Utah Broadband Access

Prepared by

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Utah State University

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Utah Broadband Access

Final Report

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Executive Summary

We were asked to conduct a survey of broadband penetration in the state of Utah. In order to make meaningful comparisons across regions and between rural and non-rural areas, we created a stratified sample comprising each of the seven Utah Association of Government areas, rural Utah, and non-rural Utah. We interviewed 900 respondents from October 4 to October 10, 2011.

Our initial assumption was that there is a residential broadband gap between rural and non-rural Utah. But, according to the survey results there is no rural/non-rural gap. That is, despite geographic and demographic differences, rural Utahns have comparable access to and use of broadband service.

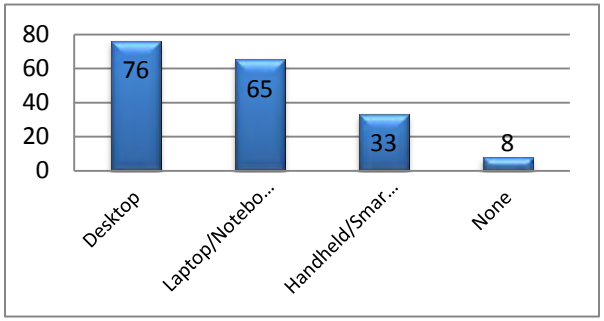
The following fact sheets comprise the executive summary for the survey. They allow for instant comparisons between rural, non-rural, and Association of Government regions.[1] The full survey results are detailed later in the report. The survey questionnaire is provided in an appendix. Tables of the statistical results are also provided in an appendix.

Funding for the study was provided by the American Recovery and Reinvestment Act of 2009 and the National Telecommunications and Information Administration.

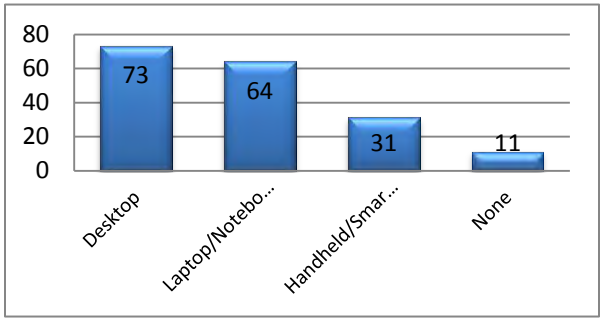
[1] The six regions and counties within each region are as follows: 1. Five County Region- Beaver, Iron, Garfield, Washington and Kane Counties 2. Six County Region- Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties 3. Wasatch Front Region- Weber, Morgan, Davis, Tooele, and Salt Lake Counties 4. Bear River Region- Cache, Box Elder, and Rich Counties 5. Mountainland Region- Summit, Wasatch, and Utah Counties 6. Uintah Basin Region- Duchesne, Daggett, and Uintah Counties

At home, do you or any member of your household own or use any of the following computers?

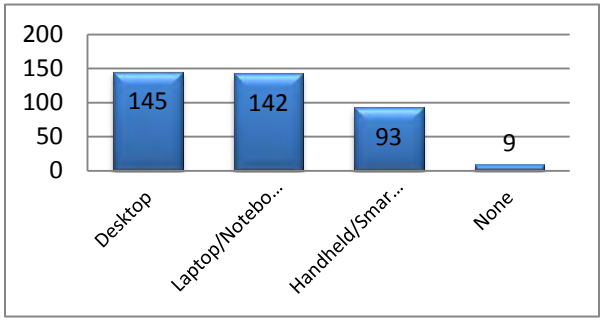
Five County Region



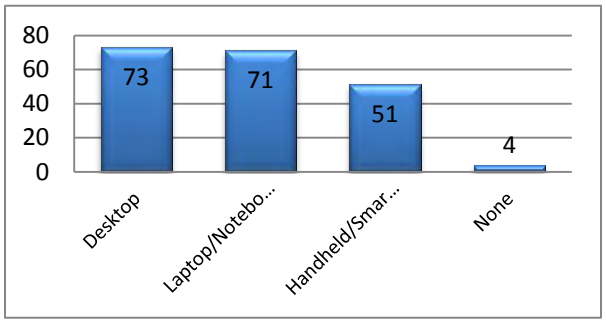
Six County Region



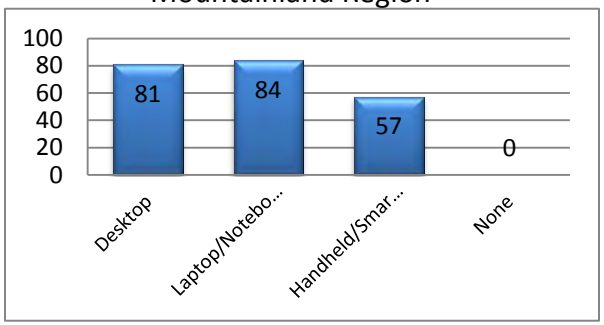
Wasatch Front Region



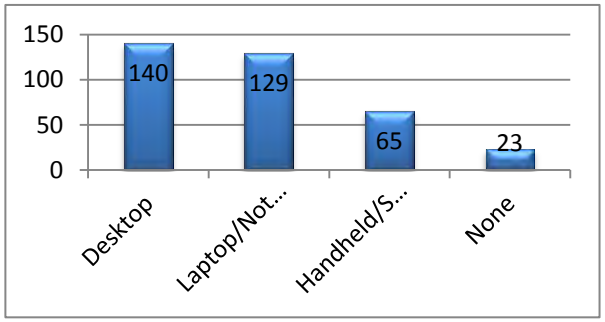
Bear River Region



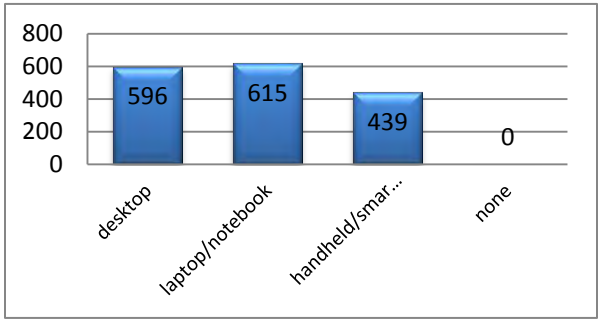
Mountainland Region



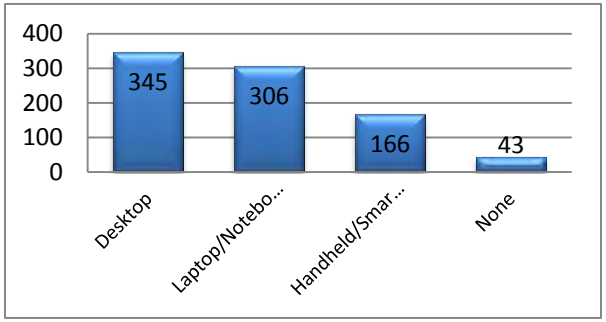
Southeastern Region



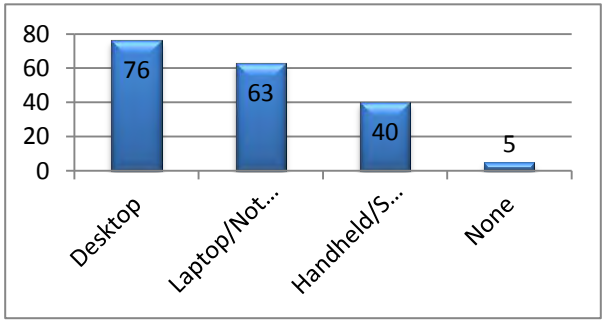
Rural Counties



Non-Rural Counties



Uintah Basin Region



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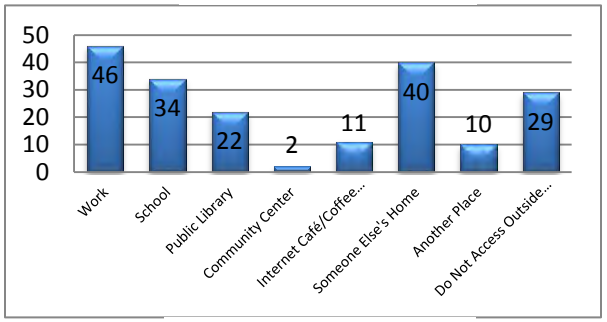
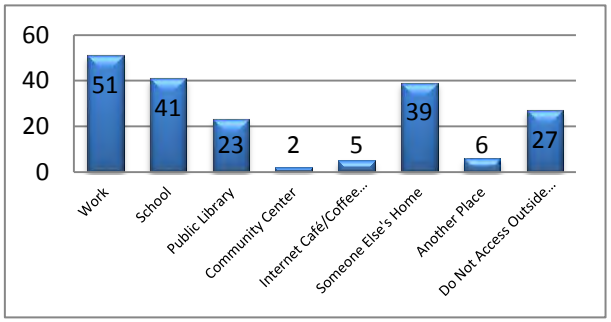
Do you or any member of your household access the internet at any of the following locations outside the home?

