2018

# Technology Access and Adoption Study

City of Seattle


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Jenny A. Durkan, Mayor

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# Background and History

The City of Seattle believes that increasing access to technology improves quality of life in our city. The Technology Access and Adoption in Seattle research study is conducted every four years to understand how Seattle residents use technology and the internet. The study also seeks to understand the barriers that prevent residents from connecting. The research has been commissioned since 2000, and the 2018 survey is the fifth time this research has been conducted. The findings help the City as it strives to ensure access, services, and resources necessary for all Seattle residents to succeed in life.

The results of this research effort provide a comprehensive view into Seattle residents' access and adoption of internet and technology. Key metrics are compared to the City of Seattle 2014 Information Technology and Adoption in Seattle Report (http://www.seattle.gov/tech/initiatives/digital-equity) as well as to the 2017 American Community Survey (ACS) (www.census.gov/programs-surveys/acs) for Seattle on digital device ownership and adoption and internet connectivity.

Though this is the fifth time this research has been conducted, 2018 brought about some important changes to the approach as well as the objectives and question lines. Past surveys also examined barriers, but the 2018 survey provides more depth to the analysis of connectivity levels, as well as skills, attitudes, perceptions, frustrations, barriers, and skill level when it comes to digital engagement. The goal was to present a holistic view of digital engagement and explore not only adoption of devices and access percentages, but also the reasons for those levels of adoption.

*For the purposes of this study, the researchers have chosen to use the term digital engagement to characterize a level of involvement and capacity by individuals and households to use digital information and communications tools to perform daily activities, including civic and community participation.*

# Research Hypothesis and Objectives

### Hypothesis set forth prior to the start of this research effort included:

- Digital connectivity among Seattle residents is not maximized. Though access and device adoption is nearing 100%, an understanding of the reasons why residents are not fully engaging is lacking.
- The lack of engagement may be due to inequitable access to the internet, devices, or skills.
- Increased digital engagement increases the well being of the City of Seattle.

### Research objectives included:

- Quantify and describe Seattle's level of digital engagement, digital divide, and level and source of digital inequity.
- Explore the linkages between digital inequity and socioeconomic, demographic, and psychographic factors.
- Determine digital equity and digital connectedness segments within the City of Seattle population. Understand the interrelationships between variables and factors that contribute to the digital divide and explore how these contributory factors have changed since 2014.
- Identify opportunities for targeted and strategic interventions to increase digital engagement levels at a faster pace than that which would occur naturally.

Research hypothesis and objectives were discussed and refined through an iterative set of Community Leadership meetings, discussions with the City's Technology Advisory Board (CTAB), and community partners interviews which took place between January and March of 2018.

# Methodology and Sampling

Residents were interviewed in a variety of ways, with the primary methodology being a mail survey of residents randomly selected using a stratified sampling plan based on Census District. The goal of the stratified sampling plan was to obtain a reliable number of responses for each Census District so that analysis could be performed at this level with a high degree of statistical confidence. A total of 19,500 surveys were sent out to the general population. Of those 19,500 surveys, 15,000 were randomly selected, with approximately 2,143 per Census District being delivered. An additional 3,000 surveys were sent to targeted low income census tract households (census tracts where 60% or more of the households have an income of less than $75K per year according to the 2016 ACS), and 1,500 interviews were delivered to households within Seattle Housing Authority (SHA) owned apartment and multi-unit dwellings.

Residents were invited to respond to the survey either online via a website survey, or by filling out a written questionnaire and returning it via a postage paid envelope which was provided. A telephone number was provided as well, for residents who required assistance in accessing or completing the questionnaire. The survey was available in both English and Spanish.

Working with the Seattle Public Schools (SPS), a second set of invitations to complete the survey online was sent via email to each parent or guardian where email addresses were available in the Seattle Public Schools database.

Finally, several individuals from the City of Seattle Information Technology Department visited two City sanctioned tiny home villages, where they distributed surveys and encouraged/assisted residents of these villages to complete a survey.

A total of 4,315 survey responses were collected and included in the final data set. Response rates varied, with the highest response rates received from the general population, randomly selected residents.

| | Invitations (n) | Responses (n) | % Response Rate |
|---|---|---|---|
| General Population | 15000 | 2937 | 20% |
| Targeted Low Income Household (60%+ low income in census tract) | 3000 | 385 | 13% |
| Seattle Housing Authority Household | 1500 | 274 | 18% |
| Seattle Public Schools Parents or Guardian (email only) | 29,865 | 669 | 2% |
| Tiny Home Village Residents | -- | 50 | -- |
| **Total** | **49,365** Invitations Sent | **4,315** Total Responses | **8.7%** Avg. Response Rate |

Analysis was completed on the total sample as well as by key subgroups such as Council District and other populations of interest. The overall confidence interval of the study results is 1.5% (e.g. percentages and proportions cited are accurate within a range of +/- 1.5%). The total sample size and associated confidence interval of each of these subgroups is as follows:

| | Number of Responses | Confidence Interval |
|---|---|---|
| Council District 1 | 632 | ±3.9% |
| Council District 2 | 610 | ±4.0% |
| Council District 3 | 527 | ±4.3% |
| Council District 4 | 582 | ±4.1% |
| Council District 5 | 775 | ±3.5% |
| Council District 6 | 649 | ±3.9% |
| Council District 7 | 476 | ±4.5% |

## Weighting

To correct for deliberate over-sampling of certain key subgroups, a sample balancing or weighting algorithm was applied to all data points. This algorithm balances the sample back to the demographic proportions that exist in the Seattle population, so that when examining the total population metrics, they are accurate and projectable to the Seattle residency at large.

- The research is a survey of households that collects data on the **individual** responding to the survey as well as the entire **household**. In the latter case, the individual responding is asked to provide data for their entire household. To account for this difference in perspective, each data point is classified as describing a household characteristic (e.g. household size and income) or an individual characteristic (e.g. age, gender, and ethnicity).
- Two different weights were developed and applied—one based on household characteristics and one based to individual characteristics. All data presented here is weighted. Base sizes/sample size groups are unweighted. A full description of the weighting algorithms can be found in the technical report.

To meet the project study mandate of representing all residents, including those that may have unique needs or be underserved or under-connected, we collected responses from a wide range of residents including the following groups:

| | Number of Responses | Confidence Interval |
|---|---|---|
| English as a Second Language | 244 | ±6.3% |
| Race/Ethnic Minorities | 931 | ±3.2% |
| Homeless/Insecurely Housed/Tiny Home Village | 56 | ±13.1% |
| Older Adult (65 years old and older) | 879 | ±3.3% |
| Low Income (At or below 135% of Federal Poverty Level) | 412 | ±4.8% |
| Residents of Multi-Unit Dwelling (MDU) | 1543 | 2.5% |
| Household Member Living with Disability | 435 | ±4.7% |
| Child Under 18 in Household | 1454 | ±2.6% |

# Rates of Internet & Device Access

## Seattle households are significantly more connected than five years ago.

Ninety five percent (95%) of Seattle households have a way to access the internet in their home through wired and wireless services. This is a significant increase in internet access compared to 2013, when only 85% of Seattle residents reported a way to access the internet.

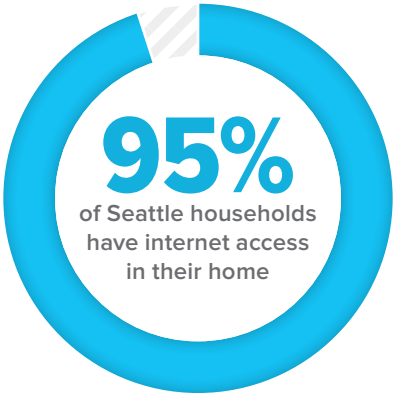
The 2018 research shows that nearly all (98%) of Seattle households have at least one type of internet capable device in the home. The average household has 3.4 types of internet capable devices in the home (e.g. laptop, desktop, smartphone, internet capable gaming console, tablet, or voice activated device).

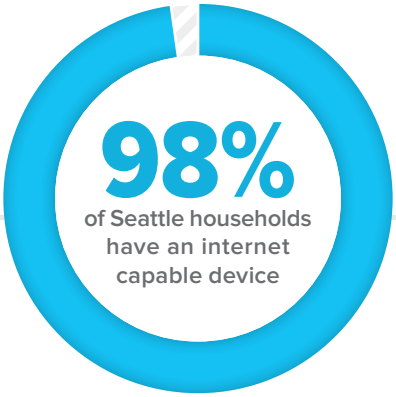
Some significant difference in access to internet and devices continues for certain populations.

**Home internet access in Seattle has increased from**

**85% TO 95%**

**over the past five years.**




**93%** have a mobile or smartphone (up from 89% in 2013)

**92%** have a desktop or laptop (up from 88% in 2013)

**64%** have a tablet or other portable device (up from 44% in 2013)

**26%** have an internet capable gaming console

**23%** have a voice activated device

## The City is mobile.

The adoption of internet capable cellphones and other mobile devices is increasing year over year. At the same time, we do not see any drop off in presence of laptops/desktops that are connected to the internet in the home.

In 2013, 89% of those responding reported a mobile or smartphone. In 2014, 58% of those responding reported owning a smartphones. This number has increased significantly in 2018, with 93% reporting the ownership of an internet capable mobile phone.

