4 Broadband use gaps exist among students and other residents in the Dallas area

As part of its efforts to perform a comprehensive evaluation of broadband gaps during the Covid-19 pandemic, the City of Dallas and DISD commissioned a mail survey of households. The survey, which was printed in English and Spanish, was intended to gather basic data about the types of services to which residents subscribe and their use of these services (including subsidized programs such as AT&T Access and Spectrum Internet Assist). Moreover, the survey was designed to provide insights about how the pandemic has impacted residents' use of the internet at various locations inside and outside the home and whether internet service is sufficient to meet residents' needs.

In brief summary, the survey found almost all respondents have access to the internet. However, for some respondents, that internet service was inadequate to meet their needs during the pandemic. Usage in the home for various activities increased significantly during the pandemic, but some lower-income households did not sufficient access to the internet and computers.

This sections below summarize the key findings, document the survey process, discuss methodologies, and present results intended to assist the City in developing strategies to close the identified gaps.

4.1 Key findings

Key findings are here presented thematically in four subsections: broadband access gaps, device utilization gaps, Covid-19 impacts on broadband use, and skills gaps in broadband and computer use. These and other findings are presented in greater detail in the body of the report.

4.1.1 Broadband access gaps

The survey found very few gaps in acquisition of residential internet services, but also that relatively few residents are taking advantage of available subsidized programs. The following are key findings:

- **Some low-income households lack access.** Overall, 96 percent reported having internet service (either home or mobile/cellular connection). However, 18 percent of low-income households earning under $25,000 per year have no internet service. Eleven percent of the lower-income segment with children (<$50,000, children in home) do not have internet.

- **AT&T and Spectrum are the leading internet service providers used.** One-half of respondents have either AT&T wired service (46 percent) or wireless service (3 percent) as their primary internet service, and 35 percent have Spectrum. Further detail on companies used by respondents is provided in the body of the report.

- **Most households with children have internet access, but it may not be sufficient for some families.** Although most respondents strongly disagreed that their children cannot complete their homework because they do not have internet access, 16 percent agreed or strongly agreed. One-third of households earning under $50,000 per year (with children) agreed or strongly agreed that the children in their care cannot complete their homework because they do not have access to the internet.

- **Some respondents are price sensitive.** Nineteen of 34 respondents without internet cited the high cost as the main reason for not purchasing home internet service. Also, willingness to purchase high-speed internet is very high for $10 per month (88 percent extremely willing) or $30 per (70 percent extremely willing), but this willingness drops sharply at higher price points.

- **Residents may be significantly underutilizing existing broadband subsidy programs.** Just 4 percent of all AT&T customers are enrolled in the ISP's Access program for low-income households, and 3 percent of Spectrum customers are enrolled in its Spectrum Internet Assist program. Just one percent of low-income subscribers receive the $9.25 subsidy under the FCC's Lifeline program, and 7 percent are unsure if they receive the subsidy.

- **Despite these various gaps, most respondents do use the internet.** Almost all (98 percent) respondents access the internet from any location, including a range of locations outside the home. However, use of the internet outside of the home has declined significantly during the Covid-19 pandemic.

- **Residents want affordable broadband internet service.** Most respondents strongly agreed the City or DISD should ensure all students (81 percent) and residents (65 percent) have access to affordable broadband service. Three-fourths of respondents strongly agreed that the City or DISD should provide free access at home to internet-based educational resources for economically disadvantaged students. Households with children were even more likely to support these efforts to reduce broadband access gaps.

4.1.2 Device utilization gaps

Most respondents have access to home internet service and computers, but a sizeable segment may face significant challenges in using, maintaining, and potentially repairing these devices. The following are key findings:

- **Most respondents have access to the internet and computers in the home.** Nine in 10 respondents indicated they have a computer in the home (desktop, laptop, tablet) with internet access. In comparison, two-thirds of low-income households (earning under $25,000 per year) have both internet access and a computer.

- **Many 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; 15 percent experience problems at least weekly.

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

- **More than one-fourth of internet subscribers would not be able to quickly replace non-working computers.** Eight percent of respondents said they could not replace their computer in the foreseeable future if it became unusable, and another 19 percent said it would take one to six months to replace it. Adding these two datapoints, 27 percent of households with home internet service are at risk of not being able to use broadband for very long periods because of computer problems, rather than residential internet connectivity problems.

- **Low-income households are at greater risk of computer issues**. One-fourth of internet subscribers earning under $25,000 experience issues at least weekly with their primary computer becoming inaccessible or unusable. Furthermore, six in 10 low-income subscribers would not be able to replace their computer (30 percent) or would take one to six months to replace it (30 percent) should their computer become unusable.

4.1.3 Covid-19 impacts on broadband use

Respondents reported increased use of and demand for broadband services during the Covid-19 pandemic. They are utilizing the internet more at home and less often outside the home, as may be expected, and they are engaged in more online activities for work and education. The following are key findings:

- **Daily use of home internet service at various times has increased during the pandemic**. Prior to the Covid-19 pandemic, approximately one-half of respondents made daily use of the internet mid-morning or early afternoon, compared with approximately eight in 10 respondents during the pandemic. Four in 10 households have at least three members online during peak usage times during the Covid-19 pandemic.

- **Use of internet services outside of the home has declined significantly during the Covid-19 pandemic.** Use of the internet in key areas decreased significantly when comparing figures pre-Covid and during-Covid, including in work settings (79 percent vs. 58 percent), home of a friend or family member (64 percent vs. 50 percent), coffee shop or private businesses (58 percent vs. 30 percent), outdoor public spaces using free Wi-Fi (52 percent

vs. 36 percent), schools or colleges (36 percent vs. 26 percent), libraries (32 percent vs. 13 percent), and other public buildings (26 percent vs. 13 percent).

- **Engagement in online activities has increased significantly during the Covid-19 pandemic.** Use of the internet for telework (58 percent vs. 73 percent), telemedicine or medical appointments (34 percent vs. 75 percent), homework (33 percent vs. 41 percent), attending online classes (28 percent vs. 49 percent), and attending homeschool (11 percent vs. 24 percent) increased substantially from pre-pandemic to during-pandemic. Additionally, 58 percent of respondents use the internet for teleworking on a *daily* basis, compared with 19 percent of respondents before the pandemic.

4.1.4 Skills gaps in using broadband and computers

Most respondents have adequate internet and computer skills. However, a small segment of respondents 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:

- **Some respondents may be vulnerable to online harms and disinformation.** When asked if they knew how to recognize and avoid a phishing scam, 15 percent disagreed or strongly disagreed. Eleven percent disagreed or strongly disagreed that they knew how to recognize false information online and find credible sources of information.

- **Most respondents have the skills to perform basic tasks on the internet.** Overall, most internet subscribers strongly agreed that they know how to use the internet for various functions, including: accessing a bank account online (79 percent), bookmarking a website or adding to list of favorites (72 percent), purchasing groceries and food (70 percent), creating/managing a social media profile (68 percent), adjusting privacy settings (65 percent), and uploading content to a website (67 percent). Respondents were less likely to agree that they are skilled in creating their own personal website or in troubleshooting issues with technology.

- **Many caregivers report that children under their care have adequate broadband skills.** Among those with children, 50 percent agreed or strongly agreed they are sufficiently skilled in computer use to complete their homework on their own. One-fourth disagreed or strongly disagreed.

- **Most caregivers have adequate skills to help their children when needed.** Nearly one-half (46 percent) of respondents with children strongly agreed that their computer skills are good enough to help their children complete their homework, and 17 percent agreed.

However, 16 percent disagreed or strongly disagreed that they have sufficient computers skills.

- **Many respondents are interested in becoming more confident in using computers, smartphones, and the internet.** Specifically, 43 percent of respondents agreed or strongly agreed that they would like to become more confident in using computers and related technology, and 29 percent agreed or strongly agreed they would like to attend training.

- **Many respondents disagreed that their children are able to minimize or avoid specific online risks.** Many respondents disagreed or strongly disagreed that their children have the skills to detect and avoid false or misleading information (56 percent), avoid online bullying (43 percent), get help for online bullying (33 percent), detect and avoid financial scams and predators (51 percent), avoid exposure to graphic violence or pornography online (41 percent), and get help if exposed to graphic violence or pornography online (29 percent). However, six in 10 respondents agreed or strongly agreed that they have the time and skills to protect their children from online risks.

4.2 Survey process

In close coordination with the City of Dallas and DISD, CTC managed the survey project, including development of the questionnaire, sample selection, mailing and data entry coordination, survey data analysis, and reporting of results.

CTC developed the draft survey instrument based on the project objectives and provided it to City and school district staff for review and comment. The City and DISD provided revisions and approved the final questionnaire. (The survey instrument is included in Appendix A.)

A total of 10,000 survey packets were mailed first-class in December 2020 to a random selection of residential households located in the Dallas Independent School District. Recipients were provided with a postage-paid business reply mail envelope in which to return the completed questionnaire. A total of 790 useable surveys were received by the date of analysis, providing a gross response rate of 7.9 percent. The low response rate may be attributed to mailing during the holiday season.

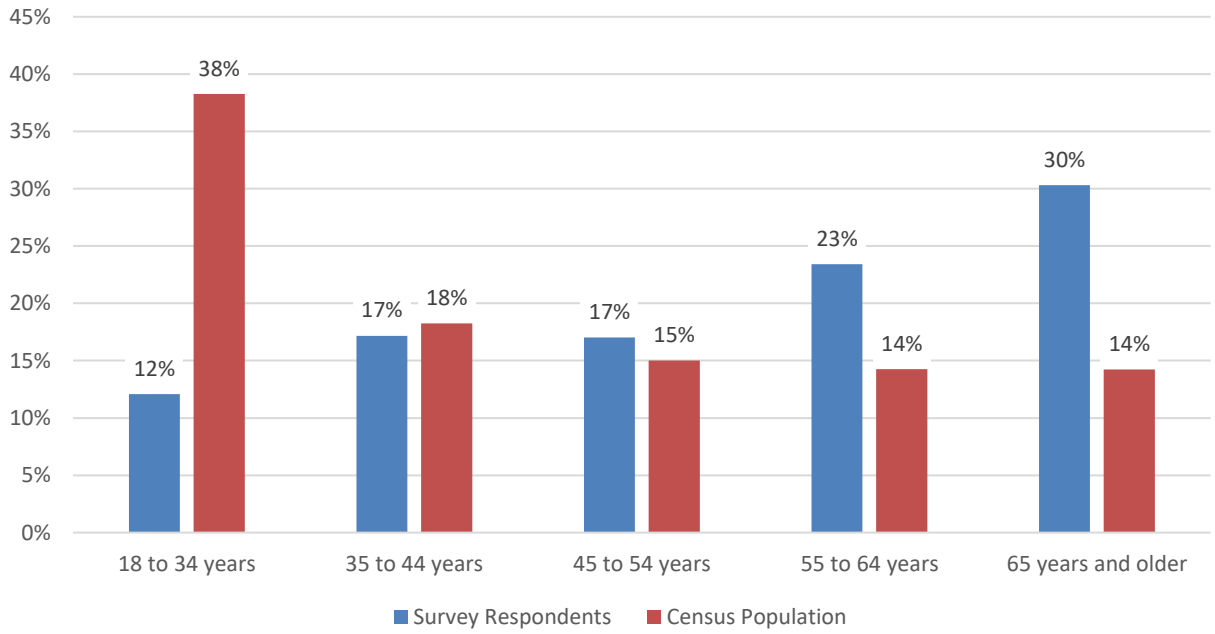
The margin of error for aggregate results at the 95 percent confidence level for 790 responses is ±3.5 percent. That is, for questions with valid responses from all survey respondents, one would be 95 percent confident (19 times in 20) that the survey responses lie within ±3.5 percent of the target population as a whole.

The survey responses were entered into SPSS[20] software and the entries were coded and labeled. SPSS databases were formatted, cleaned, and verified prior to the data analysis. 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 survey responses were weighted based on the age of the respondent, income, and presence of children in the household. The sample was stratified by income level and presence of children in the household to ensure a sufficient number of responses to analyze data among low-income households with children residing in them. Also, since older persons are more likely to respond to surveys than younger persons, the age-weighting corrects for the potential bias based on the age of the respondent. In this manner, the results more closely reflect the opinions of DISD's adult population.

Figure 23 summarizes the sample and population distributions by age.

Figure 23: Age of Respondents and Adult Population



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

4.3 Survey results

The results presented in this report are based on analysis of information provided by 790 residents within the Dallas Independent School District. (Of that total, 23 respondents replied on the Spanish-language survey instrument.) 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.

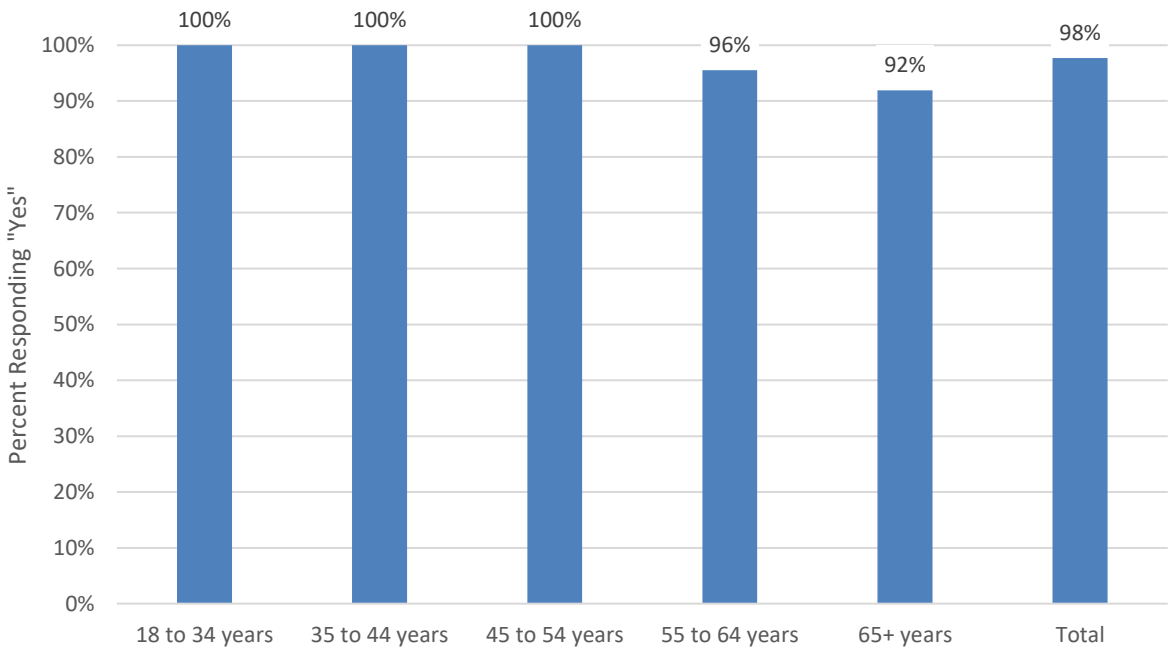
4.3.1 Internet connection and use

Respondents were asked about their use of the internet, including home internet connection providers, internet costs and enrollment in programs for low-income subscribers, and devices used. This information provides valuable insight into residents' need for various internet and related communications services.

4.3.1.1 Internet Usage

Almost all (98 percent) respondents make some use of the internet, on any device from any location, as shown in Figure 24. Usage is high across all demographic groups, ranging from 100 percent of respondents under age 55 to 92 percent of respondents ages 65 and older.

Figure 24: Internet Usage by Age of Respondent



Agreement with reasons for not accessing the internet are highlighted in Figure 25 and Figure 26. The leading barriers to internet access include concern with safety and privacy (15 out of 31 strongly agree) and cost of internet service (20 out of 36 strongly agree).

Figure 25: Reasons for Not Using the Internet (Mean Ratings)

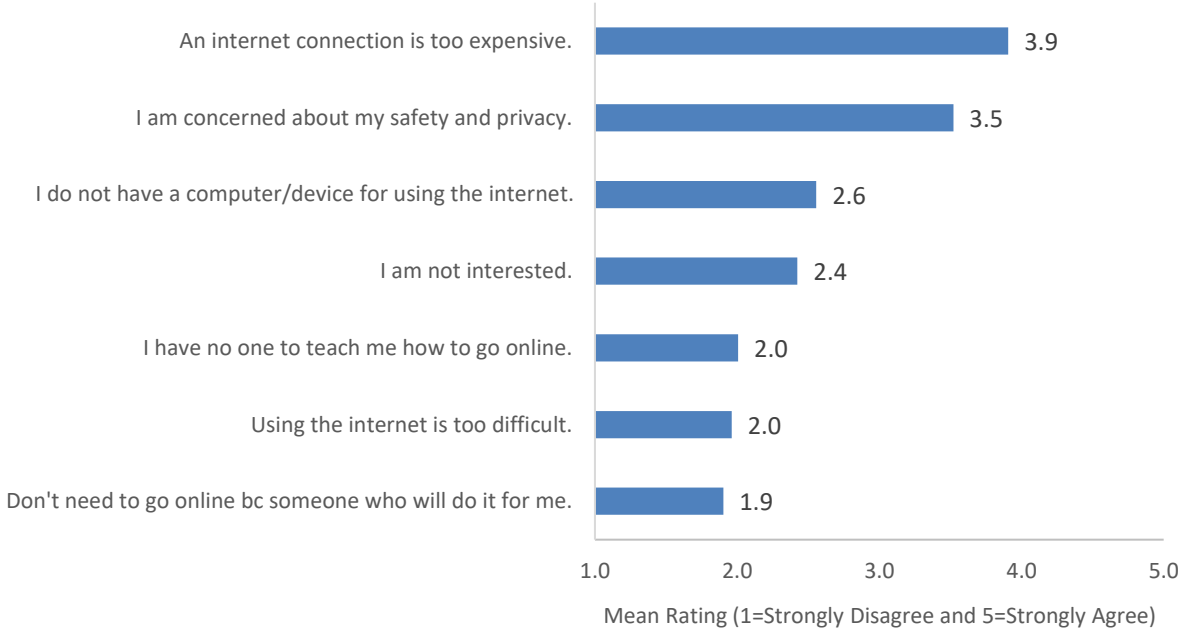
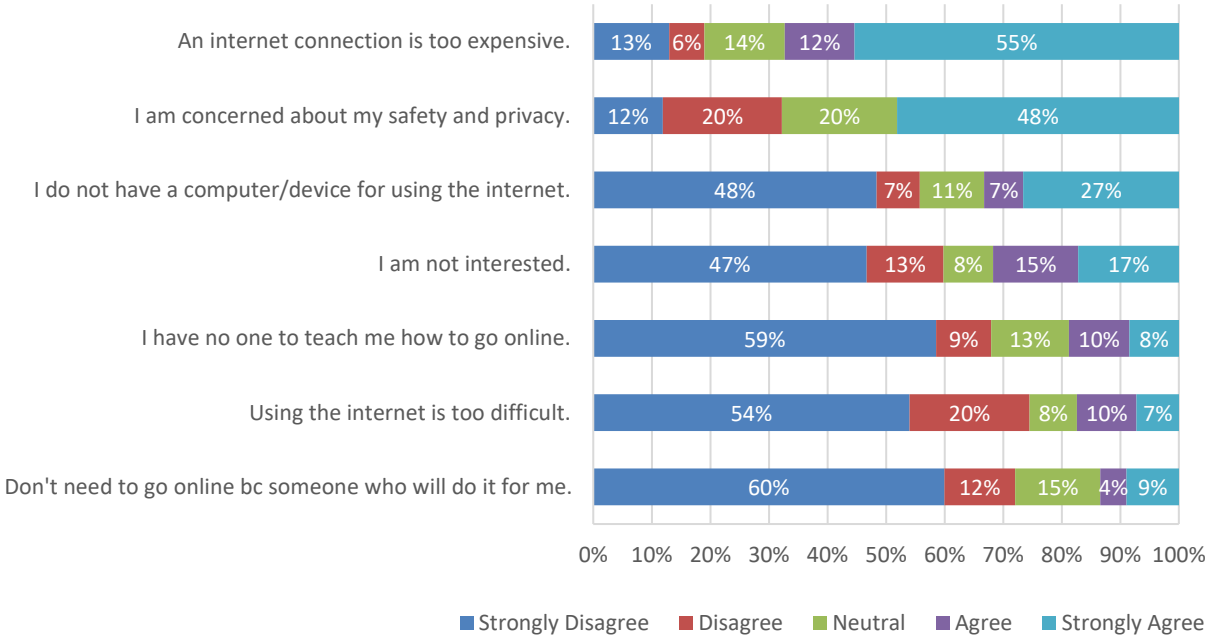


Figure 26: Reasons for Not Using the Internet



4.3.1.2 Importance of Communication Services

Respondents were asked to indicate the importance of various communication services to their household, using a scale where 1=Not at all important and 5=Extremely important. The mean importance of various service aspects is illustrated in Figure 27, while detailed responses are illustrated in Figure 28.

Figure 27: Importance of Communication Service Aspects (Mean Ratings)

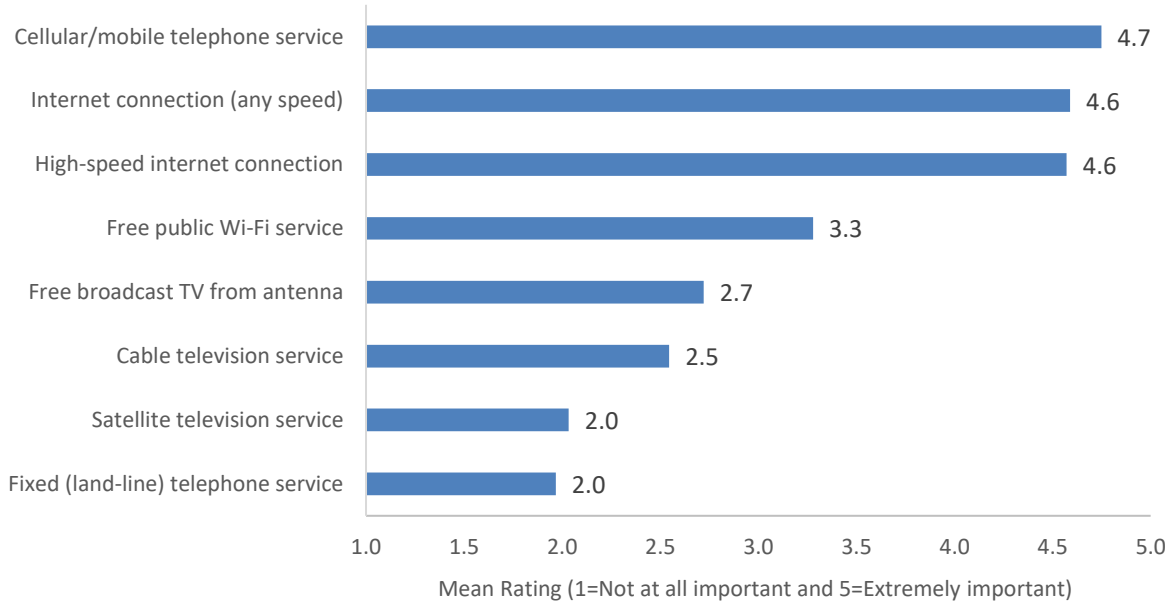
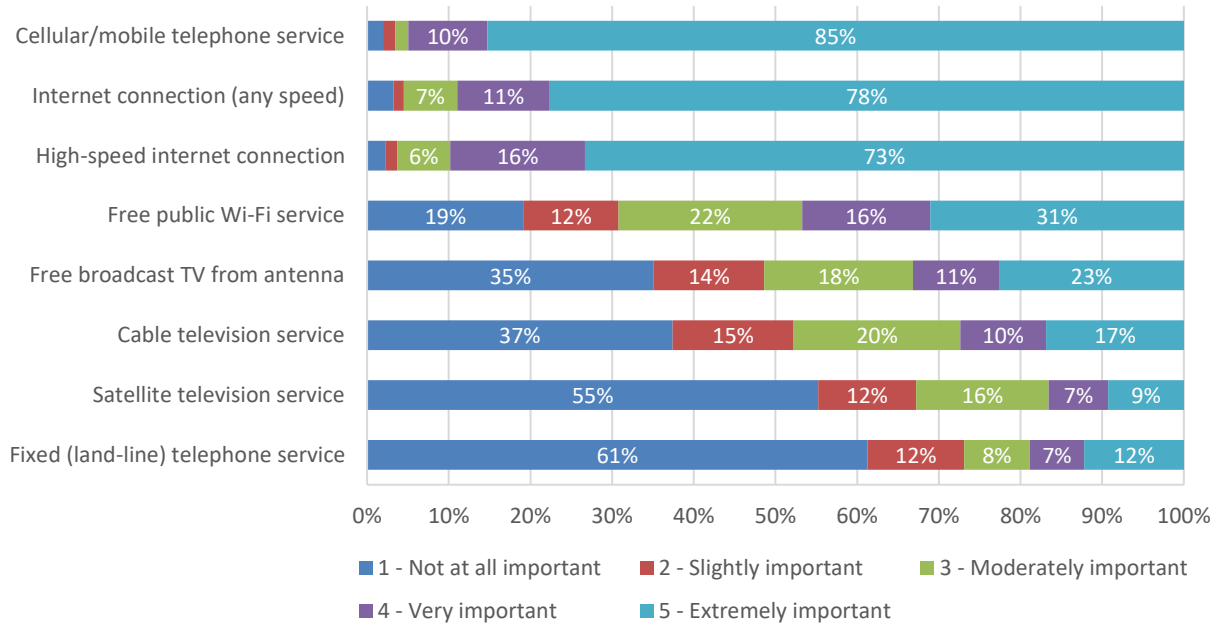


Figure 28: Importance of Communication Service Aspects



Cellular/mobile telephone and internet services are extremely important to respondents, while broadcast television service and satellite television service are significantly less important. Specifically, 85 percent said cellular/mobile phone service is extremely important, and 78 percent said an internet connection of any speed is extremely important. Another 73 percent of respondents said high-speed internet is extremely important.

