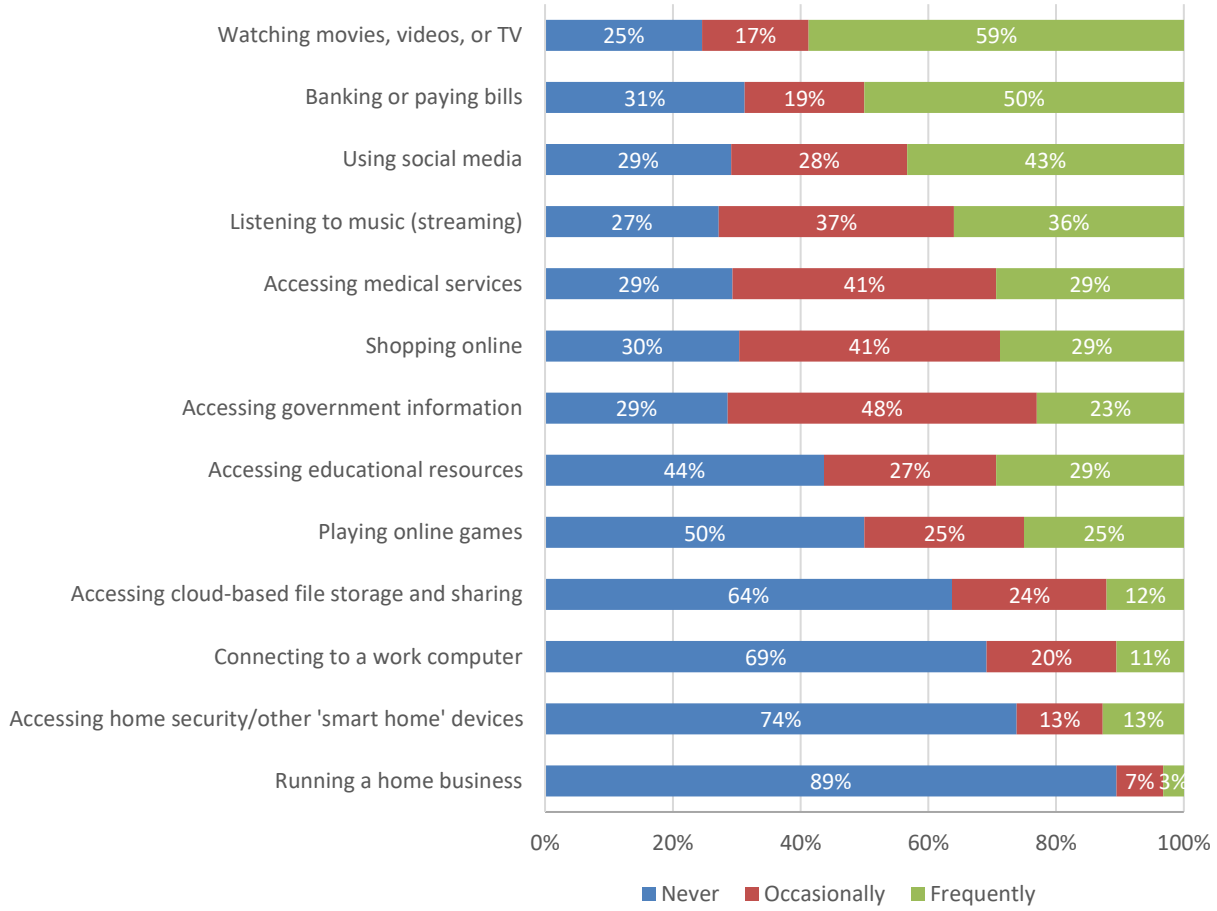
Respondents were asked about their use of their home internet connection and of their cellular/ mobile internet connection for various activities.

Home Internet Connection

Among those items listed, the home internet connection is most frequently used for watching videos, banking or paying bills, using social media, streaming music, accessing medical services, shopping online, and accessing government information, as shown in Figure 26. At least seven in 10 respondents do these activities occasionally or frequently. A home internet connection is less frequently used for other activities.

A small segment of respondents uses a home internet connection to access other key information and services. While 29 percent frequently use their home internet to access educational resources or for homework, another 44 percent never use it for this purpose. Subscribers are less likely to ever use their home internet to connect to a work computer (31%) or run a home-based business (11%).

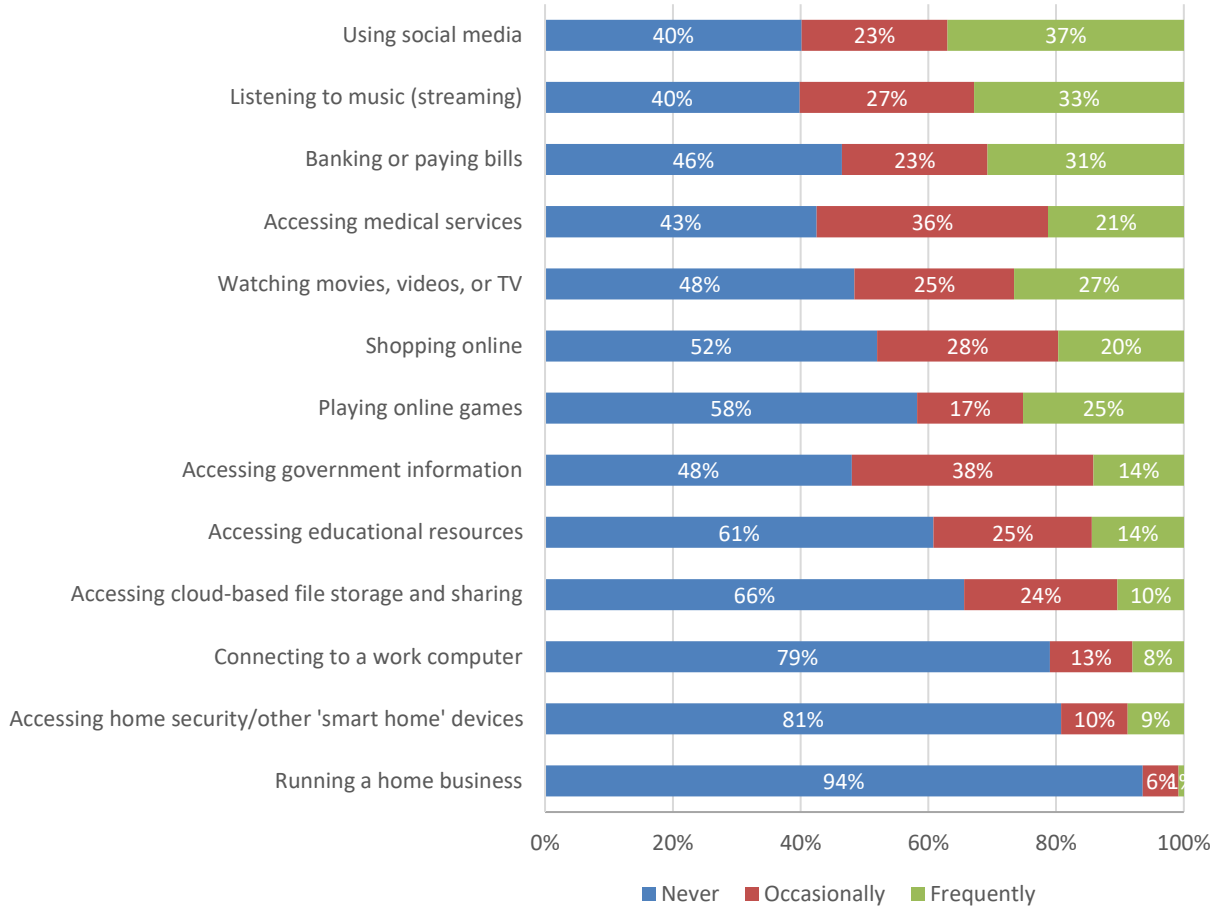
Figure 26: Home Internet Connection Use for Various Activities



Cellular/Mobile Connection

A smartphone is used most frequently for social media, streaming music, and banking or paying bills, as shown in Figure 27. More than one-half of respondents at least occasionally use a cellular/mobile connection to access medical services (57%) or government information (52%). A smaller segment of respondents uses a smartphone to ever access educational resources (39%), connect to a work computer (21%), or run a home business (6%).

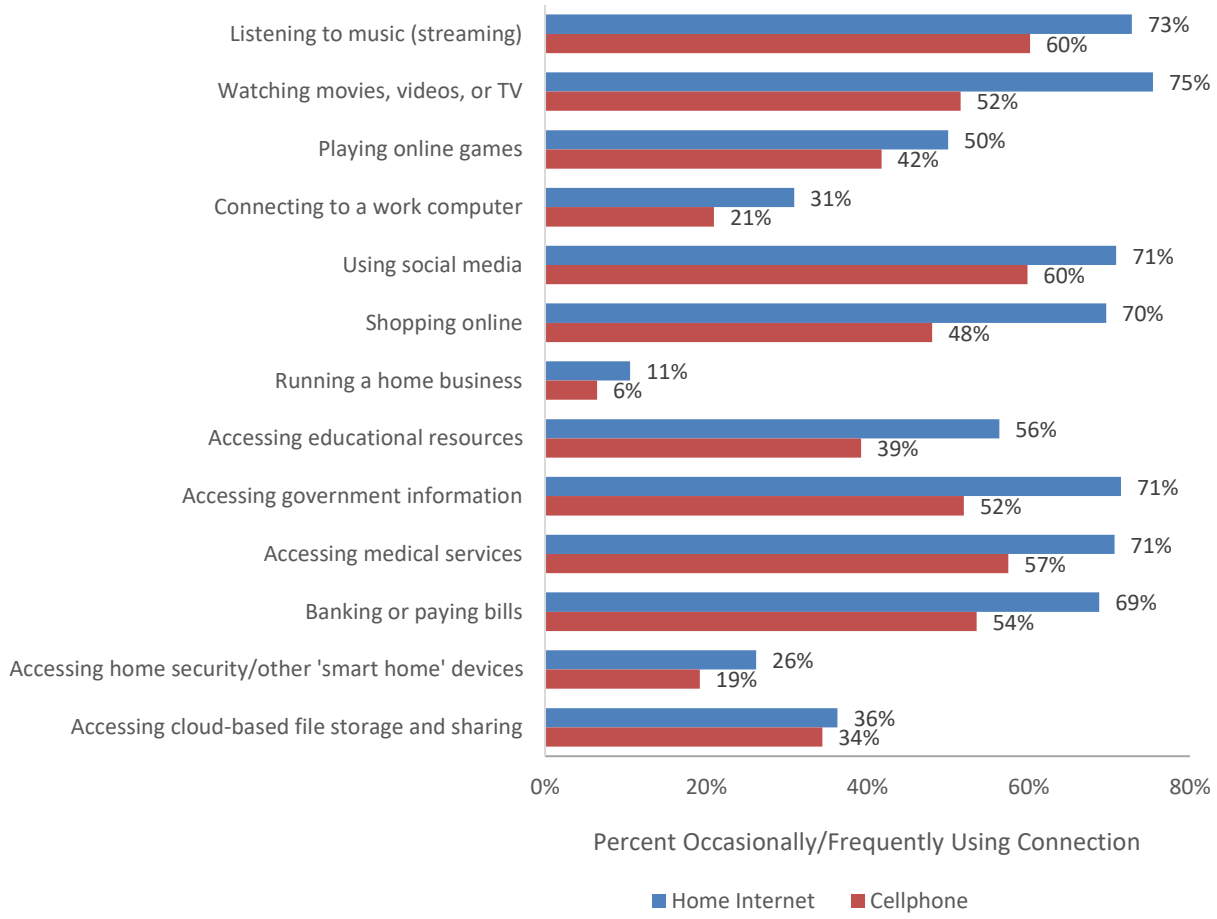
Figure 27: Cellular/Mobile Connection Use for Various Activities



Respondents are less likely to use a cellular/mobile connection than a home internet connection for most activities listed, with the exception of running a home business and accessing home security/automation which are not frequently accessed through either type of connection. Figure 28 compares the percentage of respondents by connection type who ever use their connection for various activities.

Internet subscribers are more likely to use a home internet connection to access key information and services (e.g. connecting to a work computer, accessing educational resources, accessing government information, or accessing medical services), but a sizeable segment of respondents do use a smartphone for these activities as discussed previously.

Figure 28: Internet Connection Ever Used for Various Activities by Connection Type



Internet Uses by Respondent Age

Respondents under age 55 are more likely than older respondents to ever use their *home internet connection* or *cellular/mobile connection* for some key activities, as illustrated in Table 5 and Table 6. Respondents under age 55 are more likely than older respondents to ever use their *home internet connection* for playing online games and connecting to a work computer in particular. Respondents ages 65+ were less likely than younger respondents to use a *cellular/mobile connection* for the various activities.

Table 5: Home Internet Connection Ever Used for Various Activities by Respondent Age

	< 55 years	55-64 years	65+ years
Listening to music (streaming)	83%	73%	61%
Watching movies, videos, or TV	87%	72%	64%
Playing online games	71%	42%	36%
Connecting to a work computer	49%	18%	21%
Using social media	83%	68%	63%
Shopping online	81%	65%	69%
Running a home business	13%	11%	4%
Accessing educational resources	68%	56%	43%
Accessing government information	80%	65%	71%
Accessing medical services	78%	70%	64%
Banking or paying bills	81%	64%	64%
Accessing home security/other 'smart home' devices	37%	20%	21%
Accessing cloud-based file storage and sharing	48%	31%	32%

Table 6: Cellular/Mobile Connection Ever Used for Various Activities by Respondent Age

	< 55 years	55-64 years	65+ years
Listening to music (streaming)	77%	65%	25%
Watching movies, videos, or TV	68%	46%	32%
Playing online games	65%	41%	7%
Connecting to a work computer	30%	21%	7%
Using social media	89%	54%	25%
Shopping online	74%	44%	14%
Running a home business	11%	7%	0%
Accessing educational resources	54%	43%	11%
Accessing government information	76%	48%	18%
Accessing medical services	80%	52%	29%
Banking or paying bills	77%	51%	25%
Accessing home security/other 'smart home' devices	38%	11%	4%
Accessing cloud-based file storage and sharing	53%	33%	11%

Internet Uses by Children in Household

As shown in Table 7, the few households with children in them (18 respondents) make occasional or frequent use of their internet connections for most key activities.

Almost all (96%) households with children (and that have internet service) ever use a home internet connection to access educational resources, including 56 percent who access it frequently. At the same time, 65 percent of households with children use a cellular/mobile connection for accessing educational resources, including 18 percent who do so frequently and 47 percent who do so occasionally.

Table 7: Internet/Smartphone Ever Used for Various Activities by Children in Household

	Home Internet Connection		Cellular/Mobile Connection	
	No Children in HH	Children in HH	No Children in HH	Children in HH
Listening to music (streaming)	68%	**100%**	56%	**88%**
Watching movies, videos, or TV	72%	**100%**	47%	**82%**
Playing online games	45%	**94%**	35%	**88%**
Connecting to a work computer	23%	**71%**	17%	**41%**
Using social media	67%	**100%**	56%	**94%**
Shopping online	68%	**89%**	45%	**76%**
Running a home business	8%	**18%**	6%	**12%**
Accessing educational resources	50%	**94%**	35%	**65%**
Accessing government information	73%	**67%**	50%	**65%**
Accessing medical services	69%	**83%**	54%	**76%**
Banking or paying bills	69%	**72%**	51%	**71%**
Accessing home security/other 'smart home' devices	25%	**44%**	17%	**44%**
Accessing cloud-based file storage and sharing	34%	**56%**	32%	**56%**

Internet Skills

Respondents were asked to indicate their level of agreement with various statements about their internet skills. Average rating scores are highlighted in Figure 29, while Figure 30 shows detailed responses.