## Digital Equity Differences

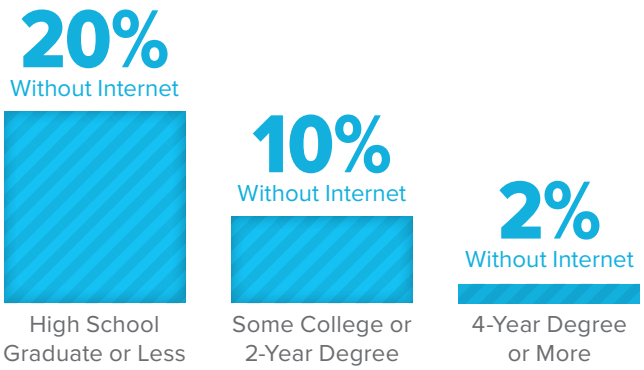
There are significant differences in access rates across demographic groups. Key risk factors for lack of home internet access include:

- Insecurely housed (tiny home villages, homeless, temporary shelter): 7 times more likely not to have internet access.
- Living in poverty (at or below 135% of the Federal Poverty Level): 5 times more likely not to have internet access.
- Household member living with disability: 3 times more likely not to have internet access.
- English as a second language: 2 times more likely.
- Older adults (65 years of age plus): 1.8 times more likely.
- Single adult households (may or may not have children): 1.7 times more likely.
- Non-white residents (members of race or ethnic minorities): 1.6 times more likely

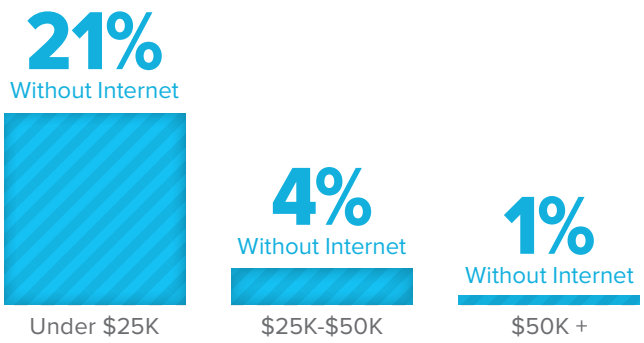
Education level correlates directly with internet access. One out of five residents without any college have on internet access in the home.

Internet access rates are lowest for low income residents with incomes below $25K. The research also shows that once a household's income reaches $50,000 (still far below the city's median income of $78,816), internet access no longer correlates with income.

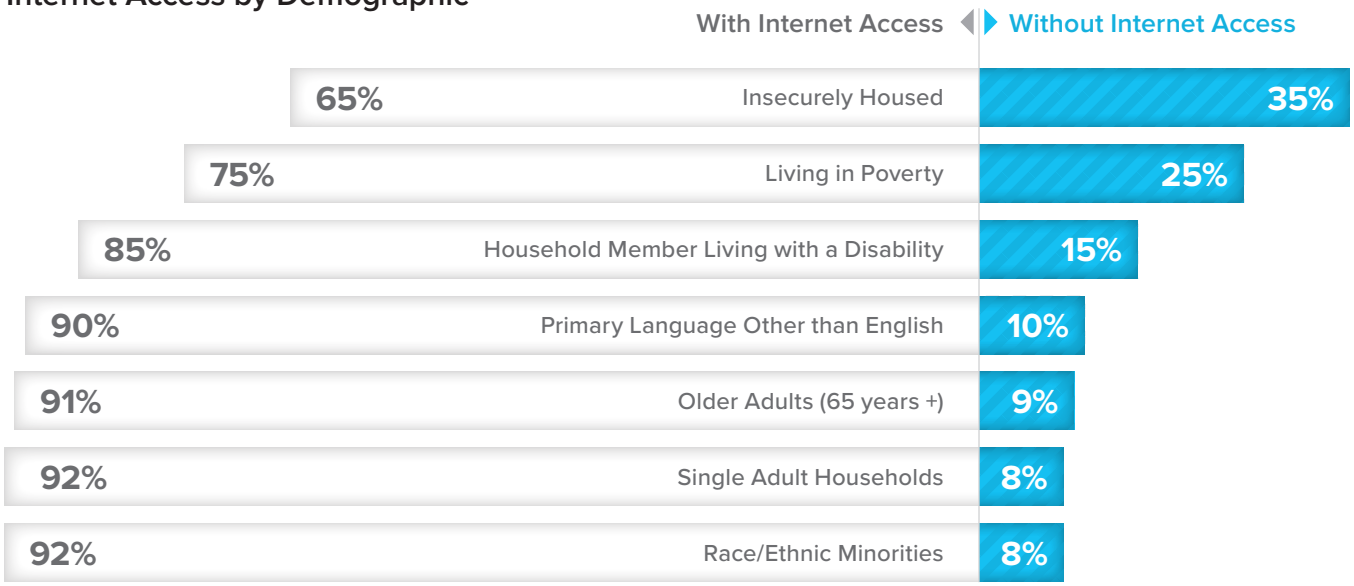
### Internet Access by Education



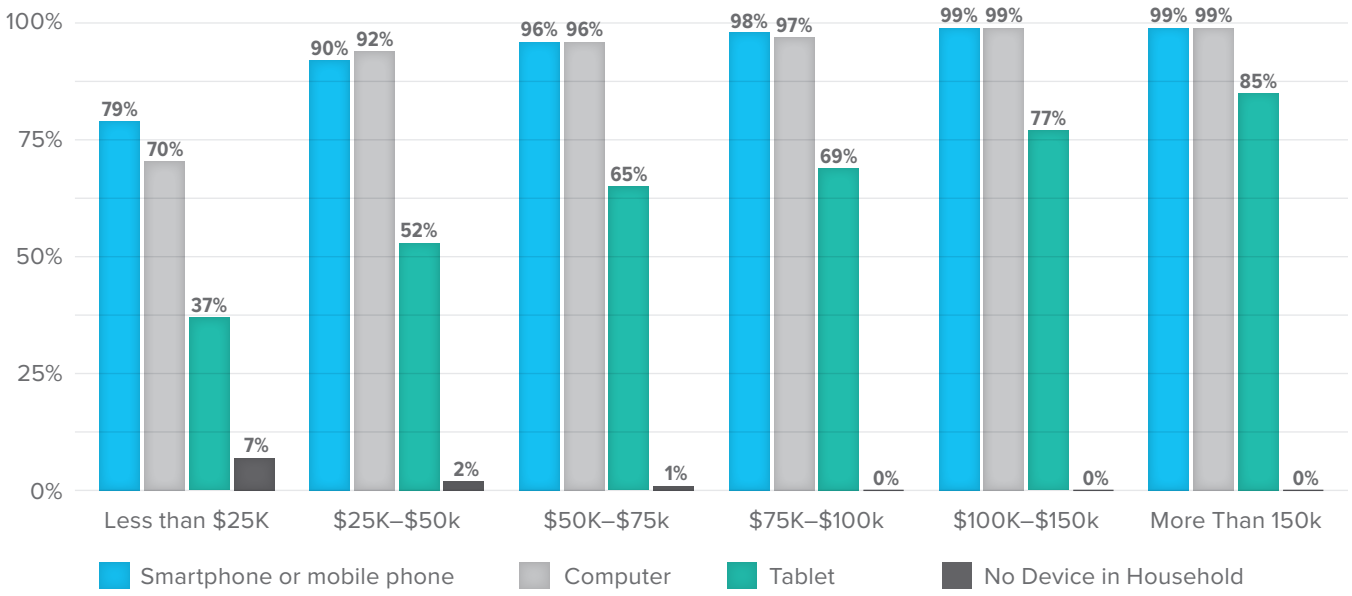

### Internet Access by Income




### Internet Access by Demographic



## Internet Devices in Household by Income




**21% of households with incomes under $25K do not have a mobile or smartphone..**

**10% of households with incomes between $25K and $49K do not have a mobile or smartphone.**

In addition to differences in device ownership by income, there are other differences found across demographic groups. Full details on these differences can be found in the Technology Access and Adoption Technical Report.

The research shows particularly high rates of access is among households with one child or more. Nearly all Seattle households with school aged children report a way to access the internet in their home.

### Fully Served Groups

**99%** of households with income of $50K or more have internet access

**98%** of households with child(ren) 18 or younger have internet access

**98%** of households with child(ren) who attend Seattle Public Schools have internet access

Income disparity also exists when it comes to access to internet capable devices in the home. The number of types of internet enabled devices in the household increases in step with household income. As with internet access, the gaps occur most notably among households in the two lowest income strata (under $25K and $25-$49K).

## Is there a digital equity gender gap?

There is no significant digital equity gender gap in the City of Seattle, with all genders being equally likely to have access to the internet.

**96%** Of women have access to the internet

**97%** Of gender non-conforming have access to the internet

**95%** Of men have access to the internet

## Some areas of Seattle report lower rates of internet access.

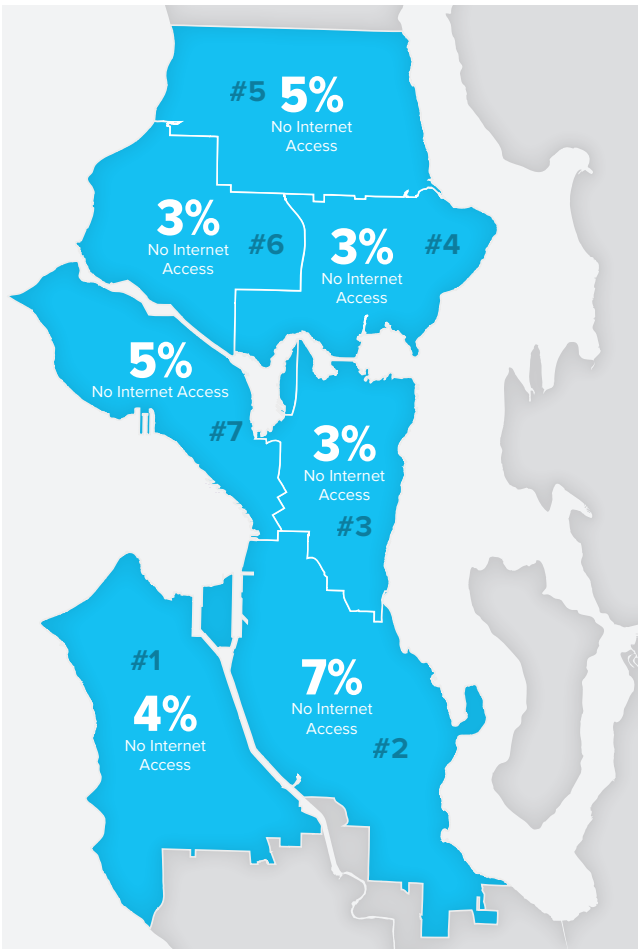
The research shows that not all areas of the City have equal access to internet in the home.