Figure 29 and Figure 30 illustrate the importance of internet services and mobile telephone service by household income and presence of children in the household. Those in higher-income households and those with children at home placed more importance on these communication services compared with their counterparts.

Figure 29: Importance of Communication Services by Household Income

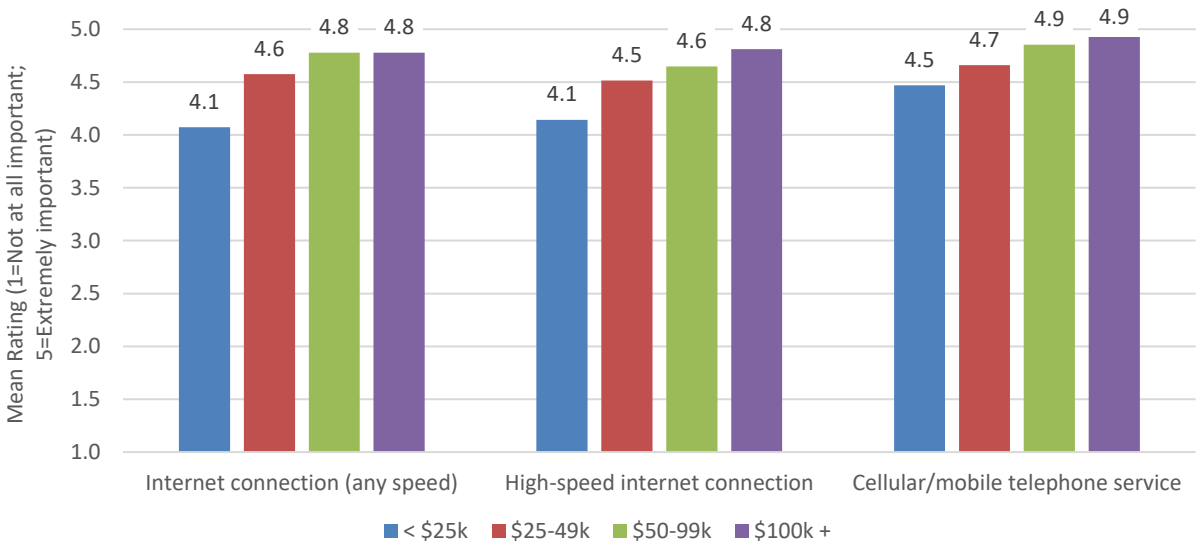
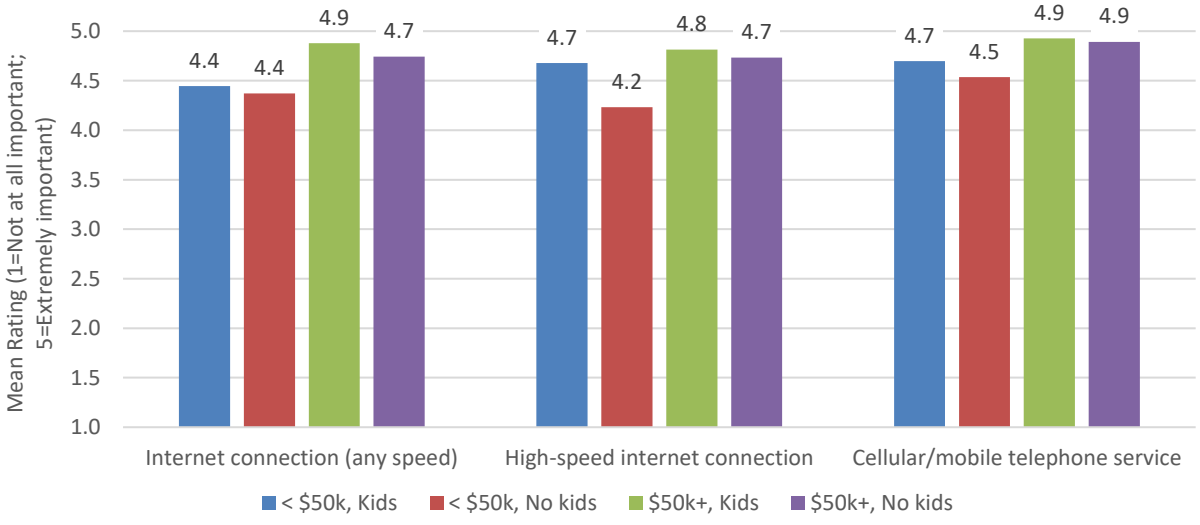


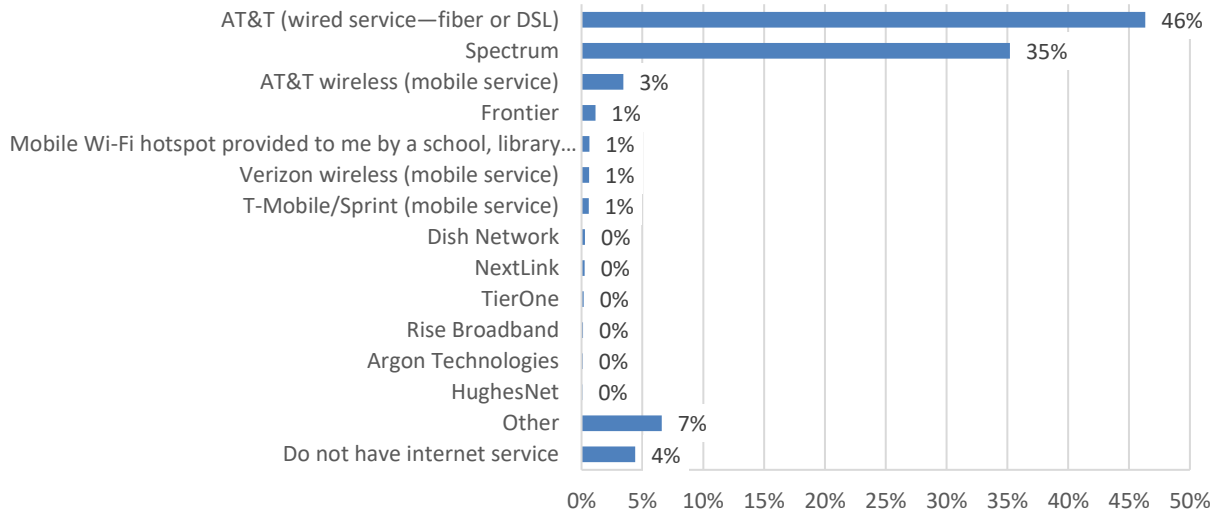
Figure 30: Importance of Communication Services by Segment



4.3.1.3 Internet Service Provider

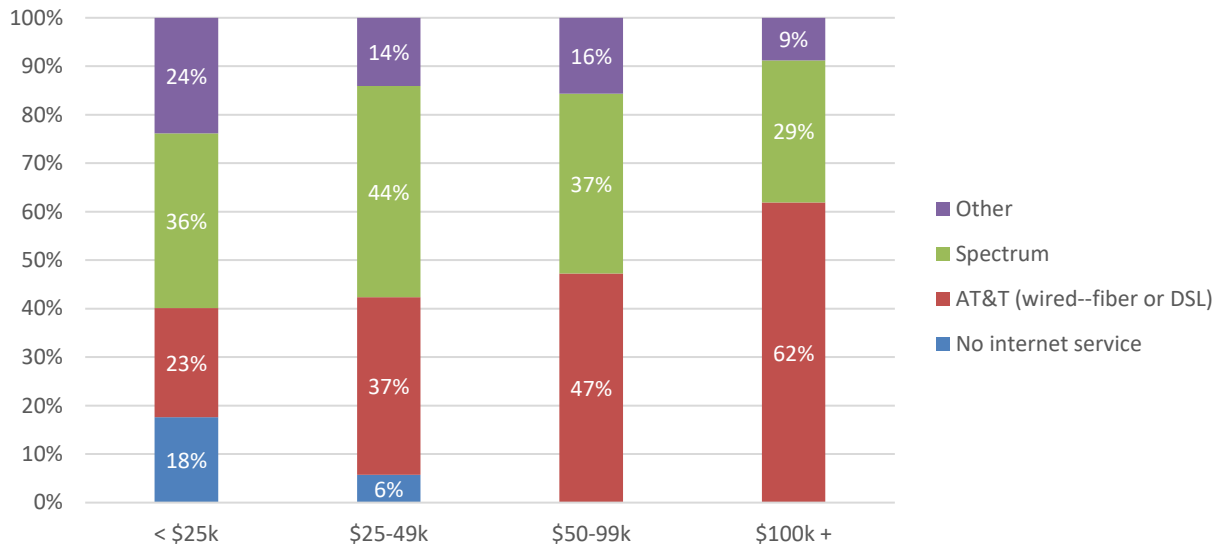
As illustrated in Figure 31, AT&T and Spectrum are the leading ISPs overall in the market area. Only 4 percent of respondents do not have internet service. More than one-half (57 percent) of AT&T (wired) subscribers have fiber, while 36 percent have a DSL connection, and 7 percent were unsure. Nineteen of 34 respondents without internet cited the high cost as the main reason for not purchasing home internet service.

Figure 31: Primary Internet Service Provider



Use of home or mobile internet service varies by household income. Eighteen percent of low-income households do not have any internet service, either a home internet connection or a mobile/cellular connection (see Figure 32).

Figure 32: Primary Internet Service by Household Income



As discussed previously, most respondents have some internet access. Total internet access is high across all demographic groups, as shown in Table 14. Respondents in lower income households are less likely to have internet service, as previously discussed, as are those with a high school education or less.

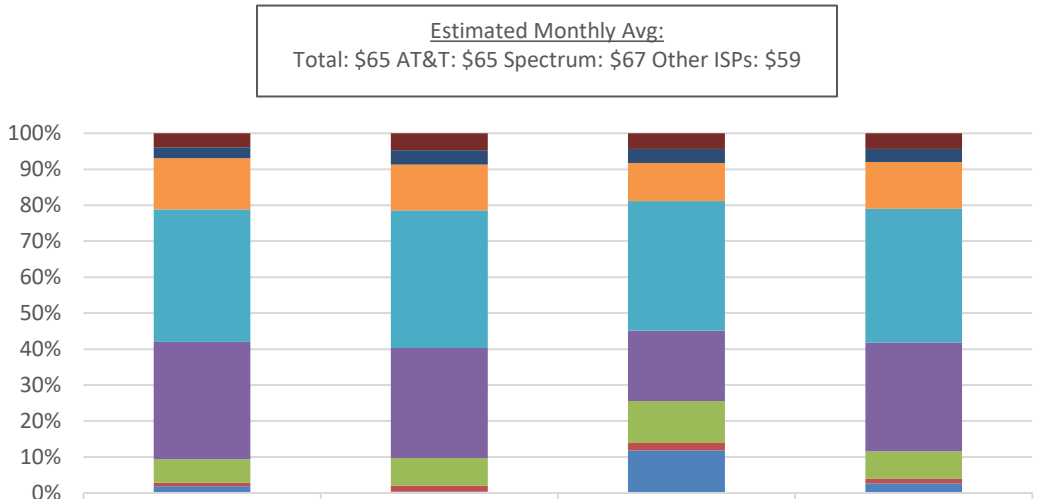
Table 14: Internet Access by Key Demographics

	No internet service	AT&T (wired)	Spectrum	Other ISP	Total Internet Access	*Weighted Count*
TOTAL	**4%**	**46%**	**35%**	**14%**	**96%**	***777***
Segment						
< $50,000, children	8%	26%	55%	11%	92%	*98*
< $50,000, no children	11%	34%	34%	21%	89%	*193*
$50,000+, children	0%	63%	29%	8%	100%	*96*
$50,000+, no children	0%	55%	33%	12%	100%	*262*
Respondent Age						
18 to 34 years	4%	42%	43%	10%	96%	*251*
35 to 44 years	1%	52%	36%	11%	99%	*130*
45 to 54 years	1%	51%	35%	12%	99%	*110*
55 to 64 years	7%	47%	31%	14%	93%	*126*
65 years and older	8%	44%	24%	24%	92%	*142*
Education						
HS education or less	14%	23%	43%	20%	86%	*159*
Two-year/technical degree	6%	47%	36%	11%	94%	*110*
Four-year college degree	1%	57%	33%	10%	99%	*237*
Grad, prof, doctorate	1%	51%	32%	16%	99%	*251*
Income						
Less than $25,000	18%	23%	36%	24%	82%	*106*
$25,000 to $49,999	6%	37%	44%	14%	94%	*185*
$50,000 to $99,999	0%	47%	37%	16%	100%	*121*
$100,000 or more	0%	62%	29%	9%	100%	*238*
Race/Ethnicity						
Black/African American, non-Hispanic	6%	46%	29%	19%	94%	*109*
Hispanic/Latino	10%	25%	50%	15%	90%	*179*
White/European-American, non-Hispanic	2%	59%	26%	13%	98%	*381*
Other/more than one	0%	35%	52%	13%	100%	*91*
Children in Household						
No children in HH	5%	47%	32%	16%	95%	*547*
Children in HH	4%	45%	43%	9%	96%	*221*

4.3.1.4 Internet Service Cost and Programs for Low-Income Subscribers

Respondents were asked to give the cost of their home internet service, as shown in Figure 33. The estimated monthly average cost for internet service is $65 overall, $65 for AT&T (wired) service and $67 for Spectrum. Two-thirds of respondents pay between $60 and $80 per month for their internet service. Another 8 percent pay more than $100 per month, and 12 percent pay less than $40 per month.

Figure 33: Monthly Price for Internet Service



	AT&T (wired)	Spectrum	Other ISPs	Total
More than $120	4%	5%	4%	4%
$101 to $120	3%	4%	4%	4%
$81 to $100	14%	13%	11%	13%
$61 to $80	37%	38%	36%	37%
$41 to $60	33%	31%	20%	30%
$21 to $40	7%	8%	12%	8%
$11 to $20	1%	2%	2%	1%
$0 to $10	2%	0%	12%	3%

As illustrated in Figure 34, just 4 percent of all AT&T customers are enrolled in the ISP's Access program for low-income households. Eleven percent of customers earning under $25,000 per year said they are enrolled in the program.

As illustrated in Figure 35, just 3 percent of all Spectrum customers and low-income customers are enrolled in the ISP's Internet Assist program for low-income households. Four in 10 customers earning under $25,000 said they had not heard of the program.

Figure 34: Enrolled in AT&T's Access Program

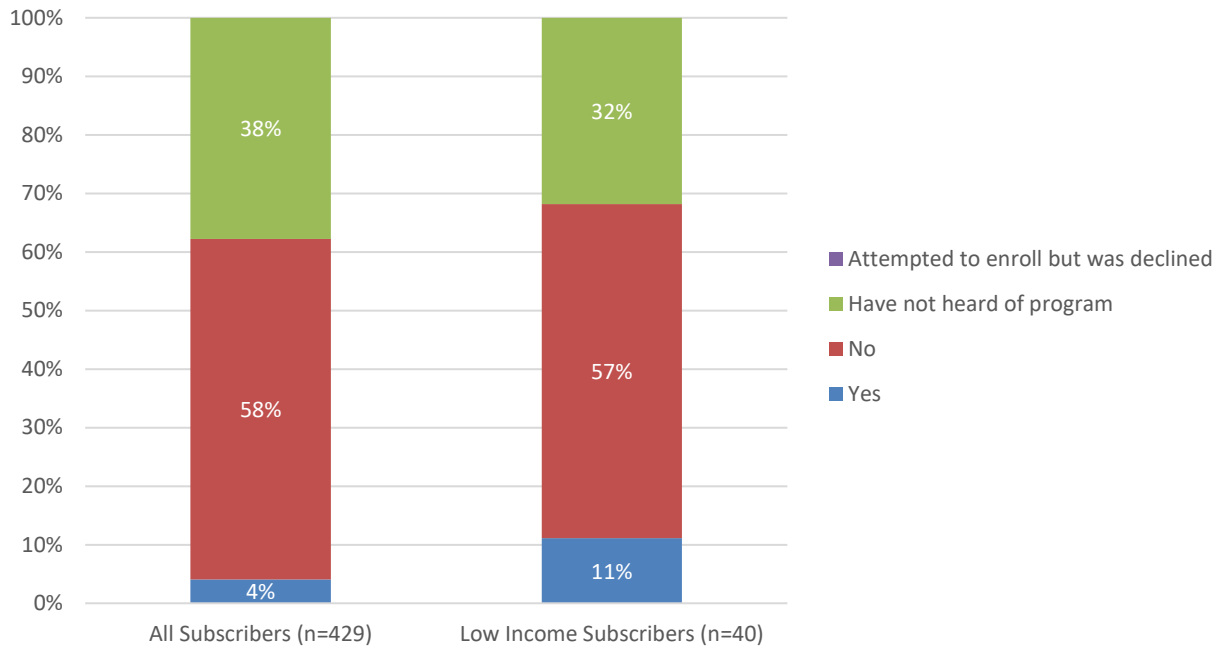
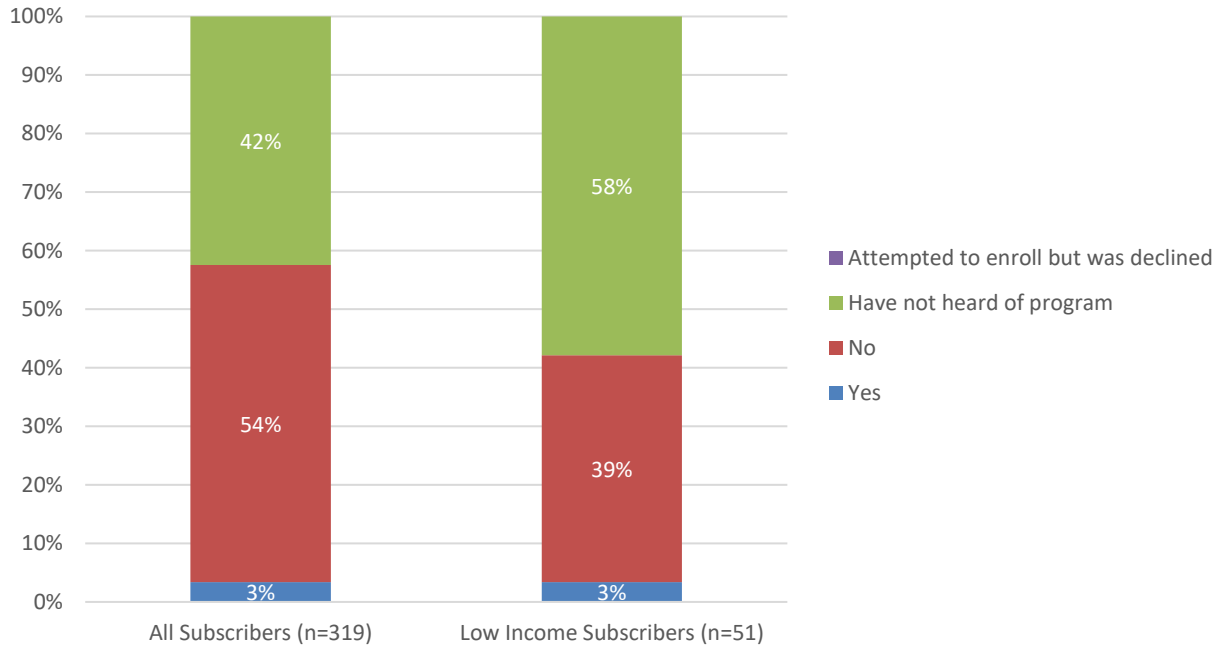
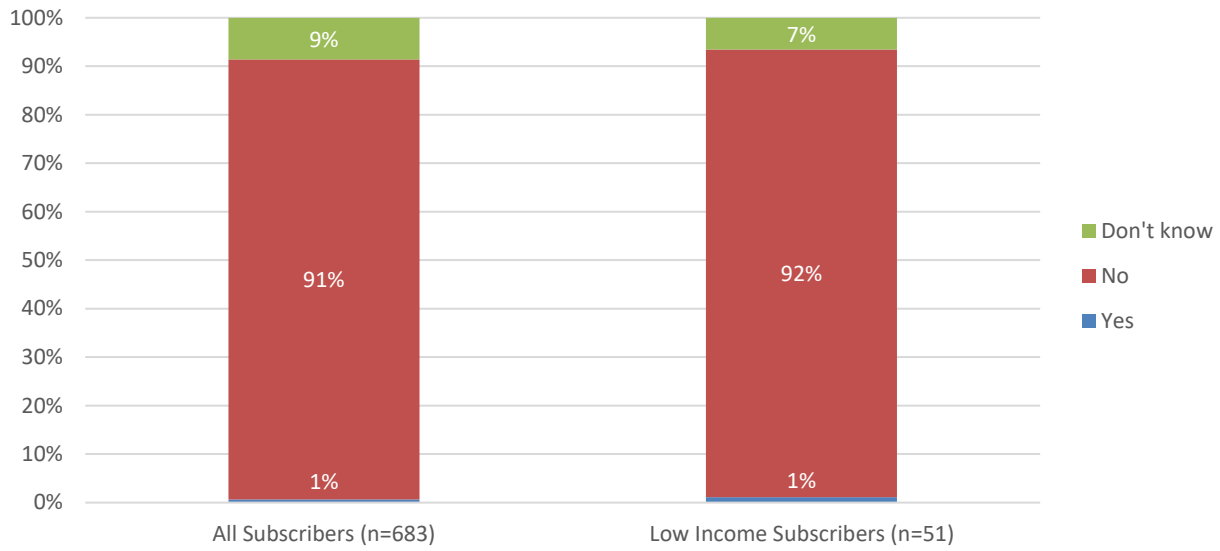


Figure 35: Enrolled in Spectrum's Internet Assist Program



Just 1 percent of low-income subscribers (earning under $25,000 per year) receive the $9.25 subsidy under the FCC's Lifeline program, and 7 percent are unsure if they receive the subsidy. Most households are not receiving the subsidy (see Figure 36).

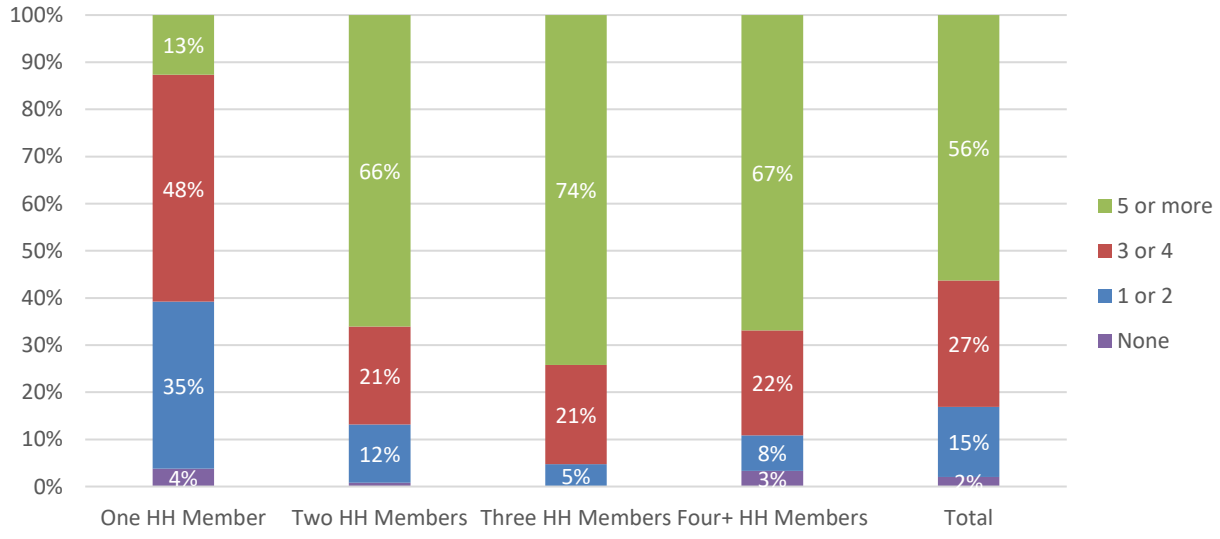
Figure 36: Receive $9.25 Subsidy Under FCC's Lifeline Program



4.3.1.5 Personal Computing Devices

Respondents were asked to indicate the number of personal computing devices they have in the home. As shown in Figure 37, 56 percent of households with internet service have five or more devices. Most households with two or more members have at least five personal computing devices in the home, compared with 13 percent of those who live alone. Nearly one-half of those who live alone have three or four devices. Specifically, 85 percent of households with children and who earn $50,000 or more per year have five or more devices, compared with 62 percent of lower-income households with children.