Figure 29: Agreement with Statement About Internet Skills (Mean Ratings)

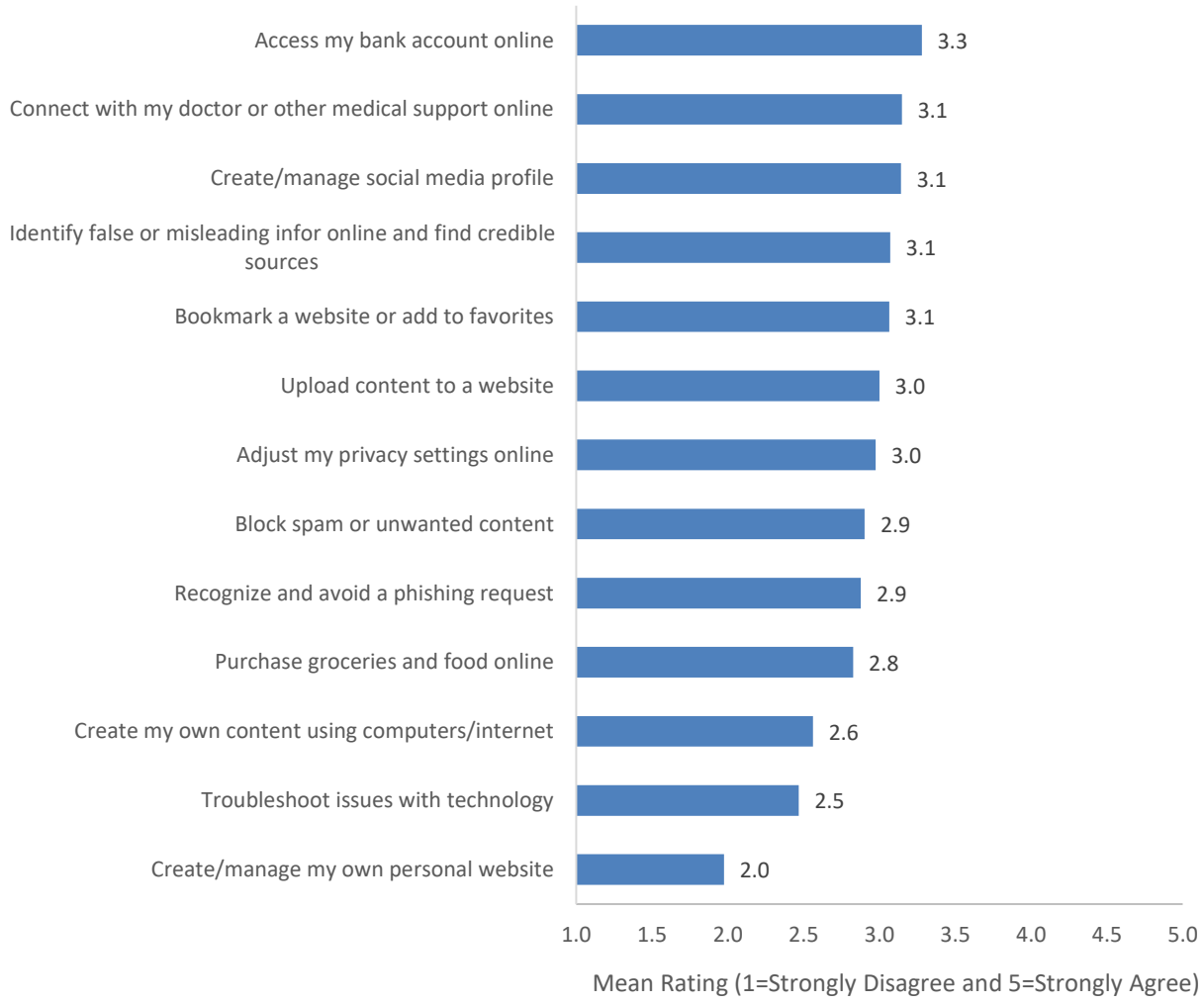
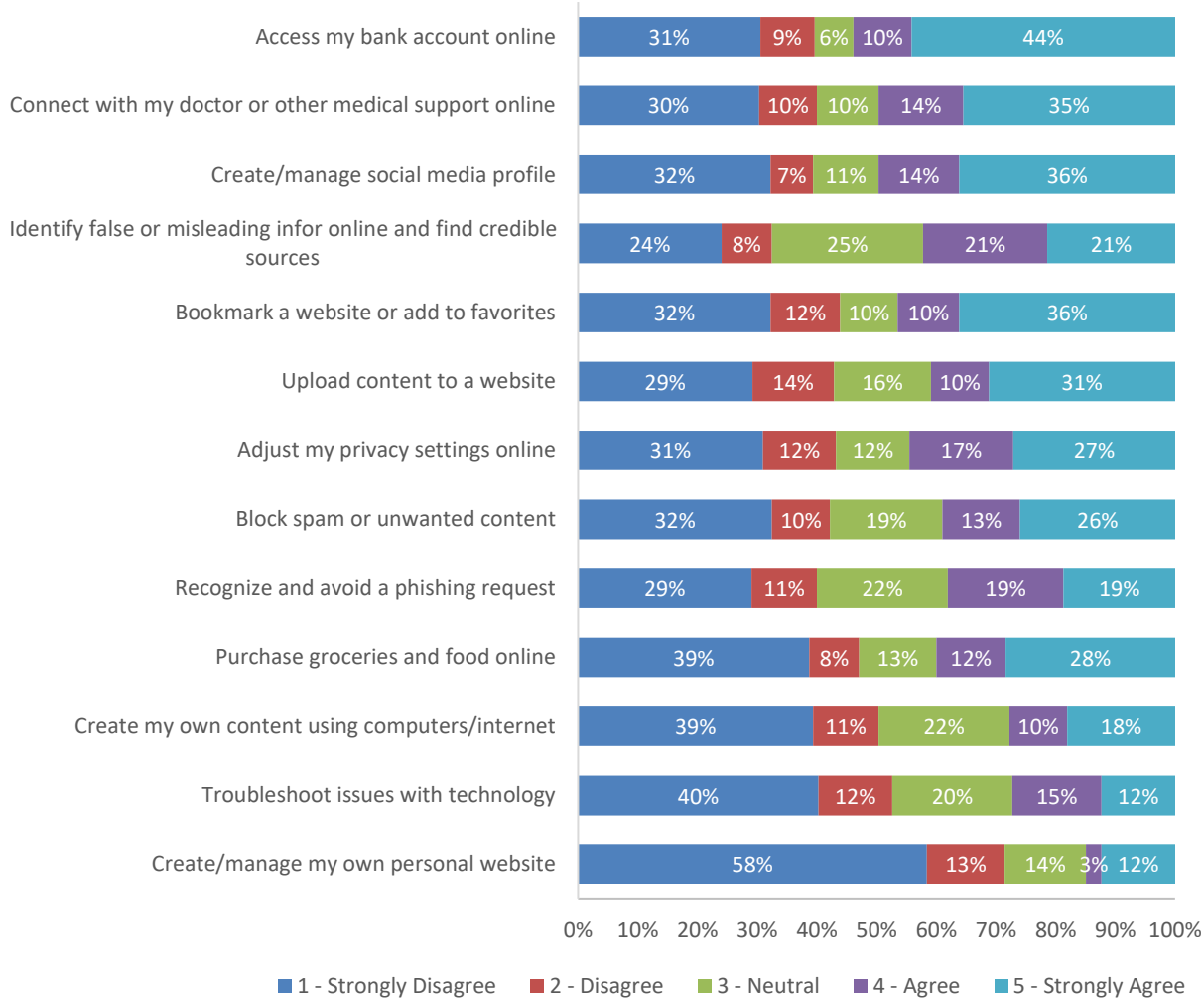


Figure 30: Agreement with Statement About Internet Skills



Overall, most internet subscribers were neutral on whether they know how to use the internet for most functions. They tended to split on strongly agreeing and strongly disagreeing with various skills.

Three in 10 respondents strongly disagreed that they know how to access their bank account online or connect with their doctor/medical support online. Approximately one-half of respondents disagreed or strongly disagreed that they can purchase groceries and food online, create their own content, or troubleshoot issues with technology. A majority (58%) of respondents strongly disagreed that they could create and manage their own personal website.

As may be expected, respondents without internet service were less likely than those with home internet to agree with statements about their internet skills (see Table 8). Still, those with internet access are only moderately skilled with the internet on average.

Table 8: Agreement with Statement About Internet Skills (Mean Ratings) by Connectivity

	Non-internet user		Internet user – below minimum criteria		Internet user – possible below minimum criteria		Internet user – above minimum criteria	
	Mean	Count	Mean	Count	Mean	Count	Mean	Count
I know how to upload content (such as videos, photos, music) to a website	1.8	21	3.3	38	3.3	24	3.2	62
I know how to block spam or unwanted content	1.9	22	3.2	38	3.3	24	3.1	62
I know how to adjust my privacy settings online, such as on Facebook or other sites	1.6	22	3.2	39	3.3	24	3.3	62
I know how to bookmark a website or add a website to my list of favorites	1.6	22	3.0	39	3.7	24	3.5	62
I know how to identify false or misleading information online and find credible sources of information	1.6	22	3.1	39	3.4	23	3.5	62
I know how to create and manage my own personal profile on Facebook or other social network site	1.7	22	3.4	39	3.3	24	3.5	62
I know how to create and manage my own personal website	1.2	22	2.1	39	2.3	24	2.0	61
I know how to recognize and avoid a phishing request	1.7	22	2.9	39	3.4	24	3.1	62
I know how to create my own content (such as videos, photos, music) using computers and the internet	1.4	22	2.9	39	2.8	24	2.8	62
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	1.7	22	3.6	39	3.5	24	3.7	61
I feel confident in my ability to troubleshoot issues with technology when they arise	1.5	22	2.4	39	2.9	24	2.7	61
I know how to purchase groceries and food online	1.7	22	2.8	39	3.7	24	3.0	62
I know how connect with my doctor or other medical support online	1.7	22	3.2	39	3.5	24	3.6	62

Similarly, respondents ages 55 and older were less likely to agree that they are skilled in various uses of the internet (see Table 9). Respondents under age 55 expressed some agreement with statements about their internet skills, particularly creating/managing social media profile, bookmarking a website, and accessing their bank account online. They were less likely to agree that they can troubleshoot issues with technology or create/manage their own personal website.

Table 9: Agreement with Statement About Internet Skills (Mean Ratings) by Respondent Age

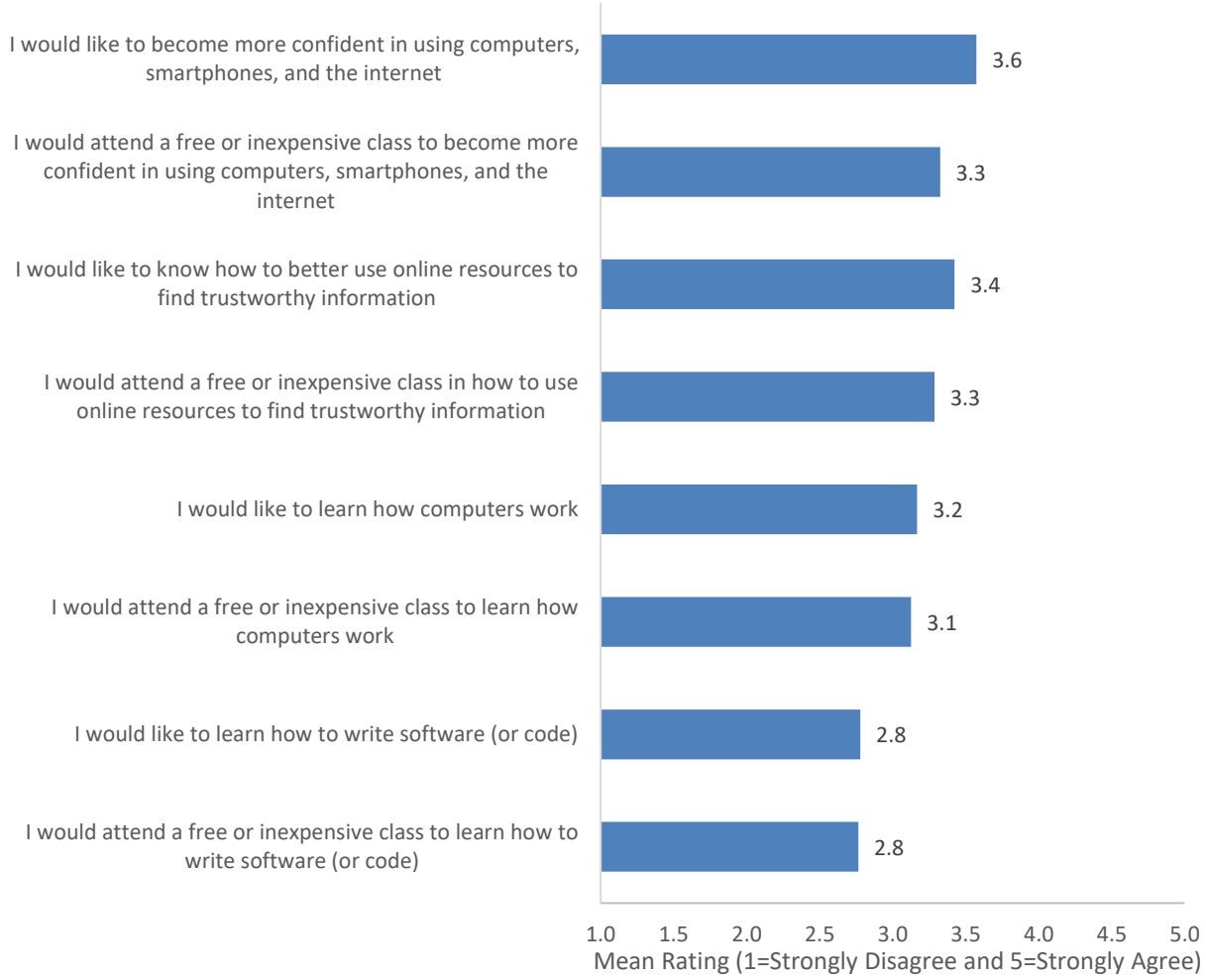
	< 55 years		55-64 years		65+ years	
	Mean	Count	Mean	Count	Mean	Count
I know how to upload content (such as videos, photos, music) to a website	3.6	53	3.1	56	2.2	38
I know how to block spam or unwanted content	3.6	53	2.9	55	2.2	39
I know how to adjust my privacy settings online, such as on Facebook or other sites	3.6	53	2.9	56	2.4	39
I know how to bookmark a website or add a website to my list of favorites	3.8	53	3.0	56	2.4	39
I know how to identify false or misleading information online and find credible sources of information	3.5	53	3.2	56	2.4	38
I know how to create and manage my own personal profile on Facebook or other social network site	4.0	53	3.1	56	2.3	39
I know how to create and manage my own personal website	2.3	53	1.9	55	1.6	39
I know how to recognize and avoid a phishing request	3.5	53	2.7	56	2.3	39
I know how to create my own content (such as videos, photos, music) using computers and the internet	3.2	53	2.5	56	1.9	39
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	3.8	53	3.2	55	2.8	39
I feel confident in my ability to troubleshoot issues with technology when they arise	2.8	53	2.5	56	2.0	39
I know how to purchase groceries and food online	3.2	53	2.8	56	2.5	39
I know how connect with my doctor or other medical support online	3.6	53	3.3	56	2.4	39

Computer and Internet Training

Respondents were also asked their level of agreement with various statements about receiving training related to computers and the internet. Average rating scores are highlighted in Figure 31, while Figure 32 shows detailed responses.

Overall, there is only slight to moderate interest in learning about or in attending a class about writing software/code. On average, there is moderate interest in becoming more confident in using computers, smartphones, and the internet, in learning how computers work, or in using online resources to find trustworthy information. However, there is a relatively sizable subsegment of respondents who strongly agreed that they would be interesting in training.

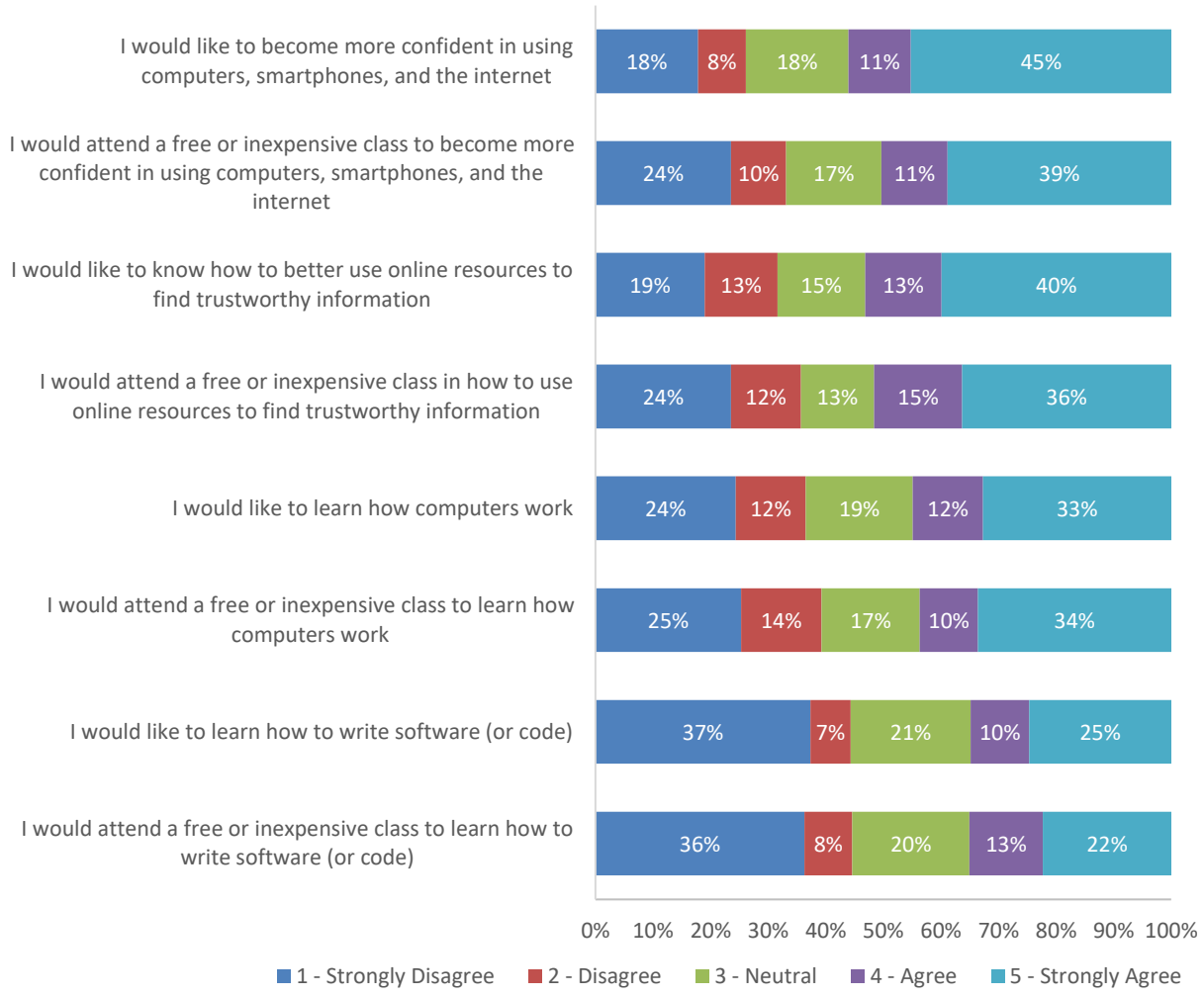
Figure 31: Agreement with Statements About Training Related to Computers and the Internet (Mean Ratings)



Specifically, 45 percent of respondents strongly agreed that they would like to become more confident in using computers and related technology, and 39 percent strongly agreed they would like to attend training.