- Council District 2 (South Seattle) has the lowest rates of access, with 7% reporting no in-home internet access.
- Council District 3 (Central Seattle), Council District 4 (Northeast Seattle) and Council District 6 (Northwest Seattle) have the highest rates of access, with only 3% reporting no in-home internet access.

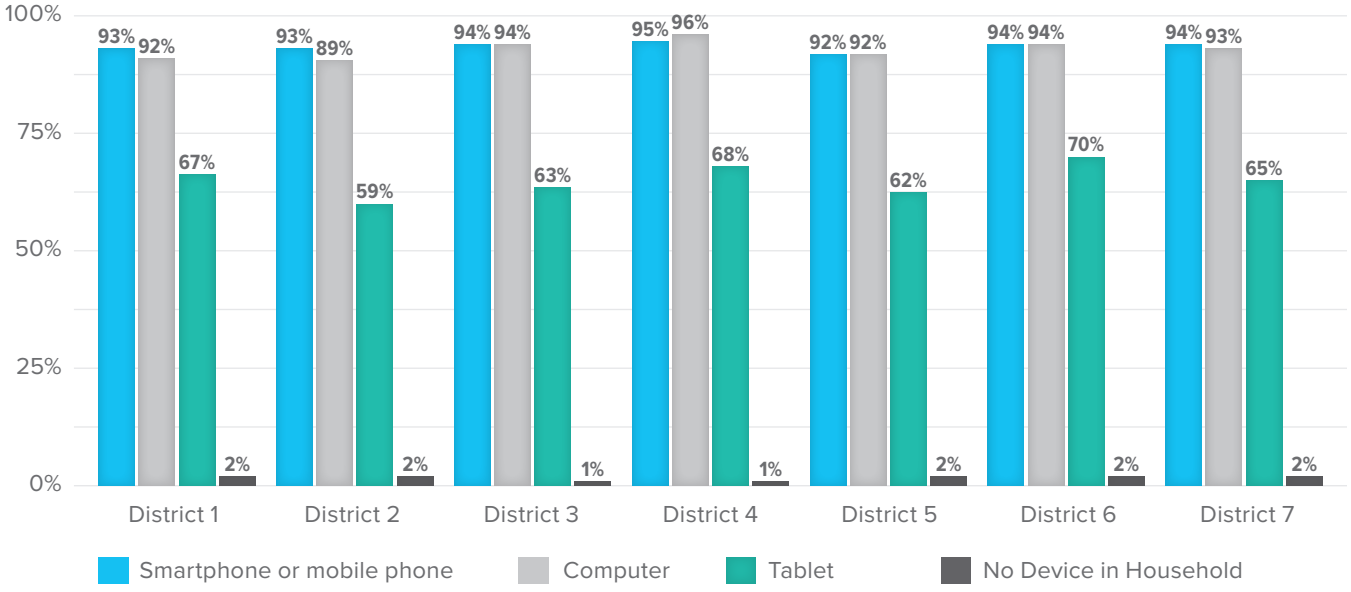
Smartphone/mobile internet capable device penetration is equal across the city and council districts–ranging between 92% and 95% across the city.

The average total number of types of devices is also lower among some areas of the city.

- It is lowest in Council District 2 and highest in Council District 4 and 6.




### Internet Devices in Household by Council District




Council District 4 and 6 are more likely than other areas to have laptops and tablets.

# Levels of Internet Service

For the majority of Seattle residents, internet access in the home is purchased from a broadband internet provider such as Comcast or Century Link.

**92%** of Seattle residents have internet subscriptions (fixed broadband subscriptions or cellular data plans)

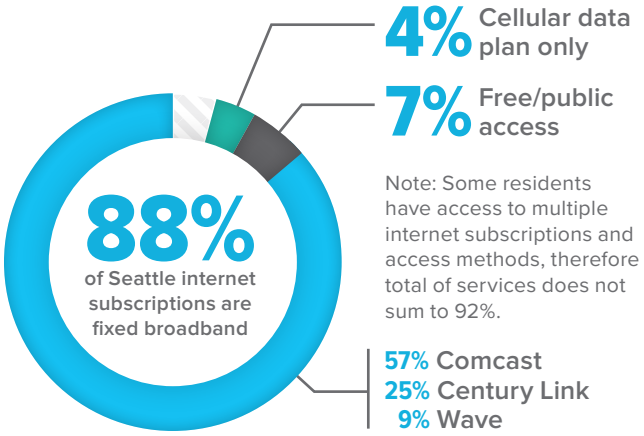
**7%** of Seattle residents use free or public access (i.e. no individually held subscription) in the home

**6%** of Seattle residents have no internet subscription

Note: Some residents have access to the internet through multiple means. Total connections will add up to more than 100%.

Among those with internet broadband, Comcast and Century Link are the most common providers. A small percentage of residents (4%) rely solely on a cellular data plan for in-home internet access.

However, those living in lower socio-economic status census tracts and those with household incomes lower than $50,000 per year are significantly more likely to have no fixed broadband subscription and instead rely on cell phone data plans or free/public access services for internet in the home.




Note: Some residents have access to multiple internet subscriptions and access methods, therefore total of services does not sum to 92%.

Those with incomes less than $25K per year are more than three times as likely to rely on a cell phone data plan for internet service.

- 13% of those with <$25K incomes rely on cell phone only to access the internet
- 6% of those with $25K-$50K incomes rely on cell phone only to access the internet

Those with incomes less than $25k per year are more than 2.4 times as likely to rely on free/public access points for internet access in the home.

- 17% of those with <$25K incomes rely on free/public internet access.
- 6% of those with $25K-$50K incomes rely on free/public internet access..

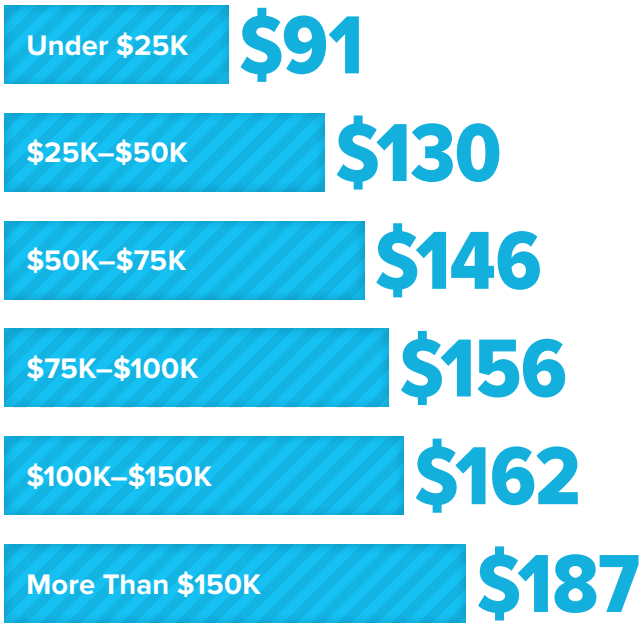
**Residents who rely on cell phones to access the internet have some distinct differences. Compared to those with a fixed broadband subscription (FBBS), those with cellular data plan only...**

- Are less likely to consider their connection at least mostly adequate (66% vs. 84% with a FBBS)
- Are more likely to want faster speeds (30% vs. 18% with a FBBS)
- Are less likely to have devices, other than their phone, in the home
- Are nearly twice as likely to have household members visit the library or community center for internet access (48% vs. 24% with a FBBS)
- Are more likely to 'apply for jobs online' at least weekly (speaking to the life stage/situation of these respondents)
- Are more likely to be unemployed (30% vs. 18% with a FBBS), and more likely to be disabled (19% vs. 4% with a FBBS)
- Are more likely to live alone (54% vs. 30% with a FBBS); and to not have children in the home (10% do vs. 26% with a FBBS)
- Are more likely to live at or below 135% of the FPL (34% vs. 7% with a FBBS) and to have lower average incomes ($43K vs. $97K)
- Are more likely to only have a high school level education or some college compared to those with a FBBS
- Are more likely to be a racial or ethnic minority (55% are white vs. 68% with a FBBS; 13% are Black vs. 5% with a FBBS)

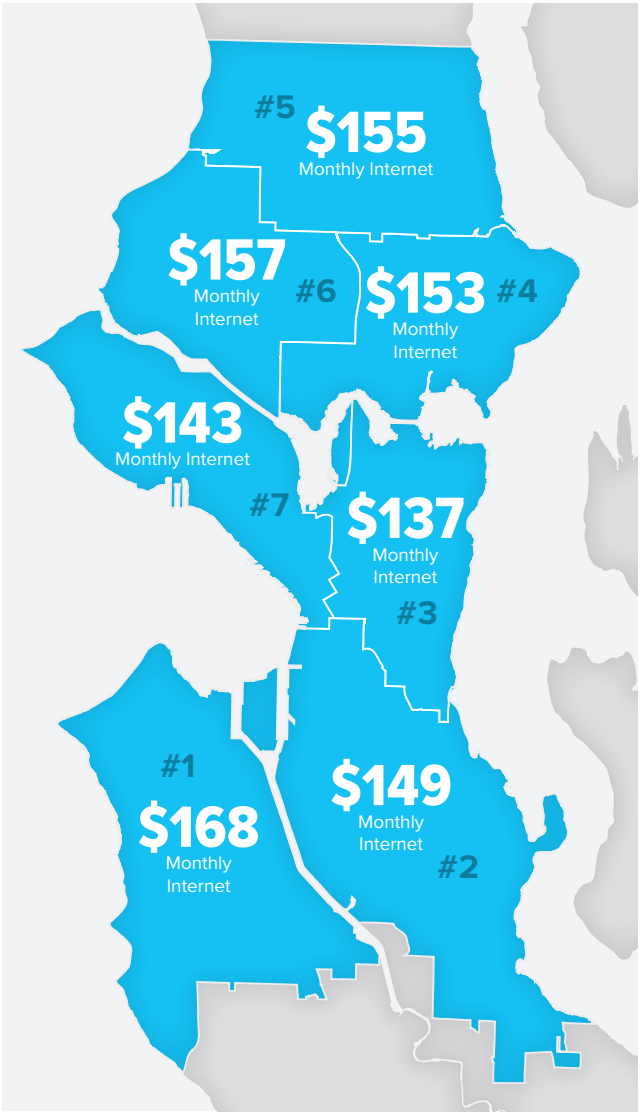
# Cost of Internet

The average monthly amount spent by households in Seattle to access internet and internet related services in the home is $150. While the amount spent does vary according to income (with higher income residents paying more for internet), the proportion of a residents' total monthly income spent on internet related services is significantly higher among those with lower incomes.