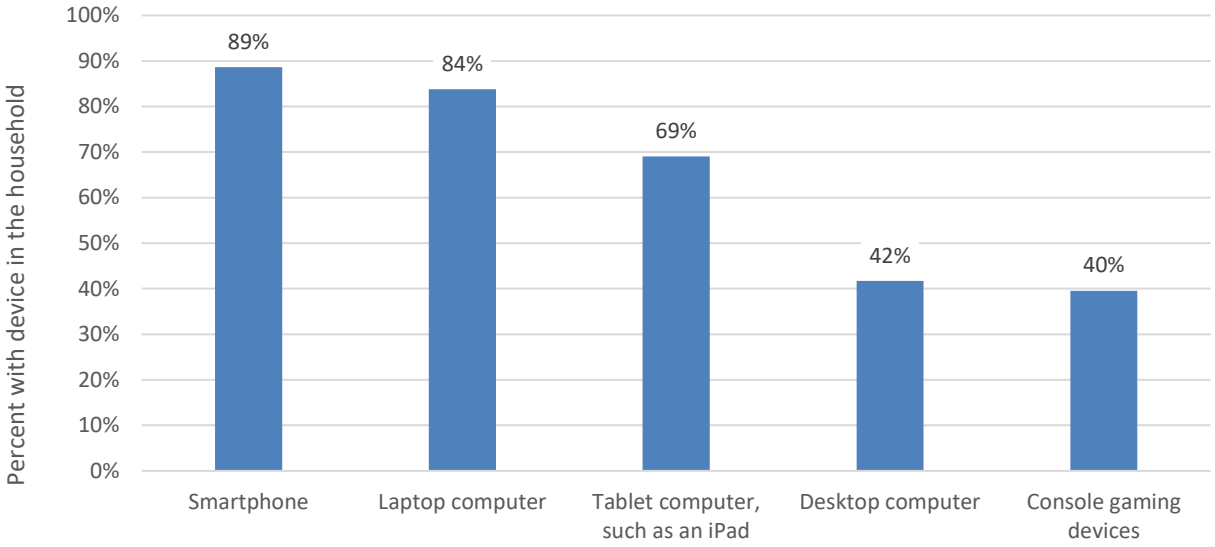
Figure 37: Number of Personal Computing Devices in Home by Household Size



4.3.1.6 Devices in the Home

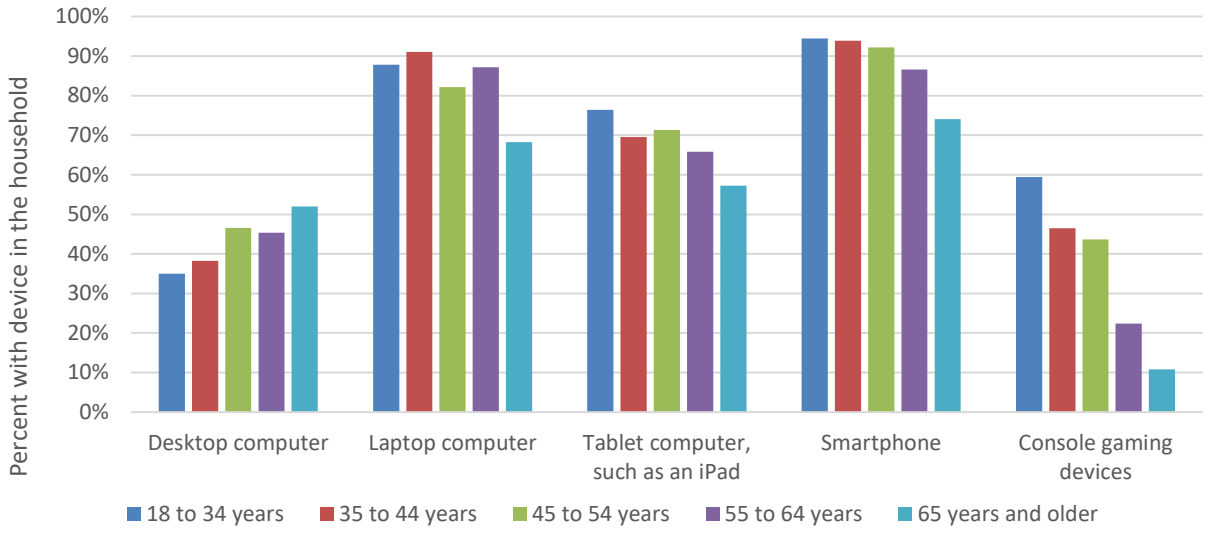
Availability of devices is relatively high in households with internet access, with respondents selecting an average of 3.3 types of devices in the home and only 4 percent not selecting any device.

Figure 38: Devices Available in the Home



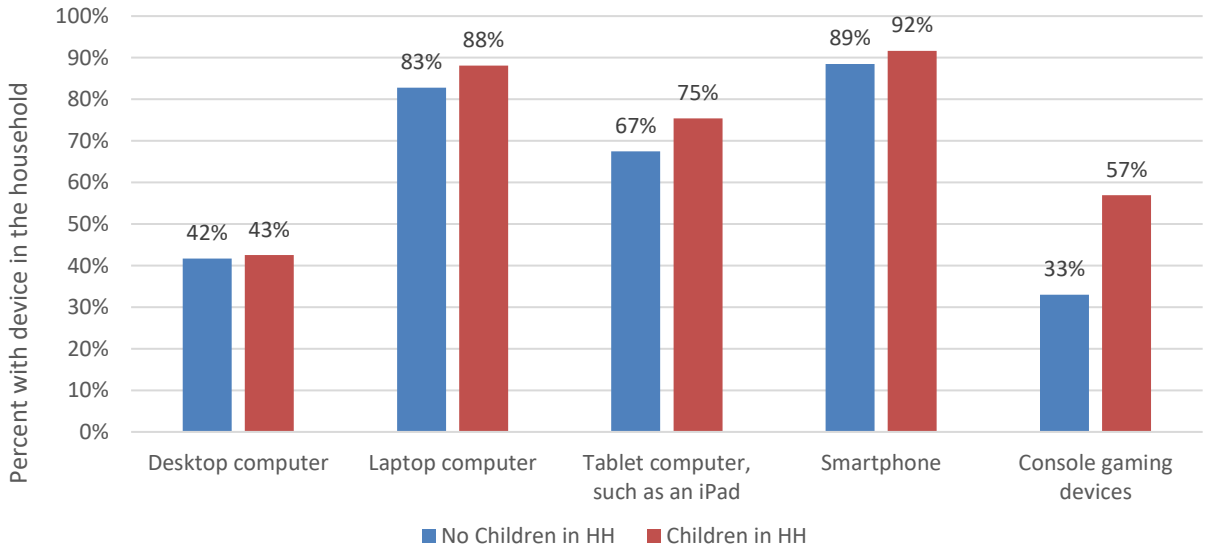
Use of smartphone is highest, with 89 percent of internet users having one, followed by laptops (84 percent) and tablets (69 percent). Forty-two percent of respondents with home internet have a desktop computer, and 40 percent have console gaming devices (see Figure 38). Respondents ages 65 and older are less likely than younger respondents to have various devices except desktop computers, as illustrated in Figure 39.

Figure 39: Devices Available in the Home by Respondent Age



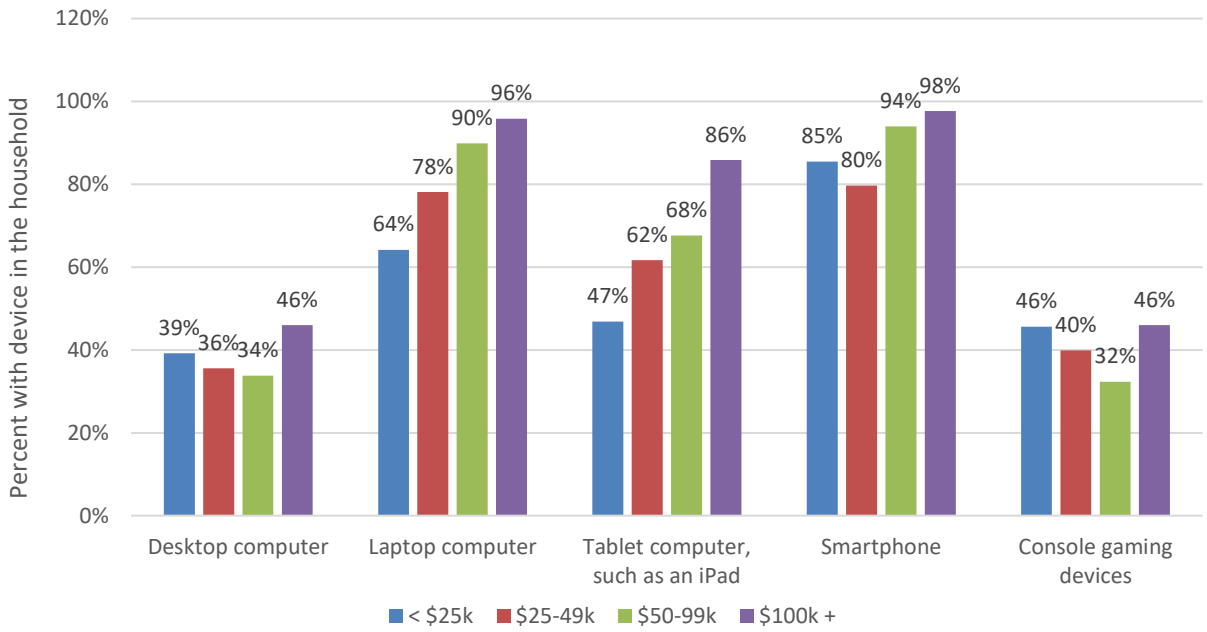
Households with children make strong use of key devices, as shown in Figure 40. Households with children are more likely than those without to children to have a tablet or a console gaming device.

Figure 40: Devices Available in the Home by Children in Household



Saturation of devices is correlated with household income. Almost all households earning $100,000 or more per year have a laptop computer or a smartphone, as depicted in Figure 41.

Figure 41: Devices Available in the Home by Household Income



Specifically, 81 percent of internet subscribers earning less than $25,000 per year have some sort of computer (desktop, laptop, or table), compared with 93 percent of those earning $25,000 but less than $50,000, 98 percent of those earning $50,000 but less than $100,000, and 99 percent of those earning $100,000 or more. (Two-thirds of low-income households have both internet service AND a computer, compared with nine in 10 of all households.)

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. Six in 10 respondents have had some issues with their computer, including 15 percent who experience problems at least once per week (see Figure 42).

Eight percent of respondents said they could not replace their computer if it became unusable, and another 19 percent said it would take one to six months to replace it (see Figure 43). Six in 10 internet subscribers could replace their computer within one week if it were lost or damaged beyond repair.

Figure 42: Computer Becomes Unusable

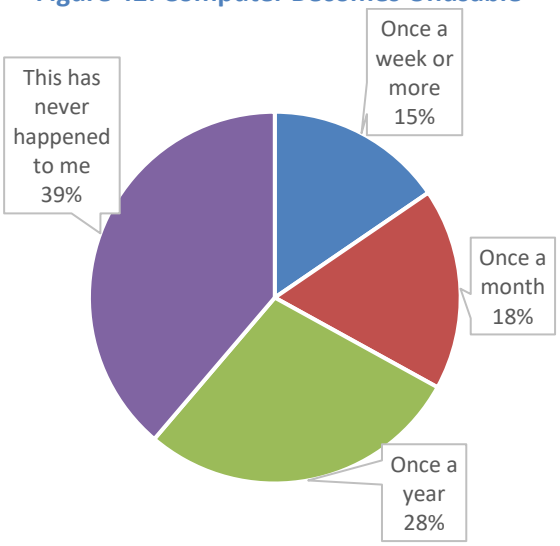
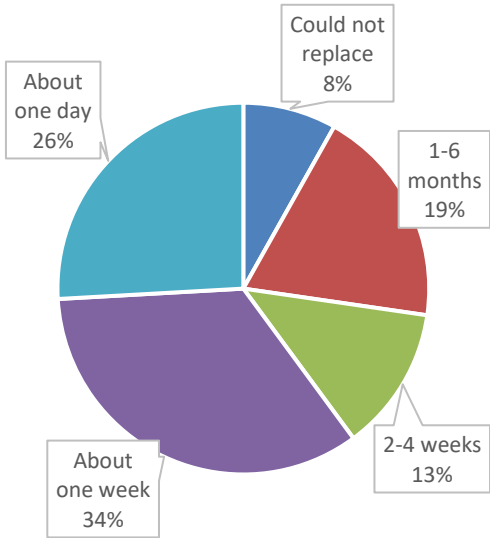


Figure 43: When Could Replace Computer



One-fourth of internet subscribers earning under $25,000 experience issues at least weekly with their primary computer becoming inaccessible or unusable (see Figure 44).

Three in 10 low-income respondents said it would take one to six months to replace a lost or damaged computer, and another 30 percent said they would not be able to replace it (see Figure 45).

Figure 44: How Often Computer Becomes Unusable by Household Income

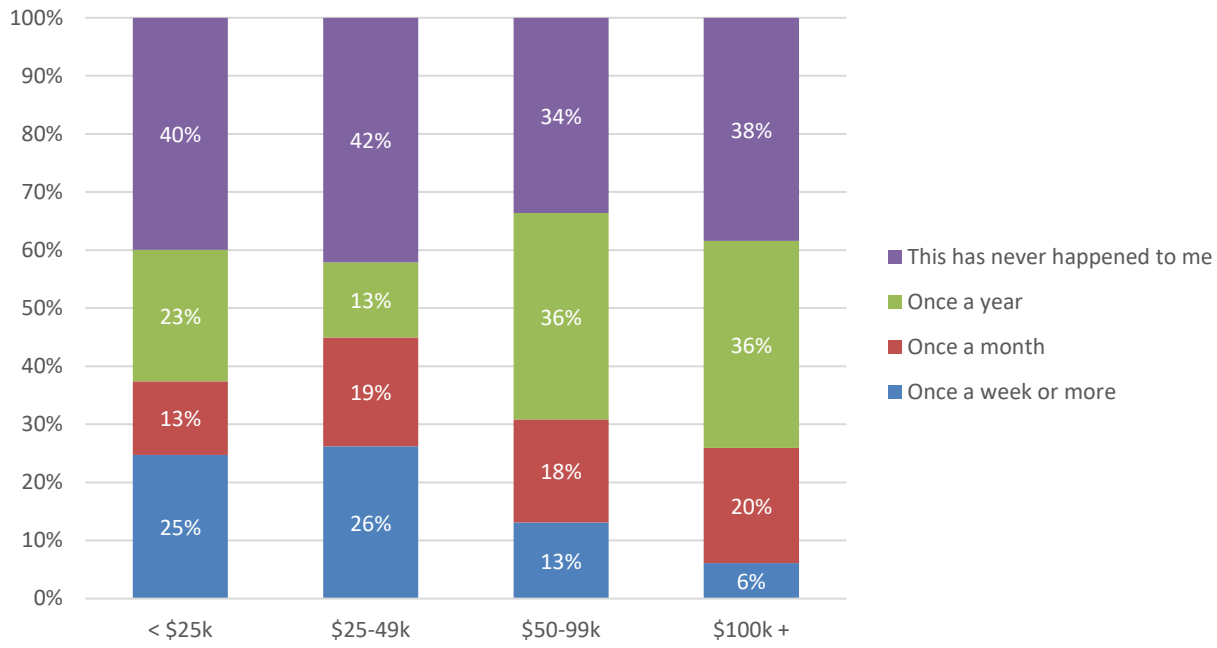
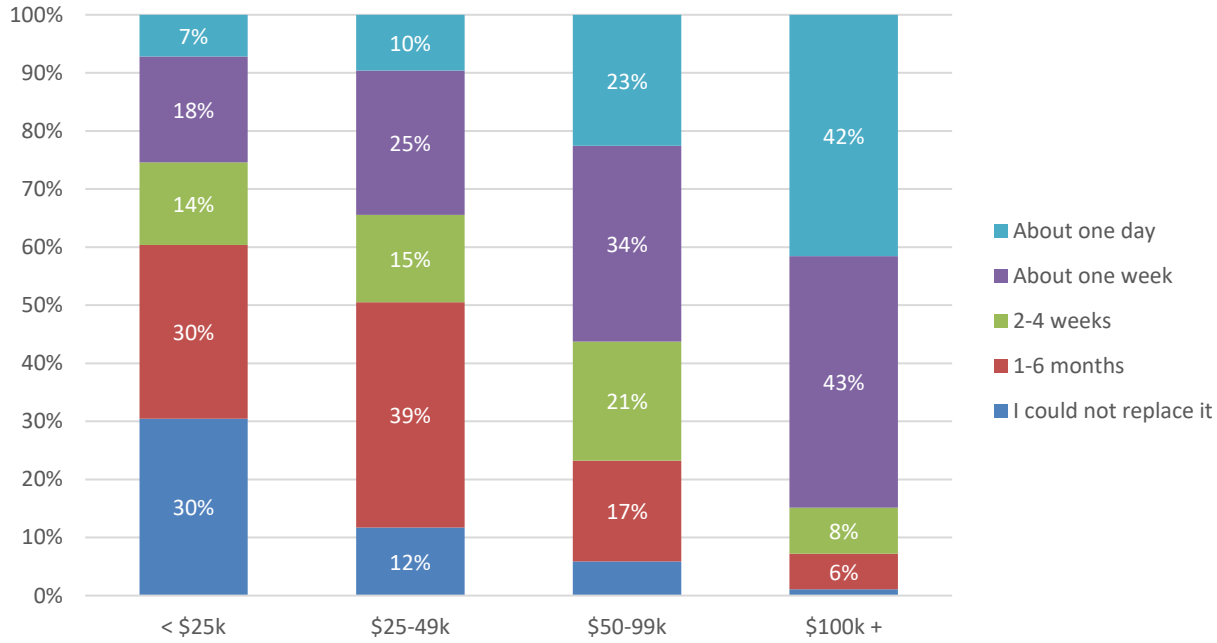


Figure 45: When Could Replace Computer by Household Income

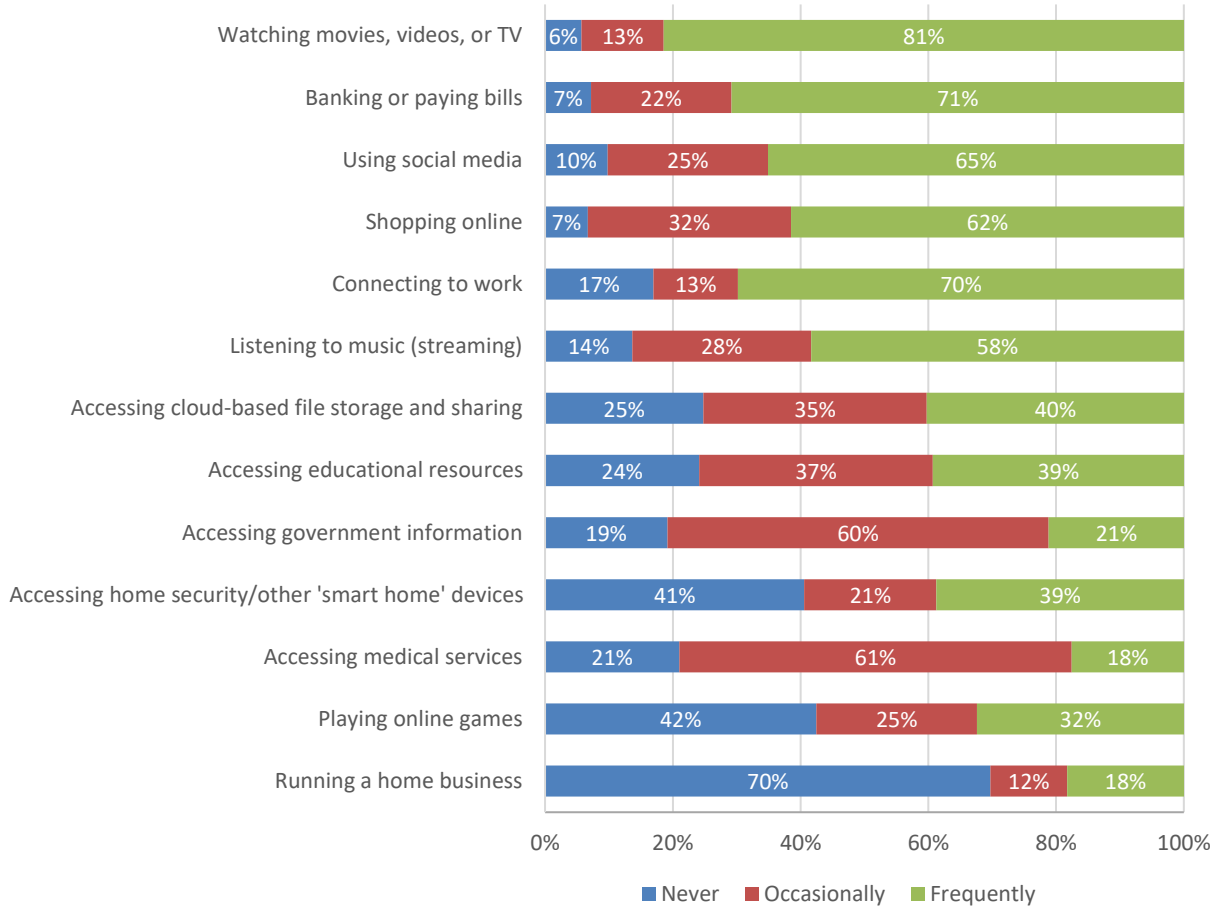


4.3.1.7 Internet Uses

Respondents were asked about their use of their home internet connection for various activities. Among those items listed, a home internet connection is most frequently used for watching videos, etc., banking or paying bills, using social media, shopping online, connecting to work, and streaming music, as shown in Figure 46. A majority of respondents engage in these activities frequently.

Some respondents use a home internet connection to access key information and services. Three-fourths of subscribers occasionally (37 percent) or frequently (39 percent) access educational resources. Approximately six in 10 subscribers occasionally use a home internet connection to access government information or to access medical services. Three in 10 respondents at least occasionally use a home internet connection for running a home-based business.

Figure 46: Home Internet Connection Use for Various Activities



4.3.1.7.1 Internet Uses by Respondent Age

Respondents under age 65 are more likely than older respondents to ever use their home internet connection for key activities, as illustrated in Table 15. Respondents under age 65 are more likely than older respondents to ever use their home internet connection for playing online games in particular. At the same time, most seniors use a home internet connection at least occasionally for various activities, and many seniors use it frequently for key activities like connecting to work, banking or paying bills, and watching movies, videos, or TV (see Table 16).

Table 15: Home Internet Connection Ever Used for Various Activities by Respondent Age

	< 45 years	45-54 years	55-64 years	65+ years
Listening to music (streaming)	94%	91%	95%	82%
Watching movies, videos, or TV	100%	98%	98%	89%
Playing online games	66%	66%	68%	41%
Connecting to work	94%	94%	84%	83%
Using social media	97%	93%	93%	87%
Shopping online	93%	94%	95%	94%
Running a home business	21%	33%	42%	37%
Accessing educational resources	81%	75%	80%	72%
Accessing government information	79%	85%	79%	81%
Accessing medical services	81%	74%	81%	75%
Banking or paying bills	98%	92%	97%	90%
Accessing home security/other 'smart home' devices	58%	73%	70%	59%
Accessing cloud-based file storage and sharing	84%	79%	78%	65%

Table 16: Home Internet Connection Frequently Used for Various Activities by Respondent Age

	< 45 years	45-54 years	55-64 years	65+ years
Listening to music (streaming)	75%	65%	66%	46%
Watching movies, videos, or TV	92%	91%	82%	69%
Playing online games	37%	35%	42%	21%
Connecting to work	82%	82%	72%	64%
Using social media	76%	66%	70%	57%
Shopping online	71%	64%	57%	52%
Running a home business	11%	22%	28%	22%
Accessing educational resources	47%	44%	55%	27%
Accessing government information	23%	22%	25%	19%
Accessing medical services	15%	16%	25%	17%
Banking or paying bills	75%	69%	81%	67%
Accessing home security/other 'smart home' devices	40%	46%	49%	31%
Accessing cloud-based file storage and sharing	47%	48%	44%	30%

4.3.1.7.2 Internet Uses by Children in Household

As shown in Table 17, most households with children ever use a home internet connection for key activities. Almost all (95 percent) households with children (and that have internet service) ever use a home internet connection to access educational resources, including 65 percent who access it frequently. Households with children are also more likely than households without children to frequently use a home internet connection for other activities like streaming music, playing online games, and accessing home security devices (see Table 18).

Table 17: Home Internet Connection Ever Used for Various Activities by Children in Household

	No Children in HH	Children in HH
Listening to music (streaming)	83%	95%
Watching movies, videos, or TV	93%	99%
Playing online games	51%	73%
Connecting to work	81%	89%
Using social media	88%	95%
Shopping online	93%	95%
Running a home business	29%	34%
Accessing educational resources	69%	95%
Accessing government information	81%	81%
Accessing medical services	79%	79%
Banking or paying bills	92%	95%
Accessing home security/other 'smart home' devices	54%	75%
Accessing cloud-based file storage and sharing	73%	81%

Table 18: Home Internet Connection Frequently Used for Various Activities by Children in Household

	No Children in HH	Children in HH
Listening to music (streaming)	54%	68%
Watching movies, videos, or TV	79%	88%
Playing online games	29%	41%
Connecting to work	67%	77%
Using social media	63%	70%
Shopping online	62%	61%
Running a home business	17%	22%
Accessing educational resources	30%	65%
Accessing government information	17%	32%
Accessing medical services	15%	26%
Banking or paying bills	69%	75%
Accessing home security/other 'smart home' devices	34%	52%
Accessing cloud-based file storage and sharing	37%	50%

4.3.2 Covid-19 impacts on home broadband

Respondents were asked a series of questions on how their broadband use has changed during the Covid-19 pandemic, including impacts on time and location of internet use, engagement in various internet activities, and usage during peak times. This information provides valuable insight into demand for broadband service during the pandemic.

4.3.2.1 Internet Use at Various Times

Respondents were asked to indicate how often they use the internet at various times before and during the Covid-19 pandemic. As shown in Figure 47, daily use of internet services at various times has increased during the pandemic. Most respondents are making use of the internet throughout the day, whereas prior to the pandemic usage was lower during daytime hours and peaked in the evening.