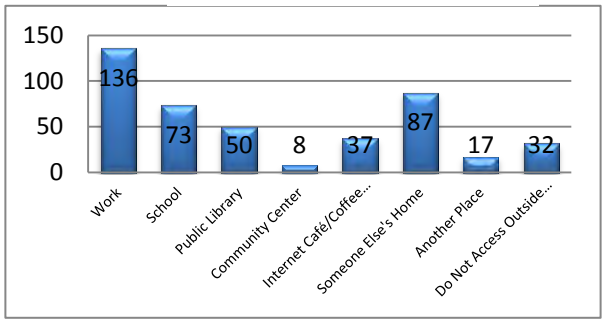
Five County Region



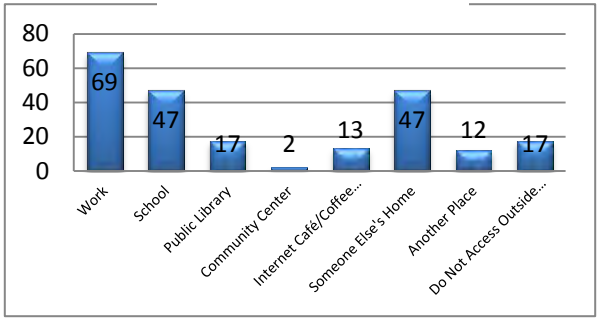
Six County Region



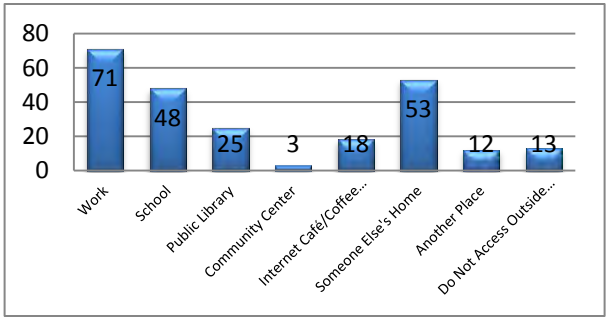
Wasatch Front Region



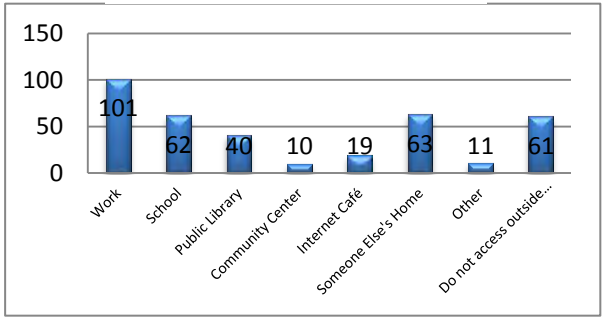
Bear RiverRegion



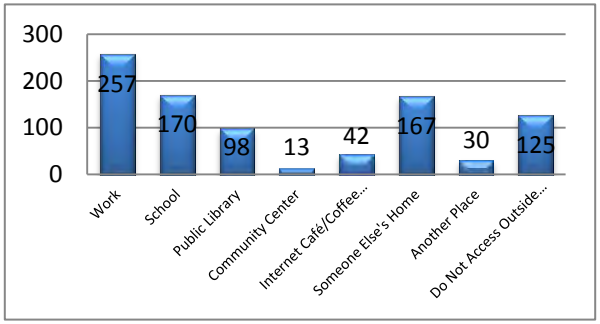
Mountainland Region



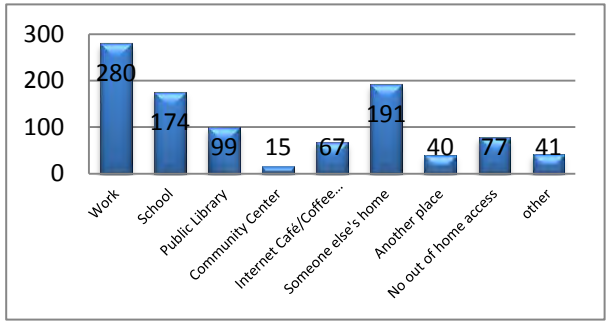
Southeastern Region



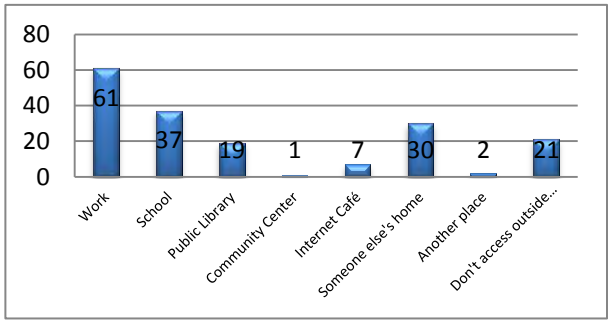
Rural Counties



Non-Rural Counties



Uintah Basin Region



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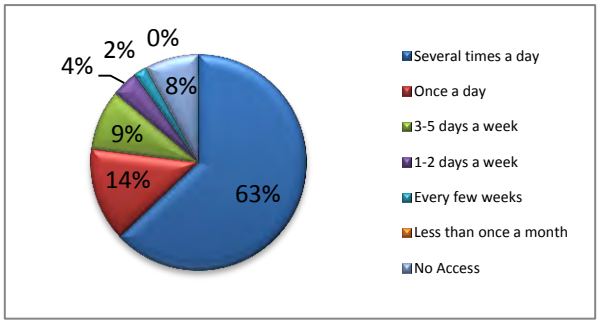
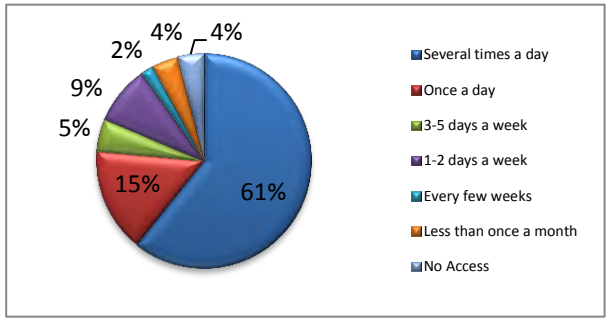
About how often do you access the internet?