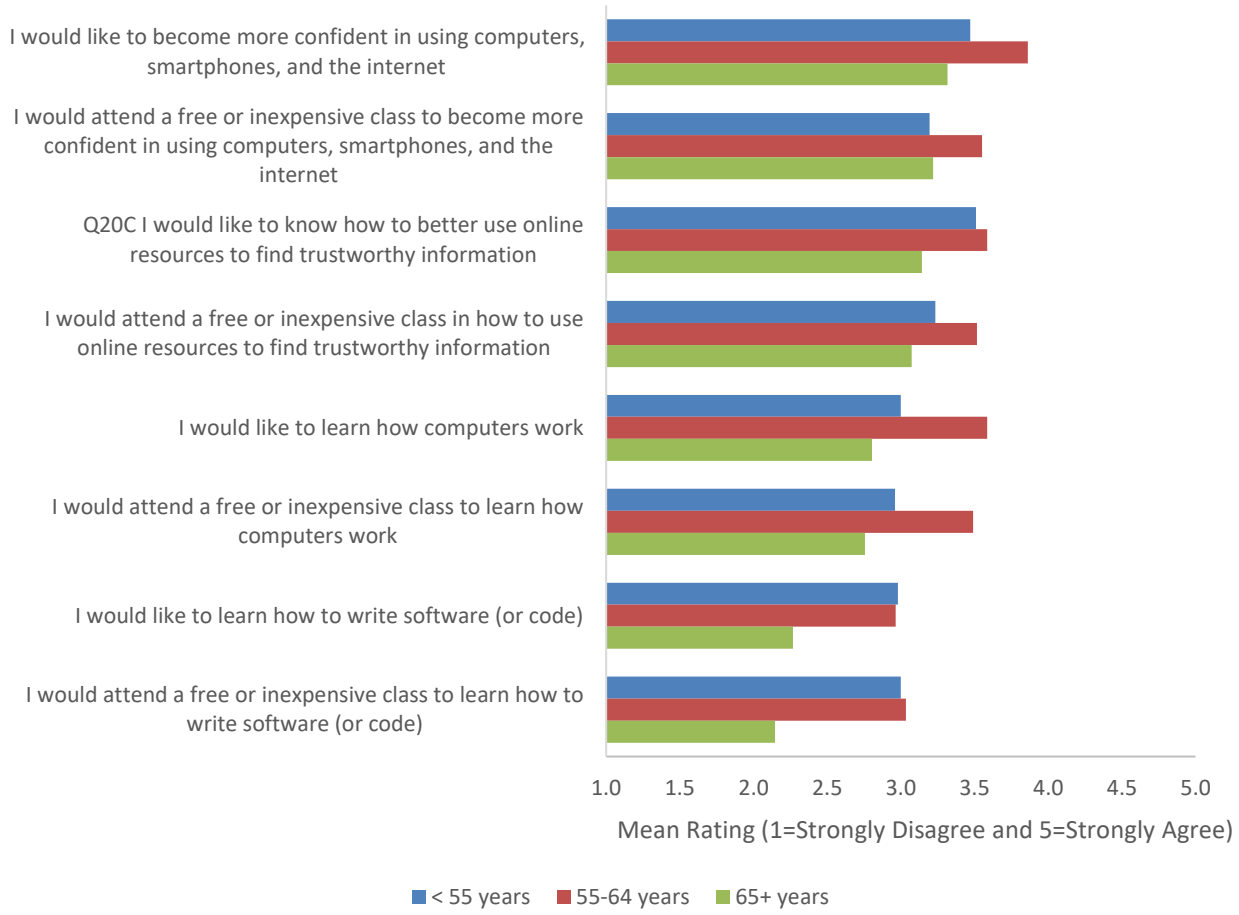
Similarly, 40 percent of respondents strongly agreed about wanting to know how to better use online resources to find trustworthy information, and 36 percent strongly agreed they are interested in training. Another one-third of respondents strongly agreed that they would like to learn how computers work, and one-third strongly agreed that they would attend a free or inexpensive class on this topic.

Figure 32: Agreement with Statements About Training Related to Computers and the Internet



Interest in training varies significantly by age of respondent. As illustrated in Figure 33, those under age 65 expressed greater interest in learning how to write software/code and in attending a free or inexpensive class about learning how to write software/code, compared with older respondents.

Figure 33: Agreement with Statements About Training by Respondent Age



Technology for Minor Children

Just 22 respondents said they are the parent, guardian, or primary caretaker of children or grandchildren under the age of 18. Respondents under age 55, black respondents, females, and those without a disability are more likely than their counterparts to a be a parent, guardian, or caretaker (see Figure 34 - Figure 37).

Figure 34: Have Minor Children by Age

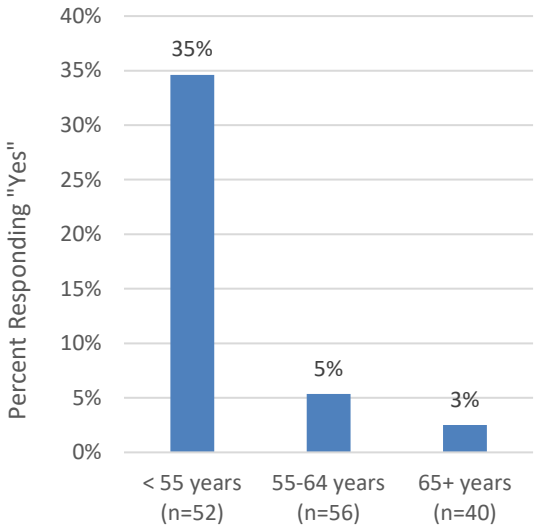


Figure 35: Have Minor Children by Race

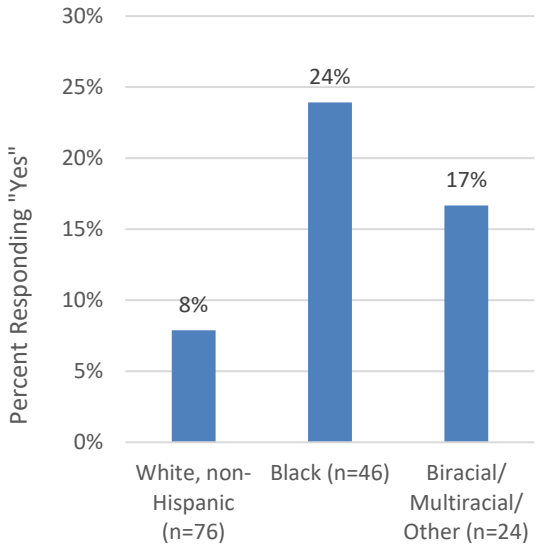


Figure 36: Have Minor Children by Gender

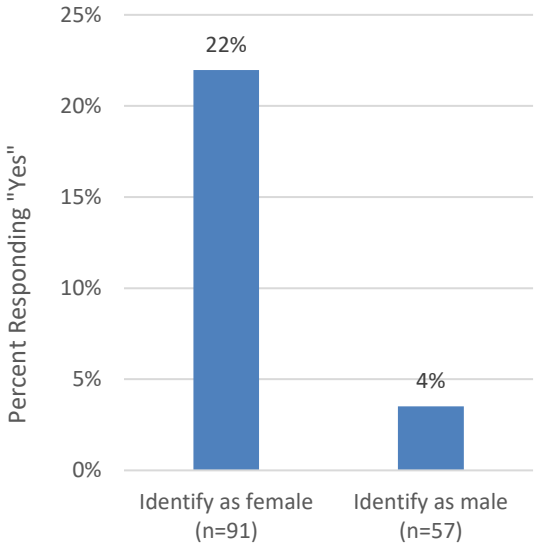
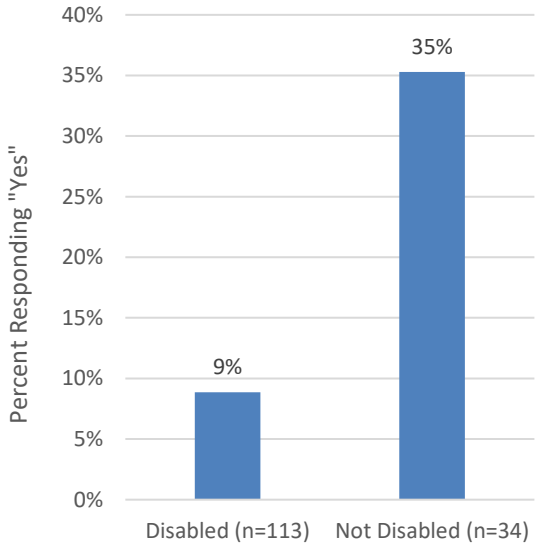


Figure 37: Have Minor Children by Disability



Use of Technology

Respondents who are the parent, legal guardian, or primary caretaker for any child or grandchild under the age of 18 were asked their level of agreement with statements about how their minor child is able to make beneficial use of technology. Average rating scores are highlighted in Figure 38, while Figure 39 shows detailed responses.

Figure 38: Agreement with Statements About Minor Children's Use of Technology (Mean Ratings)

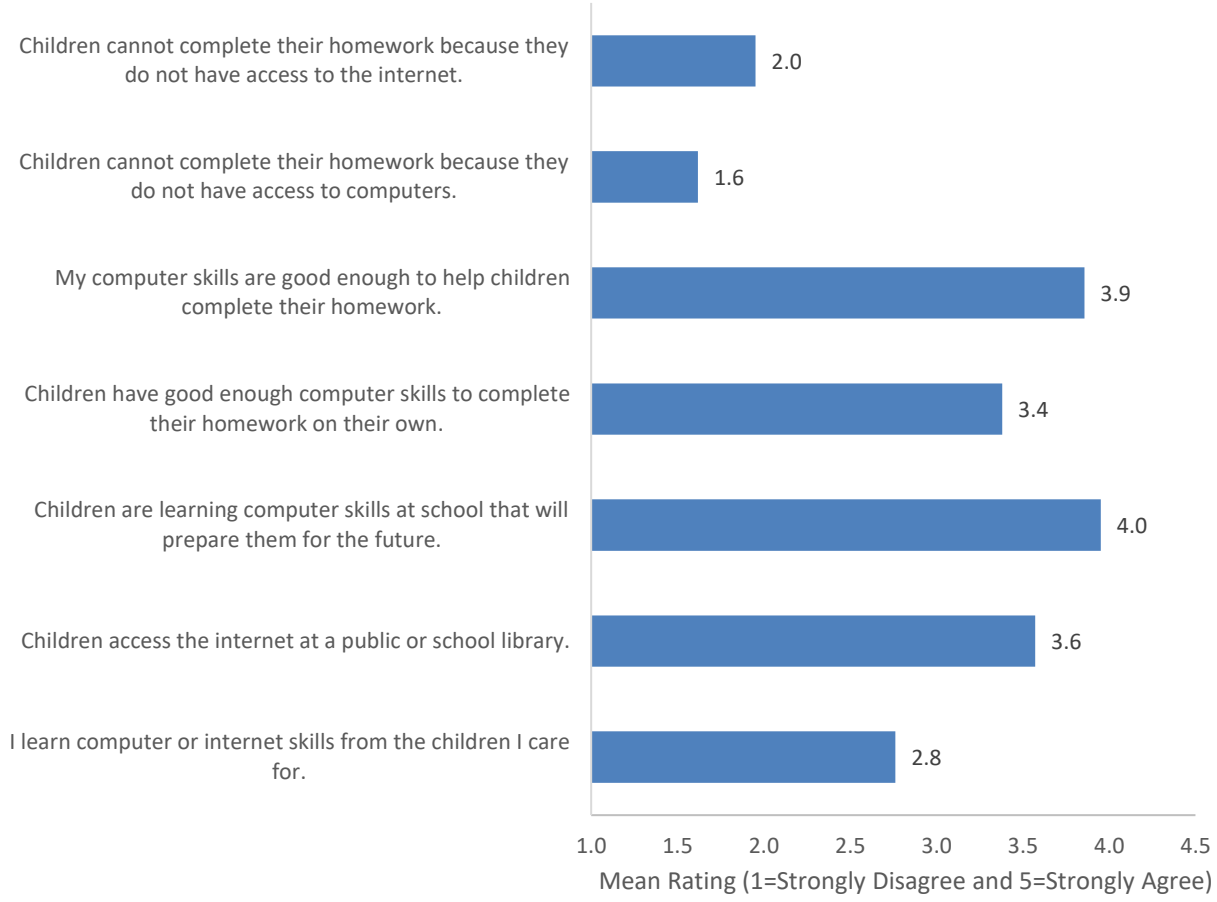
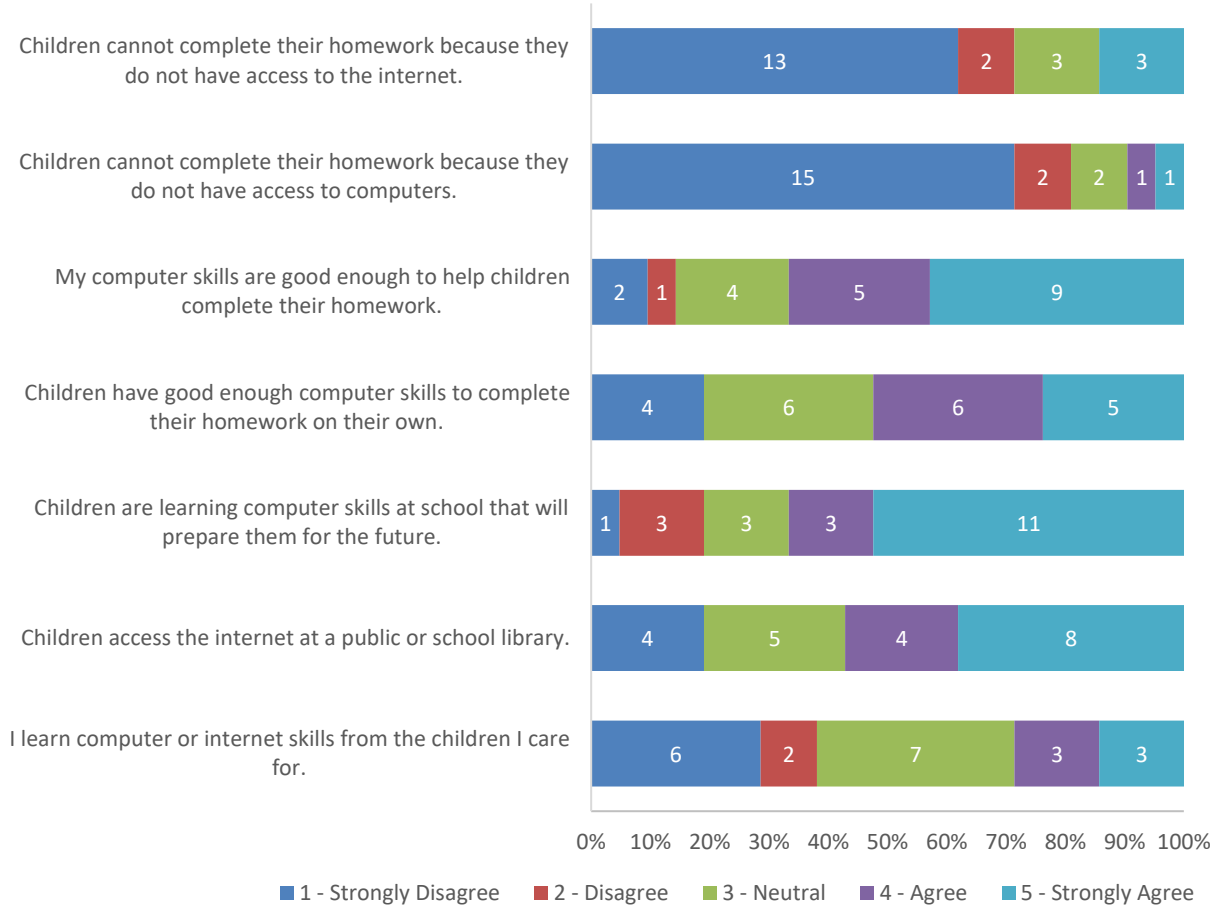


Figure 39: Agreement with Statements About Minor Children's Use of Technology



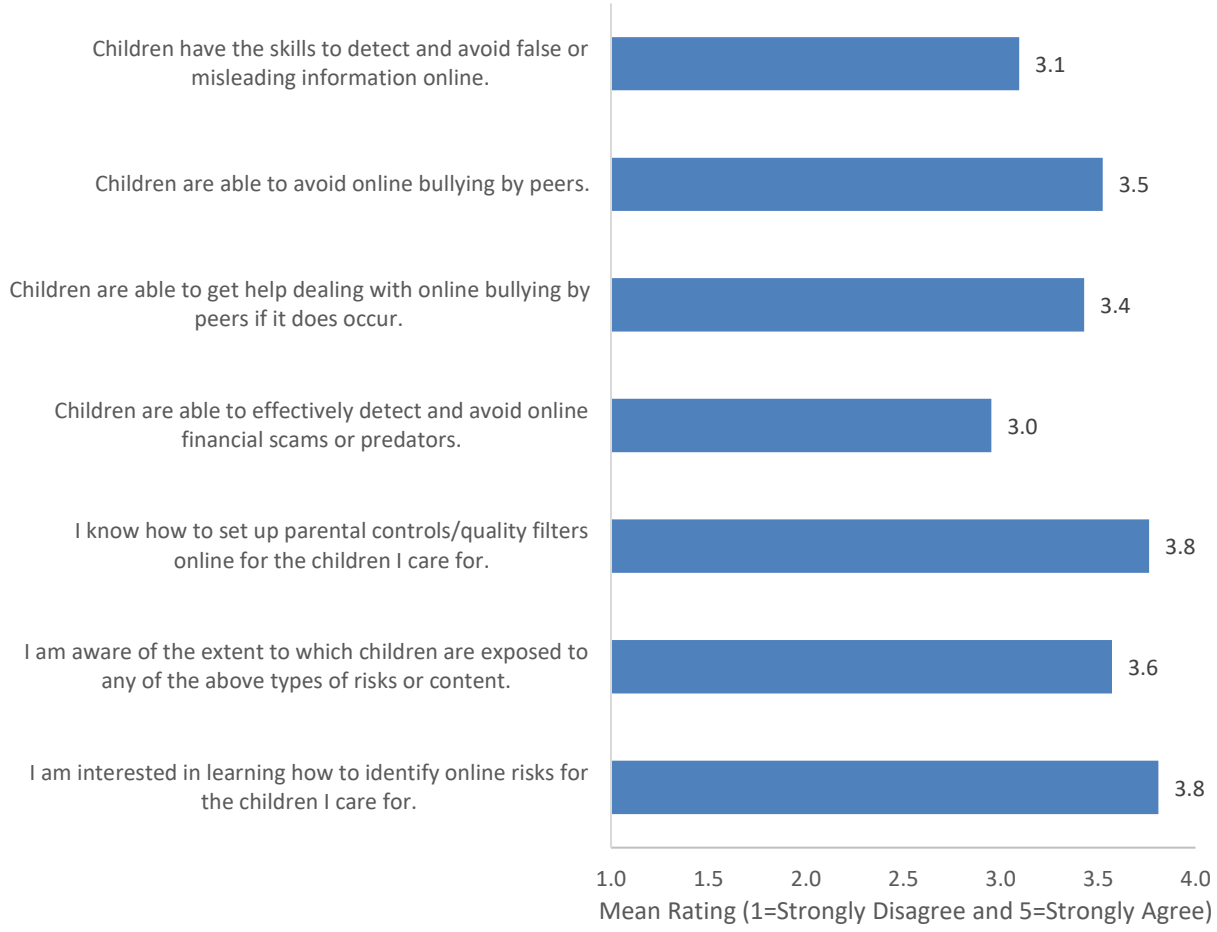
Most respondents strongly disagreed that their minor children cannot complete their homework because they do not have access to the internet (13 of 21) or computers (15 of 21). Eleven of 21 respondents strongly agreed that their children are learning computer skills at school that will prepare them for the future. Nine of 21 respondents strongly agreed that their computer skills are good enough to help their children complete their homework, but just five of 21 respondents strongly agreed that their children have good enough computer skills to complete their homework on their own. Another six respondents agreed, six were neutral, and four disagreed that their children have sufficient computer skills for homework.