Figure 47: Daily Use of the Internet at Various Times Before and During Covid-19 Pandemic

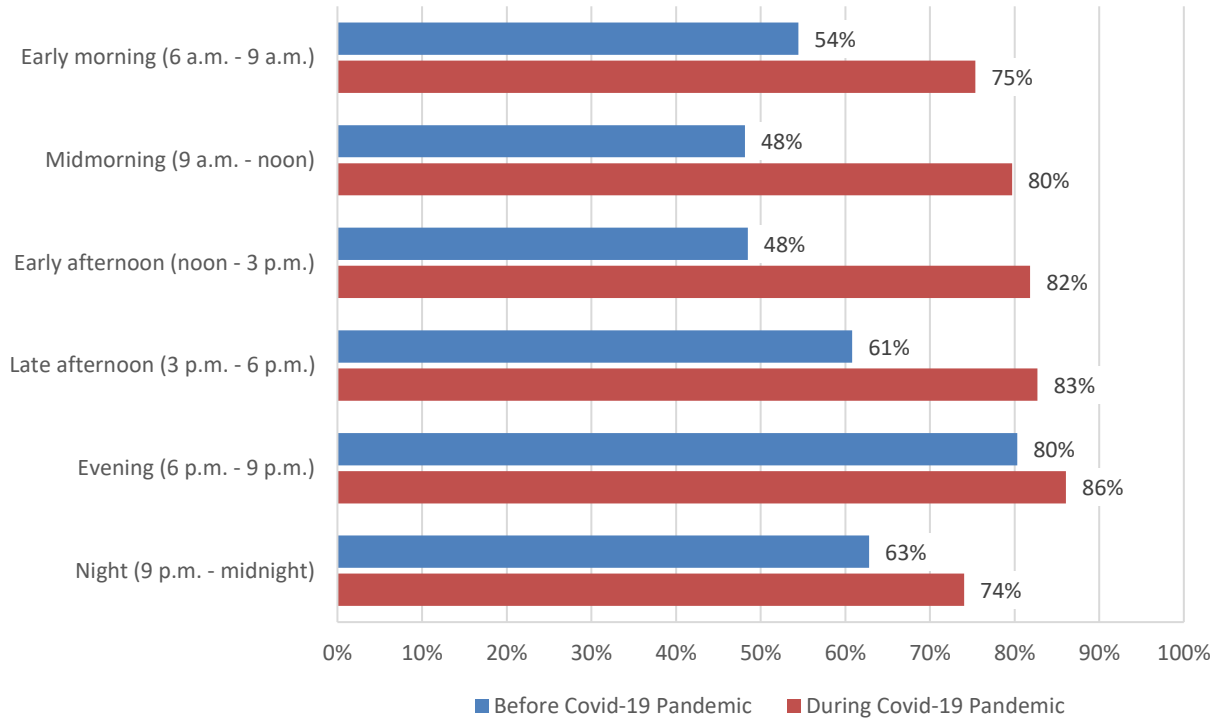


Figure 48 and Figure 49 show detailed usage of the internet at various times, before and during the pandemic. Most respondents made/make daily use of the internet in the evening, before and during the pandemic. Prior to the Covid-19 pandemic, approximately one-half of respondents made daily use of the internet in the morning or early afternoon, compared with approximately eight in 10 respondents during the pandemic.

Figure 48: How Often Use the Internet at Various Times Before Covid-19 Pandemic

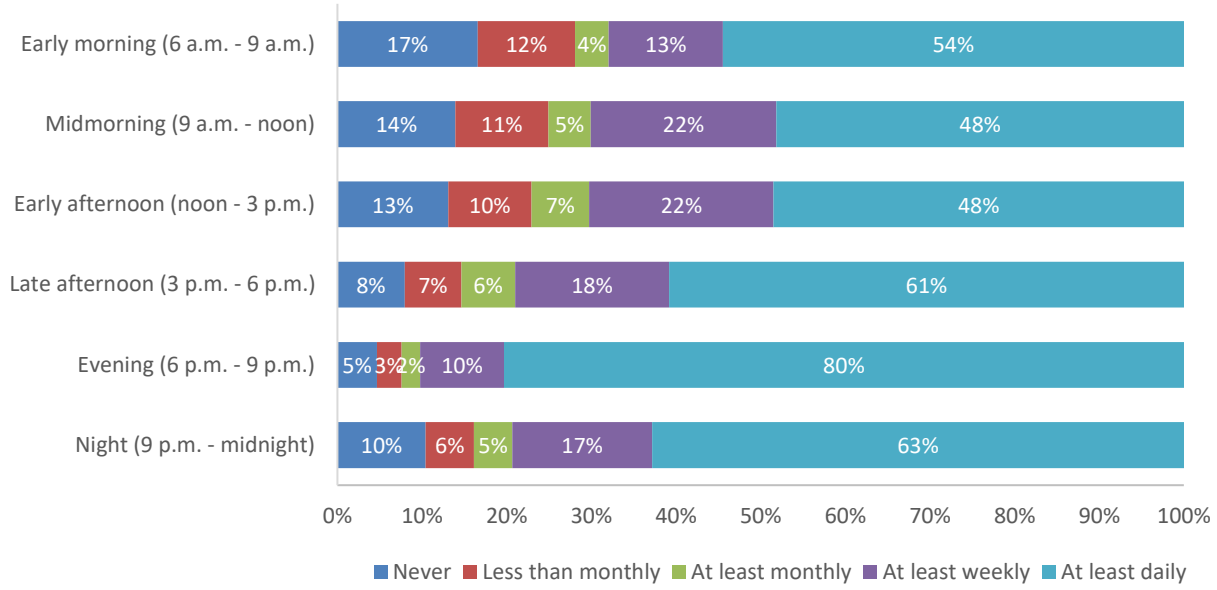
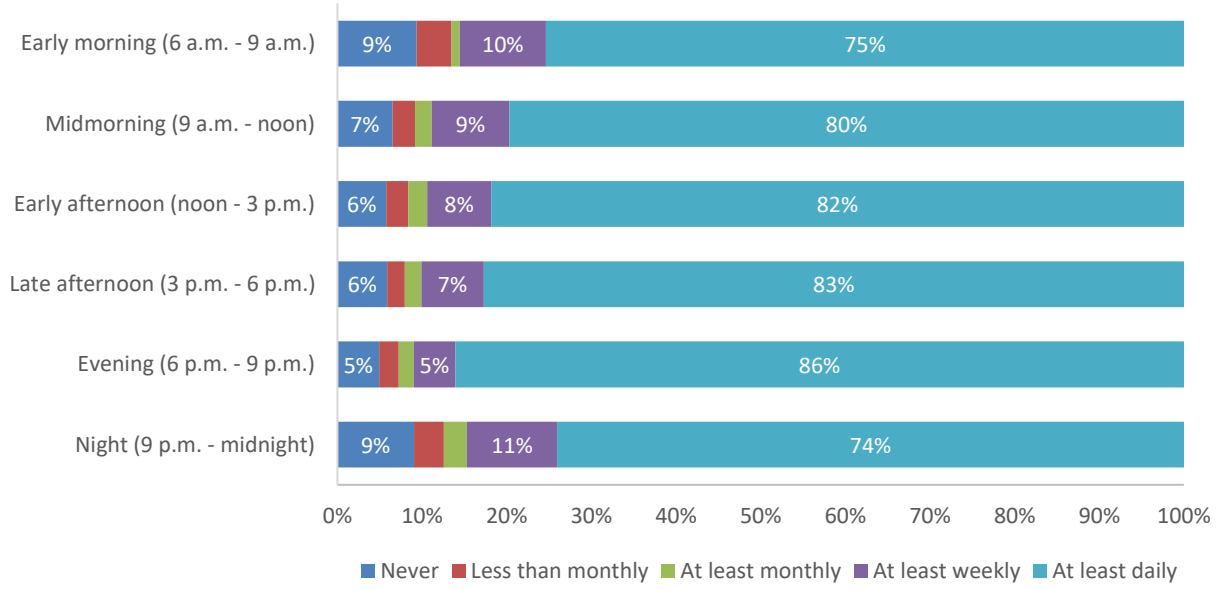


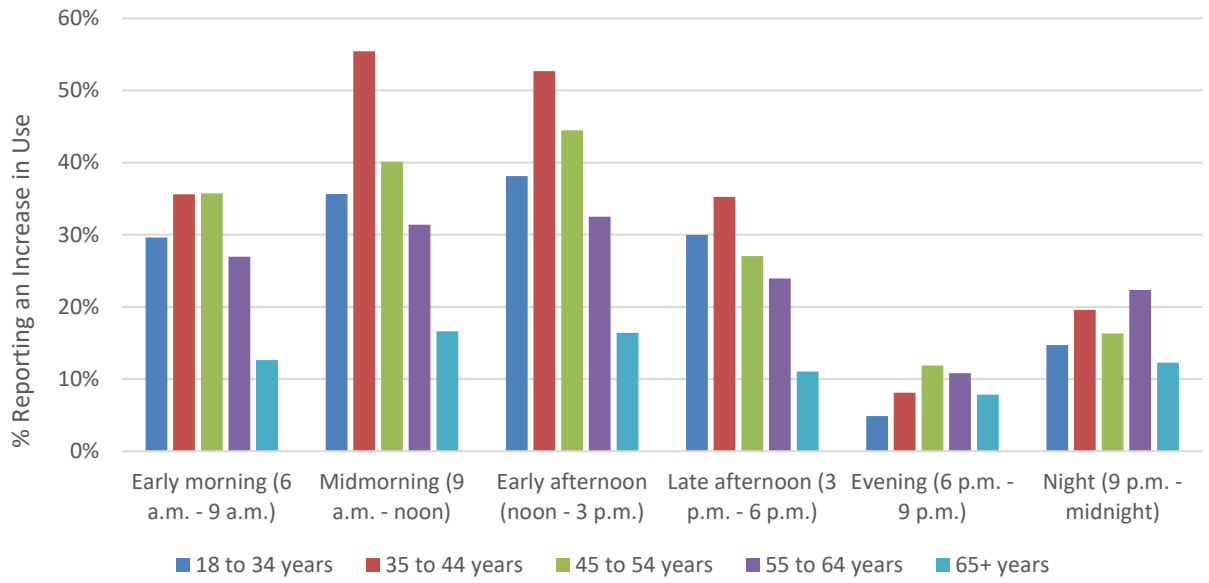
Figure 49: How Often Use the Internet at Various Times During Covid-19 Pandemic



Overall, most respondents use remained the same (most of whom were already making daily use of the internet) across the time groups, but a sizeable share of respondents increased their frequency of use as discussed. This shift has occurred across most demographic groups, except those ages 65+ saw less of an increase in frequency of use at various times of the day. As illustrated in Figure 50, respondents ages 35-54 years saw the biggest increase in use in the

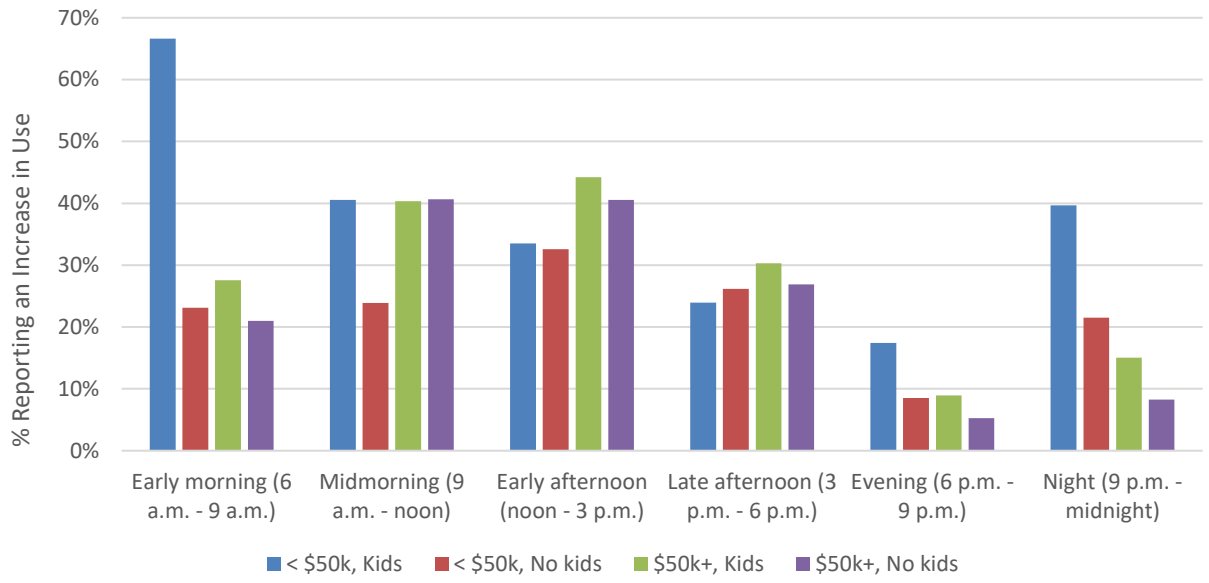
mid-morning and early afternoon, with over one-half of respondents in this age cohort increasing their use of the internet at those times of day.

Figure 50: Increase in Internet Use at Various Times of Day by Respondent Age



In general, lower-income households and households with children saw the largest increase in frequency of internet use in the early morning hours, compared with higher income households and those without children (see Figure 51). Specifically, 67 percent of the "less than $50,000, children at home" cohort increased their internet use early mornings. A large proportion of the other segments were already making daily use of the internet in the early mornings.

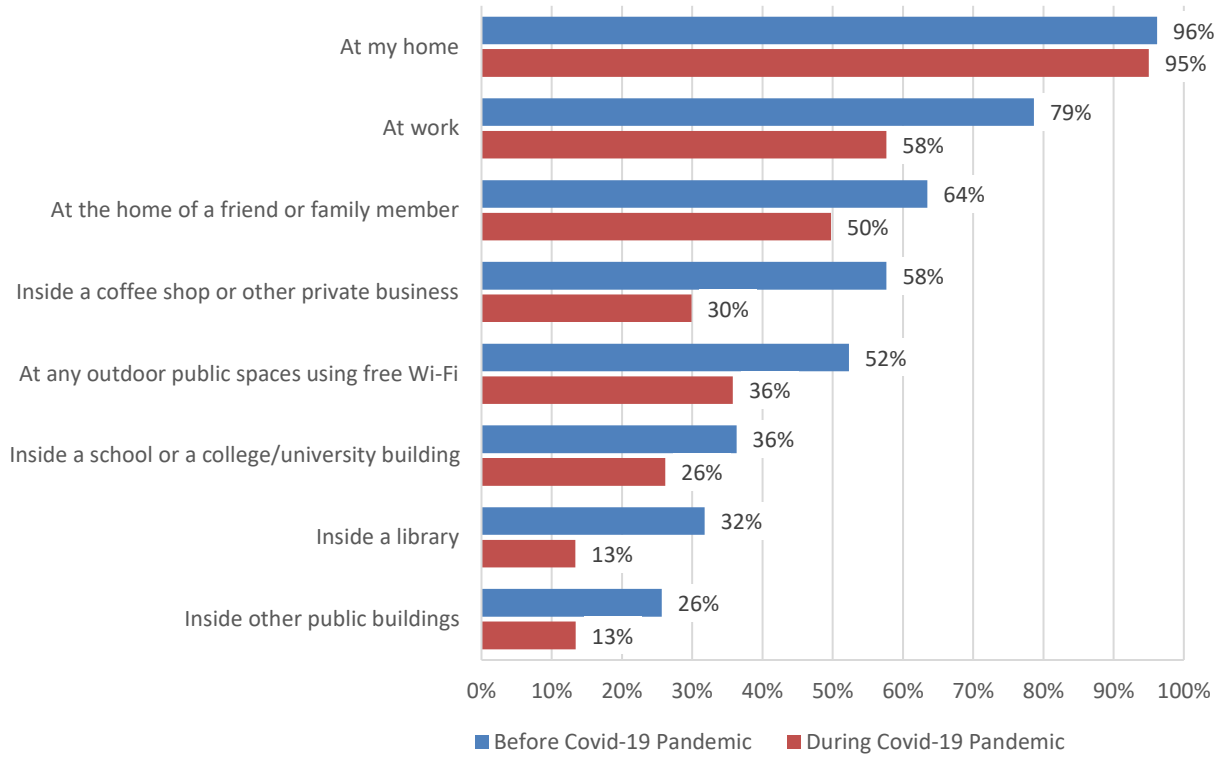
Figure 51: Increase in Internet Use at Various Times of Day by Segment



4.3.2.2 Internet Use by Location

Respondents were asked to indicate how often they use the internet in various locations before and during the Covid-19 pandemic. As shown in Figure 52, use of internet services outside of the home has declined significantly during the pandemic, which makes sense as many public areas and work settings have been less accessible.

Figure 52: Ever Use the Internet in Various Locations Before and During Covid-19 Pandemic



Significantly, use of the internet declined in work settings (79 percent vs. 58 percent) and private businesses (58 percent vs. 30 percent) when comparing pre-Covid and during-Covid figures. Use of the internet at schools or colleges declined from 36 percent of respondents pre-Covid to 26 percent currently. Use in libraries (32 percent vs. 13 percent), public buildings (26 percent vs. 13 percent), and outdoor public spaces (52 percent vs. 36 percent) also declined. Use of the internet at the home of a friend or family member declined from 64 percent of respondents pre-pandemic to 50 percent of respondents during the pandemic. Usage inside the home remained flat, with almost all respondents accessing the internet in the home pre-Covid (96 percent) and during-Covid (95 percent).

Figure 53 and Figure 54 show detailed usage of the internet at various locations, before and during the pandemic.

Figure 53: How Often Use the Internet in Various Locations Before Covid-19 Pandemic

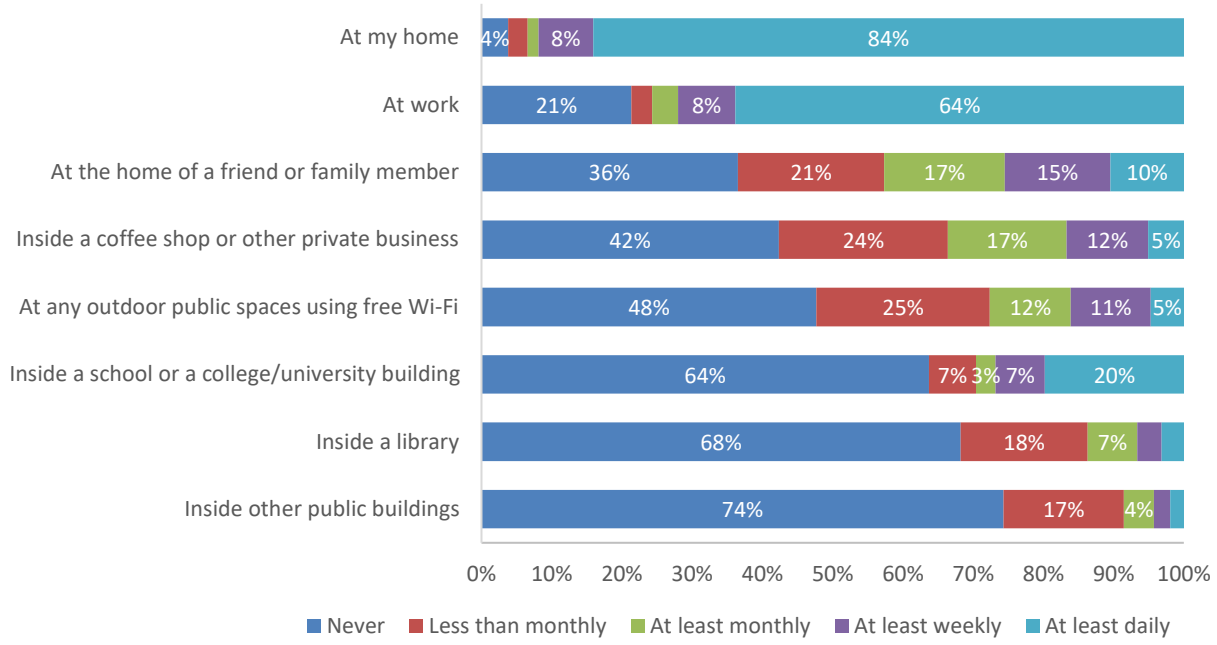
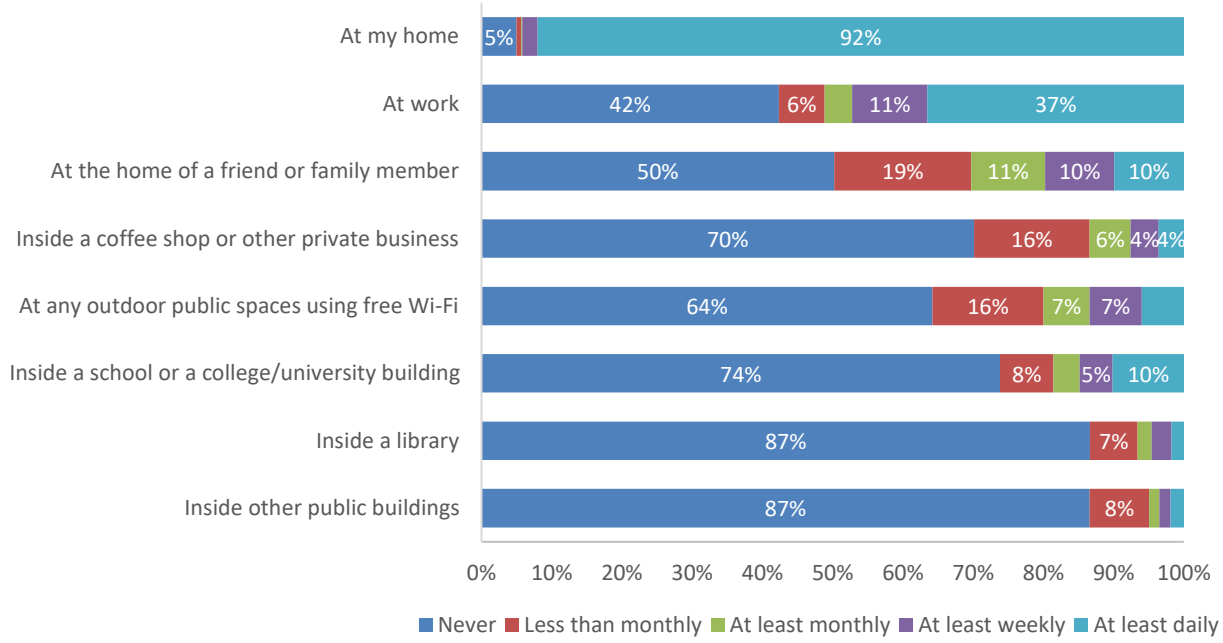
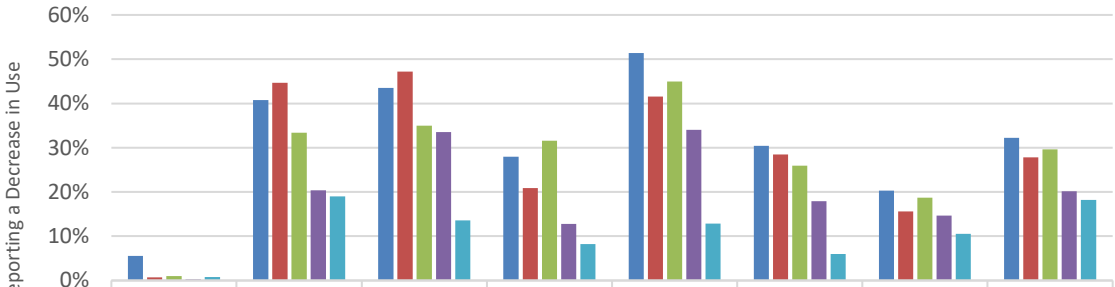


Figure 54: How Often Use the Internet in Various Locations During Covid-19 Pandemic



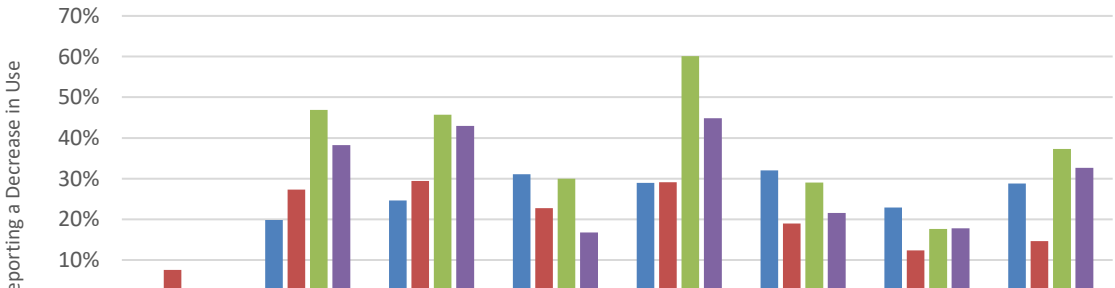
Prior to the pandemic, respondents ages 65 and older and those in lower incomes households were less likely than their counterparts to ever use the internet at various locations outside the home. They were also less likely to decrease their use during the pandemic at most locations, as illustrated in Figure 55 and Figure 56. However, three in 10 households with children, regardless of income level, reported a decrease in internet usage at schools or colleges. Prior to the pandemic, 54 percent of households with children used the internet within a school or college building (30 percent daily), compared with 36 percent during the pandemic (19 percent daily).

Figure 55: Decrease in Internet Use at Various Locations by Respondent Age



	Home	Friend/ family home	Work	School/ college	Private business	Library	Public buildings	Outdoor public space
18 to 34 years	6%	41%	44%	28%	51%	30%	20%	32%
35 to 44 years	1%	45%	47%	21%	42%	28%	16%	28%
45 to 54 years	1%	33%	35%	32%	45%	26%	19%	30%
55 to 64 years	0%	20%	34%	13%	34%	18%	15%	20%
65+ years	1%	19%	14%	8%	13%	6%	11%	18%

Figure 56: Decrease in Internet Use at Various Locations by Segment



	Home	Friend/ family home	Work	School/ college	Private business	Library	Public buildings	Outdoor public space
< $50k, Kids	0%	20%	25%	31%	29%	32%	23%	29%
< $50k, No kids	8%	27%	29%	23%	29%	19%	12%	15%
$50k+, Kids	0%	47%	46%	30%	60%	29%	18%	37%
$50k+, No kids	0%	38%	43%	17%	45%	22%	18%	33%

4.3.2.3 Engaged in Internet Activities

Respondents were asked about how they engaged in various internet activities before and during the Covid-19 pandemic. As shown in Figure 57 and Figure 58, engagement in online activities has increased significantly during the Covid-19 pandemic, with more respondents making daily use of the internet for key activities.