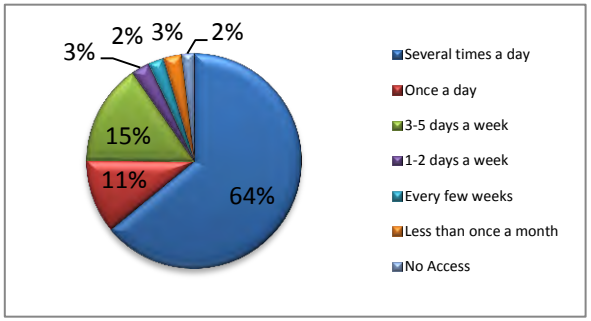
Five County Region



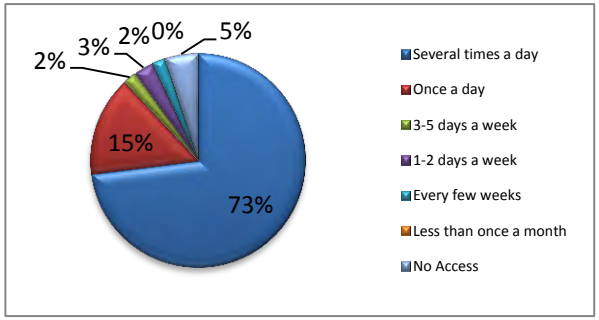
Six County Region



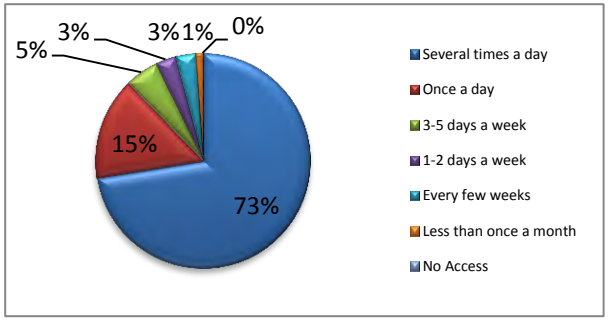
Wasatch Front Region



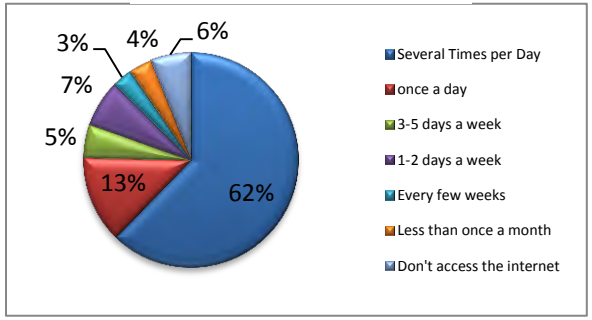
Bear River Region



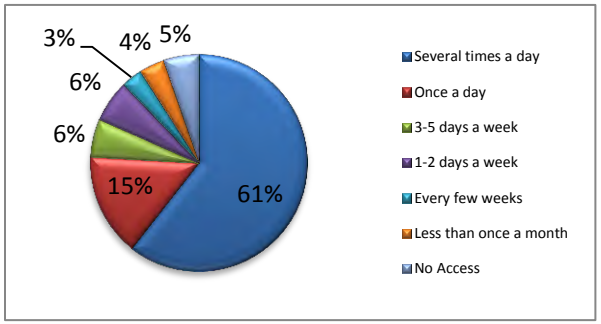
Mountainland Region



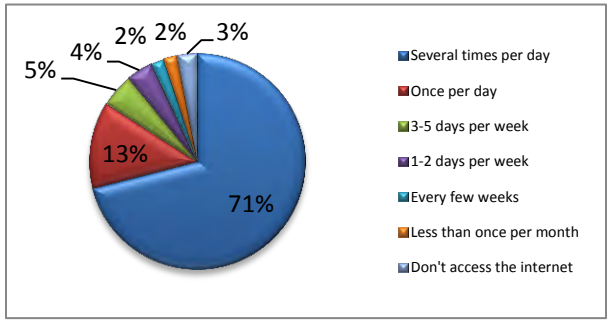
Southeastern Region



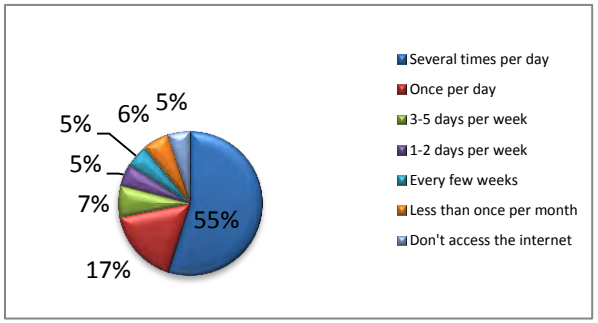
Rural Counties



Non-Rural Counties



Uintah Basin Region



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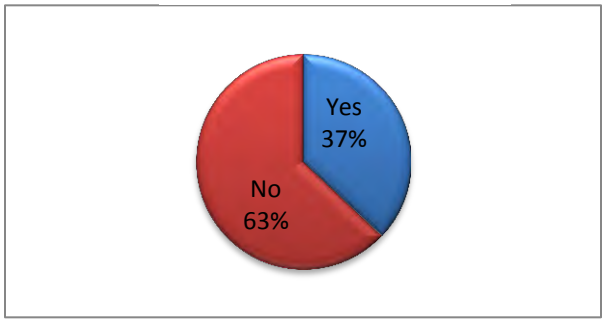
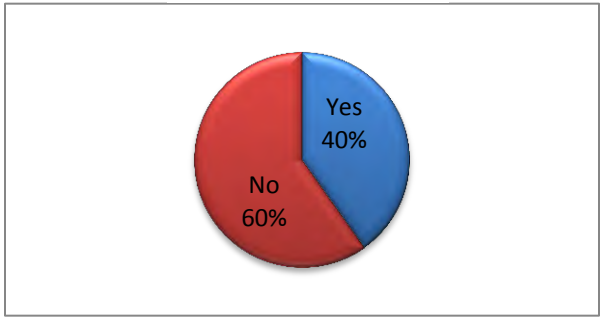
Do you know how many providers of high-speed internet service are in your area?

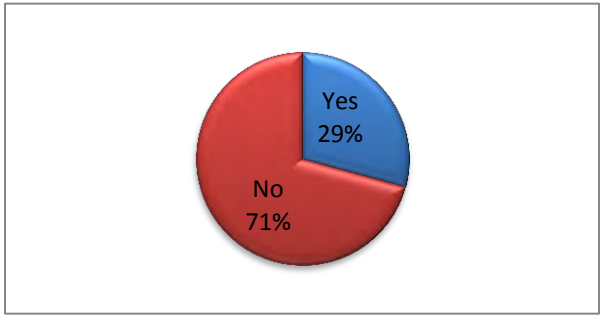
Five County Region



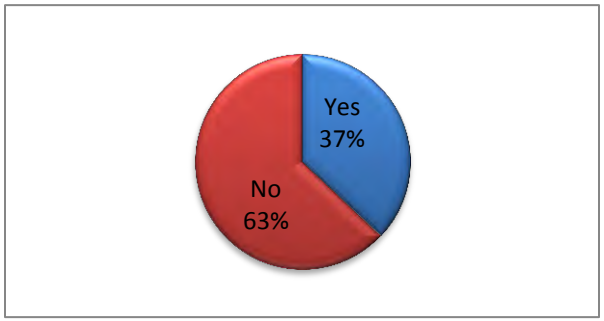
Six County Region



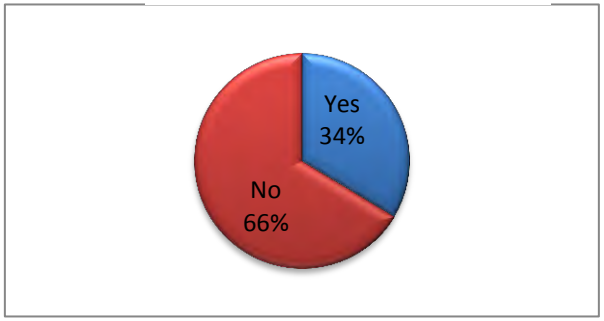
Wasatch Front Region



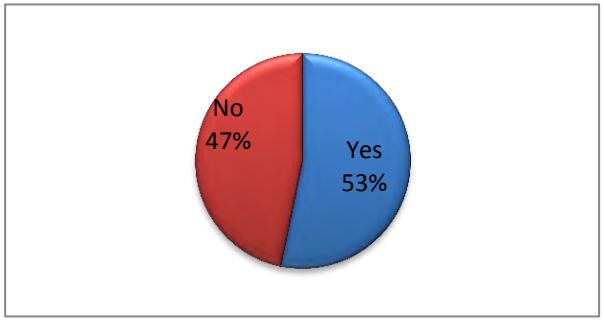
Bear River Region



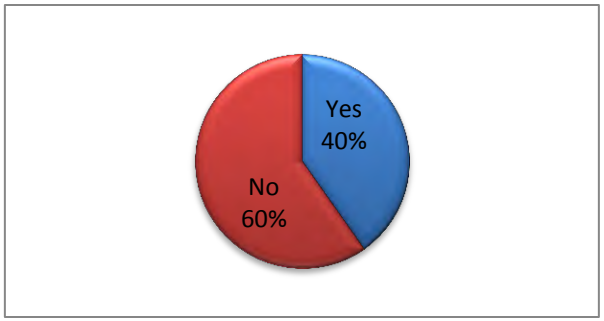
Mountainland Region



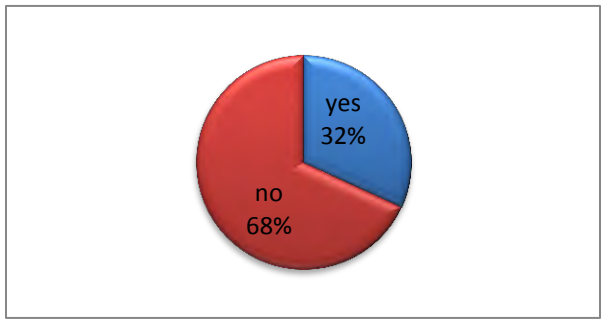
Southeastern Region



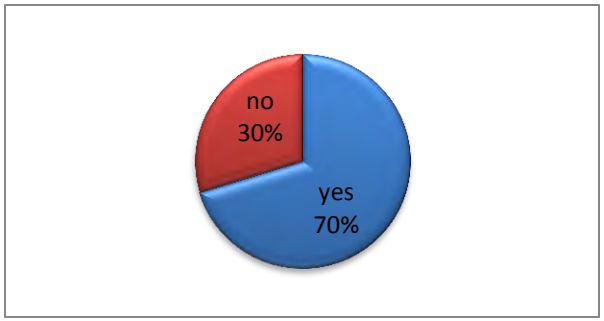
Rural Counties



Non-Rural Counties



Uintah Basin Region



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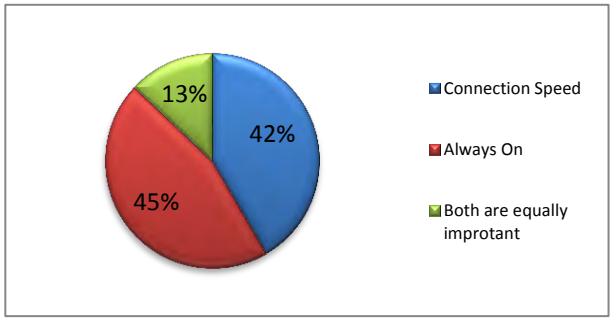
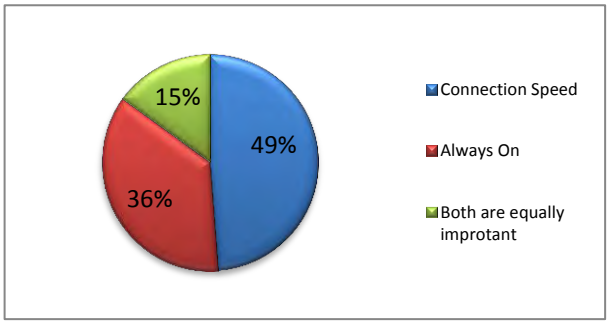
Which would you say matters more to you with respect to your home broadband connection?