Minimize Online Risks

Respondents with minor children were also asked their level of agreement with statements about the skills they or their children possess to avoid or minimize online risks. Average rating scores are highlighted in Figure 40, while Figure 41 shows detailed responses.

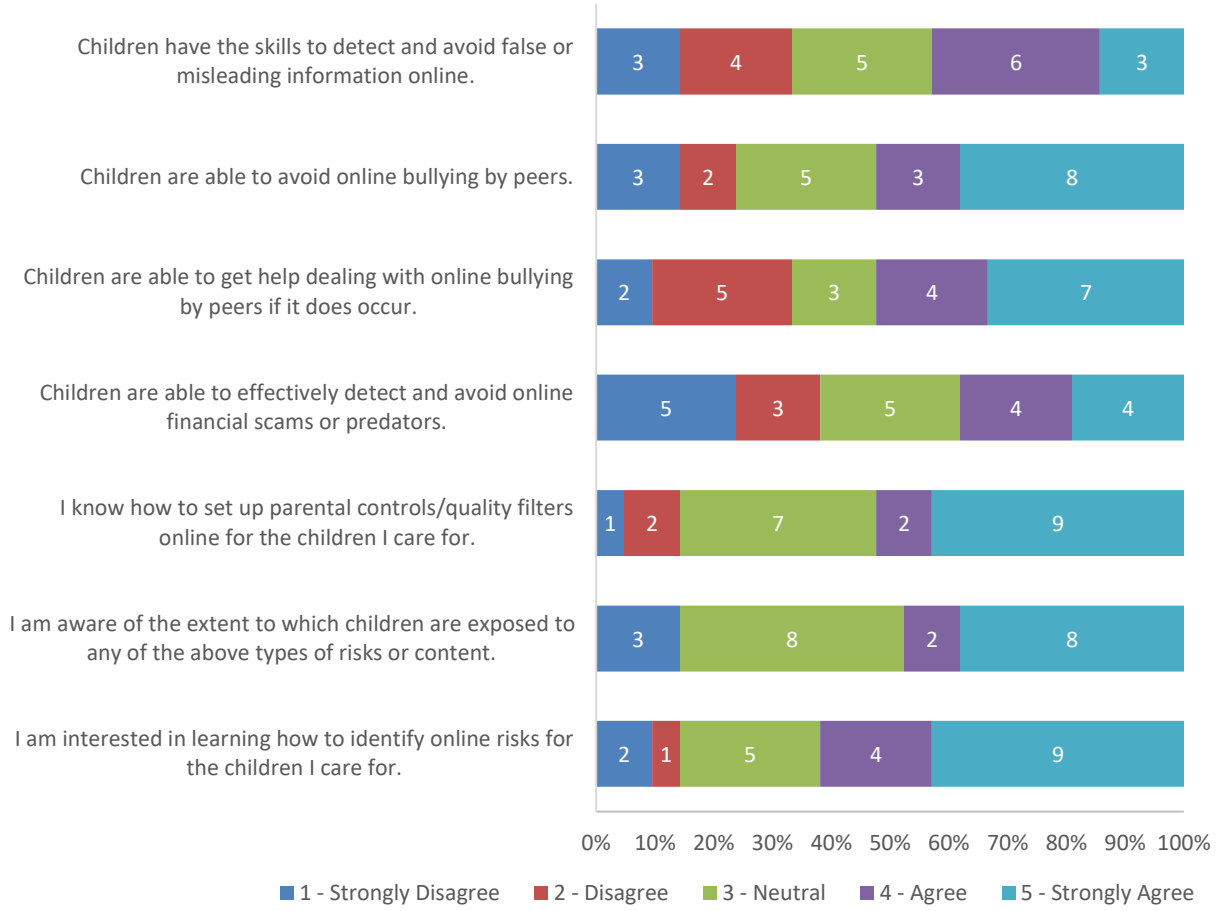
Although most households with minor children do have access to the internet and computers, respondents agree that there are some risks associated with internet use. Overall, respondents were neutral or somewhat agreed that they are aware of the extent to which children are exposed to online risk, that they are interested in learning how to identify risks for the children in their care, or that they know how to set up parental controls or filters online.

Figure 40: Agreement with Statements About Minimizing Online Risks (Mean Ratings)



Eleven of 21 respondents agreed or strongly agreed that their children are able to avoid online bullying by peers (five respondents disagree or strongly disagreed). Eleven of 21 agreed or strongly agreed that their children know how to get help for online bullying (seven respondents disagreed or strongly disagreed). Respondents were less likely to agree that their children have the skills to identify false or misleading information or that they can recognize and avoid online financial scams or predators.

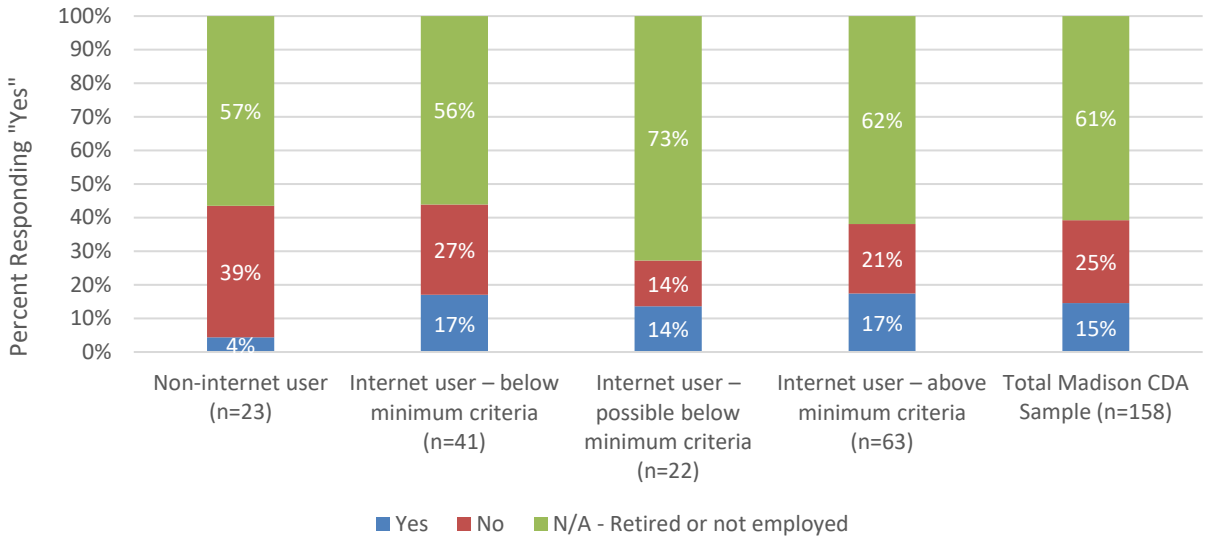
Figure 41: Agreement with Statements About Minimizing Online Risks



Internet Use for Jobs/Careers

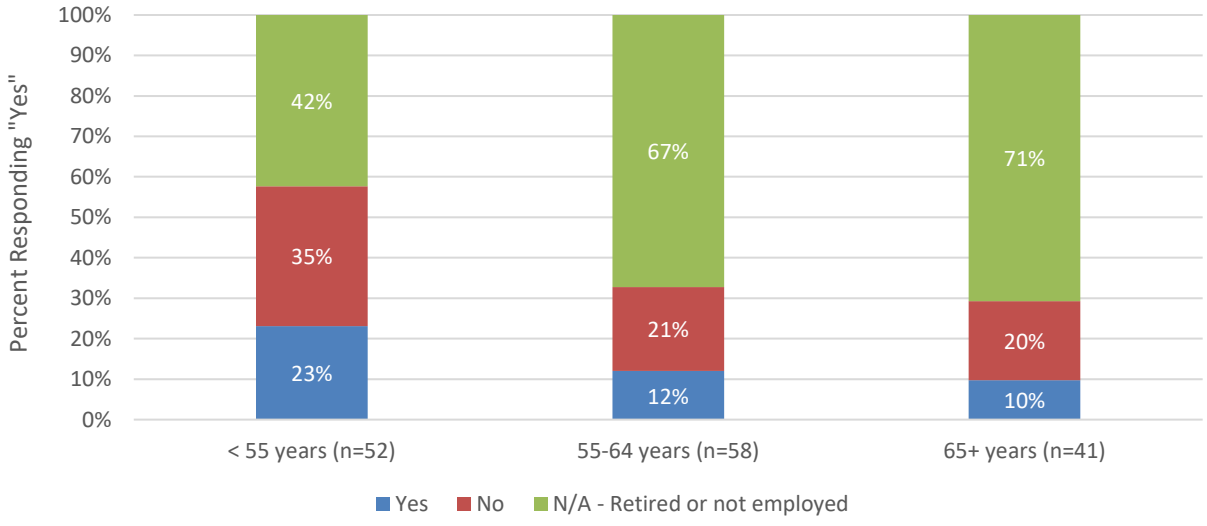
Just 15 percent of respondents said they have a job that requires them to have internet access at home. Six in 10 respondents are retired or not employed. Seventeen percent of internet users with below minimum criteria service said they need home internet access for a job (see Figure 42).

Figure 42: Job Requires Homes Internet Access by Connectivity



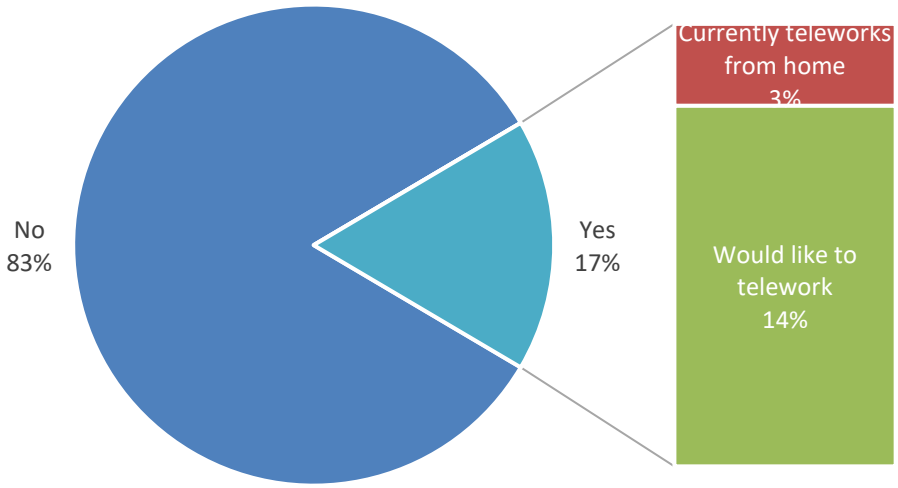
Need for internet access for a job is highly associated with respondent age, as may be expected, with the majority of those ages 55+ retired or not employed (see Figure 43). Almost one-fourth (23%) of respondents under age 55 have a job that requires internet access.

Figure 43: Job Requires Homes Internet Access by Respondent Age



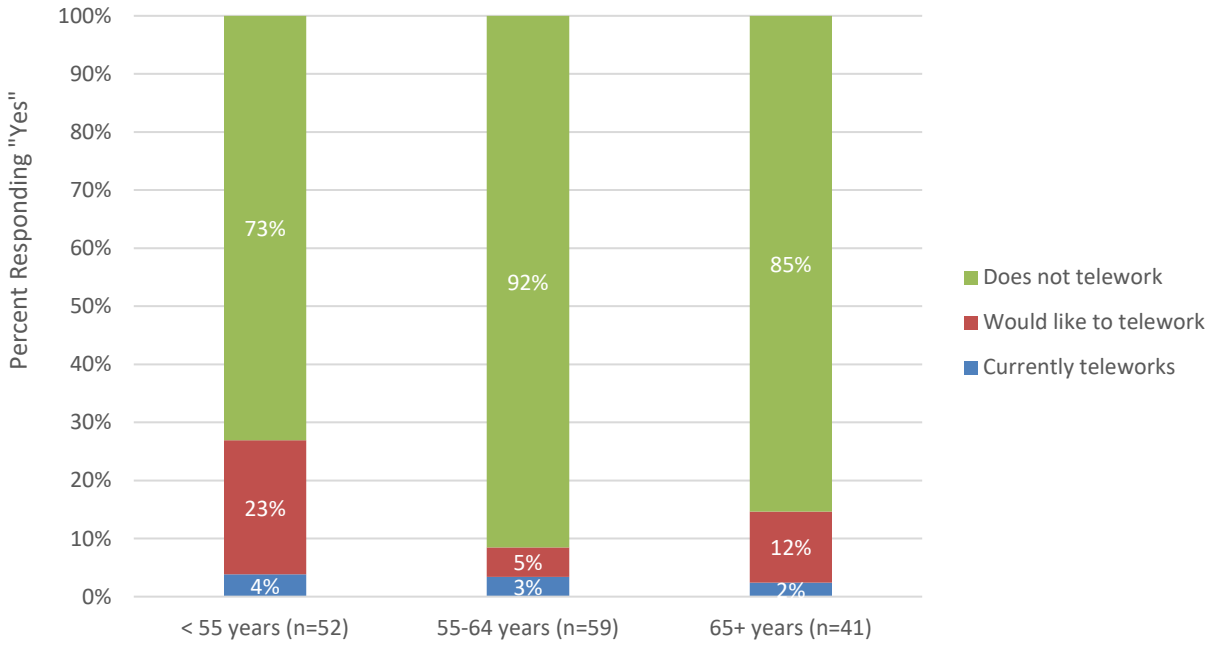
As shown in Figure 44 below, just three percent of respondents indicated that someone in their household already teleworks from home, and another 14 percent would like to telework.

Figure 44: Household Member Teleworking



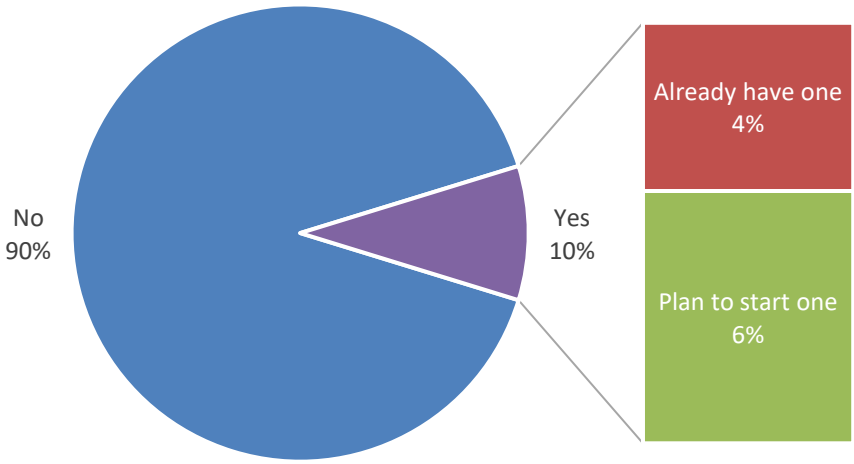
Respondents under age 55 are more likely than older respondents to have a household member who would like to telework (see Figure 45).

Figure 45: Teleworking Status by Respondent Age



One in 10 respondents either have a home-based business or are planning to start one within the next three years, as illustrated in Figure 46. No statistically significant differences by demographics were found.

Figure 46: Own or Plan to Start a Home-Based Business



A high-speed data or internet connection is extremely important for most of those who telework or would like to telework (64 percent) and for those with a planned or existing home-based business (60 percent), as shown in Figure 47 and Figure 48. Intuitively, those who do not telework or have a planned/existing home-based business find the need for high-speed internet for these aspects to be less important.