Nearly three-fourths (73 percent) of respondents have ever teleworked during the pandemic, compared with 58 percent before the pandemic. Teleworkers are making more regular use of working from home during the pandemic, with 58 percent of respondents engaging daily, compared with only 19 percent prior to the pandemic.

Seven in 10 respondents have used the internet for telemedicine or medical appointments during the Covid-19 pandemic (most on a monthly or less than monthly basis), compared with just 34 percent before the pandemic.

Use of the internet has also increased substantially for educational purposes. Use of the internet for online classes has increased from 28 percent of respondents pre-pandemic to 49 percent during the pandemic. Similarly, use of the internet for homeschooling increased from 11 percent before the pandemic to 24 percent during the pandemic. Use of the internet for homework increased slightly during the pandemic, from 33 percent to 41 percent of respondents. The percentage of respondents making daily use of the internet for homework increased from 14 percent pre-pandemic to 28 percent during the pandemic.

Figure 57: Ever Used the Internet for Various Activities Before and During Covid-19 Pandemic

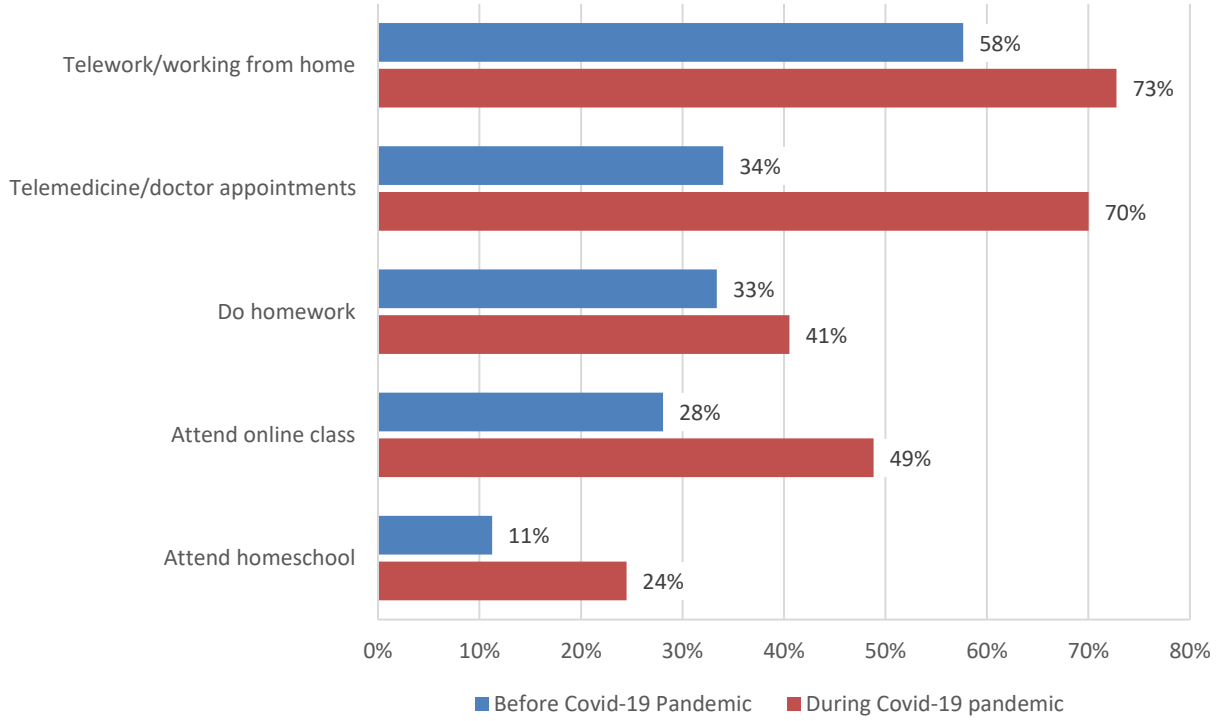


Figure 58 and Figure 59 show detailed usage of the internet for various activities, before and during the pandemic.

Figure 58: How Often Used the Internet for Various Activities Before Covid-19 Pandemic

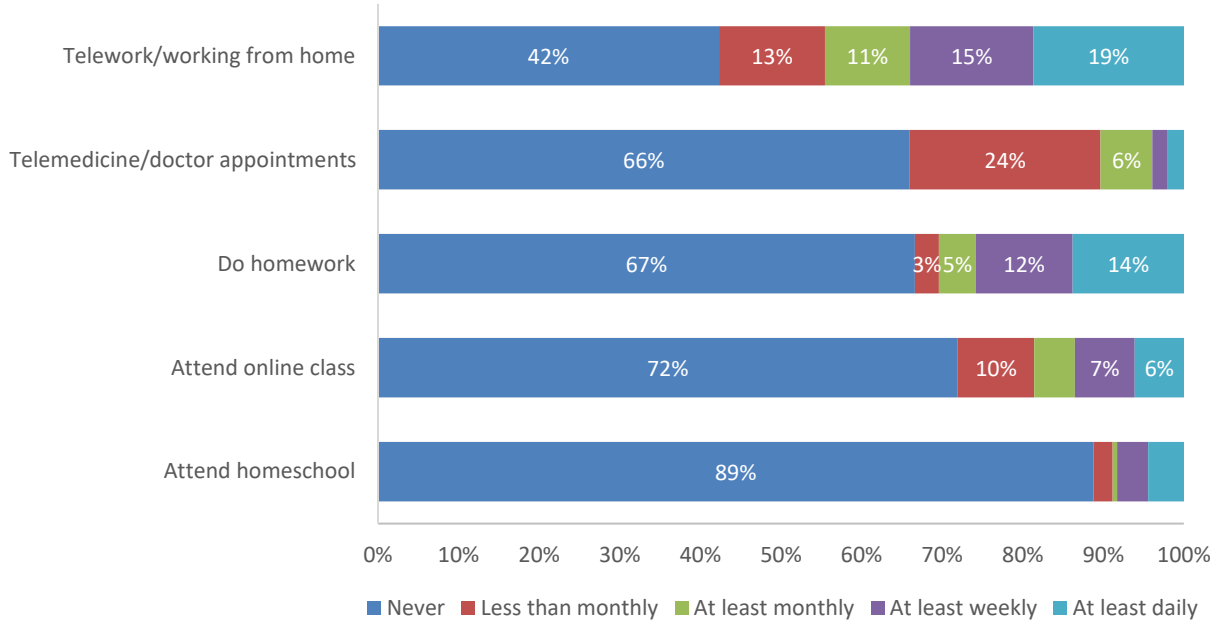
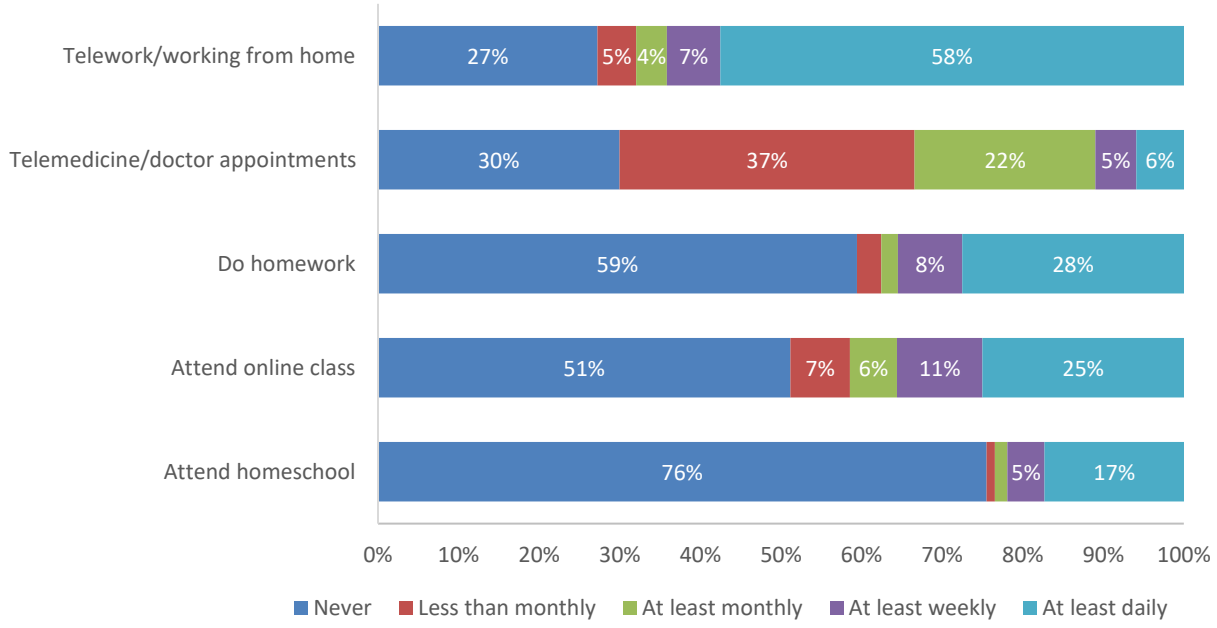


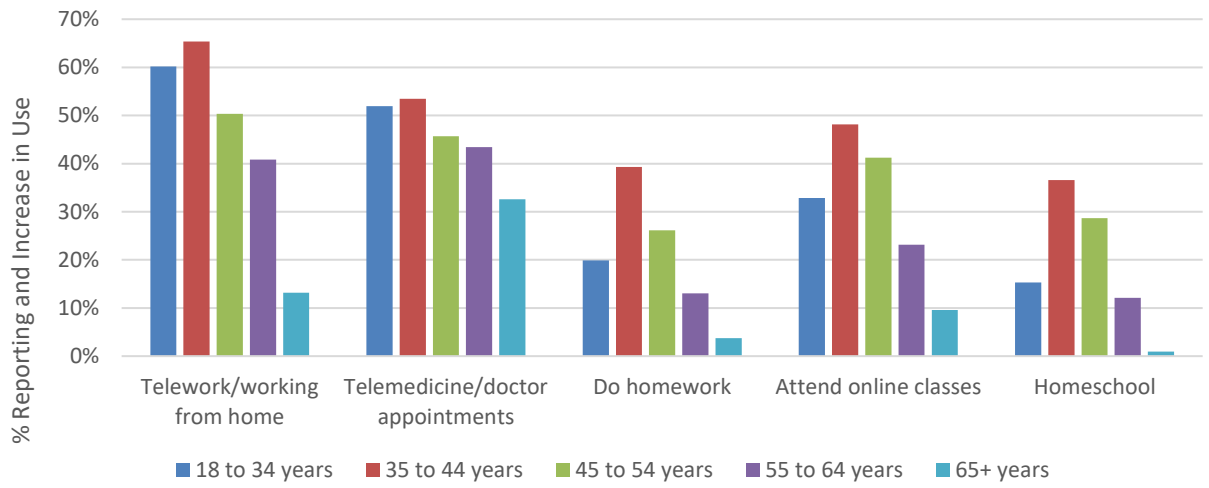
Figure 59: How Often Used the Internet for Various Activities During Covid-19 Pandemic



Respondents ages 65 and older were less likely than younger respondents to ever use the internet for work or education, both before and during the Covid-19 pandemic. More than six in 10 respondents under age 45 increased their frequency of use of the internet for teleworking during the pandemic (see Figure 60). Specifically, 18 percent of 18-34 year-olds and 18 percent

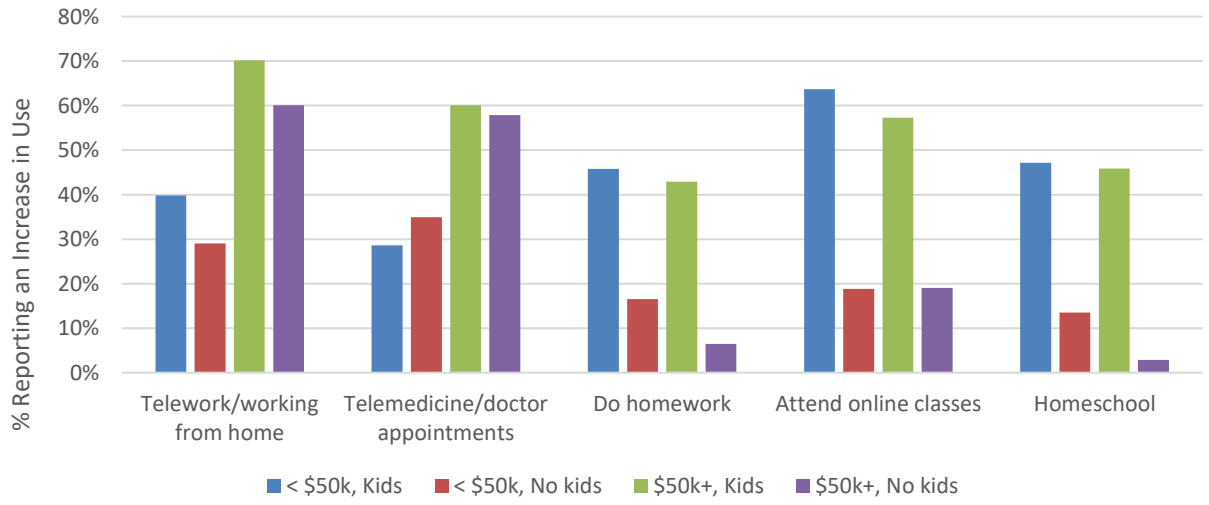
of 35-44 year-olds used the internet daily for telework prior to the pandemic; during the pandemic, 66 percent of 18-34 year-olds and 75 percent of 35-44 year-olds used the internet daily.

Figure 60: Increase in Internet Use for Various Activities by Respondent Age



Additionally, those in higher-income households were more likely to increase their use of the internet for telework and telemedicine during the pandemic. Households with children were more likely than those without children to have increased their use of the internet for education (see Figure 61).

Figure 61: Increase in Internet Use for Various Activities by Segment

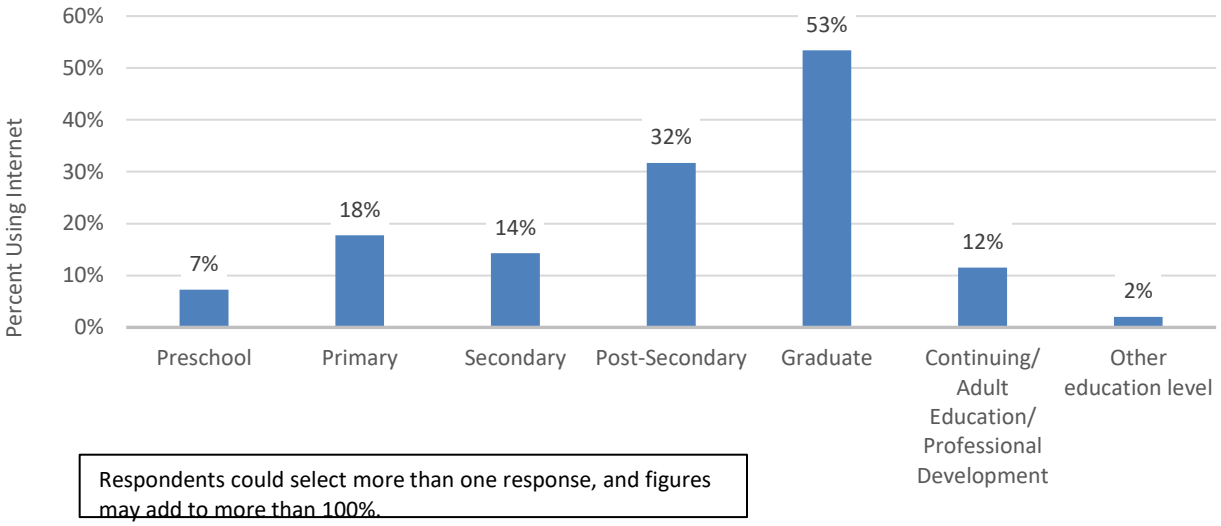


4.3.2.4 Education Level of Household Internet-Users

As shown in Figure 62, most household members who use the home internet connection have a

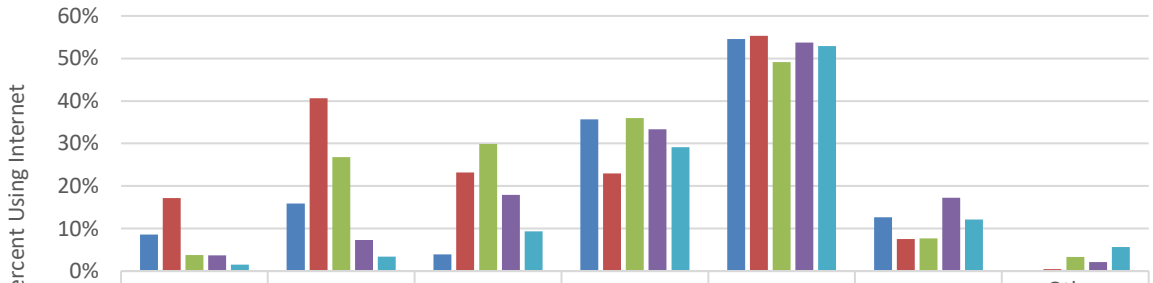
post-secondary (32 percent) or graduate (53 percent) level of education. A smaller segment of users has a primary (18 percent) or secondary (14 percent) level of education; this may include both adult household members and children who live in the household.

Figure 62: Education Level of Household Internet Users



Respondents less than age 55 are more likely than older respondents to have a household member with a primary level of education who uses the internet. Respondents ages 35-54 are more likely than older and younger respondents to have a household internet user with a secondary level of education (see Figure 63).

Figure 63: Education Level of Household Internet Users by Respondent Age

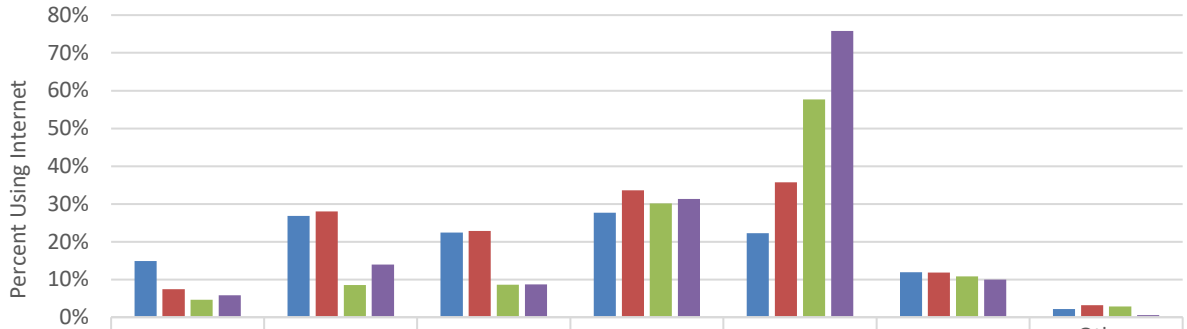


	Preschool	Primary	Secondary	Post-Secondary	Graduate	Continuing	Other education level
18 to 34 years	9%	16%	4%	36%	55%	13%	0%
35 to 44 years	17%	41%	23%	23%	55%	8%	0%
45 to 54 years	4%	27%	30%	36%	49%	8%	3%
55 to 64 years	4%	7%	18%	33%	54%	17%	2%
65+ years	2%	3%	9%	29%	53%	12%	6%

The education level of household members who use the internet is also correlated with

household income and presence of children in the household, as shown in Figure 64 and Figure 65. Three-fourths of households earning $100,000 or more per year have a household internet-user with a graduate level of education.

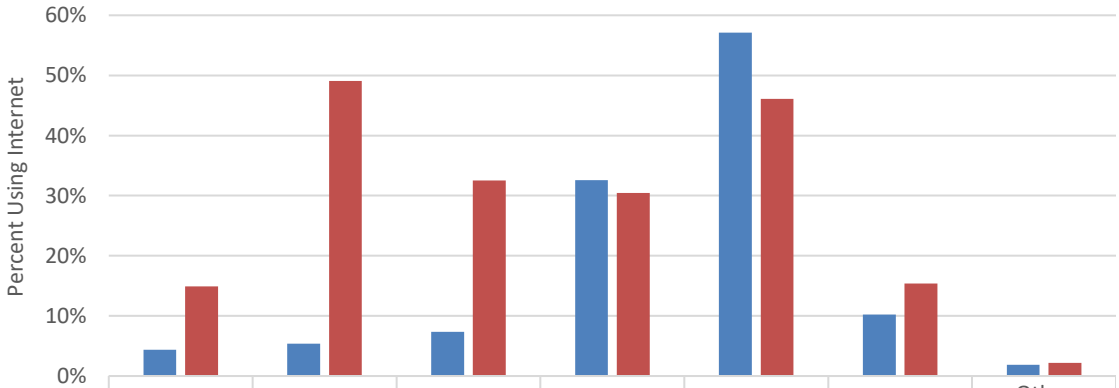
Figure 64: Education Level of Household Internet Users by Household Income



	Preschool	Primary	Secondary	Post-Secondary	Graduate	Continuing	Other education level
< $25k	15%	27%	22%	28%	22%	12%	2%
$25-49k	7%	28%	23%	34%	36%	12%	3%
$50-99k	5%	9%	9%	30%	58%	11%	3%
$100k +	6%	14%	9%	31%	76%	10%	1%

One-half of households with children have a household internet-user with a primary level of education, and 33 percent have a householder with a secondary level of education.

Figure 65: Education Level of Household Internet Users by Children in Household

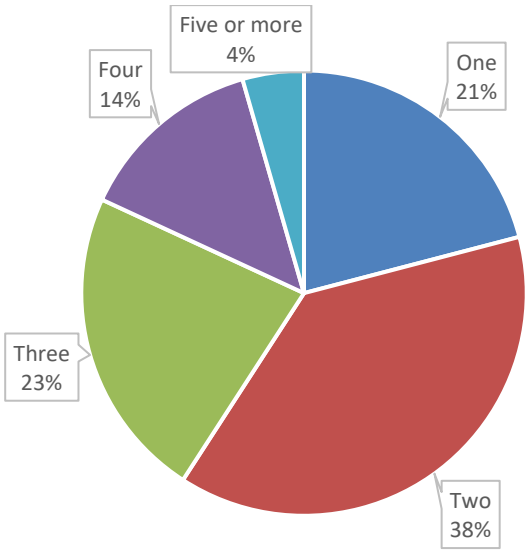


	Preschool	Primary	Secondary	Post-Secondary	Graduate	Continuing	Other education level
No Children in HH	4%	5%	7%	33%	57%	10%	2%
Children in HH	15%	49%	33%	30%	46%	15%	2%

4.3.2.5 Number of Household Members Online During Peak Usage Times

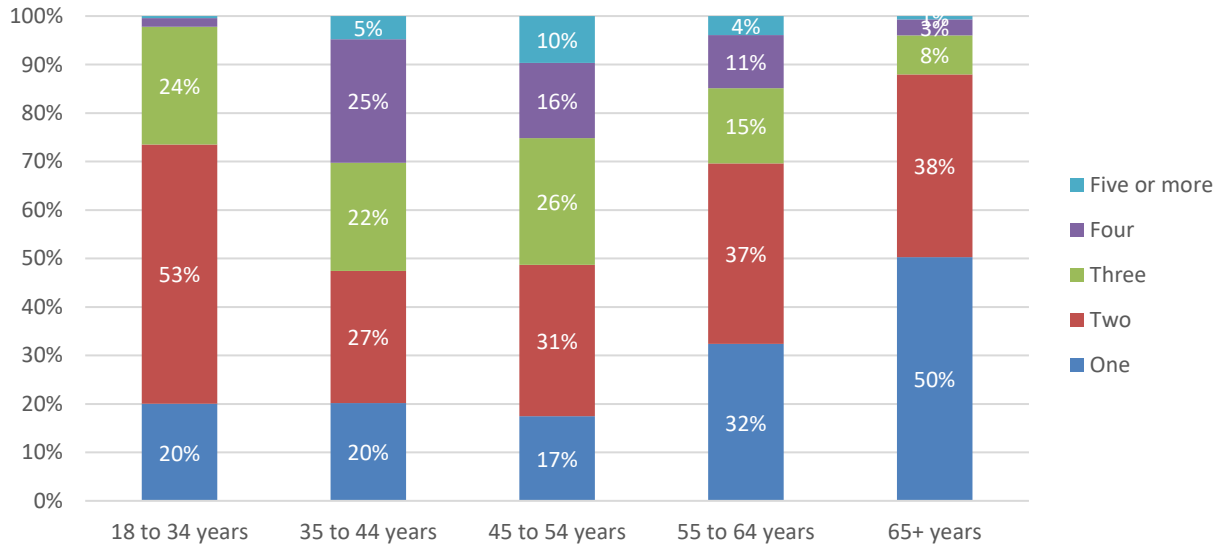
Eight in 10 households have multiple members online during peak usage times during the Covid-19 pandemic, including four in 10 households with at least three members online (see Figure 66).

Figure 66: Number of Households Members Online During Peak Usage Times



Respondents ages 35-54 years have the most members online during peak usage, with more than one-half reporting they have three or more members online at the same time. This age cohort is also more likely than older and younger respondents to have children in the household. Respondents ages 65 and older have fewer members online during peak usage; however, one-half have at least two members using the internet (see Figure 67).