**Total Approx. Monthly Cost: By Income (Bundled OR Individual Services)**




There are also differences in amount paid by geographic area – with those in Central Seattle paying the least and those in West Seattle paying the most.




*"Our household does not have any large barriers to affording or using internet access. However, we completely agree that access to technology and the internet greatly improves an individual's quality of life here in Seattle and are very supportive of efforts to improve access and affordability for others."*

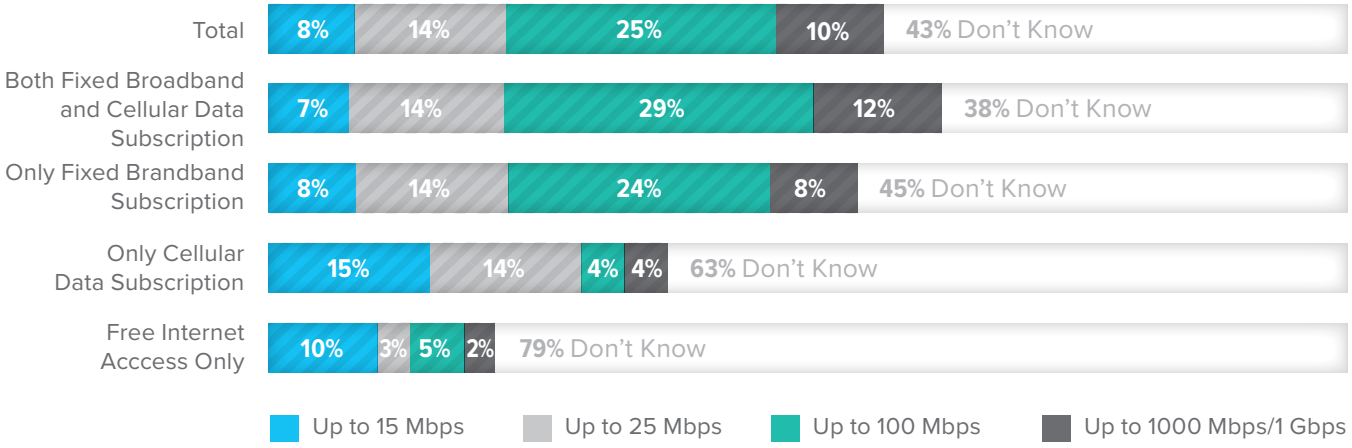
*—Seattle Resident*

# Speed and Adequacy of Internet

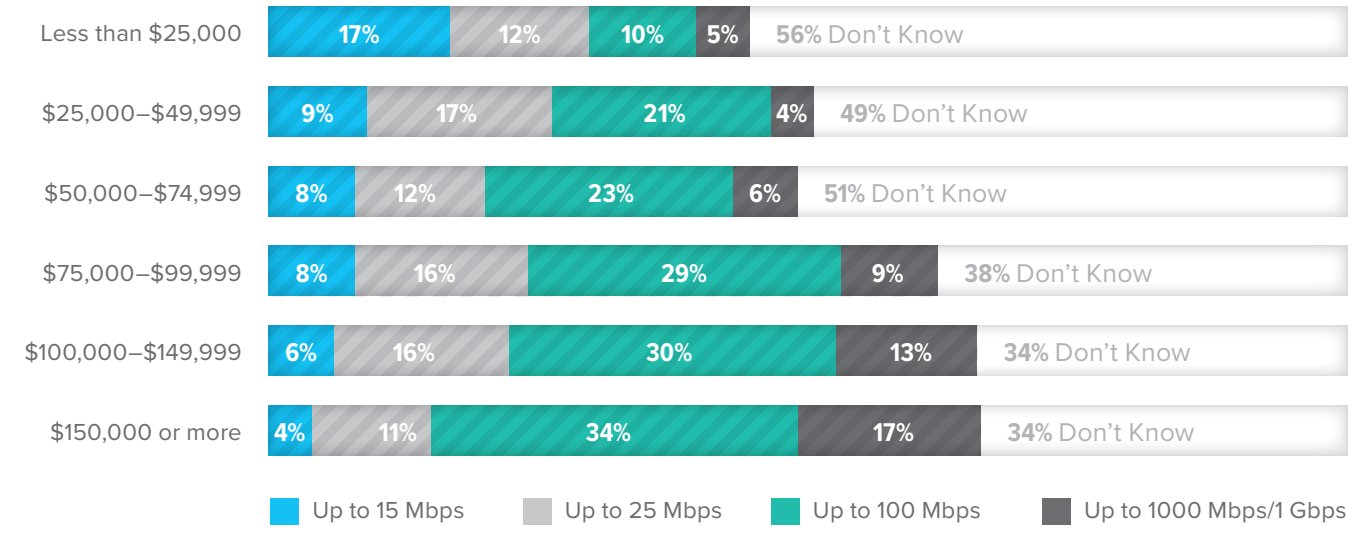
Most residents (43%) of Seattle did not know the speed of their in-home internet. However, of those that did, the majority reported speeds of over 100Mbps.

Not surprisingly, speed correlates with income; the higher a household income, the more the household spends on internet, and thus the higher speeds.

### Those who are relying only on cellular data plans or who have free internet report significantly slower internet speeds than those who are paying for broadband subscriptions




### Internet speed correlates with household income



Perceived adequacy of internet connections in the home also correlates with source of internet and household income.

Those who are paying for broadband subscriptions are significantly more likely than those using cellular data plans only or those receiving free internet to rate their connections as adequate for all they need to do.

Household income correlates with assessment of adequacy of internet. The higher the income of the household, the more likely that the internet is adequate for all that needs to be completed.

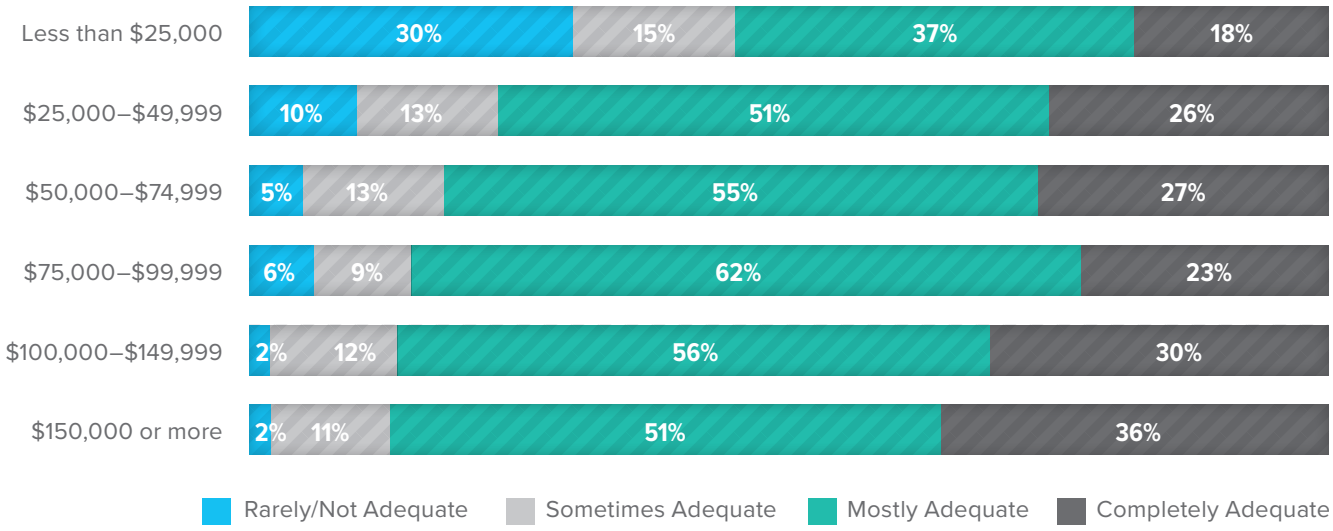
### Internet adequacy by type of service

**34%** of those relying on only cellular data for internet **&** **36%** of those using free/public access sources

say that their internet is not fully adequate for all they need to do.

This compares to only 18% of those with only fixed broadband subscription stating the same.