Figure 47: Importance of High-Speed Internet for Teleworking

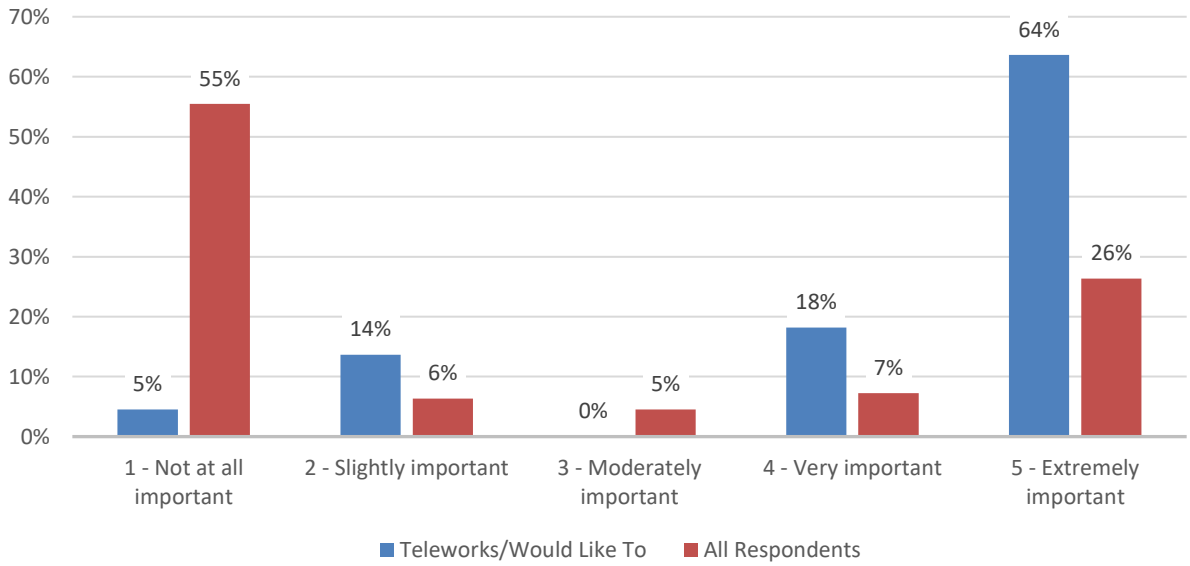
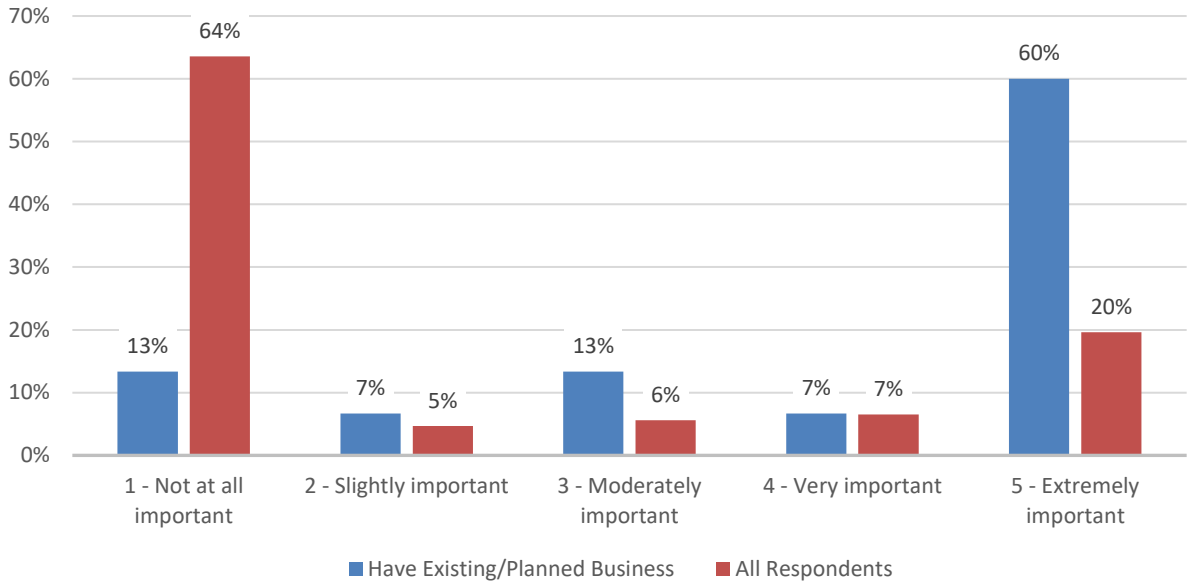


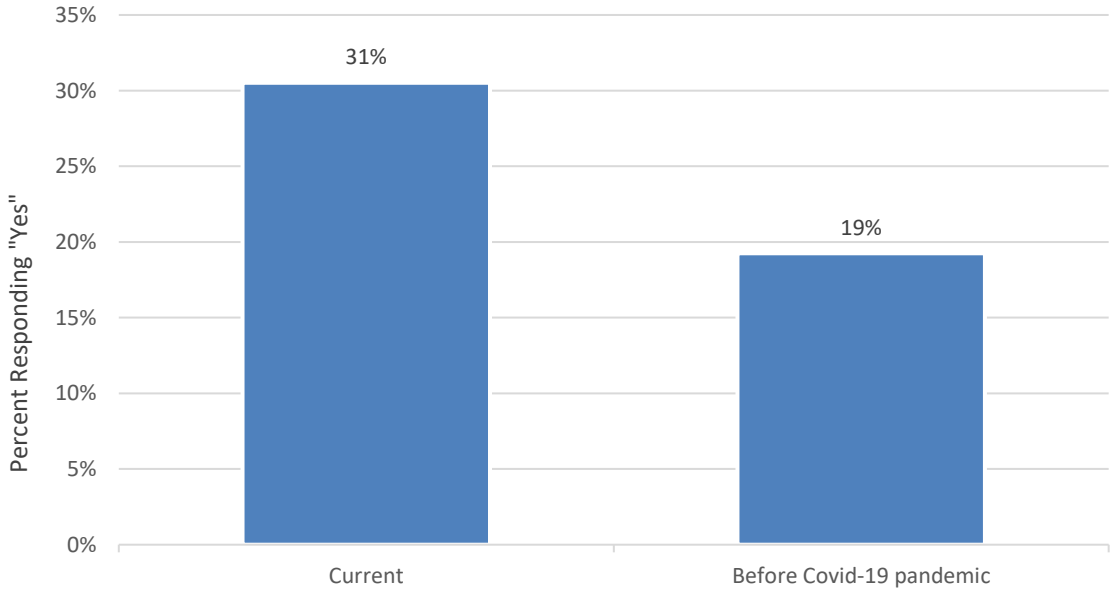
Figure 48: Importance of High-Speed Internet for Home-Based Business



Internet Use for Education

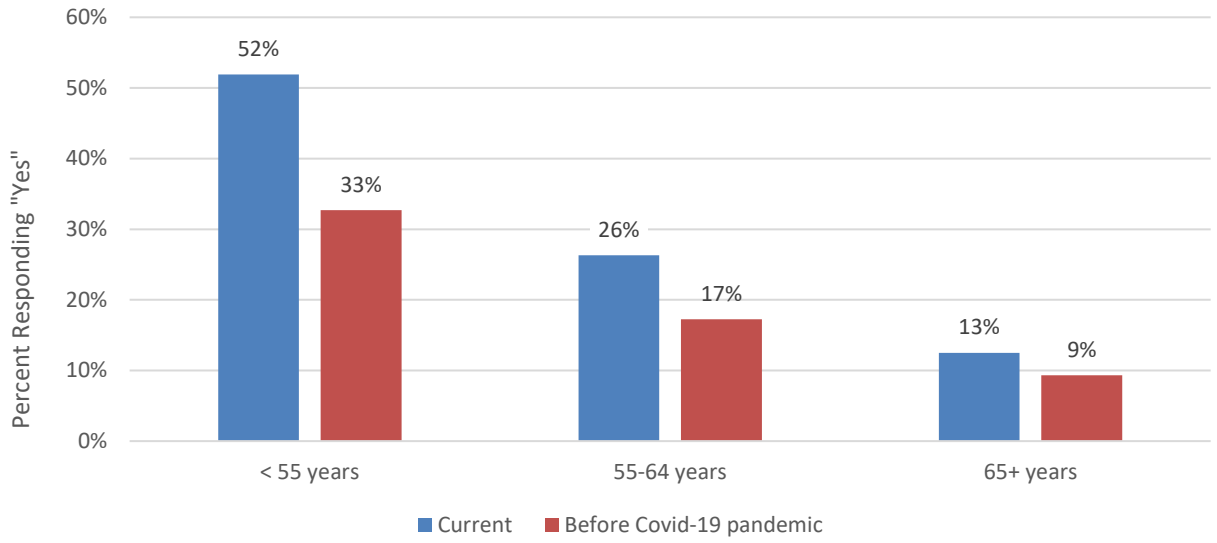
Respondents were asked if they or a household member use an internet connection for educational purposes, such as completing assignments, research, or study related to coursework or formal education. Overall, 31 percent of households have a member who uses the internet for educational reasons, and 19 percent have a member who used the internet for educational purposes before the Covid-19 pandemic (see Figure 49).

Figure 49: Use of Internet for Educational Purposes



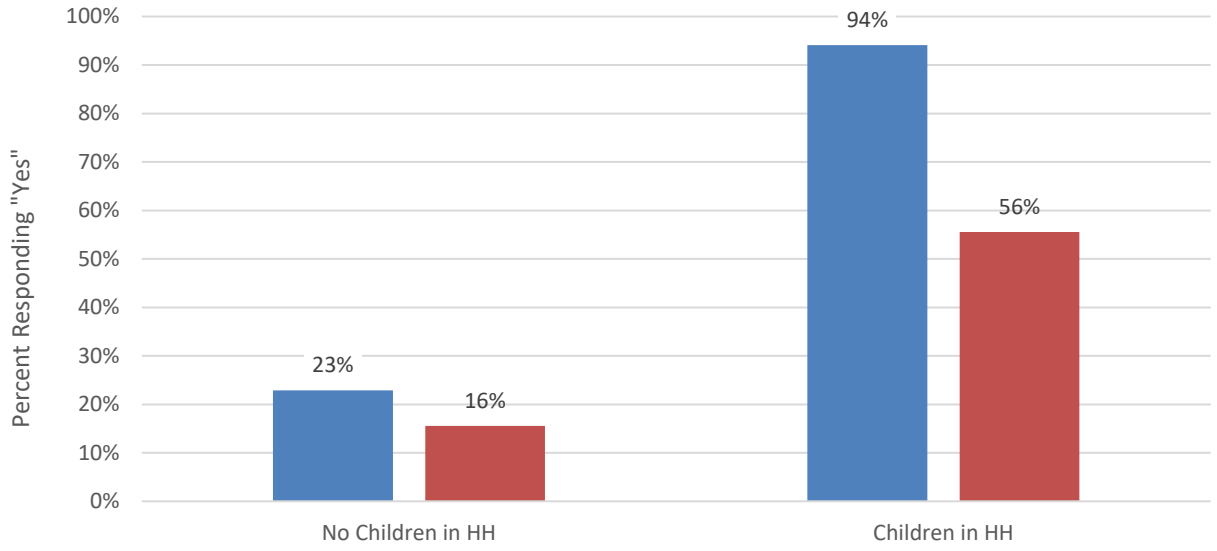
Household use of the internet for educational purposes is higher for those under age 55 years. More than one-half (52%) of respondents under age 55 have a household member who currently uses the internet for education, and 33 percent have a household member who used the internet for educational purposes prior to the Covid-19 pandemic (see Figure 50).

Figure 50: Use of Internet for Educational Purposes by Respondent Age



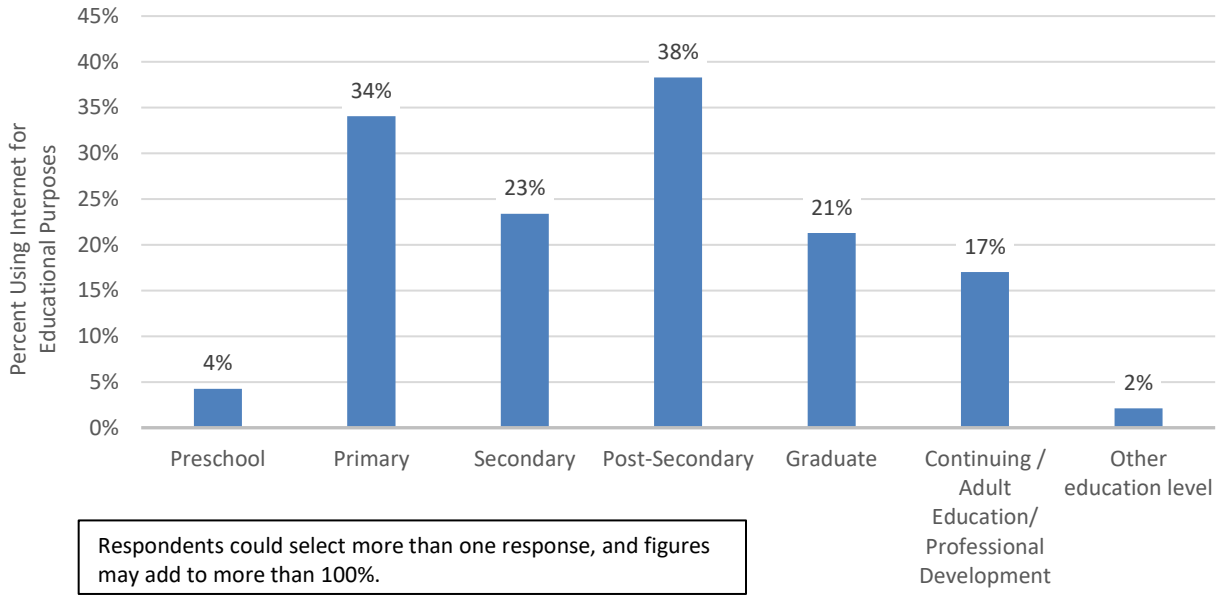
Most respondents with children in the household use the internet for educational purposes (17 out of 18 respondents), as shown in Figure 51.

Figure 51: Use of Internet for Educational Purposes by Children in Household



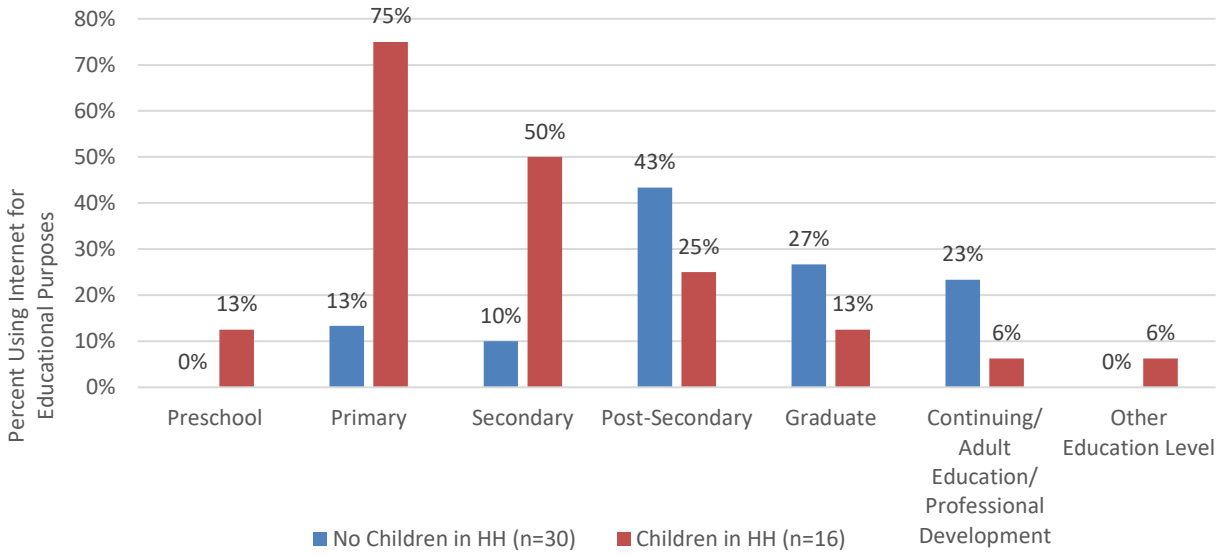
Respondents use the internet across a range of education levels. Among those who use the internet for educational purposes, 34 percent use it for primary education and 38 percent use it for post-secondary education (see Figure 52).

Figure 52: Education Level for Which Internet Connection Is Used



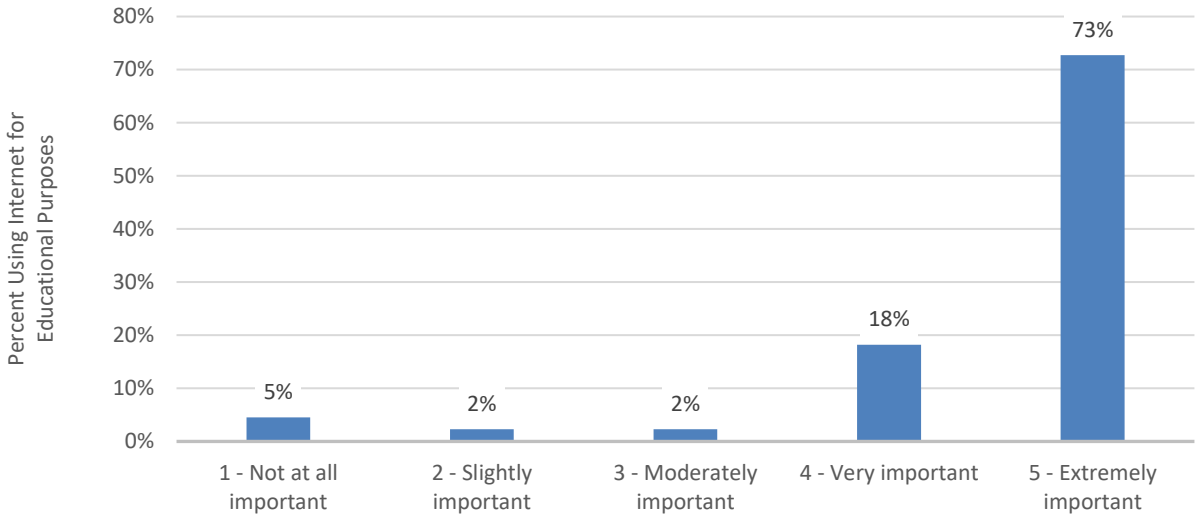
Use of the internet for educational purposes is related to presence of children in the household, as might be expected. Those with children in the home are more likely to use the internet for primary and secondary education (see Figure 53).

Figure 53: Education Level for Which Internet Connection Is Used by Children in Household



Thirty-two of 44 (73%) respondents who use the internet for educational purposes said a high-speed internet connection is extremely important for their education needs (see Figure 54).