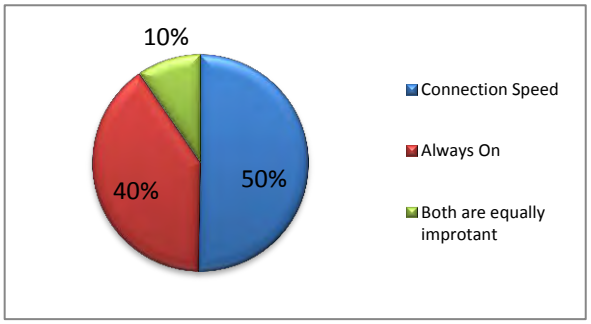
Five County Region



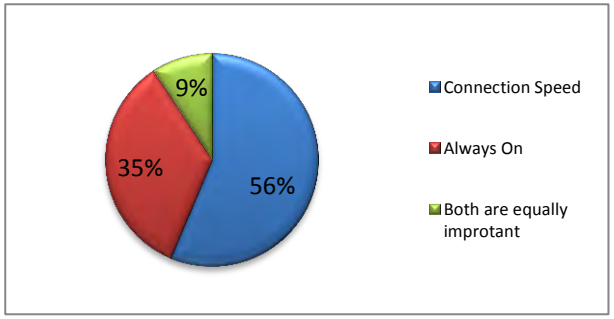
Six County Region



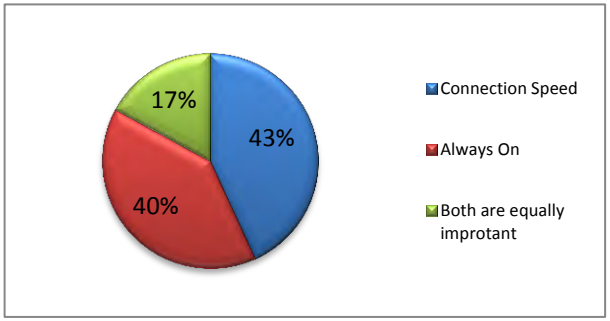
Wasatch Front Region



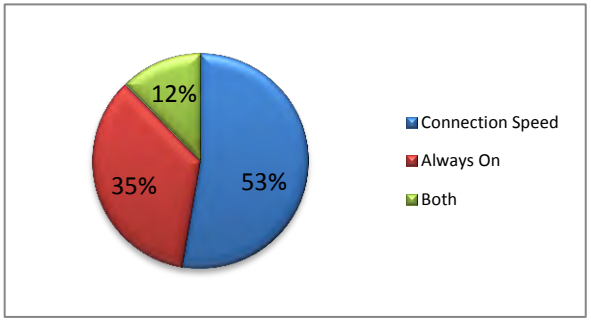
Bear River Region



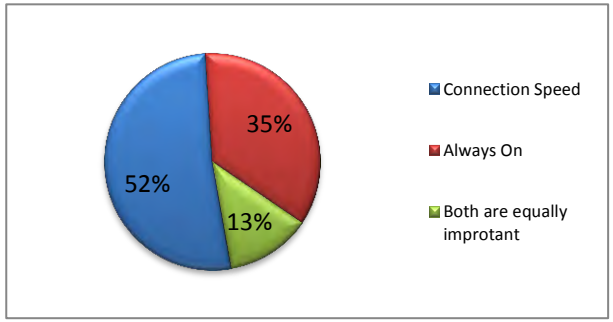
Mountainland Region



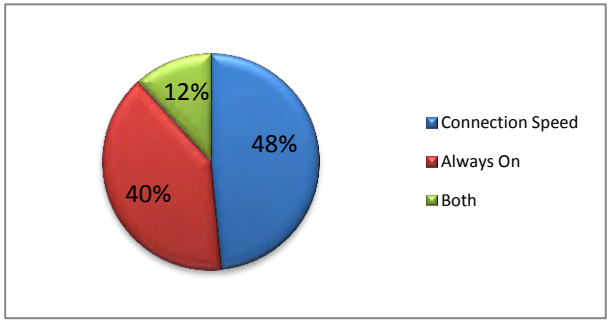
Southeastern Region



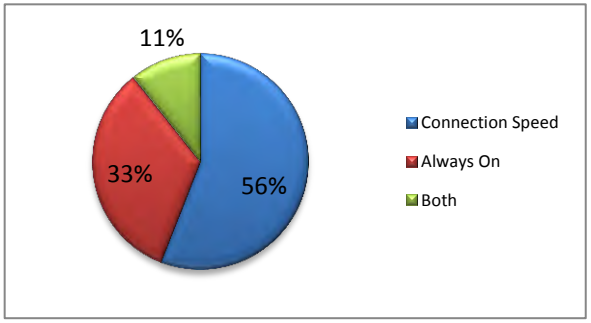
Rural Counties



Non-Rural Counties



Uintah Basin Region



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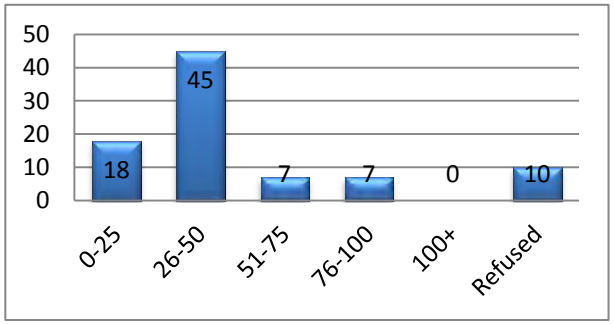
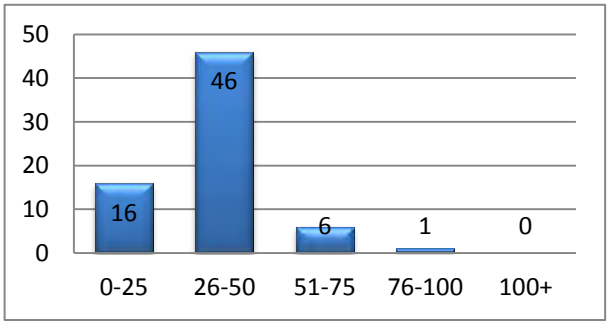
To the nearest dollar, how much per month do you pay for internet service?

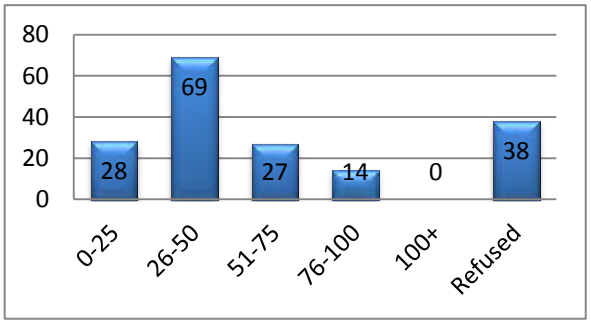
Five County Region



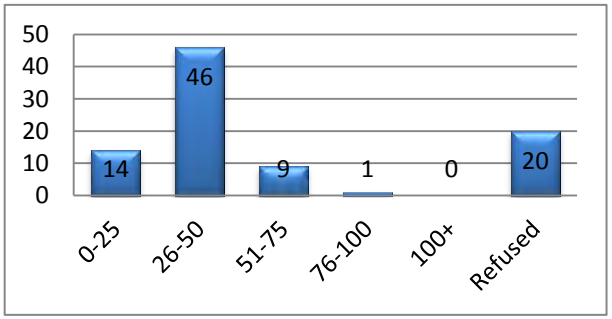
Six County Region



Wasatch Front Region



Bear River Region



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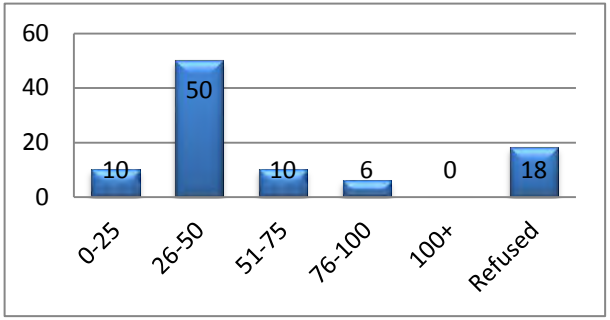
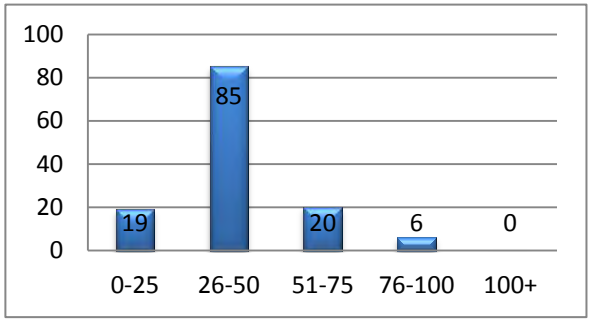
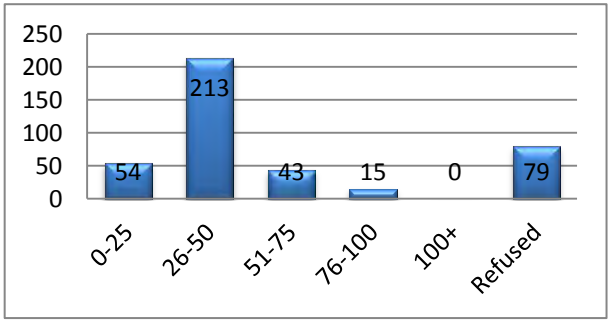


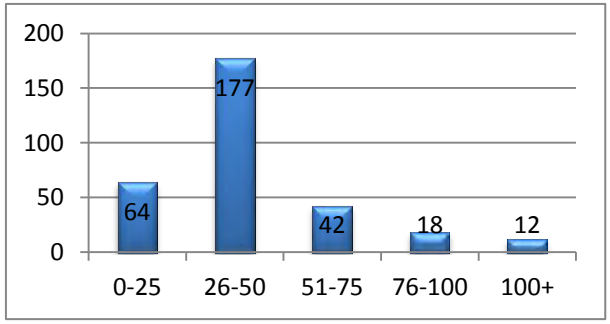
Southeastern Region



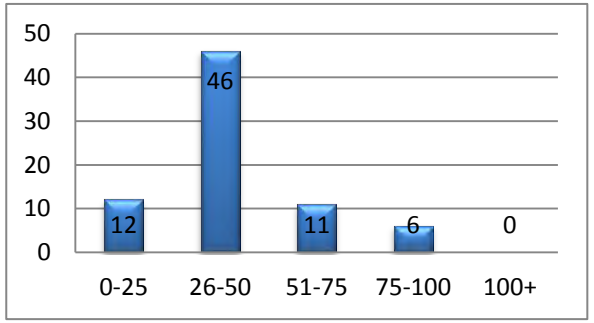
Rural Counties



Non-Rural Counties



Uintah Basin Region



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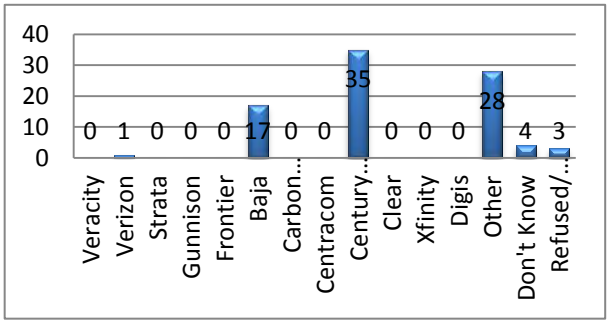
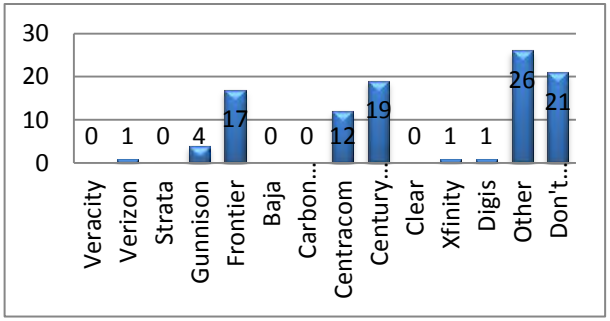
Thinking about your internet service at home, which company provides that service?