Figure 67: Number of Households Members Online During Peak Usage Times by Age



4.3.3 Computer and internet skills

Respondents were asked a series of questions on how skilled they are using computers and the internet, as well as their interest in training to learn more about these topics. This information provides valuable insight into where there may be gaps in abilities and opportunities to educate residents.

4.3.3.1 Internet Skills

Respondents were asked to indicate their level of agreement with various statements about their computer and internet skills. Average rating scores are highlighted in Figure 68, while Figure 69 shows detailed responses.

Figure 68: Agreement with Statements About Internet Skills (Mean Ratings)

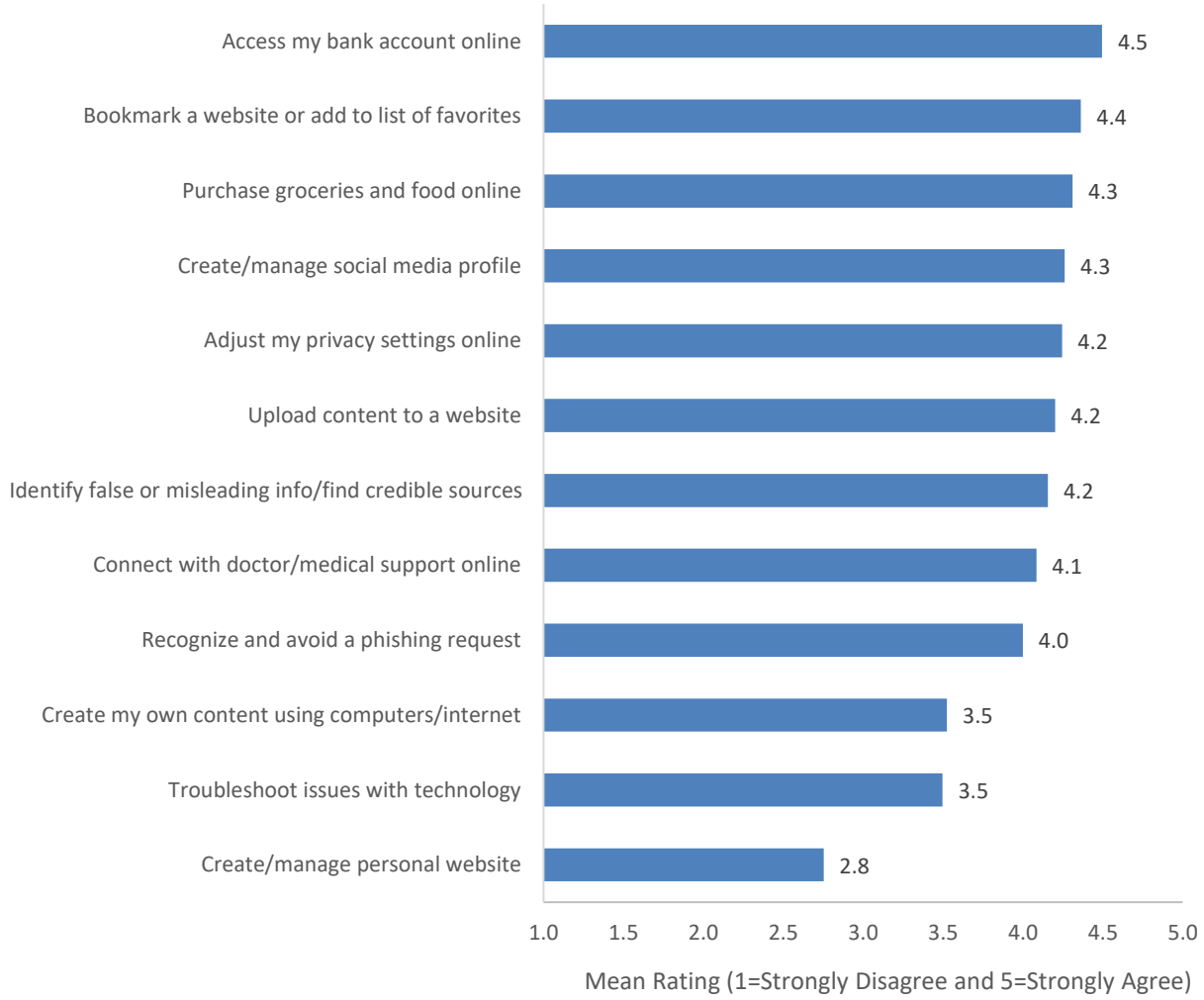
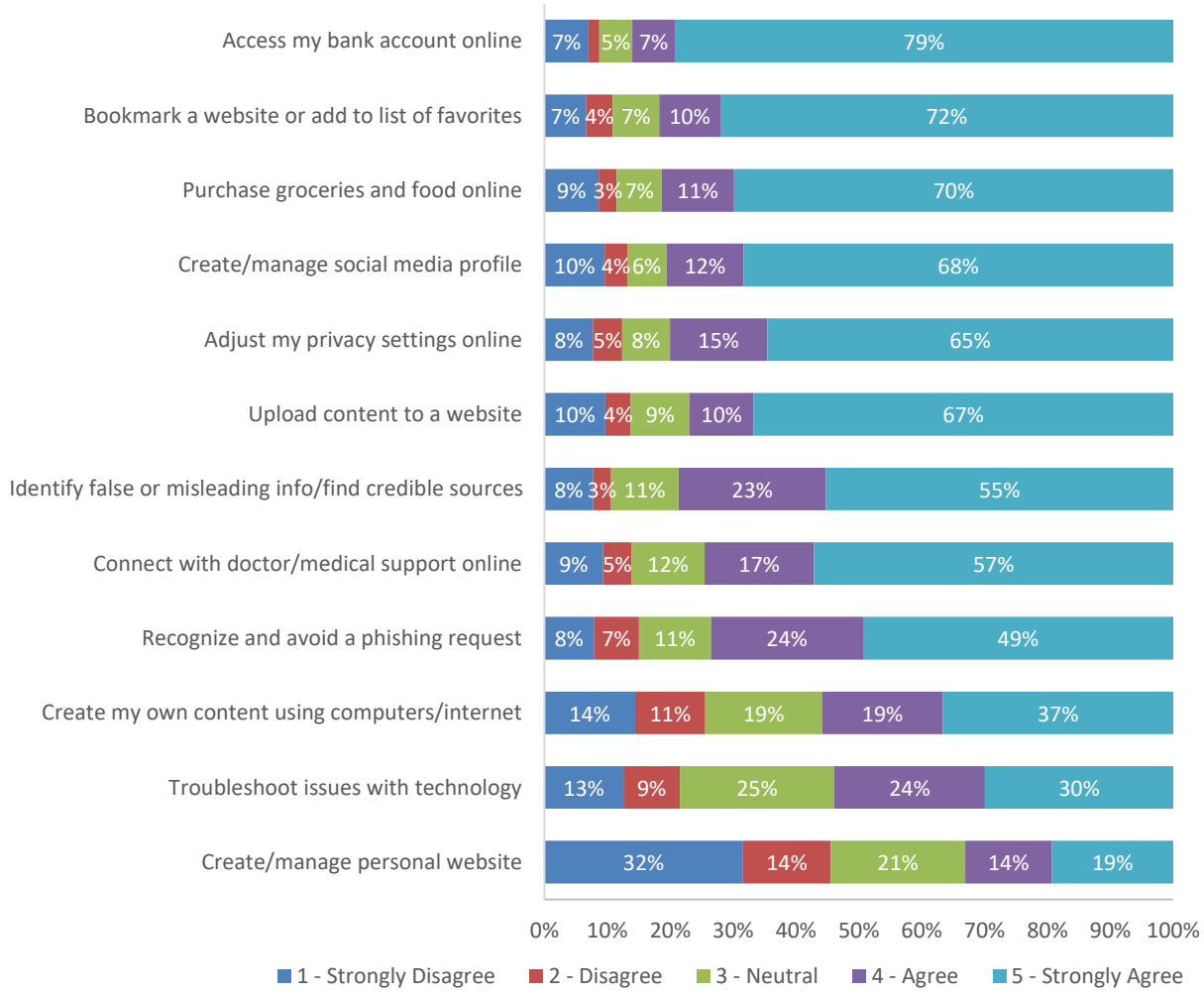


Figure 69: Agreement with Statements About Internet Skills



Overall, most internet subscribers agree that they know how to use the internet for various functions. Nearly eight in 10 respondents strongly agreed they can use the internet for accessing a bank account online. Seven in 10 strongly agreed they can use it for bookmarking a website or purchasing groceries and food online.

Approximately two-thirds of respondent strongly agreed they can use the internet for managing their own profile on social media, adjusting privacy settings online, and uploading content to a website. More than one-half of respondents strongly agreed they can use the internet to connect with doctors or other medical support online or to identify false or misleading information.

Respondents were less likely to agree that they are skilled in creating content or their own personal website or troubleshooting issues with technology.

Specifically, respondents ages 65 and older were less likely to agree that they are skilled in various uses of the internet (see Table 19 and Table 20). Respondents under age 35 are particularly skilled in internet uses compared with older respondents, especially for identifying false information, recognizing phishing scams, and creating content. Two-thirds of respondents under age 45 agreed or strongly agreed they are confident in their ability to troubleshoot issues with technology.

Table 19: Agreement with Statements About Internet Skills (Mean Ratings) by Age

	< 35 years	35-44 years	45-54 years	55-64 years	65 + years
I know how to upload content to a website	4.5	4.5	4.4	4.0	3.4
I know how to adjust my privacy settings online	4.7	4.5	4.4	3.9	3.3
I know how to bookmark a website or add to favorites	4.9	4.6	4.4	4.0	3.6
I know how to identify false or misleading information online and find credible sources of information	4.5	4.3	4.1	4.0	3.6
I know how to create and manage my own personal profile on Facebook or other social network site	4.8	4.4	4.4	3.9	3.2
I know how to create and manage my own personal website	3.1	3.0	3.1	2.5	1.9
I know how to recognize and avoid a phishing scam	4.4	4.0	3.9	3.9	3.4
I know how to create my own content using computers and the internet	4.1	3.7	3.6	3.2	2.5
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	4.8	4.7	4.6	4.3	3.8
I feel confident in my ability to troubleshoot issues with technology when they arise	4.0	3.8	3.5	3.1	2.6
I know how to purchase groceries and food online	4.7	4.6	4.4	4.0	3.6
I know how connect with my doctor or other medical support online	4.3	4.2	4.1	3.9	3.9

Table 20: Agreement with Statements About Internet Skills (% Strongly Agree) by Age

	< 35 years	35-44 years	45-54 years	55-64 years	65 + years
I know how to upload content to a website	80%	79%	70%	58%	36%
I know how to adjust my privacy settings online	80%	76%	66%	51%	37%
I know how to bookmark a website or add to favorites	91%	80%	71%	56%	45%
I know how to identify false or misleading information online and find credible sources of information	66%	64%	51%	53%	32%
I know how to create and manage my own personal profile on Facebook or other social network site	90%	77%	70%	55%	31%
I know how to create and manage my own personal website	25%	26%	21%	15%	7%
I know how to recognize and avoid a phishing scam	66%	49%	45%	43%	28%
I know how to create my own content using computers and the internet	51%	41%	33%	27%	15%
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	92%	88%	79%	68%	58%
I feel confident in my ability to troubleshoot issues with technology when they arise	37%	43%	30%	20%	10%
I know how to purchase groceries and food online	85%	82%	68%	59%	42%
I know how connect with my doctor or other medical support online	63%	60%	60%	54%	46%

Additionally, respondents in households earning under $25,000 were less likely to agree that they are skilled in various uses of the internet (see Table 21 and Table 22). Just 14 percent of respondents in low-income households strongly agreed they are confident in their ability to troubleshoot issues with technology.

Table 21: Agreement with Statements About Internet Skills (Mean Ratings) by Income

	< $25k	$25-$49k	$50-$99k	$100k +
I know how to upload content to a website	2.9	4.1	4.4	4.7
I know how to adjust my privacy settings online	3.5	4.1	4.4	4.6
I know how to bookmark a website or add to favorites	3.5	4.0	4.7	4.8
I know how to identify false or misleading information online and find credible sources of information	3.2	3.8	4.4	4.6
I know how to create and manage my own personal profile on Facebook or other social network site	3.6	4.1	4.4	4.7
I know how to create and manage my own personal website	2.2	2.4	2.9	3.3
I know how to recognize and avoid a phishing scam	3.2	3.7	4.2	4.4
I know how to create my own content using computers and the internet	2.7	3.4	3.6	4.0
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	3.5	4.5	4.8	4.9
I feel confident in my ability to troubleshoot issues with technology when they arise	2.7	3.2	3.6	4.1
I know how to purchase groceries and food online	3.4	4.0	4.5	4.8
I know how connect with my doctor or other medical support online	2.8	3.9	4.2	4.6

Table 22: Agreement with Statements About Internet Skills (% Strongly Agree) by Income

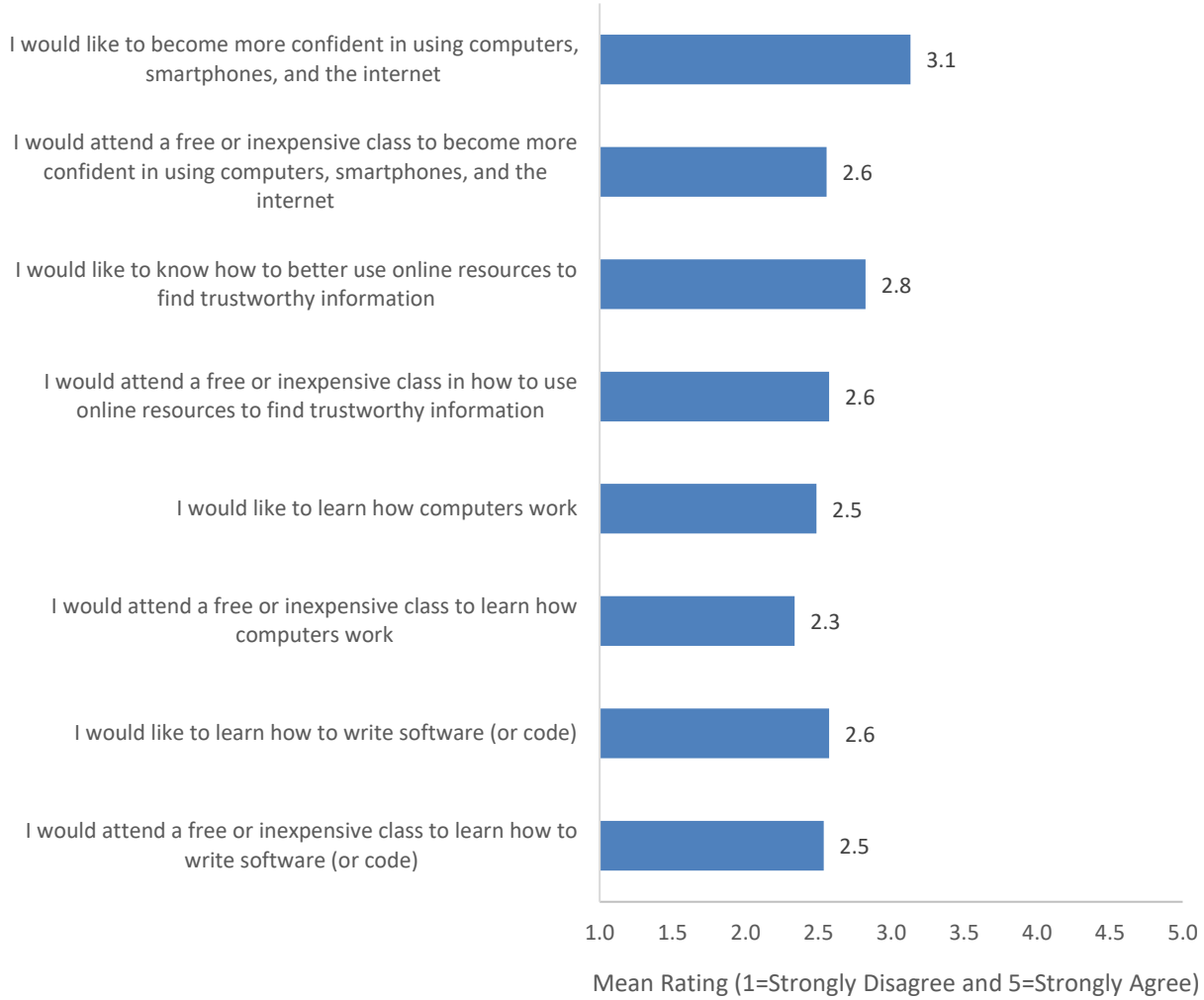
	< $25k	$25-$49k	$50-$99k	$100k +
I know how to upload content to a website	26%	63%	74%	85%
I know how to adjust my privacy settings online	39%	66%	64%	76%
I know how to bookmark a website or add to favorites	42%	62%	82%	91%
I know how to identify false or misleading information online and find credible sources of information	24%	47%	62%	73%
I know how to create and manage my own personal profile on Facebook or other social network site	42%	65%	73%	85%
I know how to create and manage my own personal website	5%	13%	17%	32%
I know how to recognize and avoid a phishing scam	24%	47%	47%	65%
I know how to create my own content using computers and the internet	16%	36%	36%	49%
I know how to access my bank account online to perform tasks such as paying bills or depositing checks with my phone	49%	76%	88%	95%
I feel confident in my ability to troubleshoot issues with technology when they arise	14%	26%	27%	44%
I know how to purchase groceries and food online	42%	63%	71%	89%
I know how connect with my doctor or other medical support online	22%	52%	57%	73%

4.3.3.2 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 70, while Figure 71 shows detailed responses.

Overall, there is only slight to moderate interest in learning about or in attending a class about writing software/code or in learning how computers work. On average, there is moderate interest in becoming more confident in using computers, smartphones, and the internet, or in using online resources to find trustworthy information. However, there is less interest in attending a free or inexpensive class about these topics.

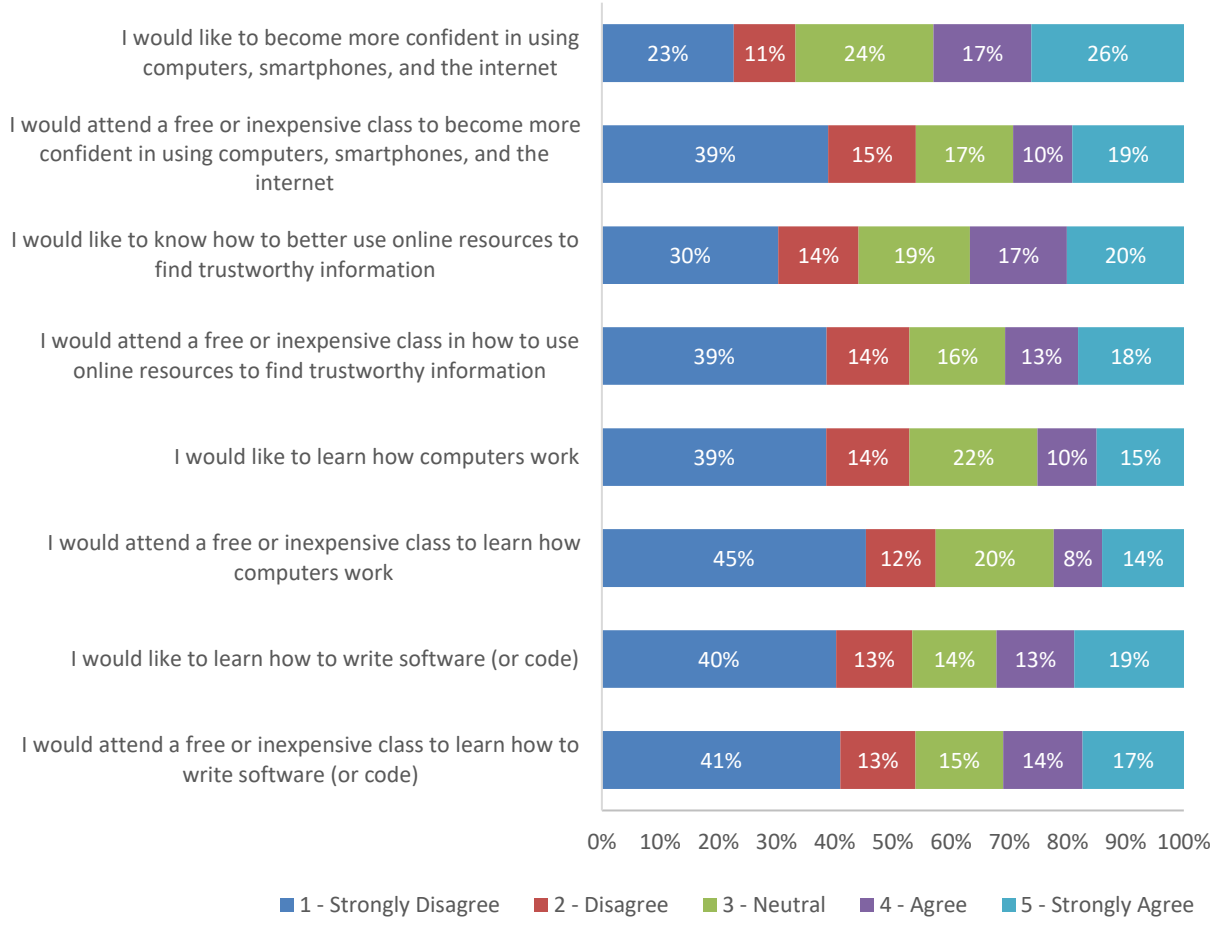
Figure 70: Agreement with Statements About Training Related to Computers and the Internet (Mean Ratings)



Specifically, more than four in 10 respondents agreed or strongly agreed that they would like to become more confident in using computers and related technology, but just 29 percent agreed or strongly agreed they would like to attend training.

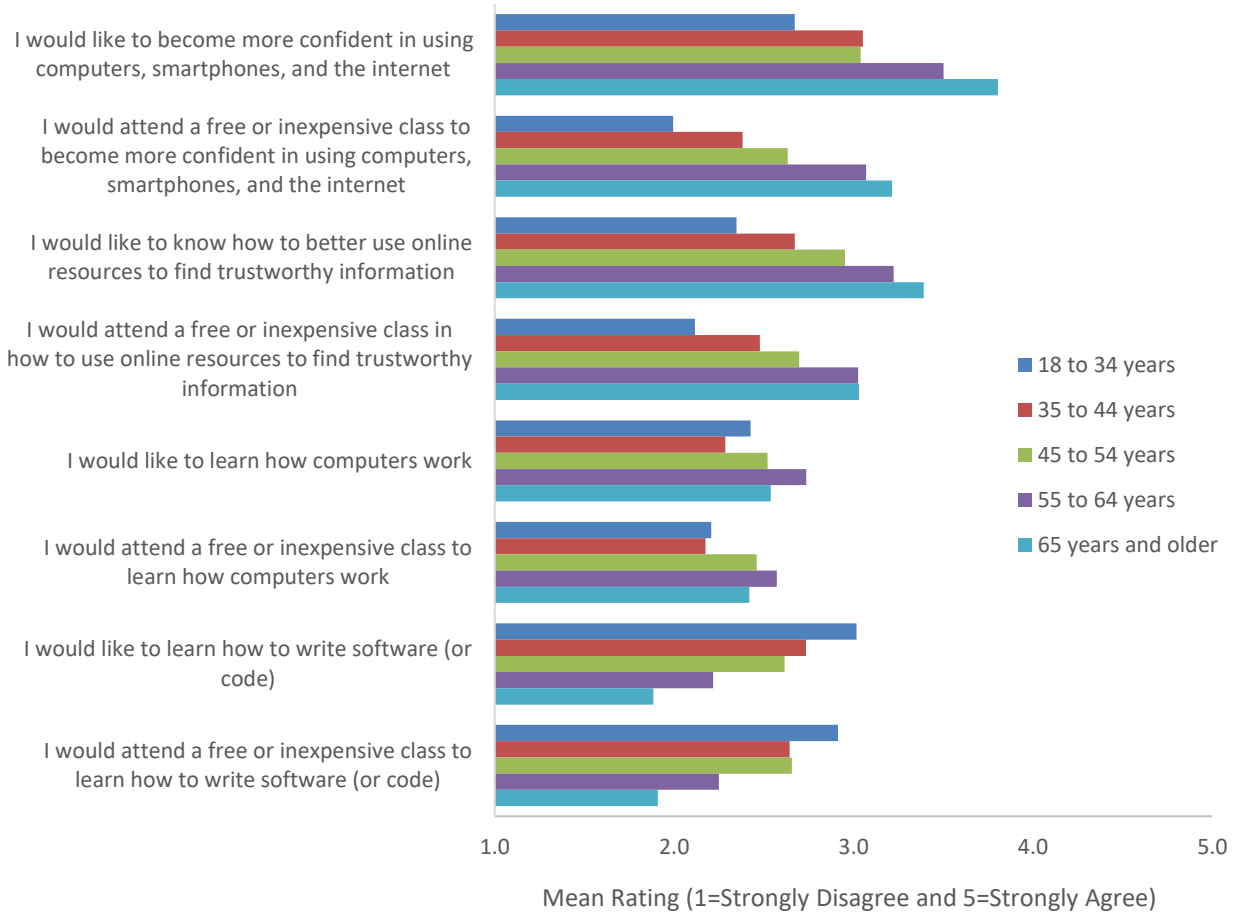
Similarly, 37 percent of respondents agreed or strongly agreed about wanting to know how to better use online resources to find trustworthy information, and 31 percent agreed or strongly agreed they are interested in training while 30 percent strongly disagreed.