Figure 54: Importance of High-Speed Internet for Education Needs



Respondent Opinions

Respondents were asked their opinion of the current broadband market. The average agreement with broadband availability statements are shown Figure 55, while detailed responses are shown in Figure 56.

Overall, respondents moderately agreed with most statements. Agreement was somewhat lower for the market offering high-speed internet at prices they can afford (46% strongly disagree) and for importance of high-speed internet service for respondents' work/job (52% strongly disagree). Just 19 percent strongly agreed, and 18 percent agreed, that they receive high-quality customer service from their internet provider.

Approximately 45 percent of respondents agreed or strongly agreed that the availability of high-speed internet is a factor they would consider when choosing where to live or when determining to start a home-based business. One-third of respondents strongly agreed that high-speed internet service is important for their family's educational opportunities, but another 36 percent strongly disagreed.

Just 17 percent of respondents agreed or strongly agreed that the market currently provides high-speed internet at prices they can afford, while 62 percent disagreed or strongly disagreed, suggesting a need for affordable broadband internet among a large segment of respondents. Just 22 percent of respondents are willing to pay a premium for access to high-speed internet, while 35 percent strongly disagreed and 17 percent disagreed.

Figure 55: Opinions About the Broadband Internet Market (Mean Ratings)

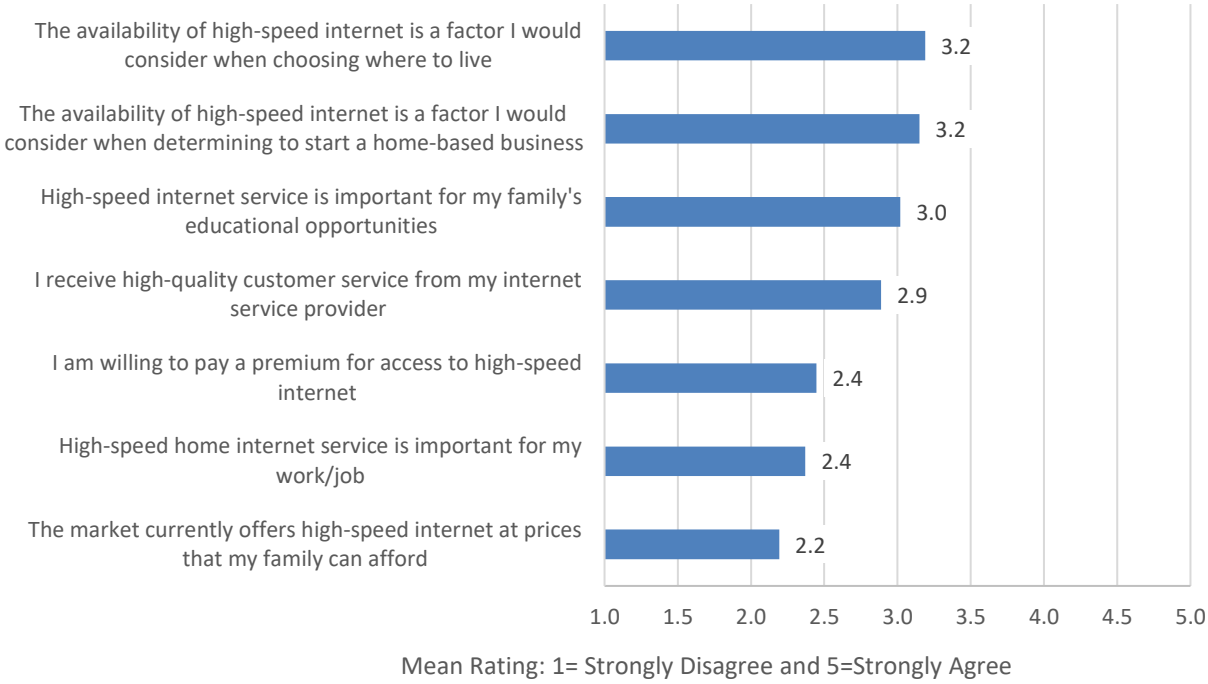
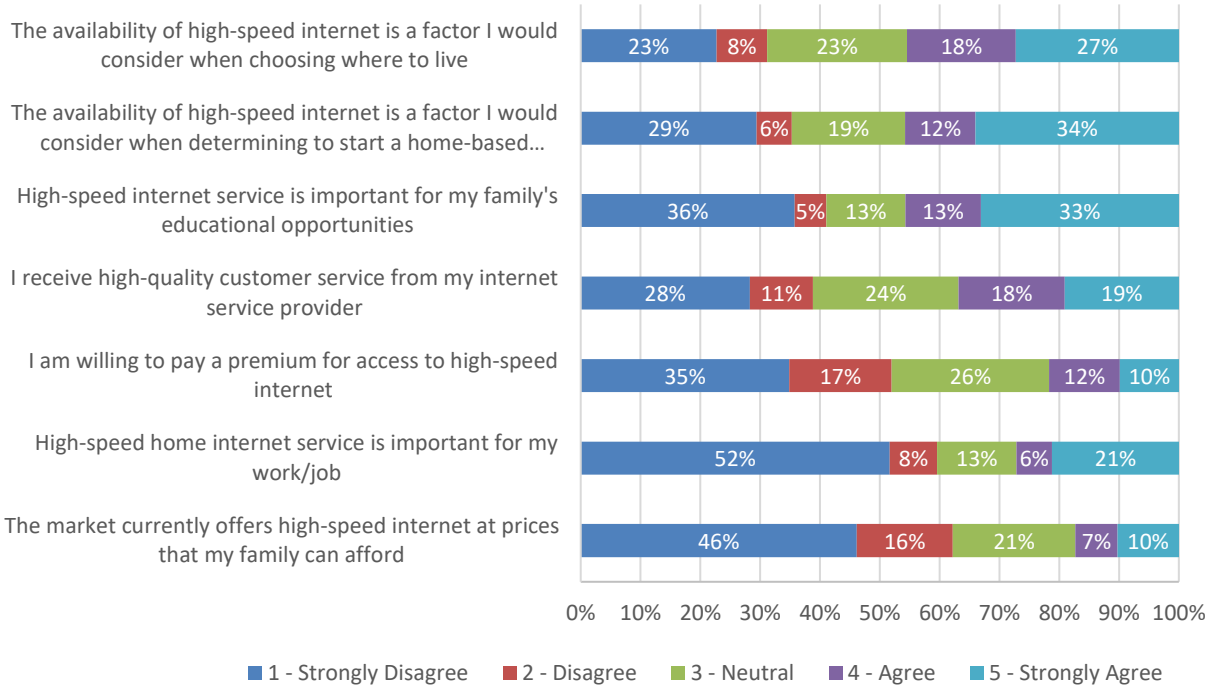
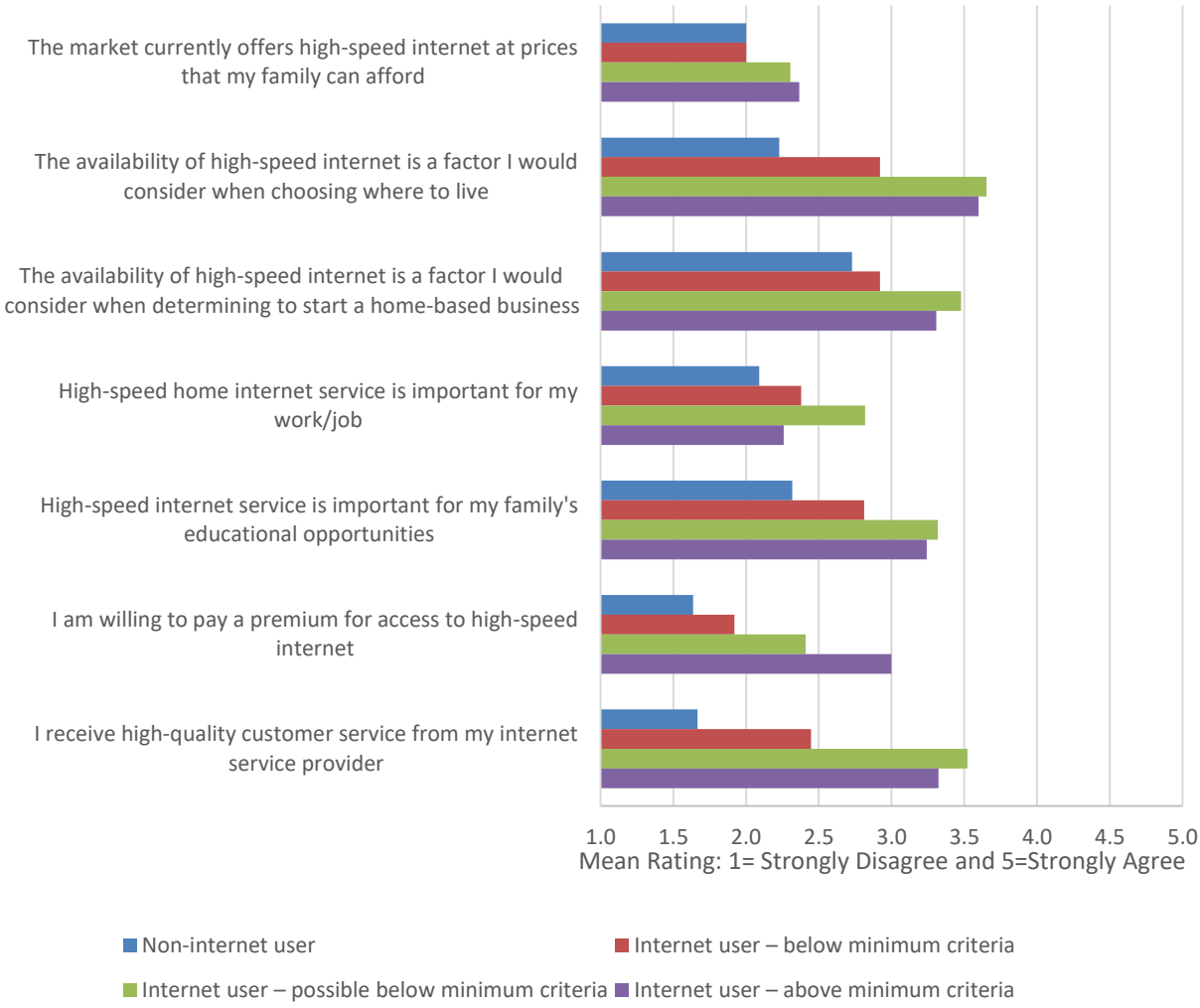


Figure 56: Opinions About the Broadband Internet Market



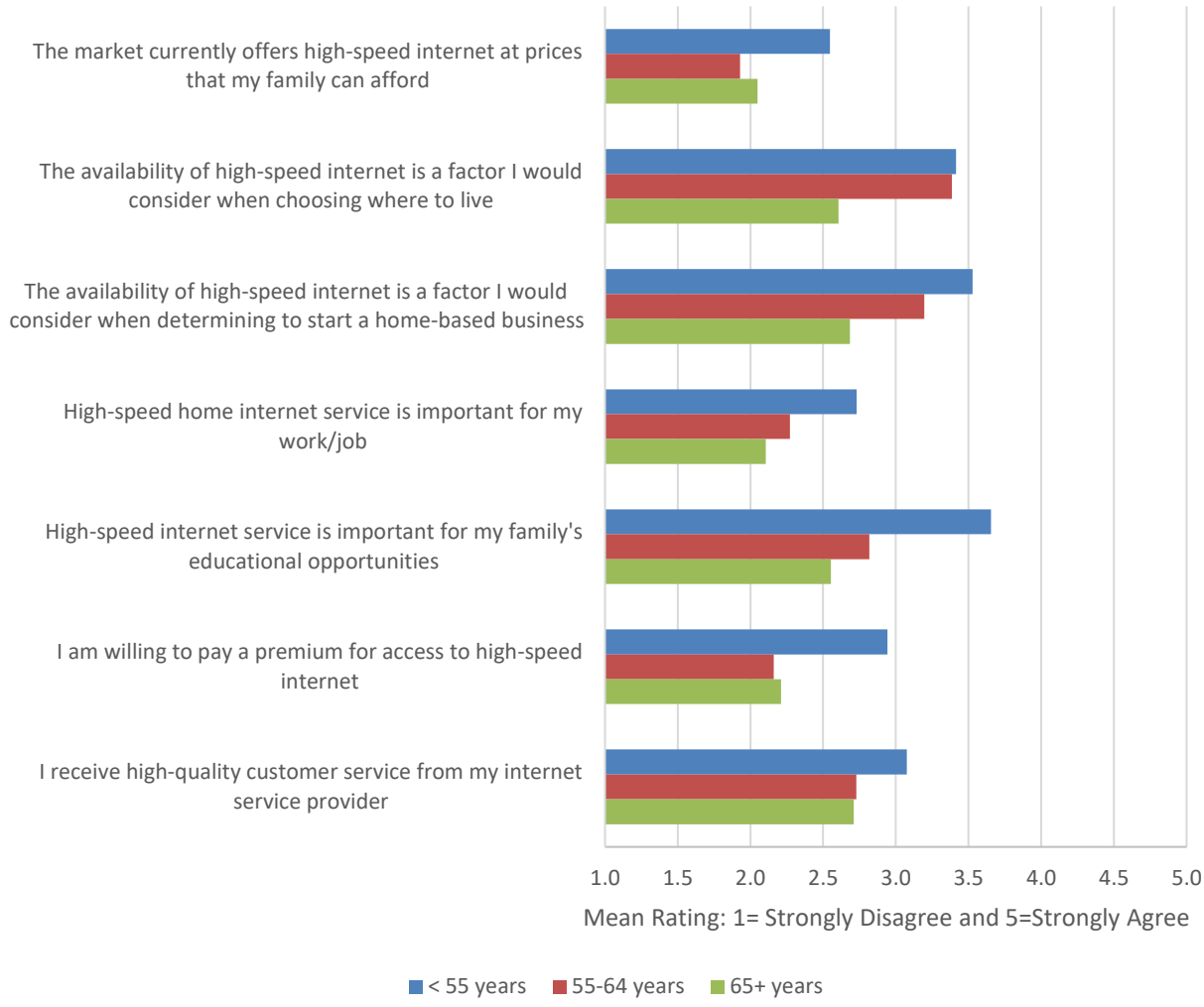
Respondents with no internet service or below criteria internet service (i.e. cellular/mobile, satellite, or dial-up) were less likely than those with higher speed connections to agree that they receive high-quality customer service and that they would be willing to pay a premium for access to high-speed internet (see Figure 57).

Figure 57: Opinions About Broadband Internet by Connectivity



As illustrated in Figure 58, respondents under age 55 were more likely than older respondents to agree that the availability of high-speed internet is factor they would consider when choosing where to live or when starting a home-based businesses. They were also more likely to agree that high-speed internet service is important for their family's educational opportunities and that they would be willing to pay a premium for access to high-speed internet.

Figure 58: Opinions About Broadband Internet by Respondent Age



Willingness to Purchase High-Speed Internet Service

Respondents were asked if they would be willing to purchase extremely fast internet service (defined as 1 Gbps) for various price levels. The mean willingness to purchase across this array of questions is illustrated in Figure 59, while detailed responses are illustrated in Figure 60.

Figure 59: Willingness to Purchase 1 Gbps Internet at Price Levels (Mean Ratings)

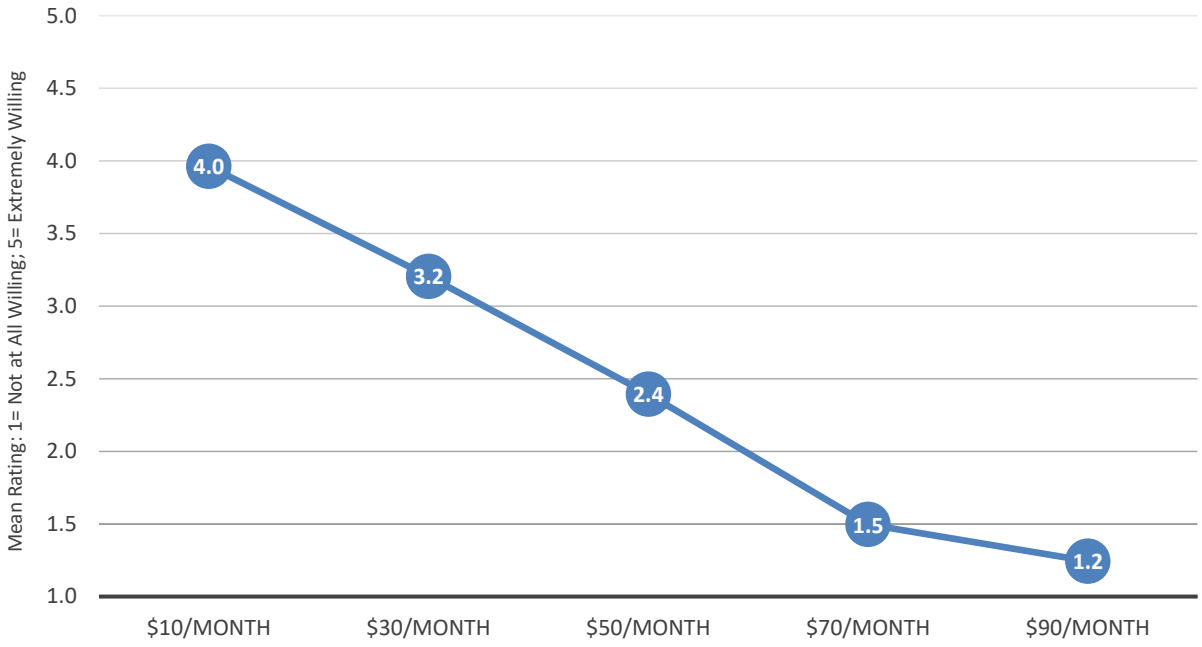
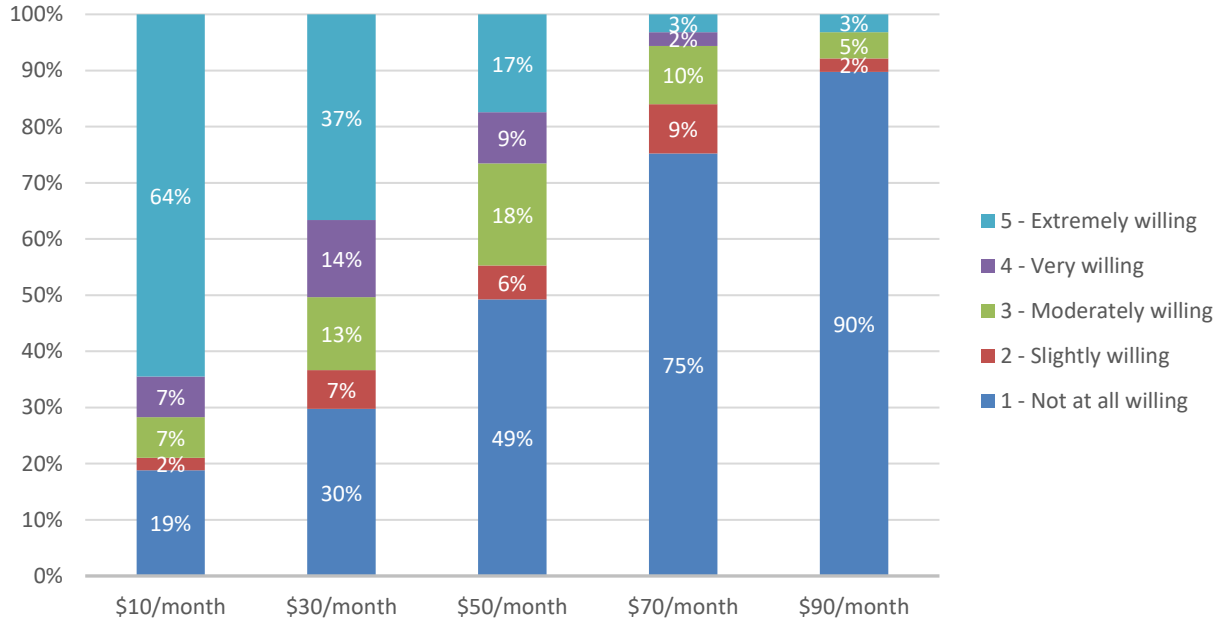