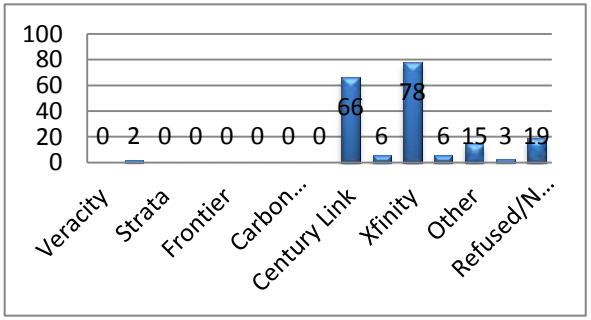
Five County Region



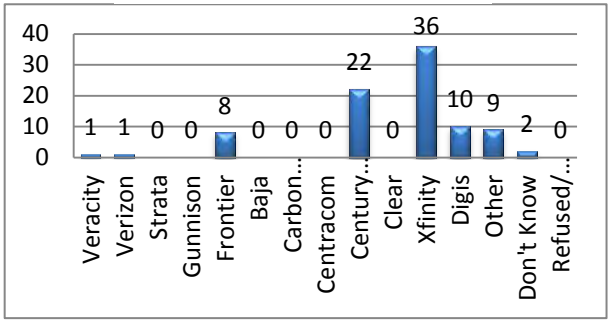
Six County Region



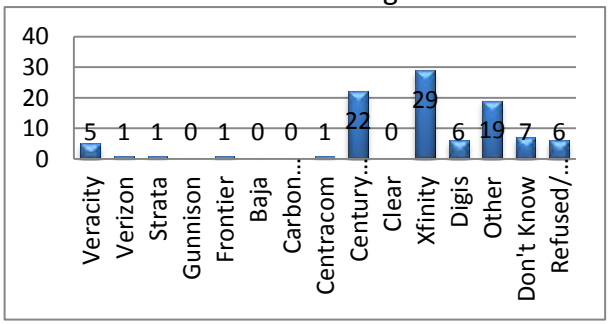
Wasatch Front Region



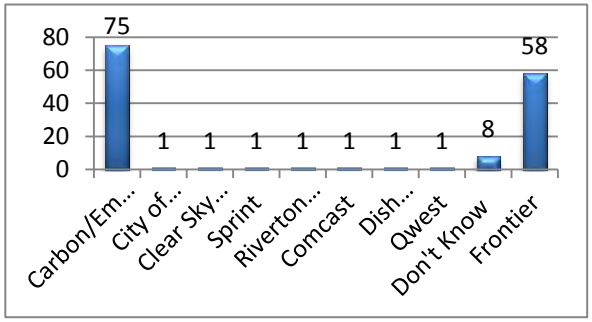
Bear River Region



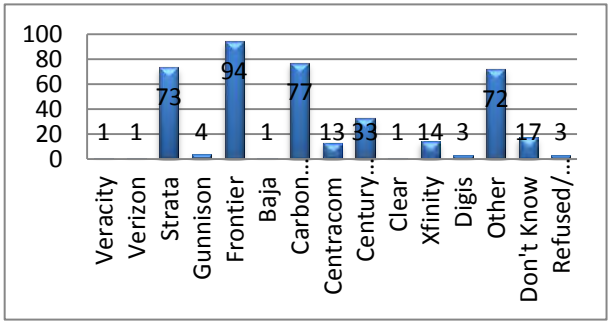
Mountainland Region



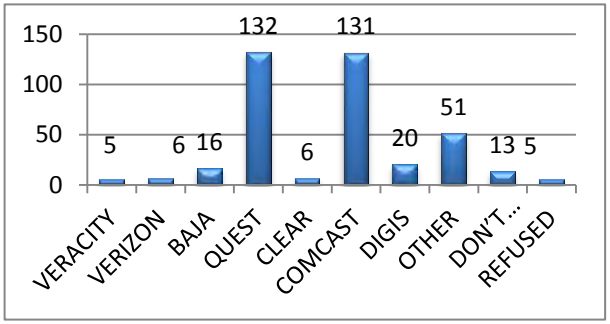
Southeastern Region



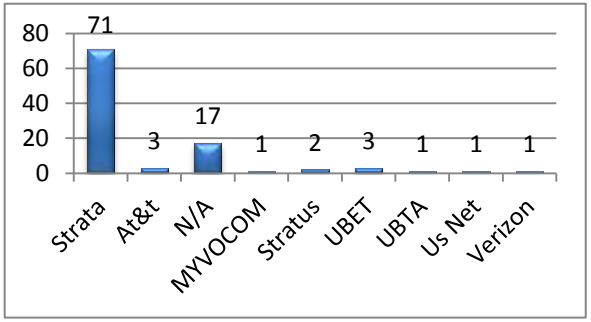
Rural Counties



Non-Rural Counties



Uintah Basin Region



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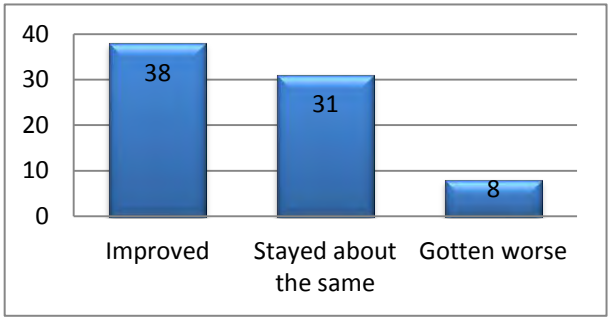
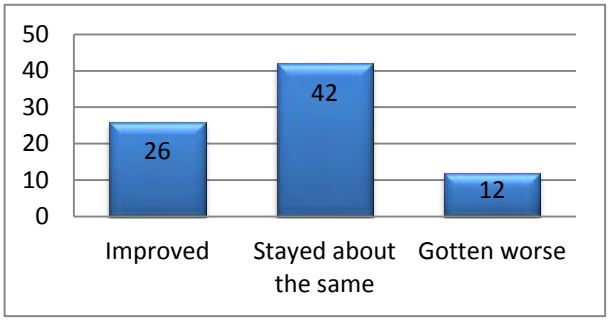
Since you first got high-speed internet at home would you say the quality of your high-speed connection has:

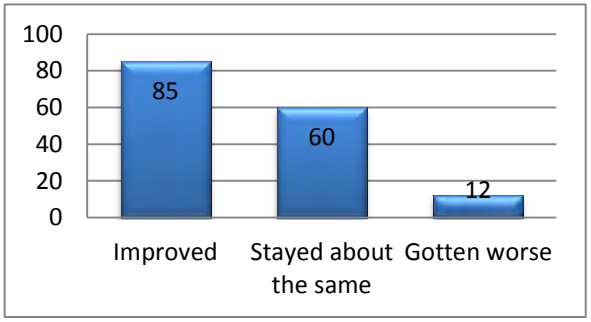
Five County Region



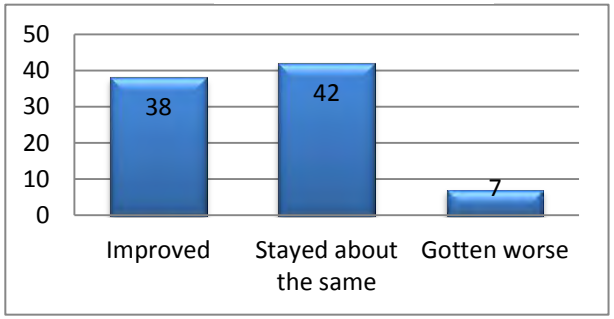
Six County Region



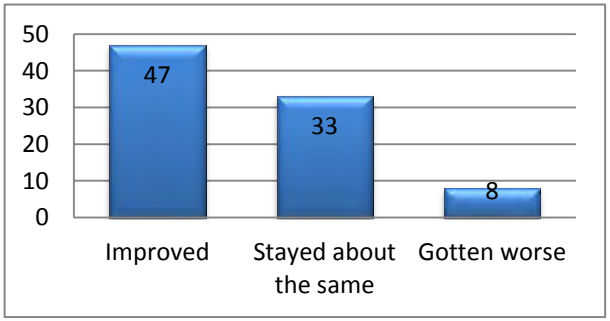
Wasatch Front Region



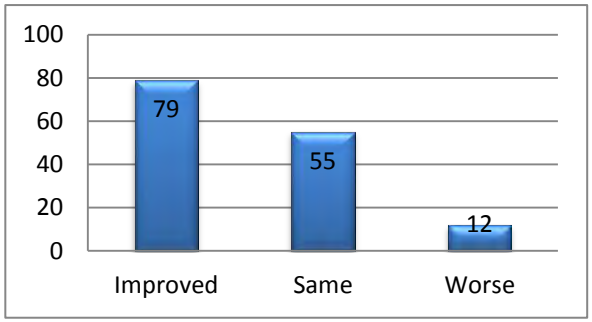
Bear River Region



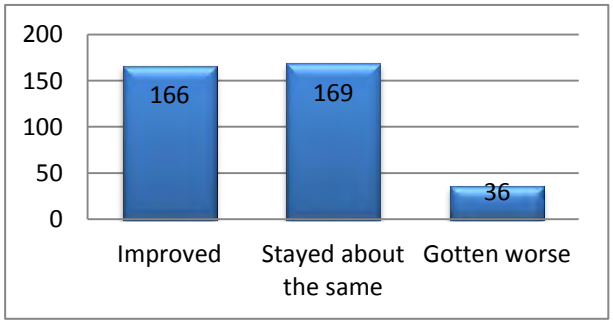
Mountainland Region



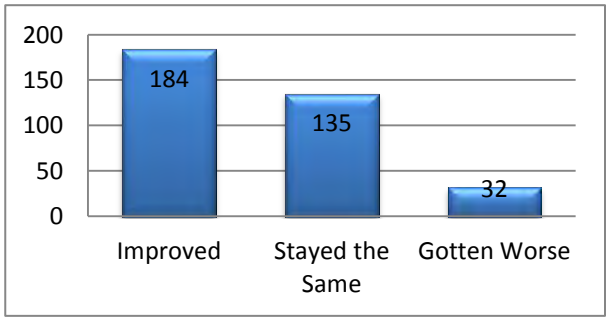
Southeastern Region



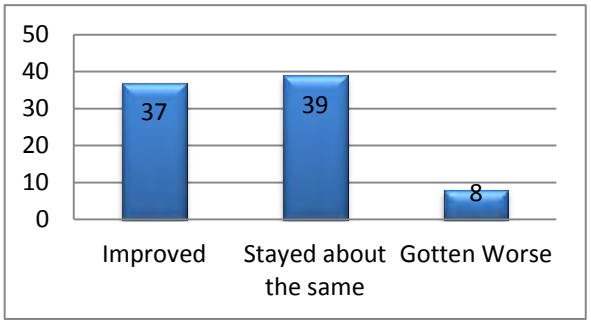
Rural Counties



Non-Rural Counties



Uintah Basin Region



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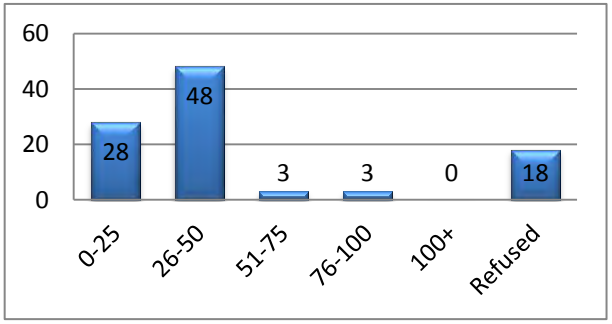
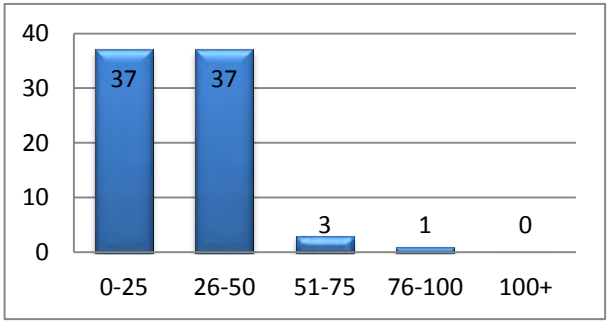
What do you think a reasonable price for high-speed internet would be?

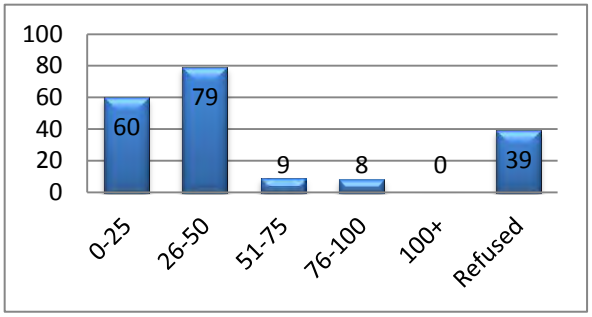
Five County Region



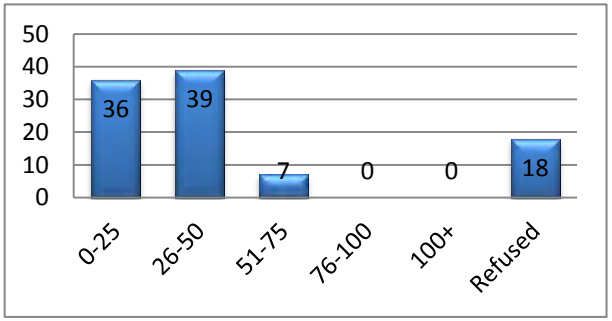
Six County Region



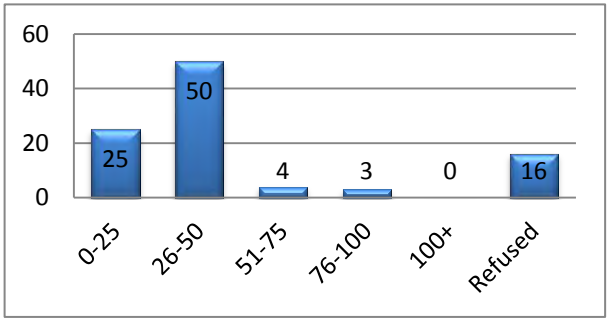
Wasatch Front Region



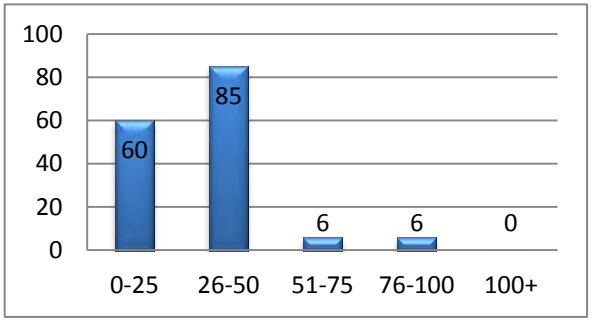
Bear River Region



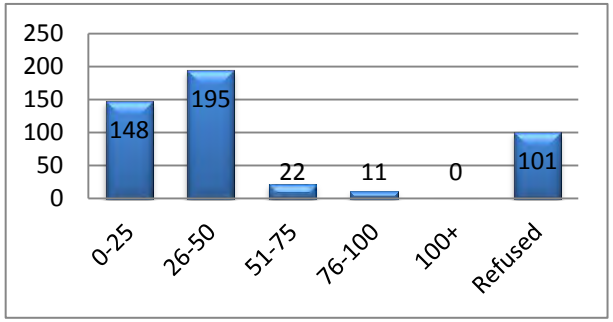
Mountainland Region



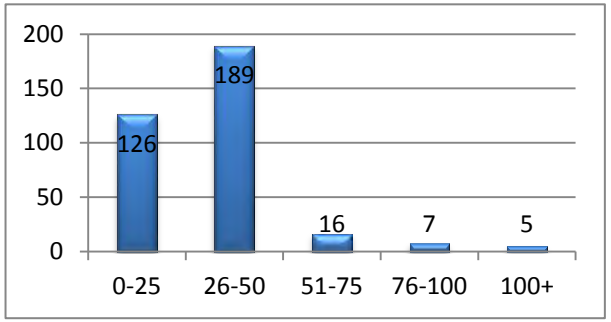
Southeastern Region



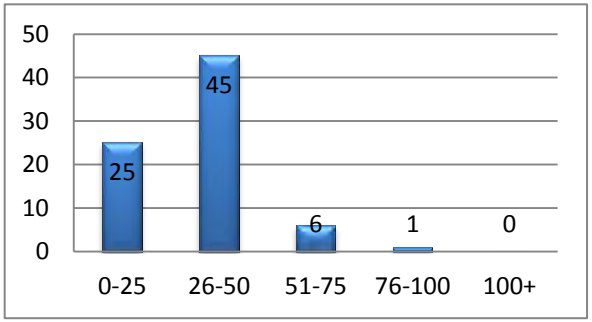
Rural Counties



Non-Rural Counties



Uintah Basin Region



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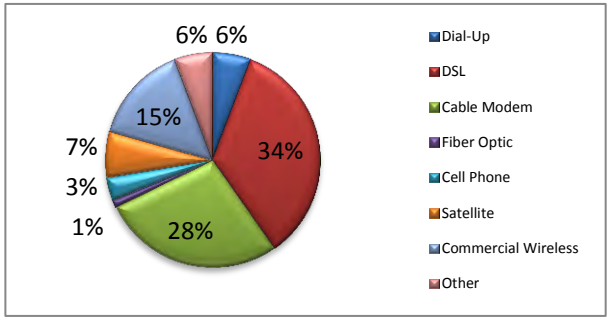
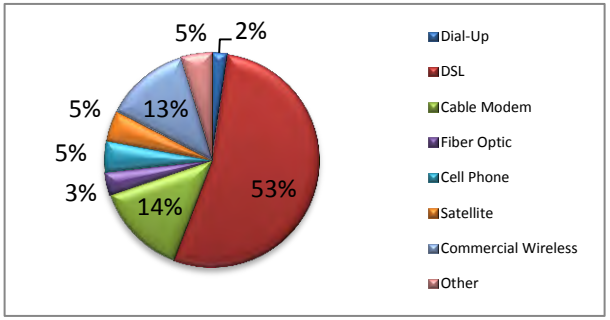
At home do you access the internet using:

Five County Region



Six County Region



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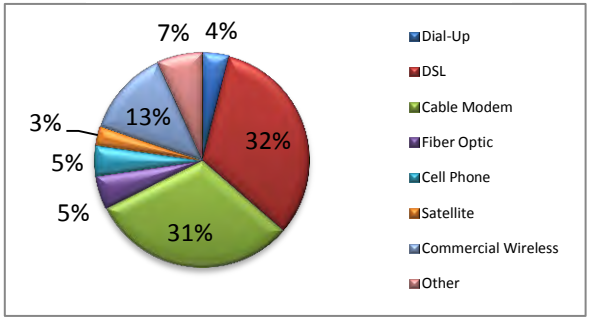
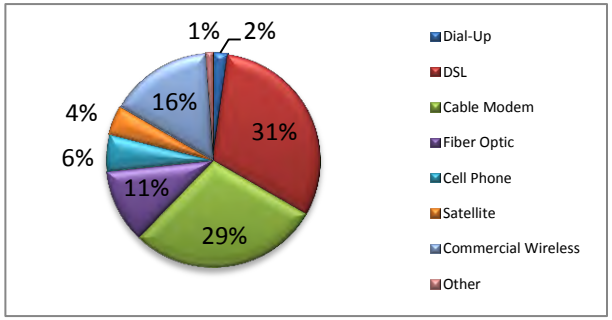
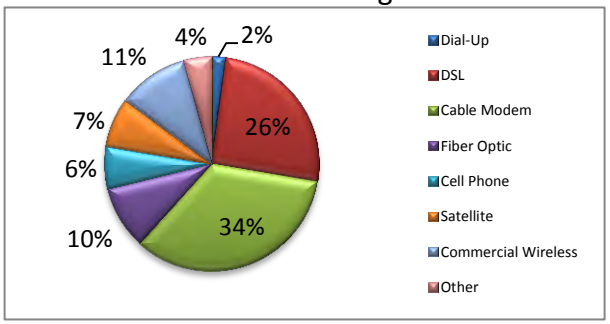