### Adequacy of the Internet Access: By Income




*"Please continue working towards being a national leader in providing fast and affordable internet access to Seattleites in urban and suburban areas at every economic level. Send a message to the rest of the nation and to the people of this great city, that this is the way forward and that Seattle is a model for the future state of access and communications. Thank you for all the work you do."*

*—Seattle Resident*

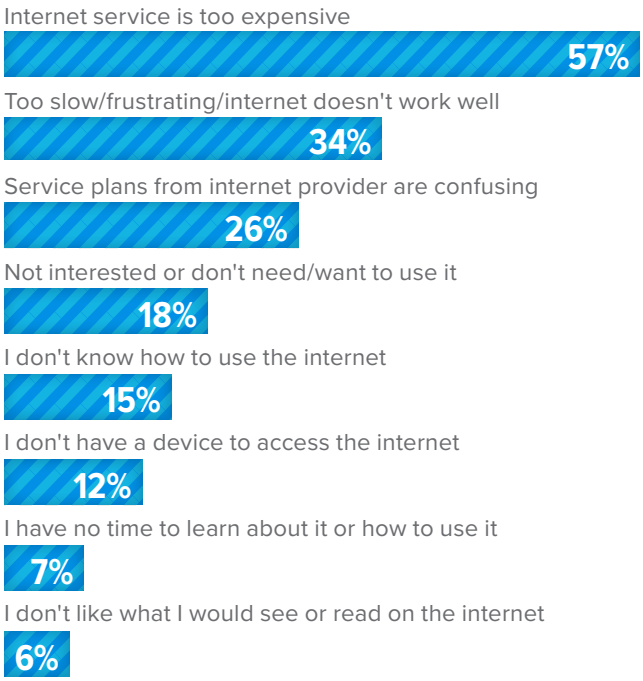
# Barriers and Reasons for not Using Internet More

While most Seattle residents report using the internet as much as they want or desire to, almost one out of four (23%) cite a factor or limitation that is keeping them from using the internet more.

**23%** **of Seattle residents have a limiting factor to not using the internet more**

The most common barriers are the cost of internet service and that it is too slow and frustrating to meet their needs. Complaints about service plans being too confusing were also relatively common.

### Top reasons why residents do not use the internet more (among those with ANY concerns)




*"I had no idea there are internet and smartphone service plans for income-qualifying households. These would help relieve some of the cost of our monthly expenses." —Seattle Resident*

Certain groups are more likely than others to report barriers to using the internet more often.

Percentage of these groups living with a barrier:

**59%** **those living in city sanctioned tiny home villages or other insecurely housed**

**54%** **those living at or below 135% of the Federal Poverty Limit**

**49%** **black residents of the city**

**38%** **older adults (65 years of age or older)**

**33%** **those living in South Seattle (Council District 2)**

**31%** **asian residents of the city**

**30%** **those who live alone**

For the five percent of households who do not have internet in their home, overall cost, lack of a device, or lack of credit/deposit are the primary reasons:

**61%** **say cost is a primary barrier to obtaining internet access**

**30%** **don't have a device to access the internet**

**20%** **don't have the credit or deposit requirements**

**16%** **don't know how to obtain internet access**

**8%** **say the internet is to slow and/or unreliable**

**8%** **don't trust the internet or technology companies**

**Low-income programs are not well used or known.** Despite cost being the number one reason for why residents do not use the internet at all or more often in the home, discount programs developed specifically for low income populations have low awareness and low usage.

Only **23%** of low income households that would qualify for these programs are using them:

- **53%** are unaware of programs
- **24%** are aware but not using programs

*Base = Among those living at or below 135% of Federal Poverty Level (n412)*

# Online Activity Levels

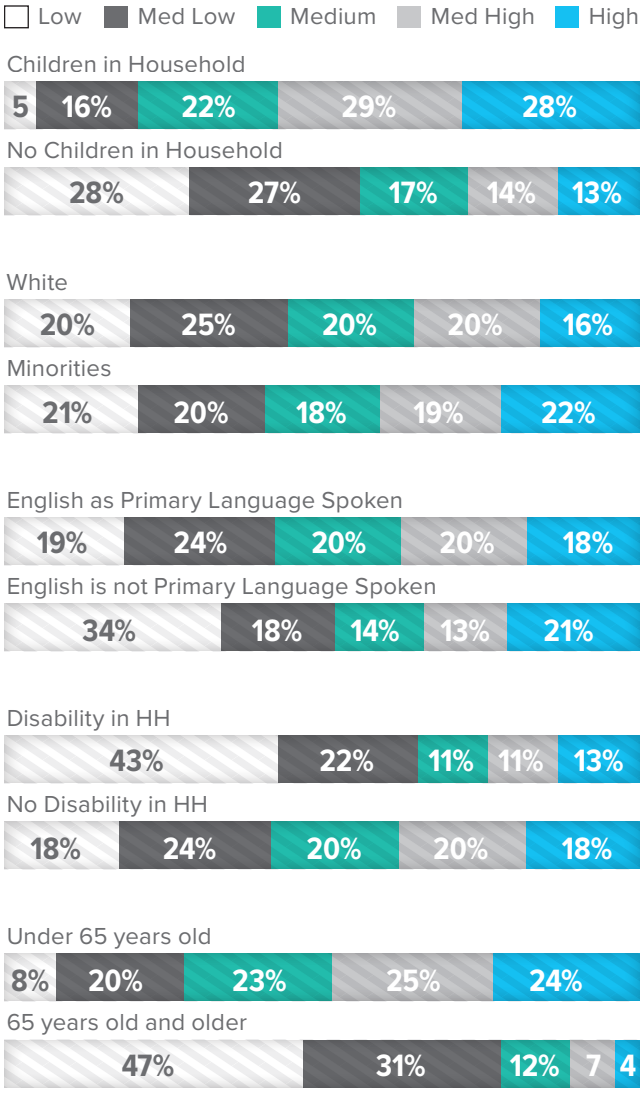
The survey measured the frequency in which residents perform 22 common online tasks. The scale used had five points: daily, weekly, monthly, less often, and never.

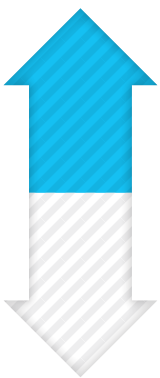
A score from '5' to '0' was assigned for each online task to represent the frequency in which the activity was performed (e.g. a '5' was given for 'daily' and a '0' for never). The individual scores were summed across each responding household and then sorted into five groups: high, medium-high, medium, medium low, low.

Certain populations have higher overall levels of online activity. This includes households with children and race and ethnic minorities. Groups that have significantly lower online activity include older adults, households with an individual living with a disability, and households that do not speak English as their primary language.

| The 22 online activities measured |
|---|
| Go online and get information from or about local government |
| Access or apply for benefits online (Medicare, VA, soc. security, etc.) |
| Do schoolwork or online research for school |
| Read or send email |
| Research and buy a product online |
| Use online banking services or pay bills online |
| Create or post original media (writing, art, music, videos) online |
| Listen to music or radio online |
| Watch videos or TV online |
| Access social media (Facebook, Twitter, LinkedIn, Instagram, etc.) |
| Get health or medical information online |
| Look for or apply for a job online |
| Attend an online class, meeting, or webinar |
| Find legal or consumer rights information online |
| Stay in touch with friends or family online |
| Look for answers to computer problems online |
| Use the internet to work from home |
| Start or run a business online |
| Arrange transportation online (check bus schedule, get transportation, order a ride) |
| Online search for homes / rentals |
| Research a new skill online |
| Learning language (programs or watching videos) online |

## Online Activity Levels: By Impacted Groups



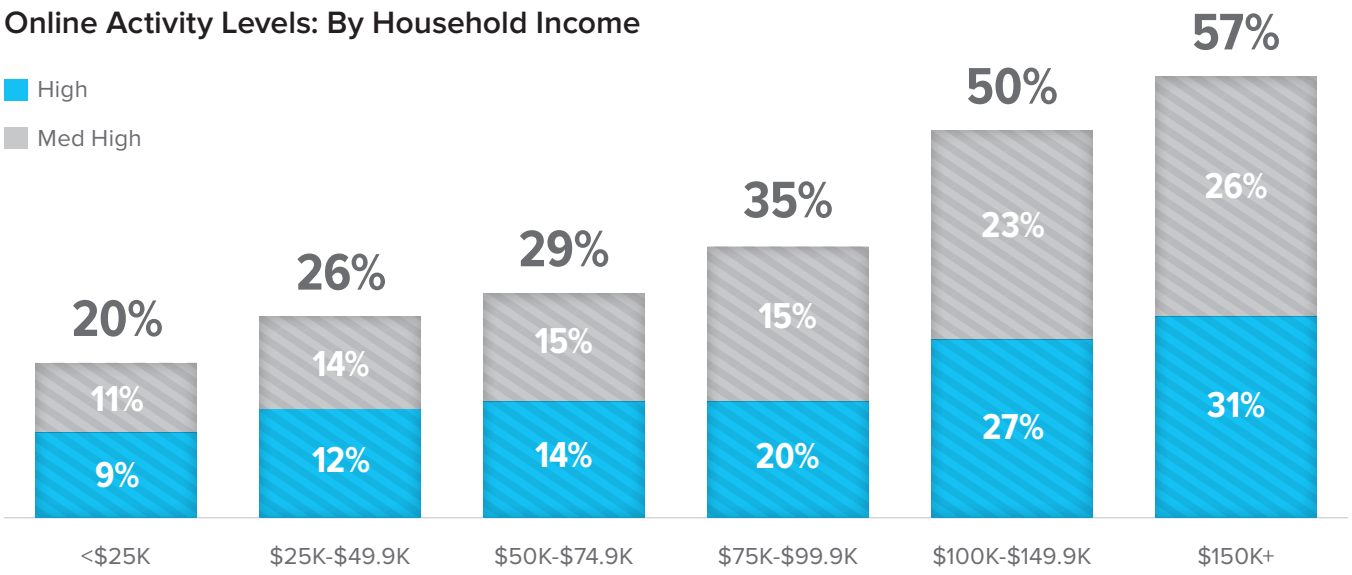
**Groups with higher online activity:**

1 Children in the household
2 Younger adults (under 65)
3 Race/ethnic minorities

**Groups with lower online activity:**

1 Older adults (65+)
2 Households with one or more member living with a disability
3 Households where English is not the primary language

### Online Activity Levels: By Household Income




There is a direct correlation between income and online activity. The greater the income, the more online activities are done on a regular basis.