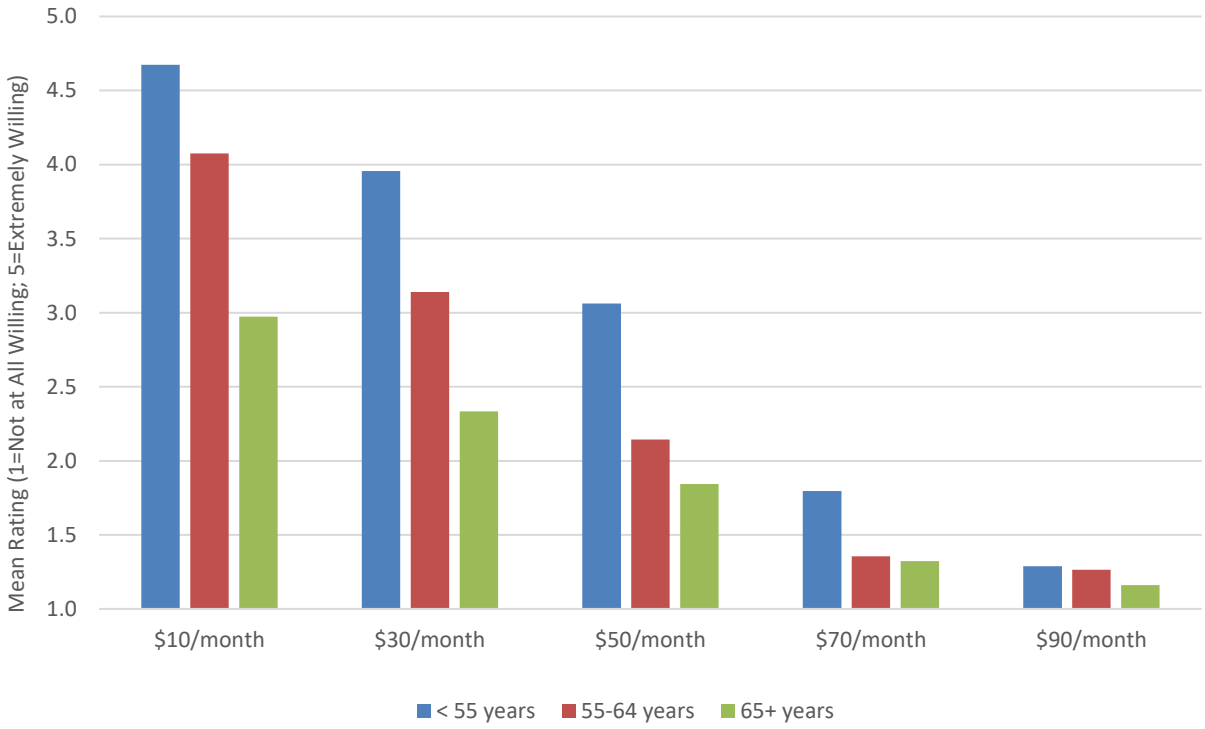
Figure 60: Willingness to Purchase 1 Gbps Internet at Various Price Levels



Respondents' willingness to purchase 1 Gbps internet service is high at $10 per month (4.0 mean), but it drops considerably as the price increases. The mean rating falls to 3.2 at a price point of $30 per month and 2.4 at a price point of $50 per month (slightly to moderately willing). From another perspective, 64 percent of respondents are extremely willing to purchase 1 Gbps internet for $10 per month, dropping to 37 percent at $30 per month and 17 percent at $50 per month.

The willingness to purchase high-speed internet service is correlated with respondent age (see Figure 61). Respondents under age 55 would be more willing than older respondents to purchase high-speed internet service at various price points.

Figure 61: Willingness to Purchase 100 Mbps Internet Service by Respondent Age



Importance of Home Internet Features

Respondents were asked to evaluate the importance of various features of home internet. The mean importance ratings are shown in Figure 62, while detailed responses are shown in Figure 63.

Figure 62: Importance of Home Internet Features (Mean Ratings)

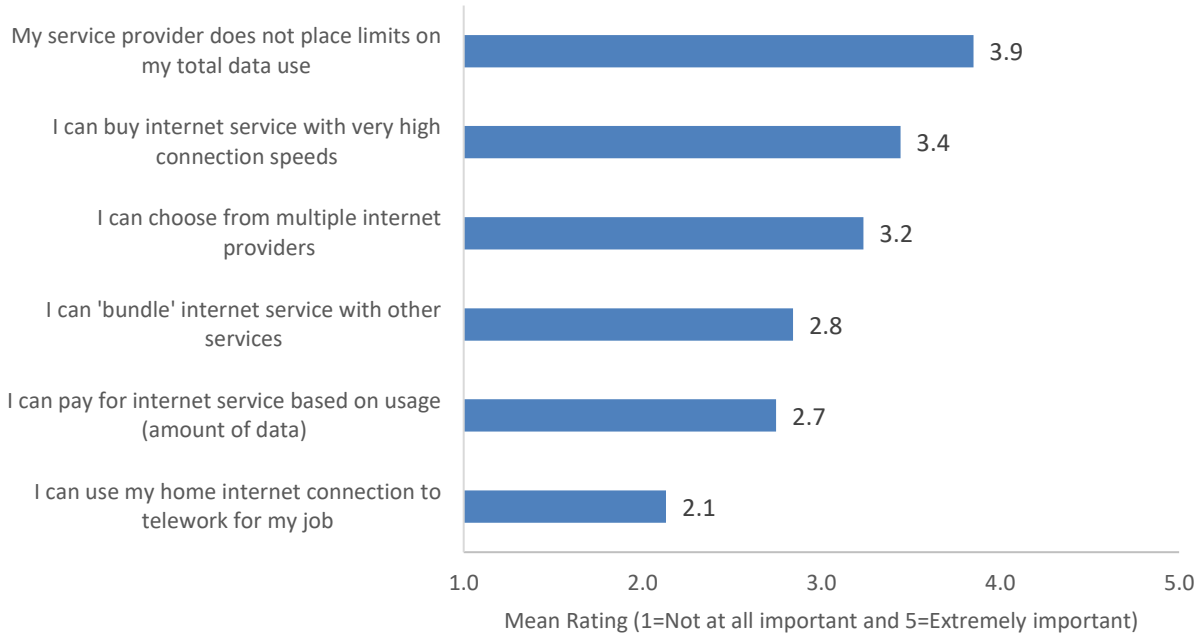
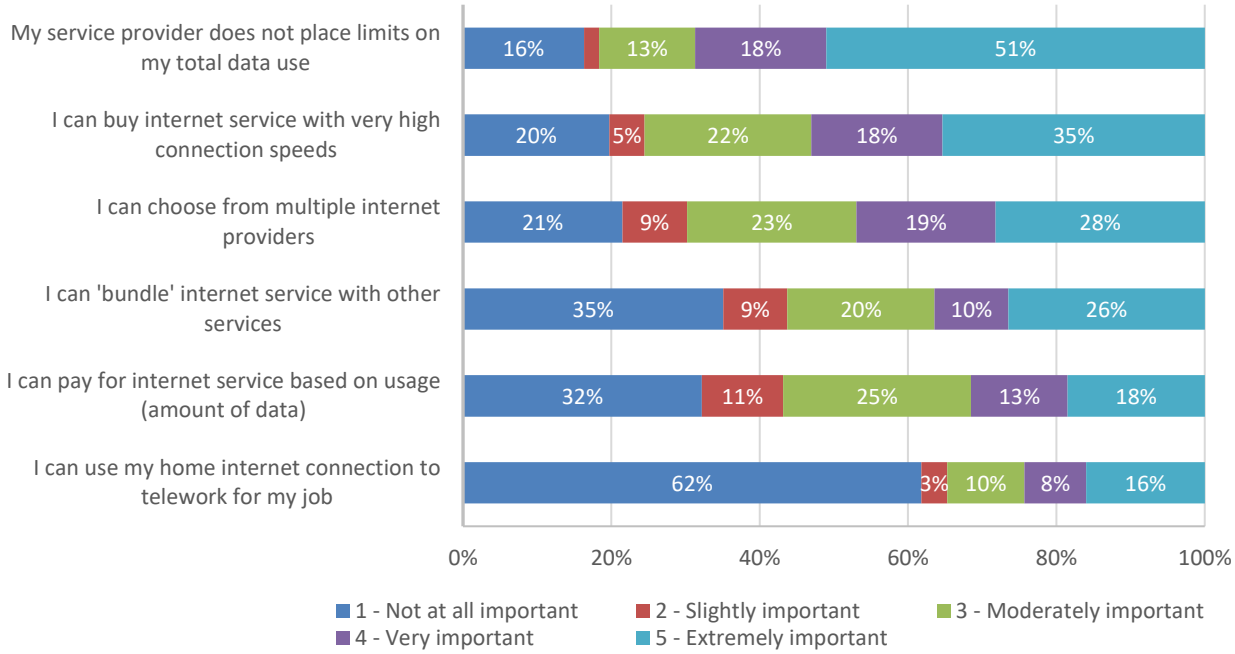


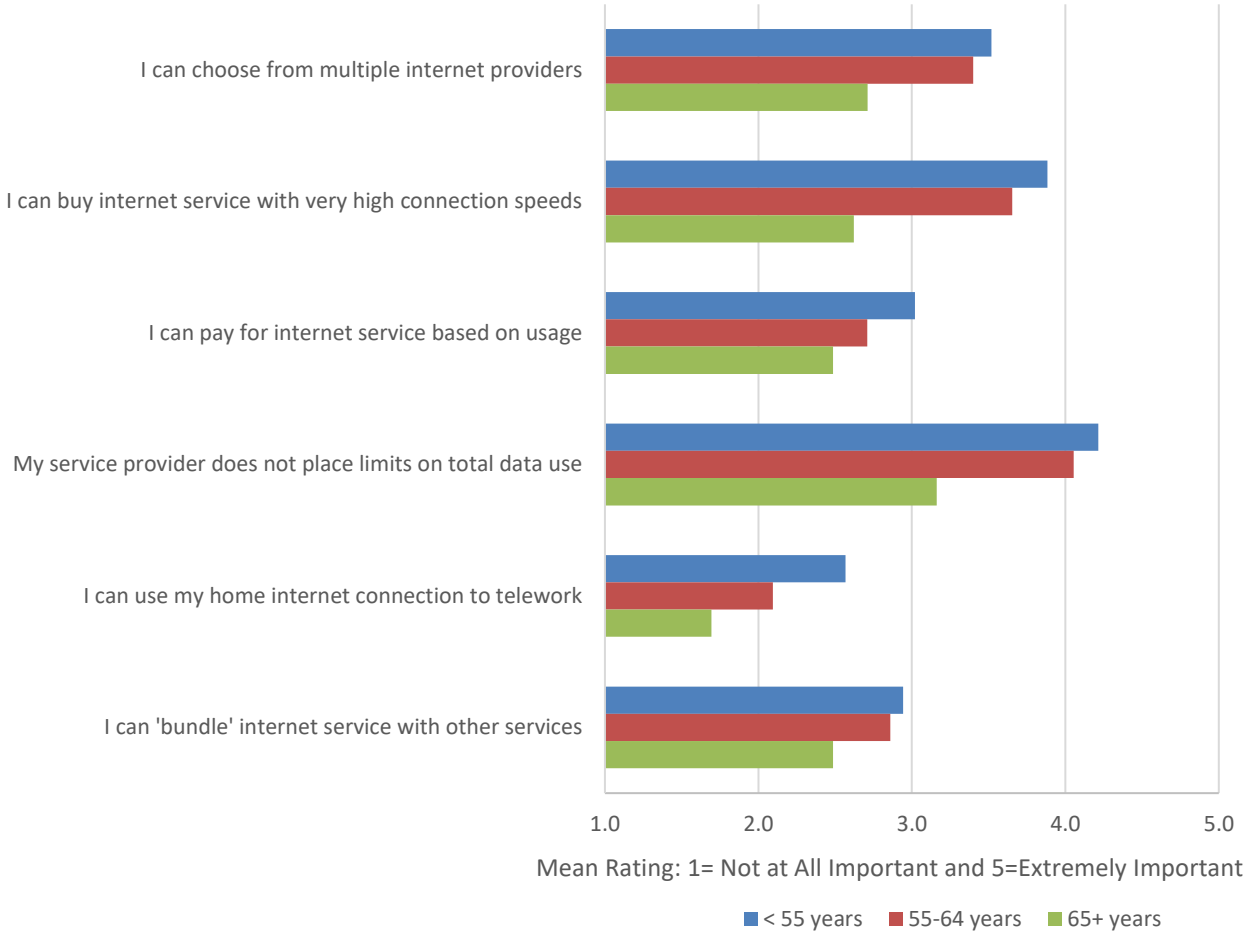
Figure 63: Importance of Home Internet Features



The most important home internet feature among those evaluated is unlimited data use, with 51 percent of respondents saying this feature is extremely important. Thirty-five percent of respondents said buying internet service with very high connection speeds is extremely important. The ability to choose from multiple providers, bundle services, and pay for service based on usage are moderately important. Using a home internet connection to telework is only slightly important on average, with 62 percent of respondents saying it is not at all important.

Respondents ages 65+ placed less important on various features of home internet service, compared with respondents under age 65 (see Figure 64).

Figure 64: Important of Home Internet Features by Respondent Age



Programs for Low-Income Subscribers

Respondents were asked if they are enrolled in Spectrum's Internet Assist program or AT&T's Access program for low-income households. Program participants represent a small share of the Madison CDA population, as illustrated in Figure 65 and Figure 66. Just nine percent of all respondents participate in Spectrum's program, and 14 percent participate in AT&T's program.

Figure 65: Participate in Spectrum's Internet Assist Program

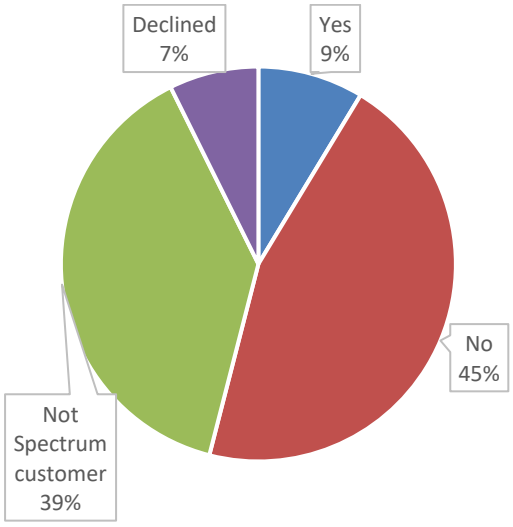
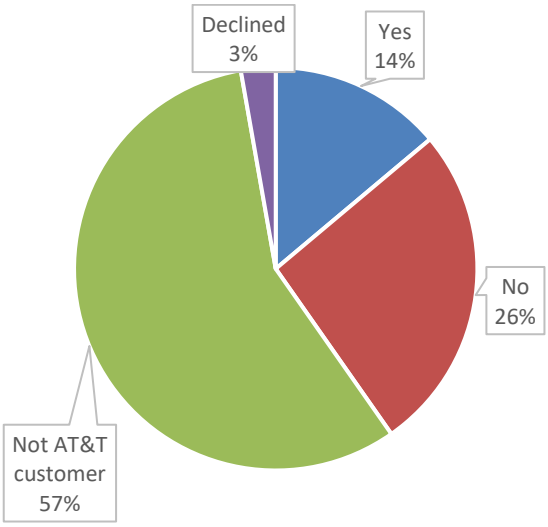
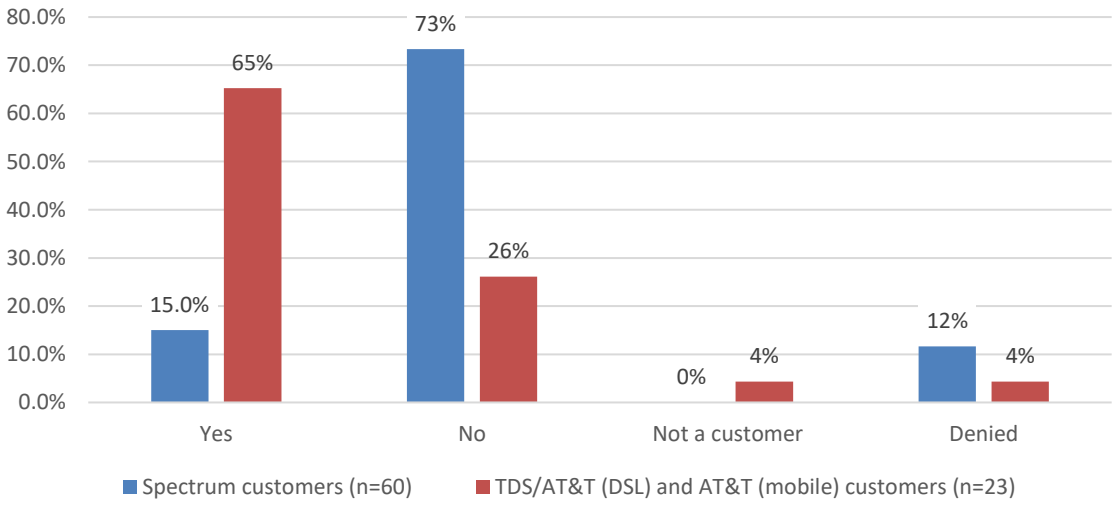


Figure 66: Participate in AT&T's Access Program



Among those who said they are customers, the AT&T Access program has a high participation rate, with 15 out of 23 subscribers (65%) participating (see Figure 67). Just nine of 60 (15%) Spectrum customers are enrolled in the Internet Assist program.