Figure 71: Agreement with Statements About Training Related to Computers and the Internet



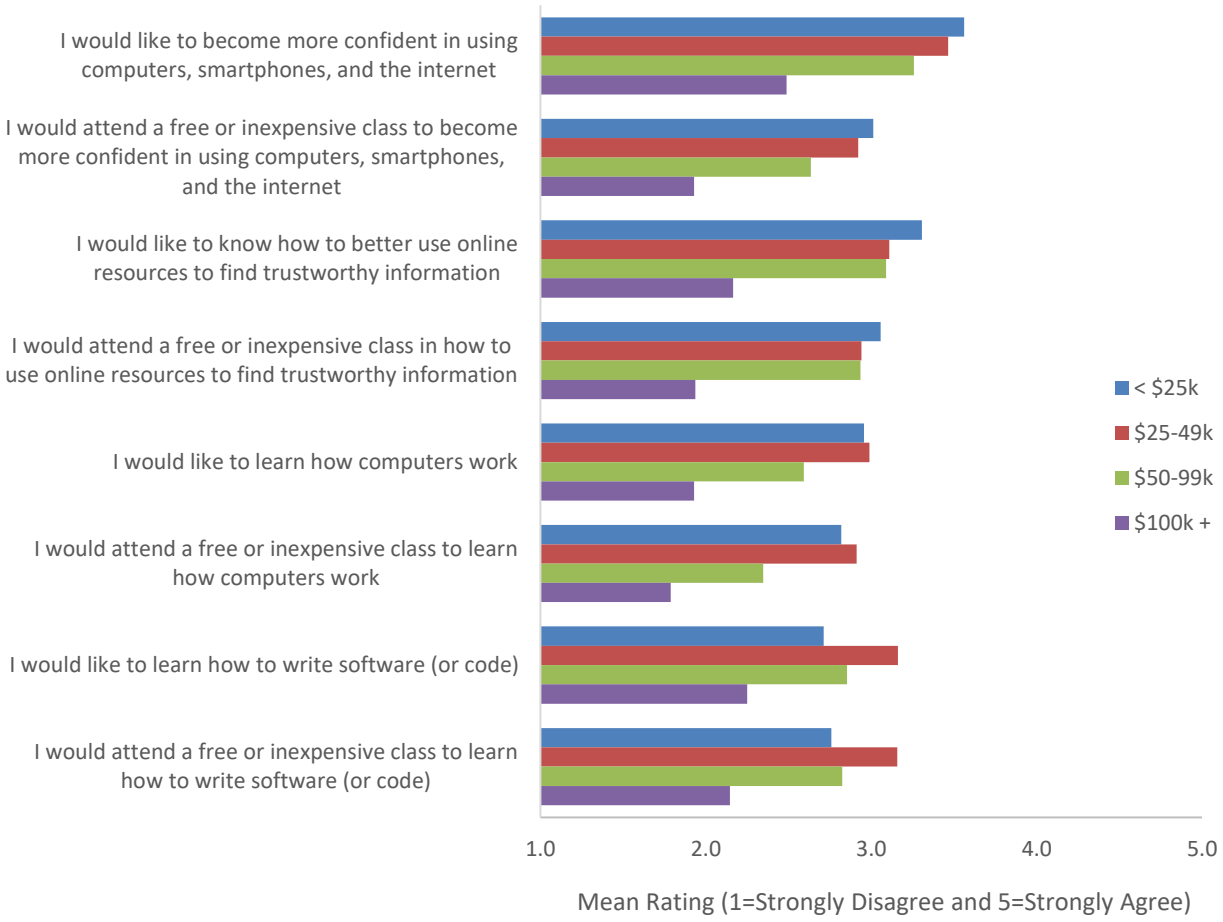
Interest in training varies significantly by age of respondent. As illustrated in Figure 72, those ages 55 and older expressed greater interest in becoming more confident in using computers and related technology and in learning how to better use online resources, as well as attending a class about these topics, compared with younger respondents. Those under age 35 are more likely than older respondents to agree they would like to learn how to write code or to take a class about this topic.

Figure 72: Agreement with Statements About Training by Respondent Age



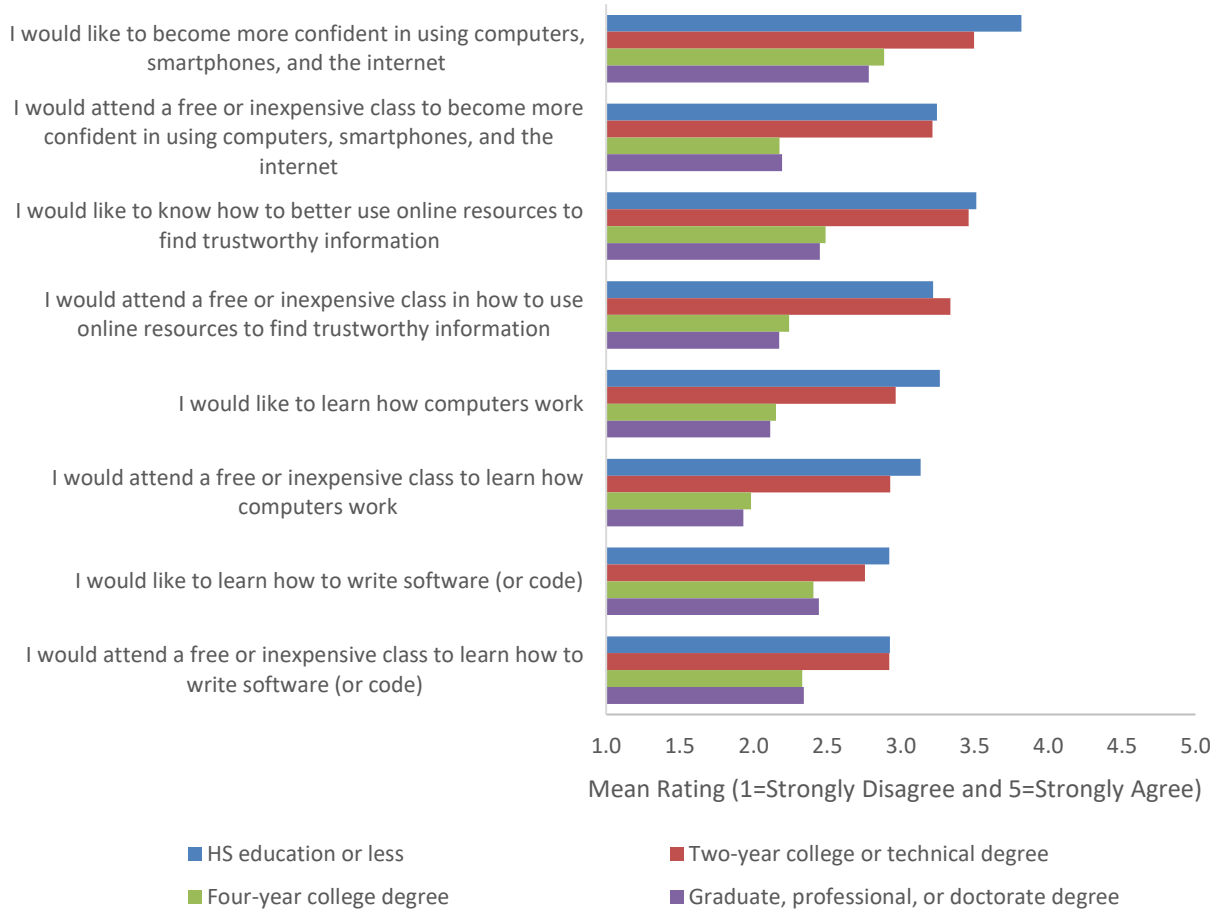
As illustrated in Figure 73, agreement with the various statements about computer and internet training are correlated with household income. Those earning less than $100,000 per year were more likely than those earning $100,000 or more per year to agree that they would like to learn more or would attend training.

Figure 73: Agreement with Statements About Training by Household Income



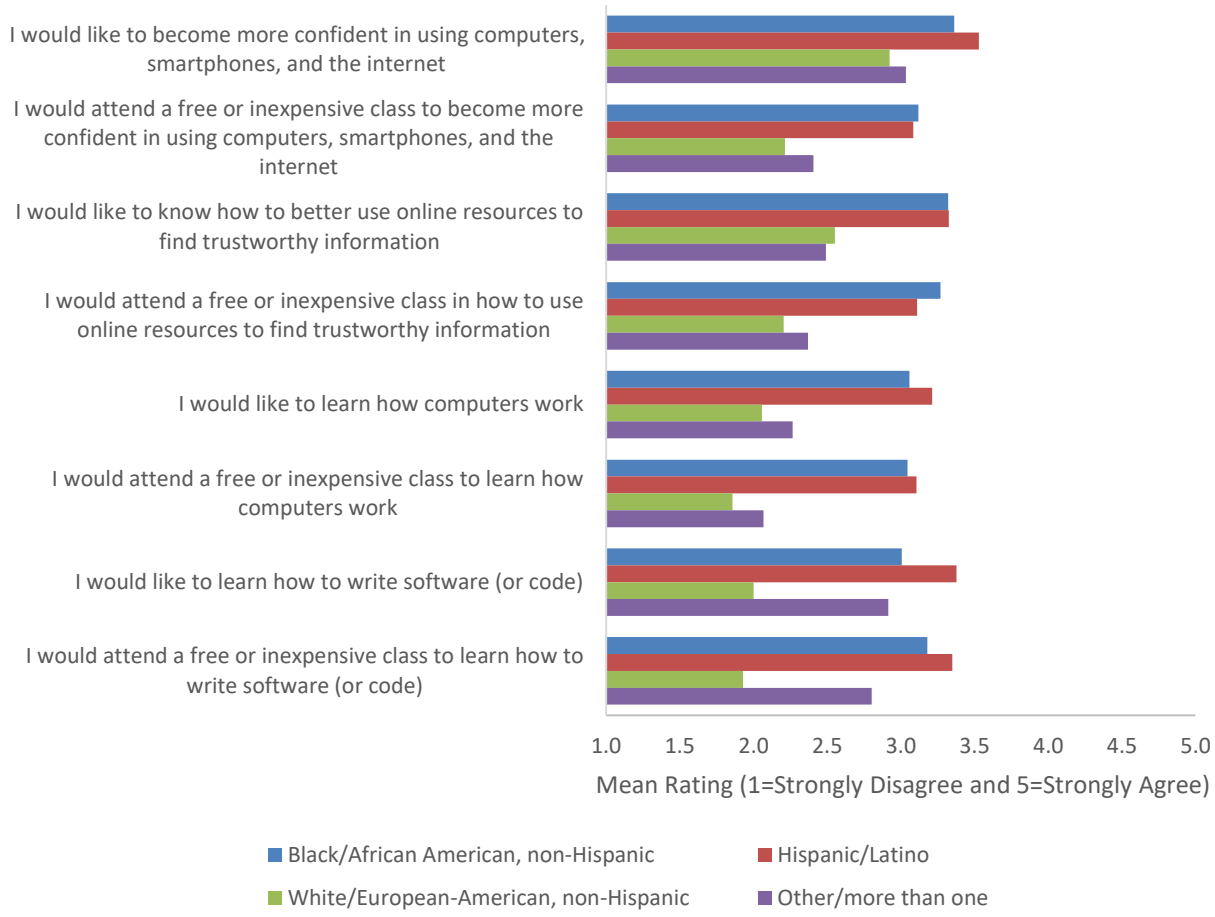
Respondents with a two-year college or technical degree, and those with a high school education or less, rated their level of agreement with various statements about computers and related technology higher than did more educated respondents (see Figure 74).

Figure 74: Agreement with Statements About Training by Household Income



Compared with White/European American (non-Hispanic) respondents, respondents who identify primarily as Black/African American (non-Hispanic) or Hispanic/Latino expressed greater interest in becoming more confident in using computers and related technology, learning how to better use online resources, learning how computers work, and learning how to write software (code), as well as attending a class about these topics (see Figure 75).

Figure 75: Agreement with Statements About Training by Household Income



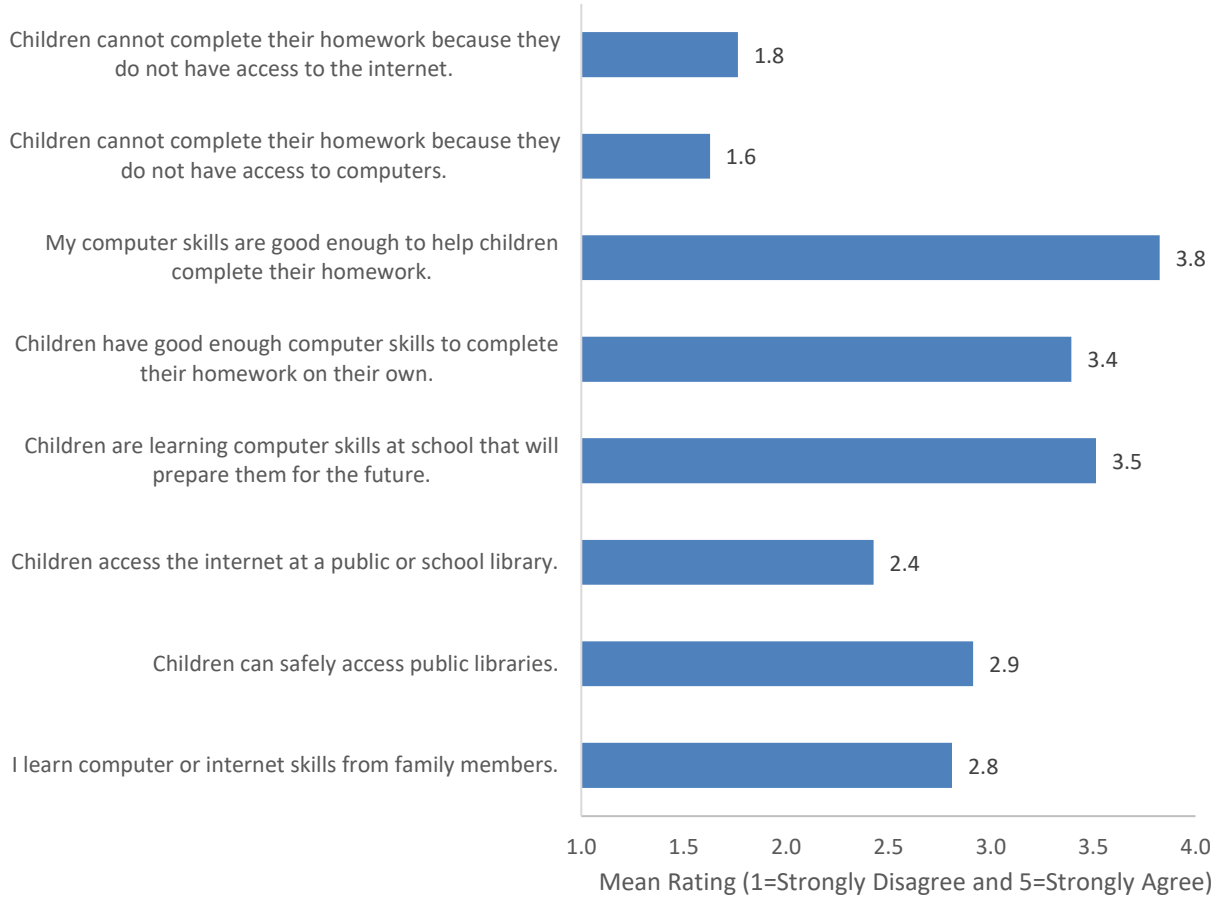
4.3.4 Technology for minor children

Just 26 percent of the weighted total of respondents said they are the parent, guardian, or primary caretaker of children or grandchildren under the age of 18. One-half of respondents ages 45-54 and 58 percent of respondents ages 35-44 are a parent, guardian, or caretaker.

4.3.4.1 Use of Technology

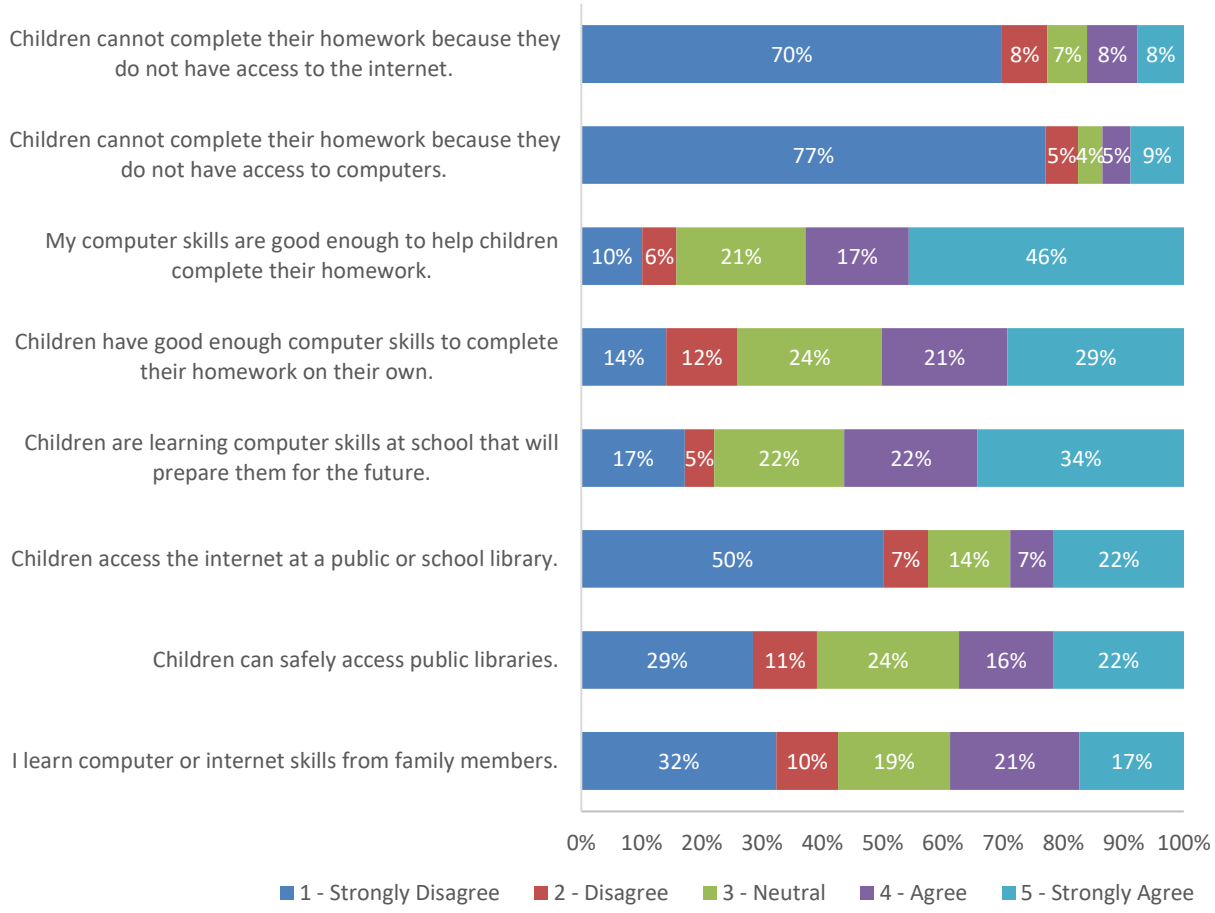
Respondents who are the parent, legal guardian, or primary caretaker for any child or grandchild under the age of 18 were asked their level of agreement with statements about how their minor child is able to make beneficial use of technology. Average rating scores are highlighted in Figure 76, while Figure 77 shows detailed responses.

Figure 76: Agreement with Statements About Children's Use of Technology (Mean Ratings)



A majority of respondents indicated that the children in their care have sufficient internet access. Most respondents strongly disagreed that the children in their care cannot complete their homework because they do not have access to the internet (70 percent) or computers (77 percent).

Figure 77: Agreement with Statements About Children's Use of Technology During the Covid-19 Pandemic



Still, accessibility may be an issue for a small segment of households without access to internet or computers. Sixteen percent of respondents agreed or strongly agreed that the children in their care cannot complete their homework because they do not have access to the internet. Also, just 29 percent of respondents agreed or strongly agreed that their children access the internet at a public or school library, while 50 percent strongly disagreed.

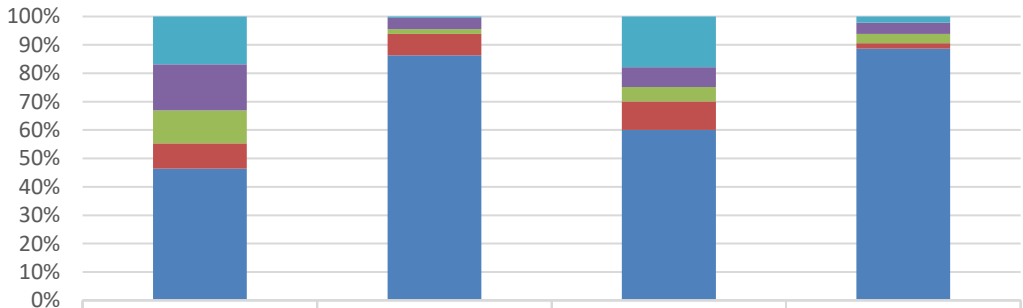
Most respondents agreed that they and their children have sufficient computer skills. Nearly one-half of respondents (46 percent) strongly agreed that their computer skills are good enough to help their children complete their homework, and 17 percent agreed. However, 16 percent of respondents disagreed or strongly disagreed that they have sufficient computers skills.

One-half of respondents agreed or strongly agreed that their children have good enough computer skills to complete their homework on their own, while 26 percent of respondents disagreed or strongly disagreed. More than one-half of respondents (56 percent) agreed or

strongly agreed that their children are learning computer skills at school that will prepare them for the future, and 22 percent disagreed or strongly disagreed.

Internet accessibility is a greater issue for lower-income households earning under $50,000 per year, compared with households earning more. One-third of lower-income households agreed or strongly agreed that the children in their care cannot complete their homework because they do not have access to the internet. One-fourth of lower-income households agreed or strongly agreed that the children in their care cannot complete their homework because they do not have access to computers (see Figure 78).

Figure 78: Agreement with Reasons Children Cannot Compete Homework by Household Income



	<$50k	$50k+	<$50k	$50k+
	Do not have access to the internet.		Do not have access to computers.	
5 - Strongly Agree	17%	1%	18%	2%
4 - Agree	16%	4%	7%	4%
3 - Neutral	12%	2%	5%	3%
2 - Disagree	9%	8%	10%	2%
1 - Strongly Disagree	46%	86%	60%	89%

4.3.4.2 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 79, while Figure 80 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, six in 10 respondents agreed or strongly agreed that they are aware of the extent their children are exposed to various risks or content, and 62 percent agreed or strongly agreed that they have the time and skills to protect their children or grandchildren from risks.

At the same time, a sizeable segment of respondents disagreed that their children are able to minimize or avoid specific online risks. Specifically, many respondents disagreed or strongly

disagreed that their children can detect and avoid false or misleading information (56 percent), avoid online bullying (43 percent), get help for online bullying (33 percent), detect and avoid financial scams and predators (51 percent), avoid exposure to graphic violence or pornography online (41 percent), and get help if exposed to graphic violence or pornography online (29 percent).