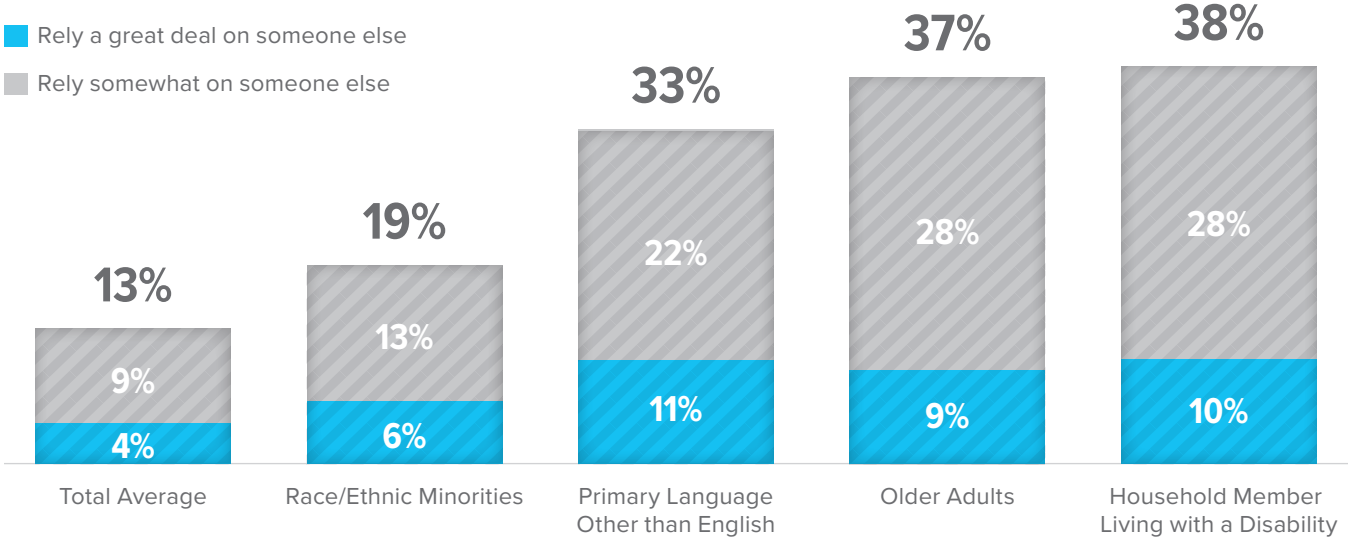
## Reliance on others

The majority of Seattle residents have the skills needed to independently access and use the internet, though more than one out of ten (13%) regularly rely on someone else to help them access the internet.

Groups that are more likely to rely on others to help them access the internet include:

- Members of race or ethnic minorities (19% rely on someone else).
- People who live in households where English is not the primary language (33% rely on someone else).
- Older adults (65+) (37% rely on someone else).
- People who live in households where there is someone living with a disability (38% rely on someone else).

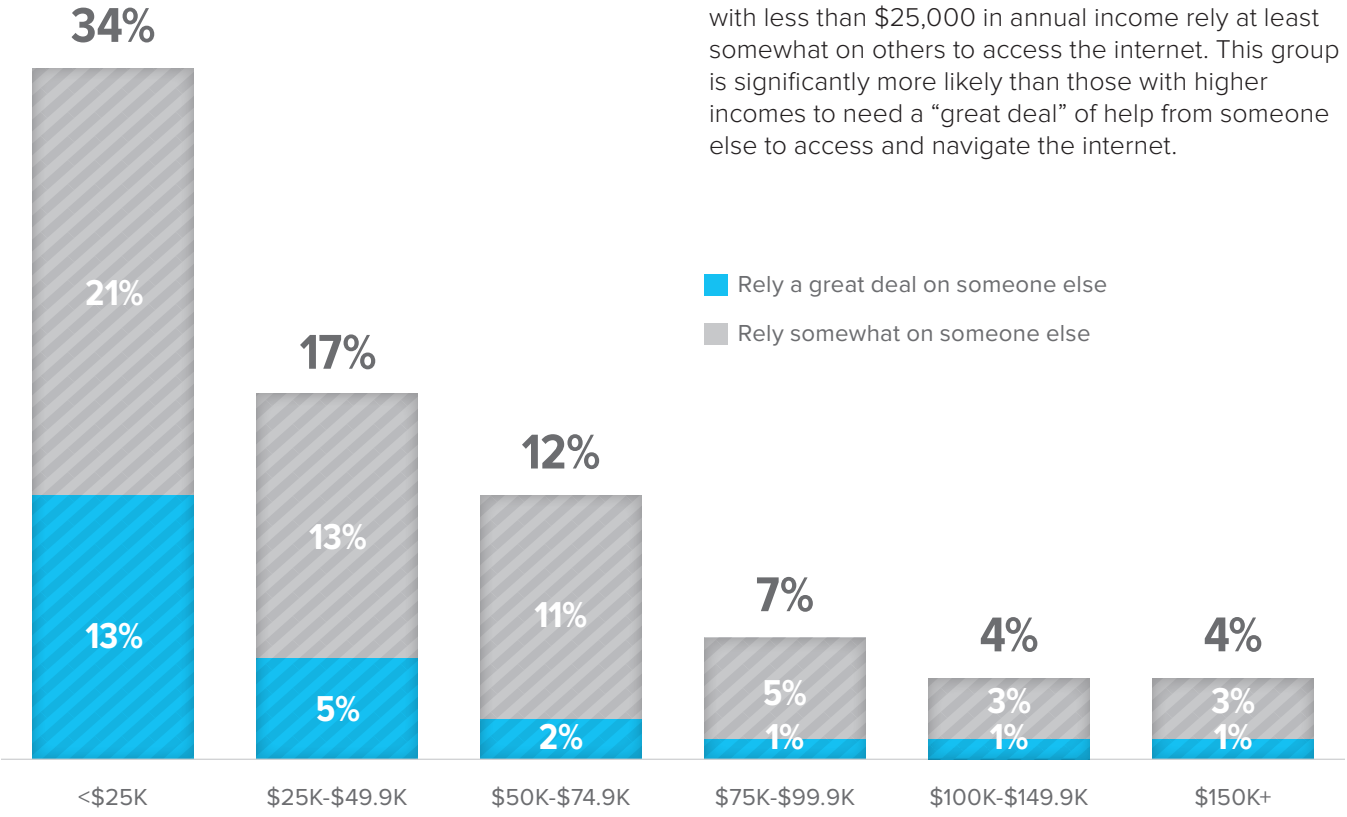
### Reliance on Others to Help with Access and Navigation of the Internet: By Impacted Groups



## Reliance on Others to Help with Access and Navigation of the Internet: By Income

Online skill level increases in step with household income – those with higher incomes are significantly less likely to rely on others to access the internet.

About one third (34%) of those living in household with less than $25,000 in annual income rely at least somewhat on others to access the internet. This group is significantly more likely than those with higher incomes to need a "great deal" of help from someone else to access and navigate the internet.



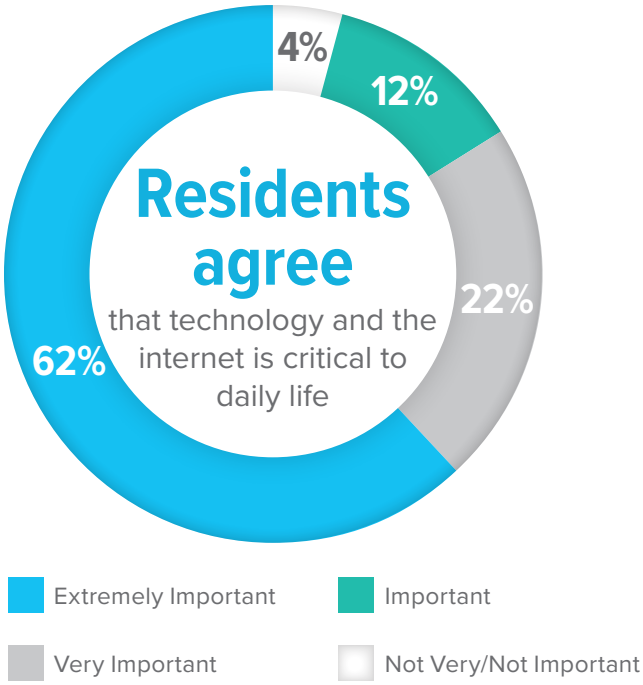

*"I'm glad Seattle cares about this issue and hope you can address race and income divides in technology."*

*—Seattle Resident*

# Importance of the Internet to Daily Life

City of Seattle residents agree that technology and the internet is critical to their daily life.

Nearly two out of three (62%) residents say that technology and the internet is **extremely important** to their daily life. Those that do not feel it is extremely important still feel that it is **very important** (22%) or important (12%). A small number (4%) of residents say that technology and the internet is **not very** or **not at all important** to them.




There are some differences found in Seattle residents' attitudes towards the importance of technology and the internet:

Groups that find the internet less important (% shown of not very/not at all important):

- Older adults (65 and older): 15%
- Low income (under 135% of FPL): 14%
- Households with a member living with a disability: 12%

Households with children are the most likely group to rate the internet as extremely or very important:

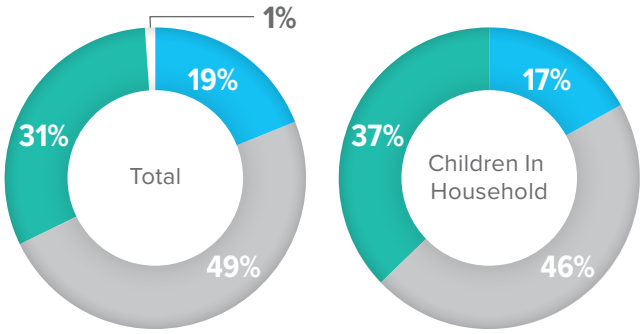
- Households with children: 98% rate it important/very important/extremely important and only 2% say it is not important.