Figure 67: Enrolled in ISP's Program for Low-Income Subscribers (Among Customers)



Just four percent of respondents receive the $9.25 subsidy under the FCC's Lifeline program, and 18 percent are unsure if they receive the subsidy. Most low-income households are not receiving the subsidy (see Figure 68). Thirteen percent of respondents ages 65+ receive the FCC's subsidy, as illustrated in Figure 69.

Figure 68: Receive $9.25 Subsidy Under FCC's Lifeline Program

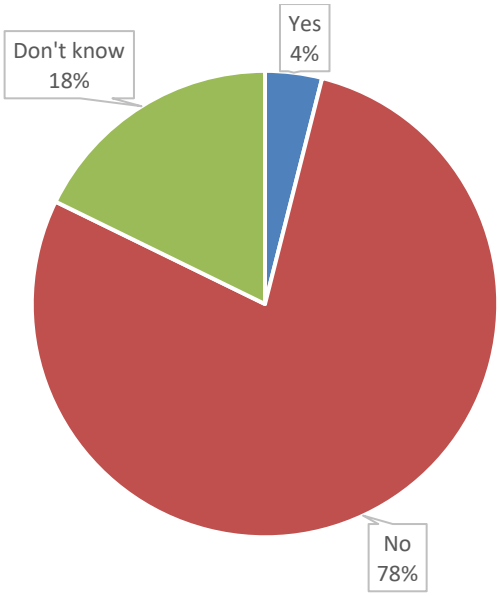
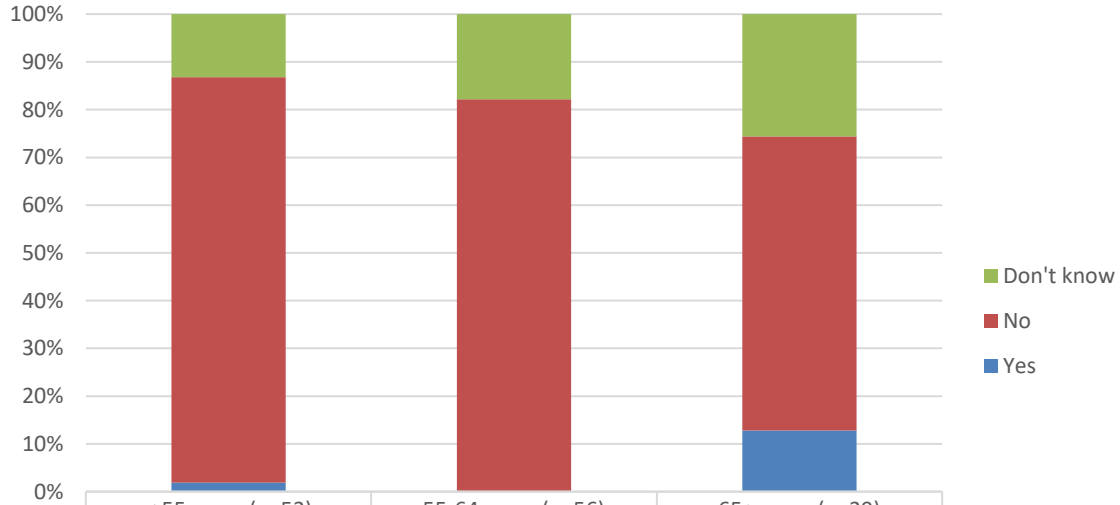


Figure 69: Receive $9.25 Subsidy Under FCC's Lifeline Program by Respondent Age



	< 55 years (n=53)	55-64 years (n=56)	65+ years (n=39)
Don't know	13%	18%	26%
No	85%	82%	62%
Yes	2%	0%	13%

Respondent Information

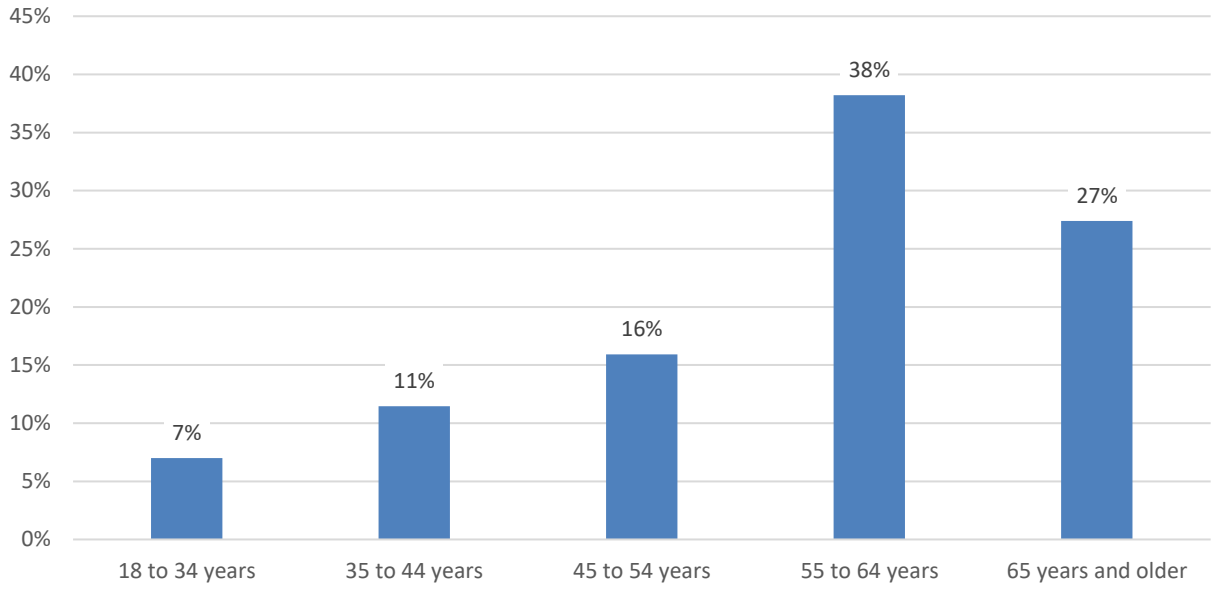
Basic demographic information was gathered from survey respondents and is summarized in this section. Several comparisons of respondent demographic information and other survey questions were provided previously in this report. Table 10 highlights the demographic characteristics of survey respondents, broken out by respondent age. Respondents under age 55 are more likely than older respondents to have children under age 18 living in the home.

Table 10: Demographic Profile by Respondent Age

	Age Cohort	< 55	55-64	65+	Total
Highest Level of Education	HS education or less	54%	44%	39%	46%
	Two-year college/tech	26%	29%	39%	30%
	Four-year college degree or higher	20%	27%	22%	23%
	Total	*54*	*59*	*41*	*155*
Race/Ethnicity	White, non-Hispanic	55%	48%	52%	52%
	Black	29%	35%	29%	31%
	Other race	16%	17%	19%	17%
	Total	*51*	*60*	*42*	*154*
Gender	Woman	74%	57%	58%	63%
	Man	26%	42%	42%	37%
	Other	0%	2%	0%	1%
	Total	*54*	*60*	*43*	*158*
Disability	Yes, disabled	72%	86%	71%	77%
	No, not disabled	28%	14%	29%	23%
	Total	*54*	*58*	*41*	*155*
Household Size	One HH member	54%	83%	93%	76%
	Two HH members	28%	15%	7%	17%
	Three + HH members	19%	2%	0%	7%
	Total	*54*	*59*	*42*	*157*
Children in Household	No Children in HH	72%	95%	100%	89%
	Children in HH	28%	5%	0%	11%
	Total	*54*	*59*	*42*	*157*

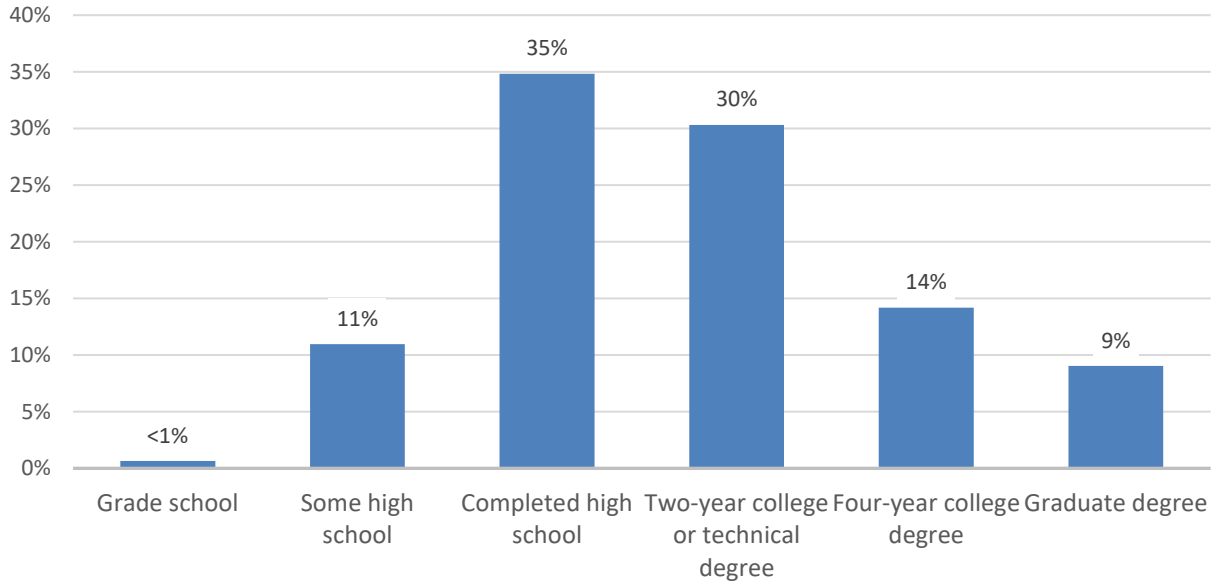
Figure 70 illustrates the age distribution of the respondent. Approximately one-third of respondents are under age 55, 38 percent are ages 55 to 64 years, and 27 percent are 65 years and older.

Figure 70: Respondent Age



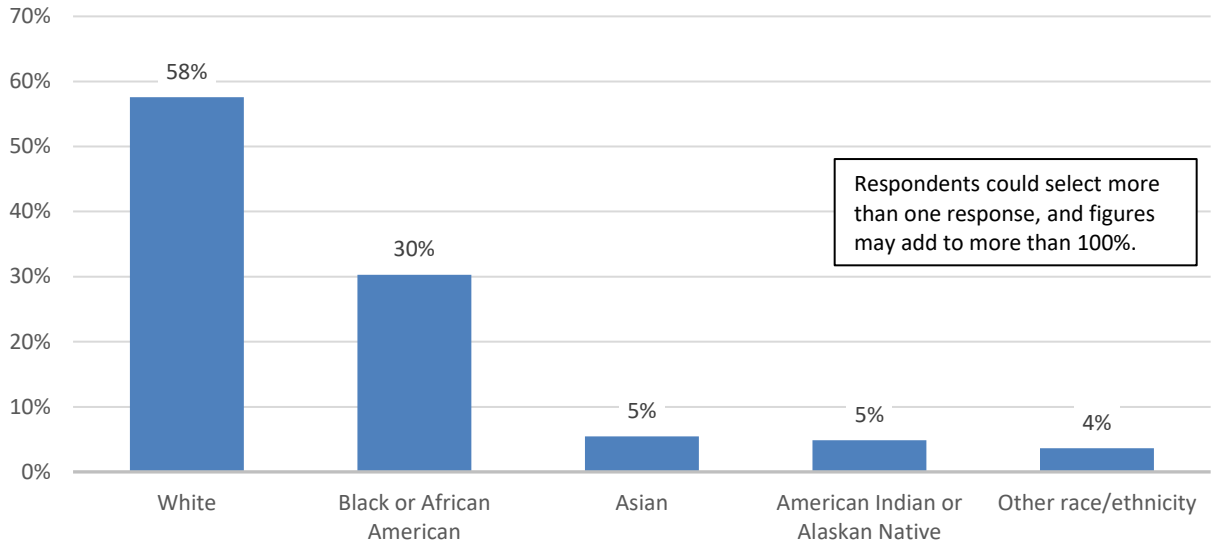
The respondents' highest level of education attained is summarized in Figure 71. Nearly one-half (46%) of respondents have a high school education or less, 30 percent have a two-year college or technical degree, and 23 percent have a four-year college or higher level of education.

Figure 71: Education of Respondent



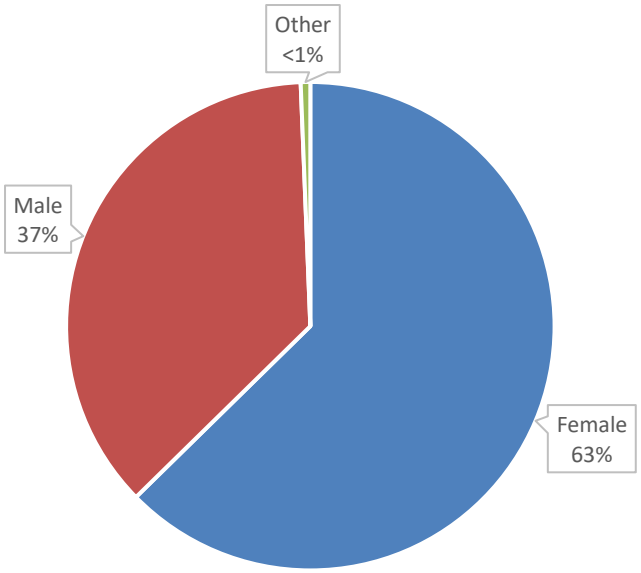
Fifty-eight percent of respondents are white and 30 percent are black or African American, as illustrated in Figure 72. Respondents could name more than one race, and they were also asked to specify if they are Hispanic or Latino. Specifically, 52 percent of respondents are white, non-Hispanic, 30 percent are black or African American, and 17 percent are biracial/multiracial or another race.

Figure 72: Race



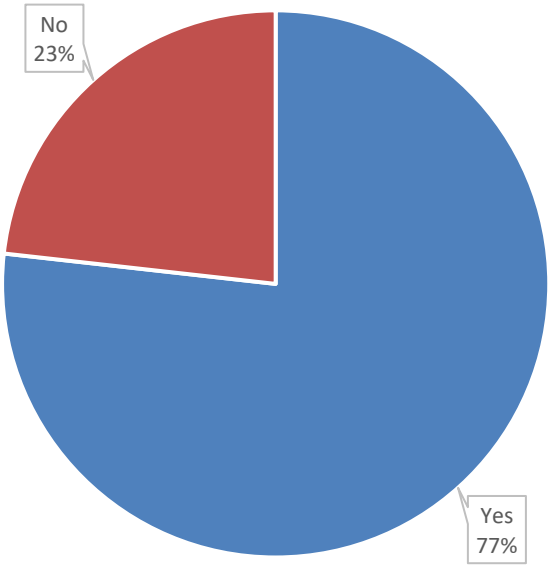
More than six in 10 (63%) respondents identify as female, and 37 percent identify as male (see Figure 73).

Figure 73: Gender Identity



Approximately three-fourths of respondents said they have a disability (Figure 74).

Figure 74: Have a Disability



Respondents were asked to indicate the number of adults and children in their household. Most respondents live alone/have just one household member (see Figure 75). One in 10 respondents have children living in the household (see Figure 76).

Figure 75: Total Household Size

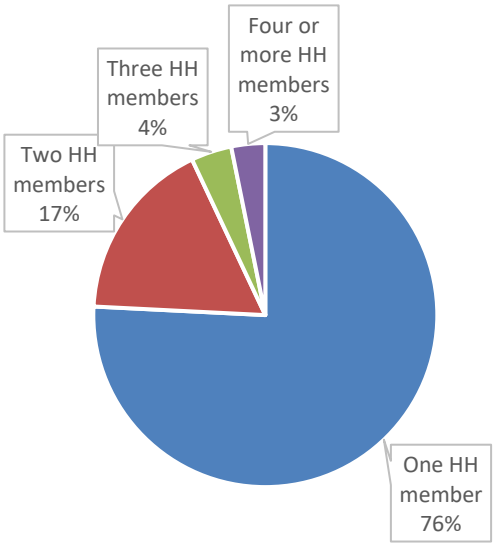


Figure 76: Number of Children in HH