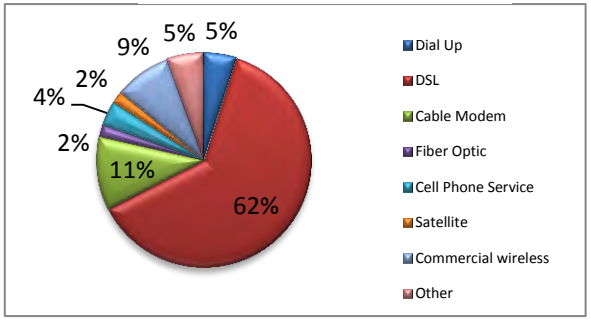
Bear River Region



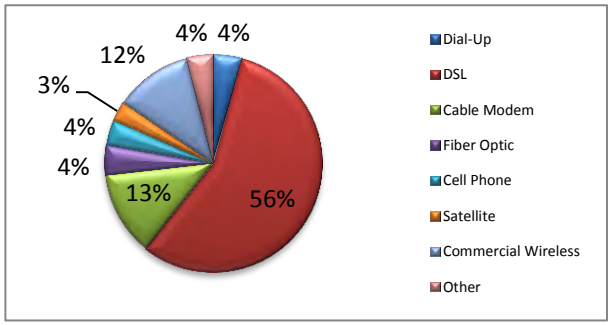
Mountainland Region



Southeastern Region



Rural Counties



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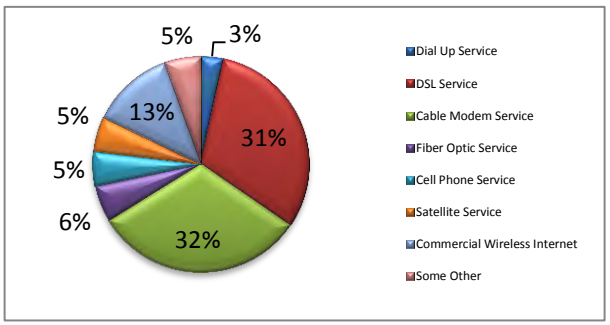
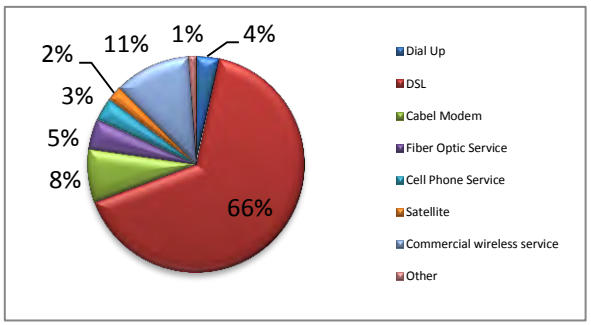


Uintah Basin Region



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Analysis

Broadband Demand in the United States

The 1996 Telecommunications Act established universal internet availability as a national goal. This act directed the Federal Communications Commission (FCC) and state commissions to encourage the development and deployment of advanced telecommunications capability. Subsequent acts and directives from Presidents have more specifically directed several agencies to encourage deployment of rural access to broadband. In 2004, a directive was issued from President Bush for affordable universal broadband technology by 2007.[2] This trend has continued during the Obama administration, under which two acts have been passed allocating federal money to extend access to broadband throughout the United States. Universal access to broadband is seen as a critical economic factor for enhanced employment opportunities, learning, and medical services, in addition to being viewed as the modern key source of news and entertainment.

Benefits of Broadband Access

The FCC estimates that closing the gap in broadband will create $32 billion annually. On an individual level, this breaks down to approximately $100 per American per year. Today's global Internet economy is an $8 trillion dollar marketplace, where participation of businesses both large and small is virtually mandatory (Federal Communications Commission, 2011). As noted by Gillet, Lehr and Sirbu in their reports to the U.S. Economic Development Administration, lower costs, innovative intra-business transactions, telecommuting, and online customer access are positive economic impacts on rural businesses as a result of broadband deployment (Dabson & Keller, 2008). Over eighty percent of Fortune 500 companies, including major employers such as Wal-Mart, Target, Costco, and ExxonMobil, require online job applications. In addition, technology skills are required in fifty percent

[2] In the US, a broadband internet connection is currently defined by the Federal Communications Commission (FCC) as a connection with capabilities of at least 768 kilobytes per second (kbps); other countries have different definitions. For comparison, Canada uses as its current standard 1.5 Megabytes per second.

of today's jobs. Over the next decade, this percentage is estimated to increase to seventy-seven percent (Federal Communication Commission, 2011).

Rural consumers in particular benefit from online access to goods and services which are not readily available in their communities and increased employment opportunities. In communities that have broadband systems, employment rates for non-farm industries, the service sector in particular, is greater than in communities that have not adopted broadband. Crandall, Lehr and Litan reported that "For every one percentage point increase in broadband penetration rate, employment is projected to increase by 0.2 to 0.3 percent per year" (Dabson & Keller, 2008:3).

In addition, it appears that broadband service has a positive impact on education and learning. A study performed by the Federal Reserve found that students with a PC and broadband in their homes average six to eight percentage points higher in graduation rates than students who do not have access to the Internet in their home. Three separate studies performed in California, Michigan and Florida support the Federal Reserve's findings. All three studies came to the conclusion that home computer access increase academic achievement and test scores. What these studies did not confirm is whether or not internet access is a necessary factor of increased student performance (Federal Communications Commission, 2011).

Broadband Defined

Types of broadband connections are numerous in the United States, and range widely in price, speed capabilities, and areas of availability. Some of the technologies used include:

Cable modem: cable television companies have been providing broadband service through the same lines which deliver cable television. The speed of service varies widely, from 6 to 100 Megabytes per second (Mbps). This service is generally available in residential areas, at reasonably competitive prices.

Digital subscriber line (DSL): broadband over local telephone service. Speeds vary from 1.5 to 50 Mbps. This service can be made available nearly anywhere with a telephone line, at competitive prices.

Satellite: satellites in geosynchronous can be used to provide broadband connections with speeds of about 1 Mbps, eliminating the need for a telephone or cable connection. This technology requires a clear line of site between the subscriber and the satellite equipment. Generally, this service has higher monthly connection fees than cable or DSL. Satellites providing broadband connections are available throughout most of the US.

Wireless: Land-based wireless service connects a home or business to the internet using a radio signal. It may be provided from a fixed point or through a mobile telephone carrier and may achieve speeds up to 100 Mbps. Speed of connection depends on distance a signal must travel and equipment being used.

Fiber optic: this technology converts electrical signals to light and sends the light through glass fibers roughly the size of a human hair. Transmission speeds using this technology can exceed 1 Gigabytes per second (Gbps).

What influences broadband adoption?

Approximately, forty-six percent of low-income American families have broadband connections, while over ninety percent of the wealthiest and upper middle class have the service. Ethnic considerations also appear to be a distinguishing factor, with less than fifty percent of African Americans and Latinos using broadband service (Federal Communications Commission, 2011).

Location is also a significant factor in broadband use, in large part because of accessibility issues. Rural populations contain a significantly lower number of users than urban areas, with less than fifty percent utilizing broadband service. "Unfortunately, while telecommunications providers expanded the national broadband market five-fold between 2001 and 2006, they have been less eager to tackle broadband deployment in rural communities and inner cities" (Dabson & Keller, 2008: 4). Jon Peha estimated that "roughly one-third of households in rural America cannot subscribe to broadband Internet services at any price" (Dabson & Keller, 2008:5).

According to a survey conducted by Pew Internet, roughly one-fifth of American adults (twenty one percent) do not use the internet. Various non-users think online content is not pertinent to their lives and many are not confident using computer hardware or navigating the web by themselves. Approximately one-third of those non-users (thirty four percent) still have some connection to the online world, either through someone they live with that has a connection that others use or because they have gone online in the past. The remaining two-thirds of non-users have no obvious ties to online life and many express little interest in internet use (Smith, 2010).

Tracking adoption

The Federal Communications Commission (FCC) uses Form 477 to assess the availability of broadband service. "As of July 2005, FCC has found that ninety-nine percent of Americans live in the ninety-five percent of zip codes that have at least one

broadband provider reporting to be serving at least one subscriber" (Government Accounting Office (GAO), 2006:3). This measure has been repeatedly used to estimate deployment and subscribership in the United States. Unfortunately, this data is reported by zip-code, and reports based on a service provider with at least one subscriber within a zip-code. This estimate may not indicate that broadband is deployed throughout an area, or covering even a significant proportion of the zip-code. As rural zip-codes are typically much larger than urban zip-codes, a subscriber reported in one area just inside the border of a large zip-code will result in the area reported as having broadband deployment. This means that actual deployment is almost certainly over reported, as is actual accessibility estimated from these figures (Government Accounting Office (GAO), 2006).

The broadband gap has led to initiatives intended to increase supply of broadband access in rural areas. As of 2009, two agencies were given responsibility for distributing federal funds for expanding broadband: the National Telecommunications and Information Administration (NTIA), which is part of the Department of Commerce, and the Rural Utilities Service (RUS) within the Department of Agriculture. The American Recovery and Reinvestment Act of 2009 (Recovery Act) provided $7.2 billion (GAO, 2010) to extend access to broadband throughout the United States, $4.7 billion for NTIA and $2.5 billion for RUS (Copps, 2009).