## Effects of the Internet & Technology

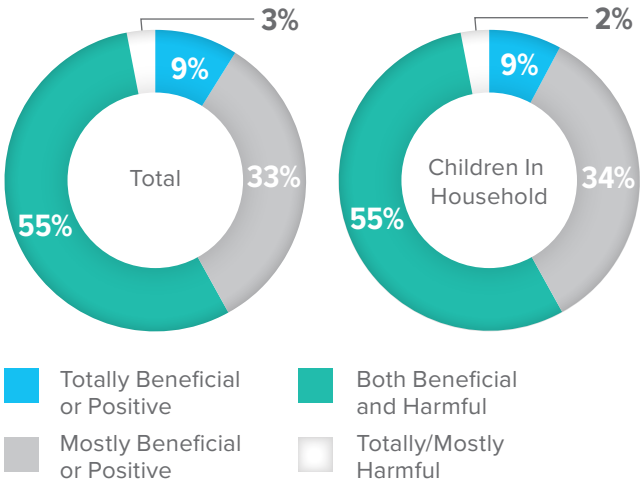
Residents agree that internet and technology can be both positive and potentially harmful. They are more likely to feel the positive effects in their personal lives (and the lives of their family); however, one out of three (32%) report that the internet and technology has some harmful effects, along with benefits, in their personal life. Moreover, the majority of residents (58%) agree that internet and technology has had some harmful effects on society.

While those with children in the household are less likely than others to say that technology is unimportant, they are significantly more likely to be tempered in their assessment of the positive and negative effects of technology and the internet on society.

### Effect of the Internet and Technology on You and Your Family

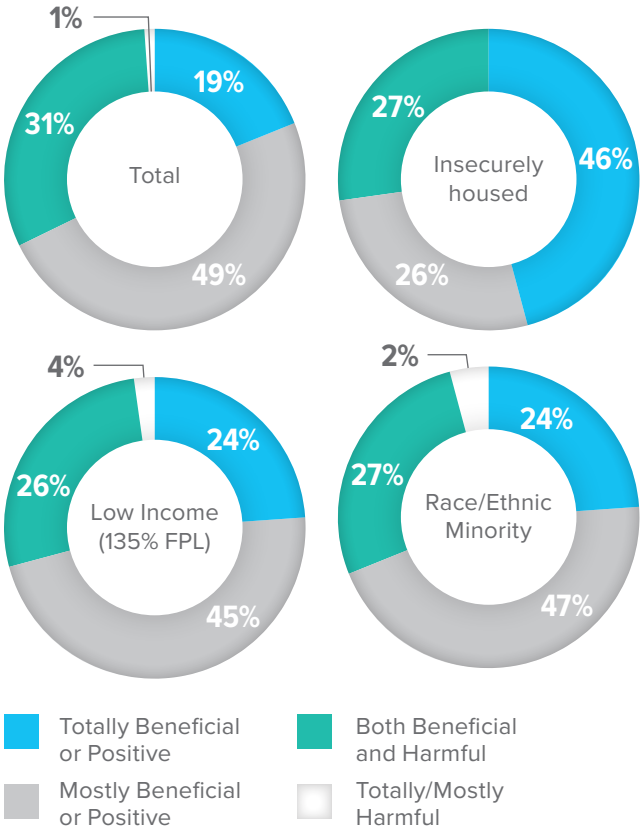



### Effect of the Internet and Technology on Society



Residents that are insecurely housed, those in low income households, and race/ethnic minorities are the most likely to rate the effect of the internet and technology as "totally beneficial" to them—even though these groups tend to be less likely to rate technology as extremely or very important to them.

### Effect of the Internet and Technology on You and Your Family




This speaks to the fact that those falling on the wrong side of the digital divide are aware of the divide and the inequities that it creates.

## Technology and Internet Concerns

'Ensuring the safety and security of personal information' and 'How their data and information is being used' are primary concerns among Seattle residents. Nine out of ten (91%) residents have at least one concern when it comes to accessing and using the internet.

City residents, regardless of age, are most concerned about the security of their personal information, how their data is used, and protection from viruses.

### Percentage of residents Concerned about Technology and Internet Safety and Security Issues

**80%** Ensuring the safety and security of my personal information

**77%** How my data and information is being used (including ways you may not know about)

**71%** Protecting myself from viruses and malware

**39%** Protecting myself from others online

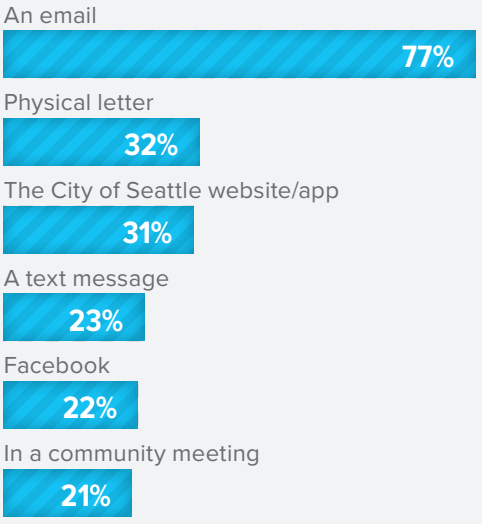
**24%** Protecting my children from others online

## Civic Engagement Preferences

When it comes to communicating with a group or the city, electronic communication is more preferred than physical communication, with over three quarters mentioning email as a preferred method.

Some key differences include:

- Those with less than a high school education prefer physical letters (40%) over email (30%).
- Those living in Seattle Housing Authority buildings have an equal preference for physical letters and email (50% physical letters and 49% email).
- While email is still the preferred method, adults under the age of 35 and high income earners are more likely than other groups to prefer the City website or an app (37% for young adults and 39% for high wage earners—$150,000 or more in household income).



# Exploring Digital Engagement Segments

With the goal of providing a holistic understanding of residents' use of technology and the internet that goes beyond descriptive data surrounding rates of internet access, device usage, and barriers to use of technology, a classification system to explain the level of digital engagement each resident has was developed.

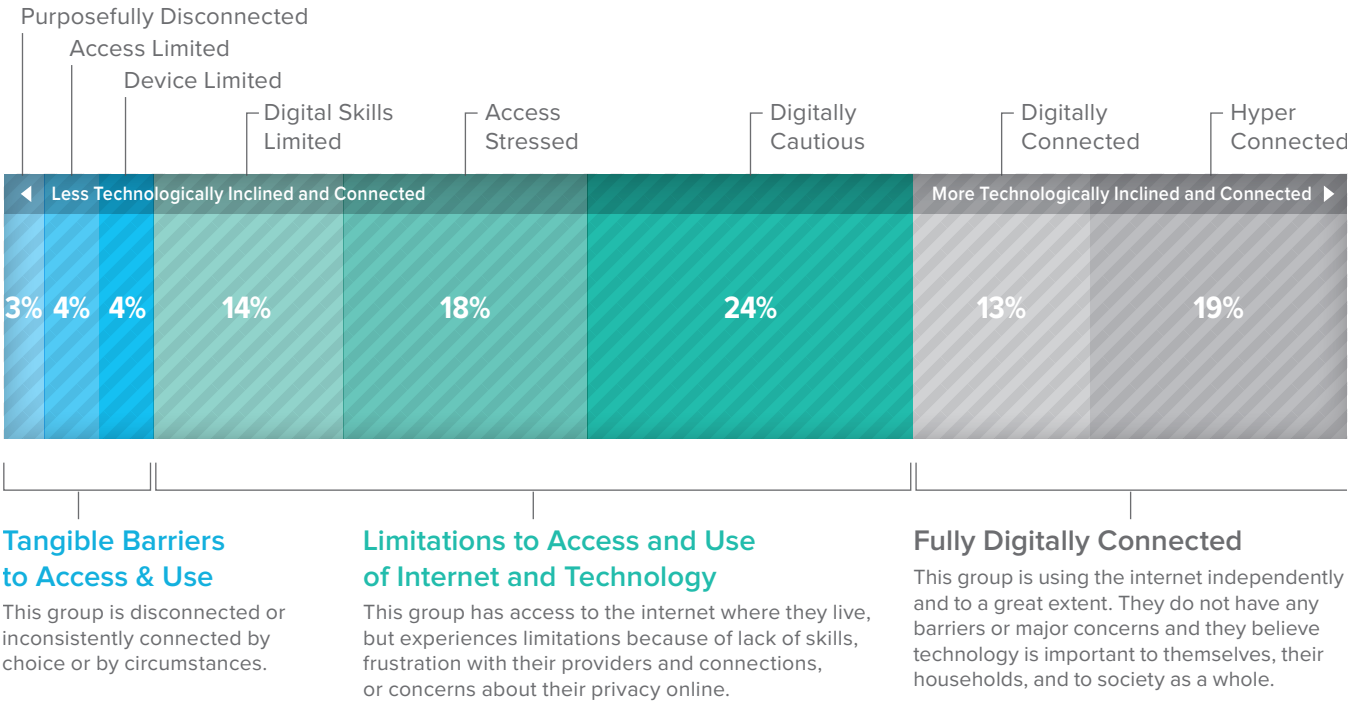
This segmentation divides the population into groups based on a hierarchy of factors that can impede or restrict full technology adoption. It uses a continuum of attributes that are related to both infrastructure (e.g. rates of internet and device access) and the usability (skills in using the internet unassisted, concerns and worries that may limit digital adoption) factors that determine the extent to which any individual uses technology and the internet. This classification system divides the population into distinct groups based on the most significant factor that is affecting full digital adoption.