Figure 79: Agreement with Statements About Minimizing Online Risks (Mean Ratings)

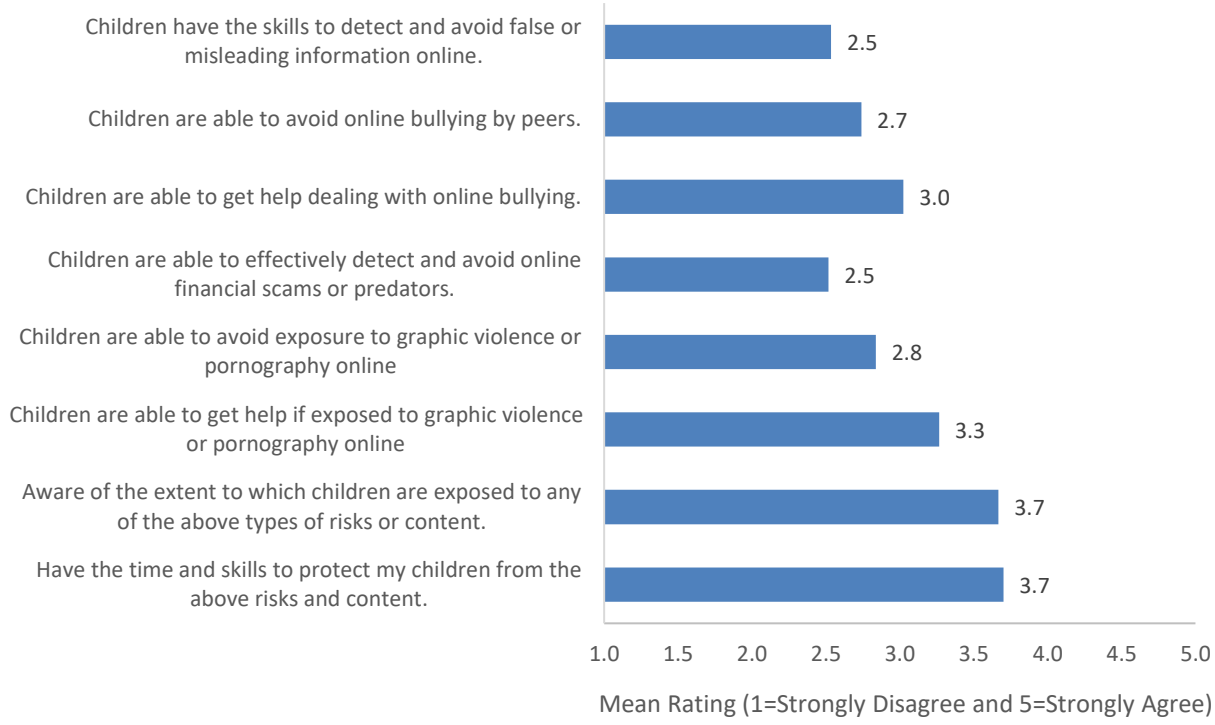
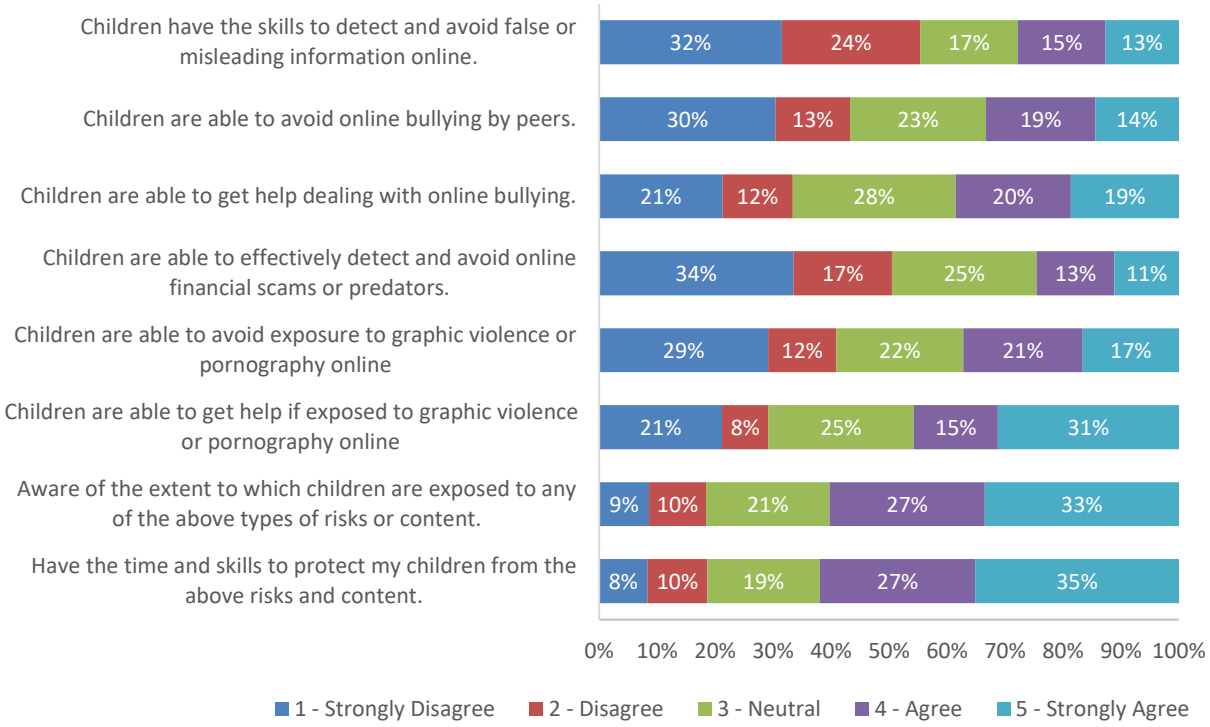


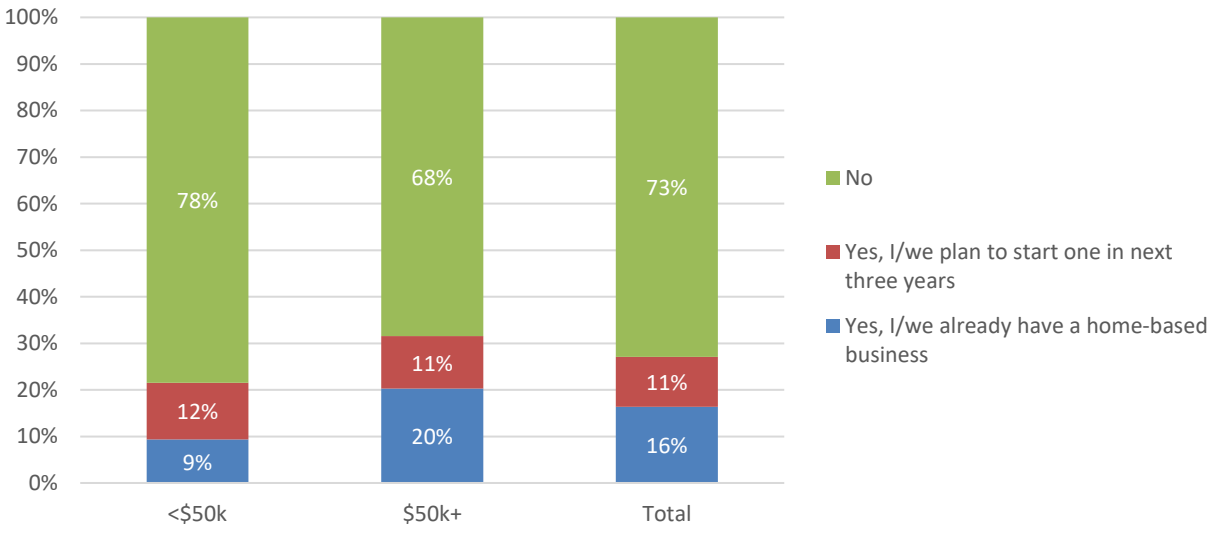
Figure 80: Agreement with Statements About Minimizing Online Risks



4.3.5 Internet use for jobs/careers

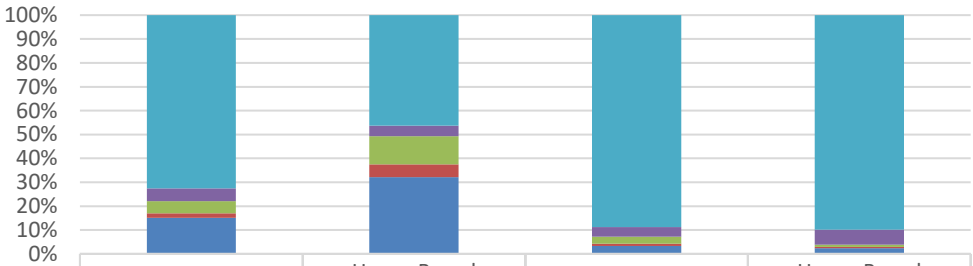
More than one-fourth of households either have a home-based business or are planning to start one within the next three years, as illustrated in Figure 81. One-fifth of households earning $50,000 or more per year have a home-based business.

Figure 81: Own or Plan to Start a Home-Based Business



Nearly three-fourths of respondents said a high-speed internet connection is extremely important for teleworking, and 46 percent said it is extremely important for running a home-based business (see Figure 82). Nine in 10 of those who have a planned/existing home-based business said high-speed internet access is extremely important.

Figure 82: Importance of High-Speed Internet



	Total		Those with home-based business	
	Teleworking	Home-Based Business	Teleworking	Home-Based Business
5 - Extremely important	72.5%	46.3%	88.7%	89.9%
4 - Very important	5.4%	4.4%	4.1%	6.3%
3 - Moderately important	5.2%	11.8%	2.9%	1.0%
2 - Slightly important	1.8%	5.4%	1.0%	.5%
1 - Not at all important	15.1%	32.1%	3.3%	2.3%

4.3.6 Respondent opinions

Respondents were asked their opinions about the role of the City or DISD in providing or promoting broadband communications services within the area. Figure 83 illustrates the mean ratings, while Figure 84 provides detailed responses to each portion of the question.

Figure 83: Opinions About the Role(s) for the City or DISD (Mean Ratings)

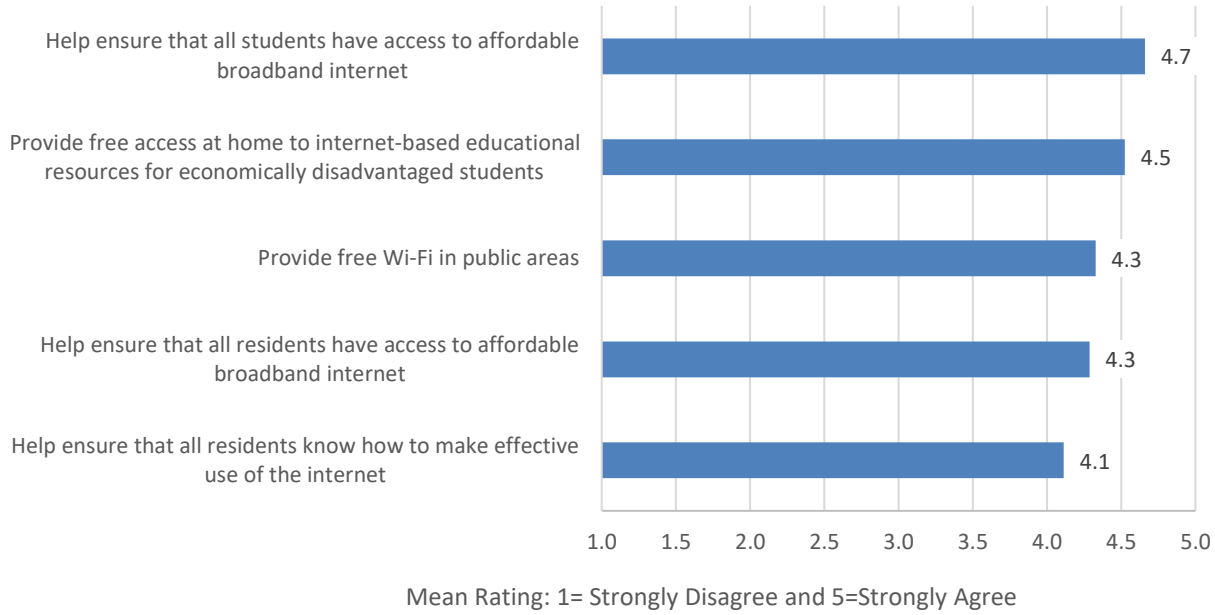
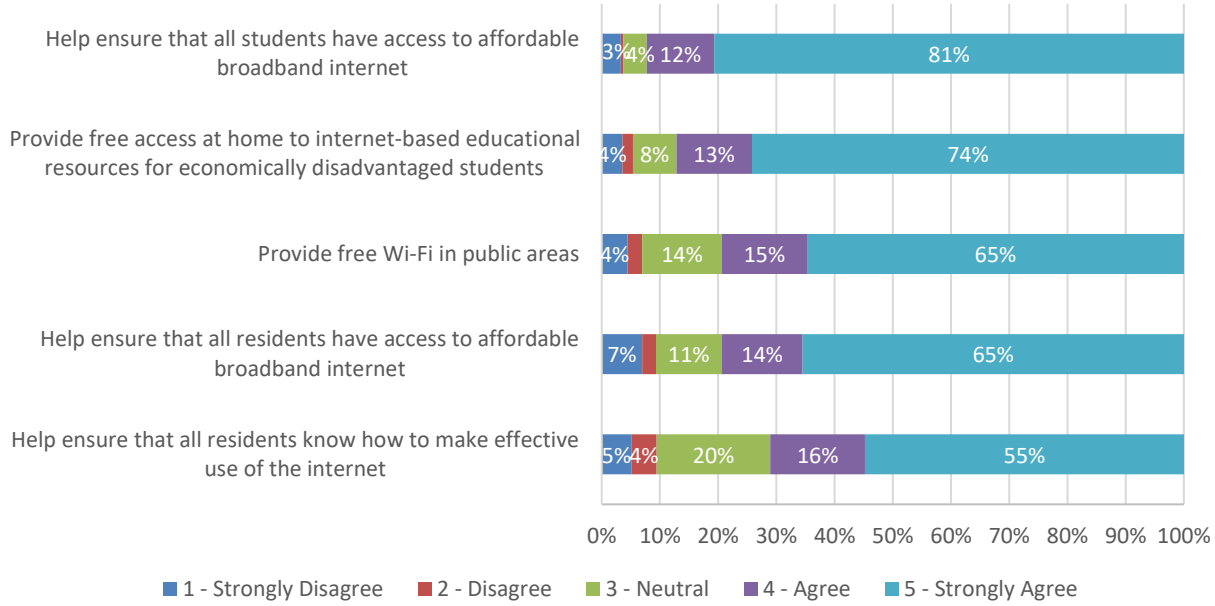


Figure 84: Opinions About the Role(s) for the City or DISD

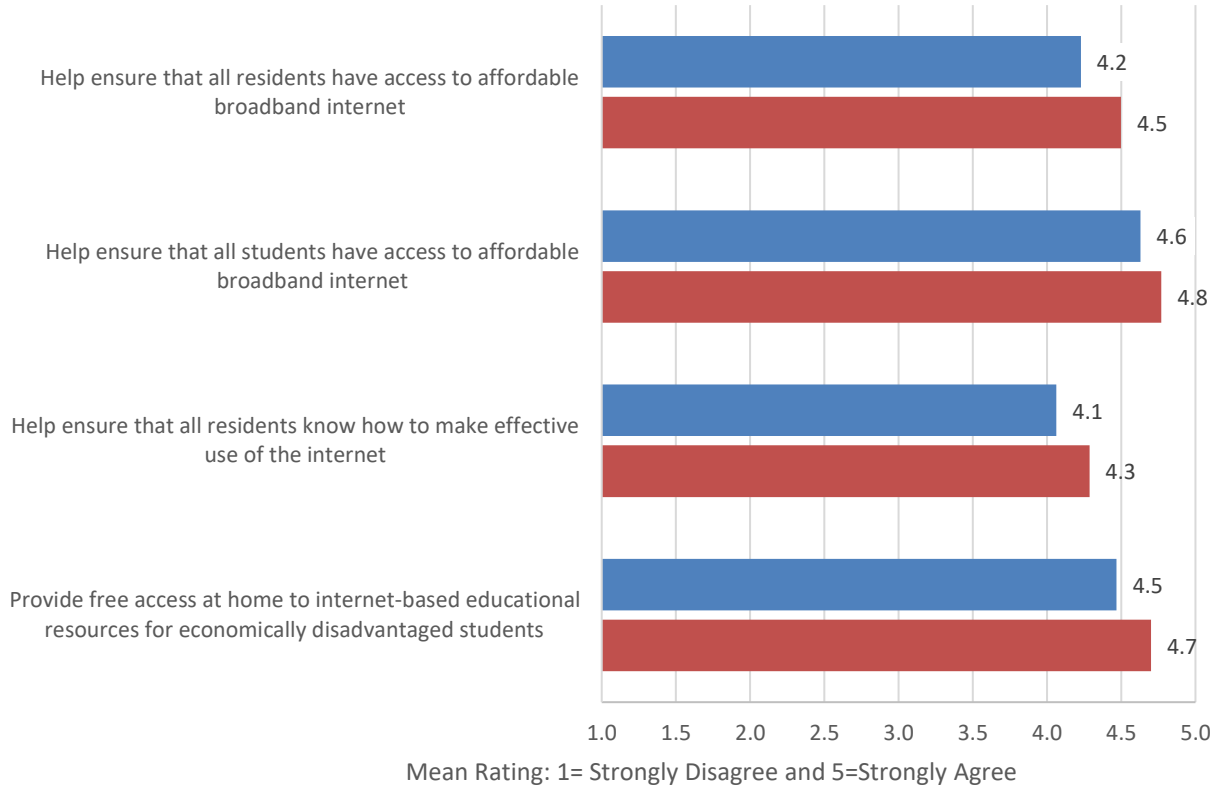


Overall, there is strong support for ensuring all students have access to affordable broadband services, with 81 percent strongly agreeing. Three-fourths of respondents strongly agreed that the City or DISD should provide free access at home to internet-based educational resources for economically disadvantaged students.

Additionally, there is relatively strong support for providing some form of internet access to residents. Sixty-five percent of respondents strongly agreed that the City or DISD should ensure all residents have access to affordable broadband service, and 65 percent strongly agreed that it should provide free Wi-Fi in public spaces. Additionally, 55 percent of respondents strongly agreed that the City or DISD should help ensure that all residents know how to make effective use of the internet.

Respondents with children in the household were somewhat more likely than those without children to agree with the various statements about the City's or DISD's role in offering broadband internet service or support, as illustrated in Figure 85. Specifically, 85 percent of respondents with children strongly agreed the City or DISD should help ensure all students have affordable broadband access, and 82 percent strongly agreed the City or DISD should provide free access at home to internet-based educational resources for economically disadvantaged students.

Figure 85: Opinions About the Role(s) for the City or DISD by Children in Household



4.3.6.1 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 86, while detailed responses are illustrated in Figure 87.

Figure 86: Willingness to Purchase 1 Gbps Internet at Price Levels (Mean Ratings)

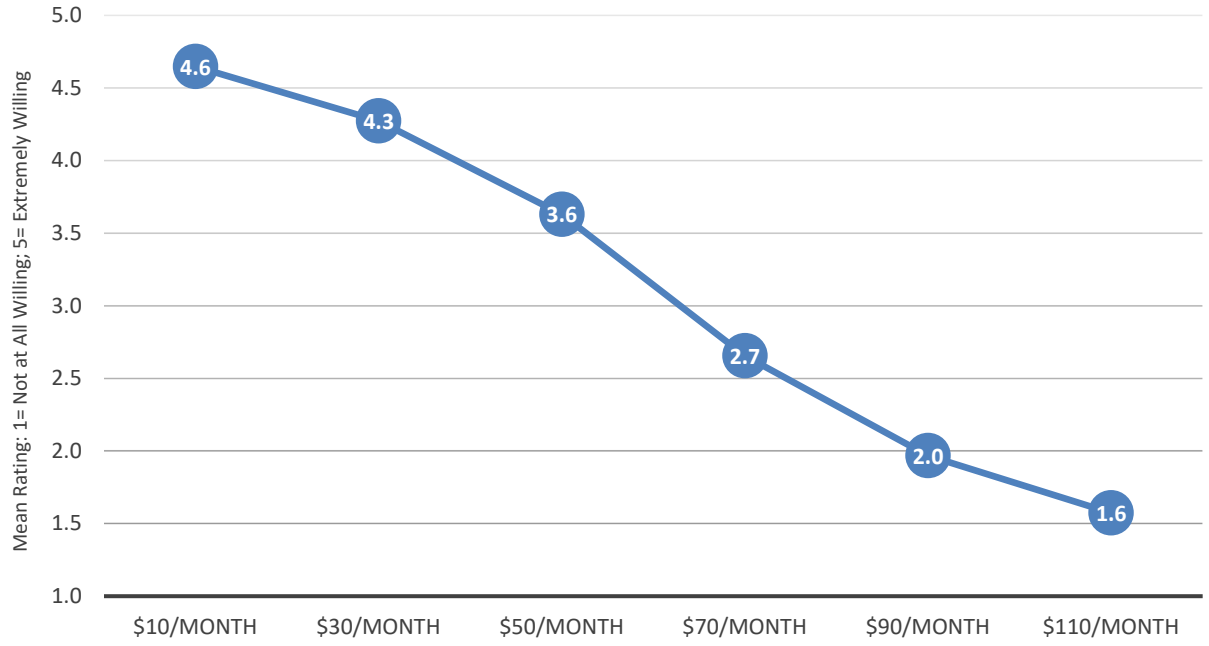
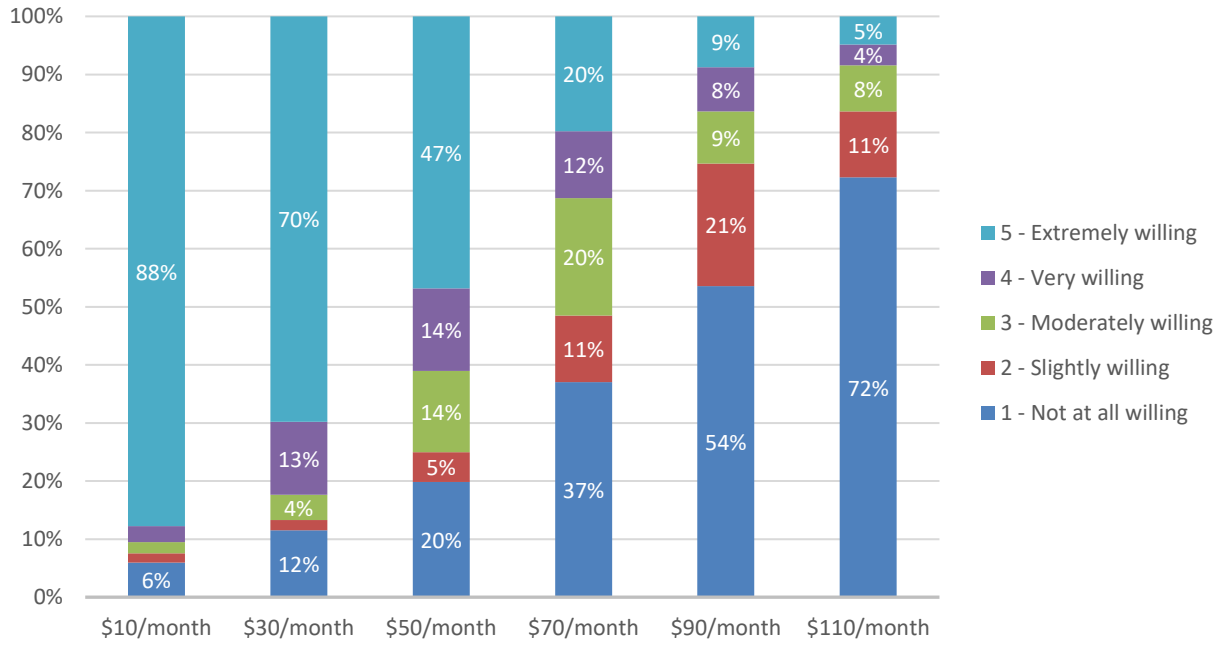


Figure 87: Willingness to Purchase 1 Gbps Internet at Various Price Levels

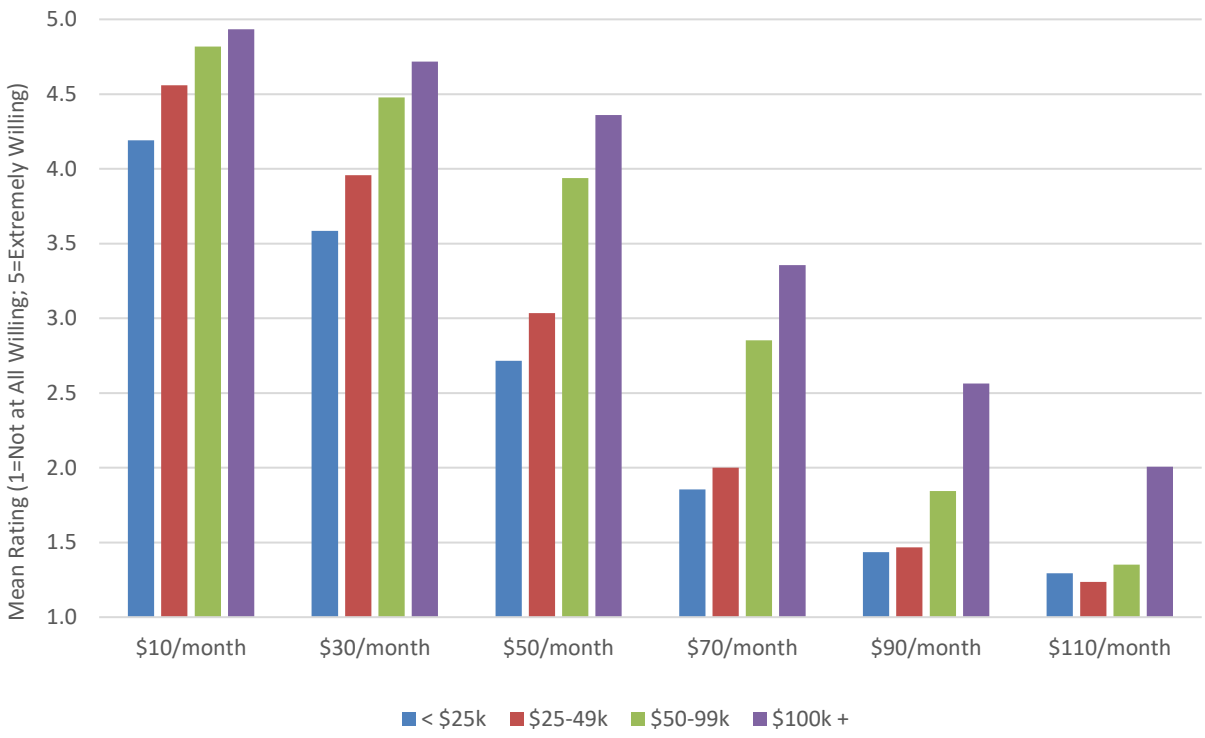


Respondents' willingness to purchase 1 Gbps internet service is high at $10 per month (4.6 mean), but it drops considerably as the price increases. The mean rating falls to 4.3 at a price point of $30 per month, 3.6 at a price point of $50 per month, and 2.7 at a price point of $70 per month (slightly to moderately willing). Respondents would only be slightly willing to switch for price points of $90 per month or $110 per month.

From another perspective, 88 percent of respondents are extremely willing to purchase 1 Gbps internet for $10 per month, dropping to 70 percent at $30 per month, 47 percent at $50 per month and 20 percent at $70 per month. Just 9 percent strongly agreed at a price point of $90 per month, and 5 percent strongly agreed at a price point of $110 per month.

The willingness to purchase high-speed internet service is also correlated with some demographic characteristics of the respondents, including household income (see Figure 88). The likelihood of purchasing high-speed internet tends to increase as household income increases.

Figure 88: Willingness to Purchase 1 Gbps Internet Service by Household Income



4.3.7 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.

As indicated previously in Figure 1 regarding age-weighting, disproportionate shares of survey respondents were in the older age cohorts relative to the area's adult population as a whole (see Figure 89). Similarly, the data were weighted to account for differences in response by household income and presence of children in the household. The weighted survey results presented in this report are adjusted to account for these differences and to provide results that are more representative of the area's population, as discussed previously.

Figure 89: Age of Respondents and City of Dallas/DISD Adult Population