Eight different groups or segments were defined. Each individual is placed into only one group based on what they told us about their current access to the internet, their digital skill level, their attitudes about the importance of the internet, and their worries and concerns about using technology. Segments are located on a continuum from left to right, where may or may not also fall into other segments further up on the continuum. However, segment members do not fall into categories that are lower on the continuum.

*"The internet has truly become a baseline for interacting with the modern world much the way telephones did. With this reality comes all of the responsibilities of making the internet as widely accessible as any other utility."*

*—Seattle Resident*

### Spectrum of Digital Connectedness: Three Major Groups and Eight Detailed Segments




**Tangible Barriers to Access & Use**

This group is disconnected or inconsistently connected by choice or by circumstances.

**Limitations to Access and Use of Internet and Technology**

This group has access to the internet where they live, but experiences limitations because of lack of skills, frustration with their providers and connections, or concerns about their privacy online.

**Fully Digitally Connected**

This group is using the internet independently and to a great extent. They do not have any barriers or major concerns and they believe technology is important to themselves, their households, and to society as a whole.

# Segments with Tangible Barriers to Access & Use

## Purposefully Disconnected (3% of Seattle)

This segment does not have a way to access the internet in their home because they do not want it, do not need it, do not trust it, and/or do not believe the internet is important or useful. Unlike the traditional definition of a "cord cutter" this segment is unlikely to ever have had a cord to cut. They have made a conscious decision to not adopt technology and maintain that they have no need to change course at this stage in their life.

*"I am not connected to the internet and I have an old phone. My mobile phone is not connected to internet. I rely on the librarian if needed."*

*–Purposefully Disconnected Seattle Resident*

This segment does not feel any connection with technology or the internet–they do not need or want it, and they find it unimportant in their daily lives. They tend to feel the internet and technology has had either a harmful or mixed effect; few see it as beneficial. They have a level of mistrust for the internet or for businesses that only operate online.

Other than a mobile phone, they do not have personal technology devices. None of them report access to the internet where they live. They express a distinct preference for in-person/personal communication in interactions with a group or the City. On the rare occasions they go online (perhaps at the library), the primary purpose is to read or send email, which they do once or twice per month. The majority rely on someone else to help them access or navigate the internet.

This segment has a higher proportion of men, and tends to be older adults who are retired, long time residents of Seattle, who live alone. There is also a higher proportion of Black and Asian residents found in this segment.

## Access Limited (4% of Seattle)

This segment reports a connection with technology and the internet–both are important to their daily lives–but they face access barriers. Less than half have internet access where they live. If they do have a way to go online in their home, it is through their phone, which is on a limited or pre-paid data plan. Cost is the primary reason they do not use the internet more. This segment has some limited awareness of low cost internet service plans for qualified households, but few use them.

While they worry, like many, about the security of their personal data, this segment's mistrust of the internet does not stop them from using it. Three quarters report that the internet and technology have been personally beneficial. Seven in ten feel confident in accessing or navigating the internet, and rarely, if ever, rely on someone else to help them. Most are comfortable engaging in a wide range of online activities. When they go online, they commonly email, use social media, and stream video or music.

This segment has limited income. One third are disabled and nearly three in ten have a household member with an impairment that makes it difficult to use technology or the internet without assistance or adaptation.

*"Access to the internet has become integral to participating in modern society and nobody should feel they can't access it because they lack funds or live in a bad neighborhood."*

*–Access Limited Seattle Resident*

## Device Limited (4% of Seattle)

This segment has moderate comfort with technology and the internet, though neither is central to their daily lives. Although they all have internet access where they live, they only have one device in the household (a smartphone or a computer, not both) and this device is often shared among multiple individuals. They are more likely than other segments to be using devices that are borrowed from others.

Most are purchasing their internet service, and they are frustrated and impeded by the cost. Four in ten do not consider themselves especially confident in using devices to access the internet, and six in ten worry about being able to afford new devices. Their skills are limited and over a third rely on someone else to help them access or navigate the internet. Their main use of the internet centers around reading or sending email.

*"I have internet at home because a relative pays the bill. I cannot afford to have home internet service."*

*–Device Limited Seattle Resident*

This segment has limited income and tends to be older adults living alone. One fifth are disabled and a quarter have an impairment that makes it difficult to use technology or the internet without assistance or adaptation.

# Segments with Limitations to Access and Use of Internet and Technology

## Digital Skills Limited (14% of Seattle)

The residents in this segment tend to lack skills or confidence when it comes to technology and the internet. They are more likely than others to prefer a basic model device, to describe themselves as having a hard time learning how to use a new device or software, and to not feel confident doing business with places only reachable online.

These residents are not limited by access–they all have internet where they live, and nearly all have a smart/mobile phone and computers in the household. They own their devices, and nearly all purchase their internet service.

While most are comfortable using email or visiting websites, notable portions would not be comfortable with a range of internet activities beyond this. Two thirds in this segment rely on someone else to help them access or navigate the internet. Members in this segment are less likely to go online to bank, shop, stream video or music, or access social media.

Residents in this segment are more likely to be women and tend to be older. They are middle income and while some are employed, many are retired. This segment has the highest proportion of Asian residents.

*"You should always consider those unable to use technology and be sure to have a means of communication on par (for those that cannot use technology). My experience is that paper mail is more 'real' and more likely to be read."*

*–Digital Skills Limited Seattle Resident*

## Access Stressed (18% of Seattle)

The access stressed segment of residents is characterized by having a level of internet service that is only sometimes adequate to support the things they want to do. This segment is technologically savvy and adept. They own an array of digital devices and virtually all consider technology and the internet to be important to their daily lives; two in three consider it "extremely important." They have internet access where they live, but that access is not always satisfactory.

They tend to have a slower download speed than other segments with a similar wide array of devices. One in four only have a speed of up to 15 Mbps.

Regarding the one thing they would change about the internet where they live, over half cite a lower price, and one in four cite faster speeds. Three in ten do not use the internet more because the service is too expensive, and nearly a quarter limit their use because it is too slow or does not work well. This segment is more likely than others in more digitally connected segments to worry about being able to afford to worry about being able to afford new devices as technology changes and improves.

*"Learning to use the internet and technology is the same as learning to read in the beginning of last century. It isn't vital to survive, but it is necessary to move up the socioeconomic ladder. Learning to read is free. The internet should remain as close to free as possible."*

***–Access Stressed Seattle Resident***

This segment has more women, is younger than average and has more middle income residents.. They tend to be employed, though a significant minority (9%) are job seekers or students. The racial and ethnicity makeup of this segment is similar to Seattle's population as a whole.

## Digitally Cautious (24% of Seattle)

This segment is confident in their use of the internet and technology; however, they are also very worried about their privacy and about information sent across the internet. They tend to mistrust information found online. This segment has the highest proportion of members worried about the security of their personal information, how their data may be used, and about online viruses and malware. While three out of five feel the internet and technology have been personally beneficial, the remainder feel the impact has been both beneficial and harmful.

*"Privacy, neutrality, and proper data stewardship are of utmost importance."*

***–Digitally Cautious Seattle Resident***

This segment is technologically savvy and adept– they own a lot of digital devices and use the internet frequently. Virtually all consider technology and the internet to be important to their daily lives. They have internet access in the home that is sufficient for their needs, and they have income levels that assure them access to technology.

In spite of their wariness, they still use the internet to a great extent. They frequently email, access social media, and stream video and music. Although cautious, three quarters engage in online banking and shopping.

Residents in this segment tend to be high income employed residents in their 30s to 40s. Most live with their spouse and/or partner and more than a quarter have children in the home.

# Segments who are Fully Digitally Connected

## Digitally Connected (13% of Seattle)

This segment values technology and the internet, and what it can do in their lives. All consider technology and the internet to be important to their daily lives; two in five consider them "extremely important." They all have internet access where they live and while they might wish it were more affordable, they have income levels that assure them access to technology.

There are a few other factors that distinguish this segment. The majority feel the internet and technology have had only a beneficial effect on their personal lives. They are confident with technology and consider themselves highly capable when it comes to using devices to access the internet, and rarely need to rely on others for help.

*"I feel comfortable with technology and service where I live but I wish it was not quite so expensive."*

*–Digitally Connected Seattle Resident*

All of this segment own at least one device to access the internet, and most own two or three. This segment likes to stay in touch electronically, frequently sending email and accessing social media. They also like to stream video or music, and bank or shop online.

Residents in this segment tend to be White, between the ages of 25 and 50, employed, college educated, and high income.

## Highly Connected (19% of Seattle)

This segment has fully adopted technology and the internet–they embrace their digital devices, have fixed broadband with fast connection speeds, unlimited data plans, and they can afford to pay for it. They all (100%) have internet access where they live.

Each one in this segment feels technology and the internet are "extremely important" to their daily lives–and four out of five feel they have had only a beneficial effect on their personal lives. They are very confident with technology and consider themselves highly capable when it comes to using devices to access the internet, needing to rely on no one but themselves.

Smartphones and laptops are ubiquitous across these households. Additionally, tablets, desktop computers and voice activated devices are also common. This segment feels technology gives them more control over their daily lives. They frequently engage in a wide range of activities online, including banking, shopping, and working from home.

Residents in this segment have a higher proportion of men than is found in the general population. They are younger, employed, college educated, high wage earners, who live with their partner and often with their children. Relative to other segments, they are newer to Seattle–with more than a third arriving within the past five years.

*"I think that technology is extremely important in 2018, and easy access to the internet and technology by all income levels will be necessary to slow the income inequity problem. We cannot increase the chasm that the poor must overcome by only allowing access to technology to those who can afford it."*

*–Highly Connected Seattle Resident*

City of Seattle