The Broadband Market

Markets are best understood by considering their supply side and demand sides. The supply side would consider whether a product is being supplied, in what amounts, how and at what prices. The demand side would consider how much people are willing to pay for a product, in what quantities, and of what quality. Understanding the broadband market, therefore, requires studying both the supply and demand sides.

Supplying broadband technologies in rural areas may be far more difficult than in urban areas. Thus, many worry that markets will fail to provide the access that leads to the outcomes suggested above. That is, it may be more costly because of mountainous or rough terrain. There may be limited access to sufficient transportation corridors. And there simply may be too few people spread over too large an area to make providing broadband profitable. Distance from existing operations can also pose a significant cost, as well as the extent of existing competition in a given geographic market. Some technologies are extremely limited by distance issues. An example is DSL, which can generally only extend 3 miles from a central office.

Demand for broadband service is affected by several factors, including demographic characteristics and price. GAO found that income and college education were both positively correlation with adoption, while age of consumers and price of service were negatively correlated with adoption (GAO 2006, 2010). Rural households were found to have both lower availability and adoption of broadband, however, some studies have suggested that this may be due to demographic factors of demand rather than simply lack of availability.

A GAO study concluded there was no urban–rural difference in broadband adoption after controlling for demographic variables (GAO 2006.) Older, less educated, lower income residents are more common in rural communities than urban ones and these are groups with low levels of broadband adoption. The obvious, if unstated, implication of such findings is that there is nothing to be done: rural residents are just not the sort of people who need, want, or can afford broadband service. That is, as LaRose et al. explained, “the intractable problems of rural poverty, outmigration of the young, and limited educational access might have to be addressed first to fully close the urban–rural broadband gap” (LaRose et al., 2007:361).

Both the GAO and LaRose et al. suggest that demographic differences between rural and urban areas are the clearest explanatory factors for the “broadband gap” between the areas. Lower income, less educated, and elderly individuals- who make up

a higher proportion of the population in rural regions- are much less likely to want broadband access. The studies suggest that the national gap in adoption of service is not an issue of supply; it is an issue of demand.

Expanding access to information, education, medical reference, and employment is in the interest of public welfare. While these certainly are compelling reasons for providing universal access to broadband internet in the United States, it is unclear if demand for service exists. If broadband service is not in sufficient demand in rural areas, there are alternatives to wide scale and subsidized deployment. If the driving purpose of broadband deployment to a given area is the enhancement of educational goals or increased access to medical information, broadband "anchor points" such as public schools, libraries, or medical centers can be more cost effectively provided than community wide deployment.

Hypotheses

Applying the assumptions from national studies to Utah leads us to the following core hypothesis:

There is an adoption broadband gap between Utah's urban and rural communities.

To test our core hypothesis we propose the following hypotheses:

H1. Utah's rural communities will have lower broadband adoption rates than their non-rural counterparts.

H2. Respondents in Utah's rural communities will identify fewer broadband internet options in their communities than their non-rural counterparts.

H3. Utah's rural communities will report higher prices for internet service than their non-rural counterparts.

H4. Respondents in Utah's rural communities will express a lower willingness to pay for broadband speed internet than their non-rural counterparts.

H5. Rural Communities in Utah will exhibit substantially different demographic profiles than their urban counter-parts on:

Age

Employment Status

Education Level

Access to Technology

H6. Rural Communities will exhibit a lower probability of broadband adoption than their non-rural counterparts.

Testing our Hypotheses

To test these hypotheses we surveyed 900 Utah residents about their actual internet use, the availability of high-speed internet in their community, their willingness to pay for broadband service, and their perceptions of the internet services market. In this survey we sought to explore whether substantial differences in consumers' perceptions about the access and quality existed between rural and urban areas of the state, and to provide a clearer understanding of the marketplace providing broadband speed internet in both rural and urban areas of Utah.

We conducted a public opinion survey by telephone of 900 Utah residents exploring their internet use and preferences. Thirty two percent of respondents were contacted on their cell phones the remainder on land lines. The telephone survey was conducted from 10/4/2011 to 10/10/2011 with a response rate of 17.80%. Completion of the full survey took 11.88 minutes. Because we were largely interested in how rural residents perceive, use, and demand high-speed internet products, the survey was

designed to oversample rural areas. This oversample attempted to limit respondents from the urban parts of the state to no more than ½ of the total sample. Further, because we were interested in ensuring that each region of the state was represented and had data sufficient to evaluate the preferences of survey respondents, our sampling methodology ensured that each region had a minimum of 100 completed surveys.

Because we oversampled rural areas, and sparsely populated regions of the state the aggregate results from all 900 respondents are of substantially less value than the comparison between rural and urban areas and each of the six regions we surveyed. (For more Information about sampling methodologies and regional descriptions please refer to the full discussion in the survey methodology section of this report)

Results

Our core hypothesis was that a broadband gap exists between rural and non-rural communities in Utah, but this hypothesis is not supported by the data. The data demonstrated no significant difference between rural and non-rural rates of adoption, willingness to pay for broadband internet, the prices being paid for internet services, or the probability of broadband uptake controlling for other factors identified by the literature. These results occurred despite confirmation of our hypotheses that compared to their non-rural counterparts, rural residents would have had less knowledge about broadband providers, and were on average older, less educated, facing less certain employment circumstances, and utilizing technology at a lower rate. Each of these is a factor predicted by the literature as substantially reducing the likelihood of broadband adoption. In what follows we discuss each of our hypothesis tests, our methods, and the implications of our results.

H1. Utah's rural communities will have lower broadband adoption rates than their non-rural counterparts.

Our first hypothesis was focused directly on reports by respondents in our survey about whether they were subscribers to in-home broadband internet services. We tested this hypothesis using a two sample difference of means test to determine if the adoption rate in rural areas was lower than the adoption rate in non-rural communities. In our sample rural communities had an adoption rate of 70.80%. The adoption rate for non-rural communities was 75.25%. The difference in adoption rates between the two samples was 4.45% had a p-value of .136 indicating that the difference between the two samples was not statistically significant.

Because this difference did not meet the standards of statistical significance we cannot confirm our hypothesis that rural areas have lower rates of broadband adoption at standard 5 percent or 10 percent significance levels.

H2. Respondents in Utah's rural communities will identify fewer broadband internet options in their communities than their non-rural counterparts.

Our second hypothesis was focused on whether respondents in our survey were aware of broadband internet options. To this hypothesis we used two questions from our survey. The first question asked respondents if they were aware of any broadband internet providers in their communities. The second asked them to identify how many providers were present. Using a two sample difference of means test we compared rural and non-rural responses to both questions to determine if rural respondents were less aware of broadband providers in their community. In our sample 40.2% of rural respondents were aware of a provider in their area compared to 32.00% of non-rural respondents. The difference in the awareness rates between the two samples was 8.2% and had a p-value of .011 indicating that the difference between the two samples was statistically significant although counter to our hypothesized direction. Thus we cannot confirm our hypothesis that rural respondents were less aware of any provider options.

We also asked, however, how many providers respondents could identify. In our sample rural respondents identified an average of 2.62 providers compared to 3.69 by non-rural respondents. The difference in total identified providers between the two samples was 1.07 and had a p-value of .000 indicating that the difference between the two samples was statistically significant and in the hypothesized direction. This result indicates that while more rural respondents could identify a provider, non-rural respondents were able to identify more providers in their area.

This result is not entirely unexpected, especially as rural communities are far more likely to have a single provider. The ability of non-rural respondents to identify more providers is consistent with the realities of the broadband marketplace.

Given these results evidence for this hypothesis is mixed, rural residents are more likely to know that a providers is available but less likely to be able to readily identify multiple options in the marketplace.

H3. Utah's rural communities will report higher prices for internet service than their non-rural counterparts.

Our third hypothesis was focused on whether rural respondents in our survey paid on average higher prices for internet service than t their non-rural counterparts. We asked respondents to report how much their average monthly payment was for internet service. Using a two sample difference of means test we compared rural and non-rural payments for internet services. In our sample, rural respondents paid an average of $41.34 compared to $43.22 paid by non-rural respondents. The difference in the mean payments between the two samples was $1.87 and had a p-value of .229 indicating that the difference between the two samples was not statistically significant and counter to our hypothesized direction. Thus we cannot confirm our hypothesis that rural respondents pay more for internet services.

H4. Respondents in Utah's rural communities will express a lower willingness to pay for broadband speed internet than their non-rural counterparts.

Our fourth hypothesis is focused on whether rural respondents in our survey were less willing than their non-rural counterparts to pay for broadband internet service. We asked respondents to report what they thought was an appropriate payment was for broadband internet service. Using a two sample difference of means test we compared rural and non-rural wiliness to pay. In our sample rural respondents were willing to pay an average of $33.13 compared to $34.75 for non-rural respondents. The difference in the mean willingness to pay between the two samples was $1.62 and had a p-value of .221 indicating that the difference between the two samples was not statistically significant although in our hypothesized direction. Given these results we cannot confirm our hypothesis that rural respondents are less willing than non-rural residents to pay for broadband internet service.

H5. Rural Communities in Utah will have exhibit substantially different demographic profiles than their urban counter-parts on:

Age

Employment Status

Education Level

Access to Technology

Our fifth hypothesis is focused on whether the rural respondents in our survey were demographically different than their non-rural counterparts. The literature surrounding broadband adoption is replete with demographic explanations for lower reported broadband adoption rates. We asked respondents to report their age, employment status, level of education, and their access to a laptop computer. Using a two sample difference of means test we compared rural and non-rural respondents on each of these categories. In our sample the average age of rural respondents was 54.10 compared to 46.65 for non-rural respondents. The difference in the mean age between the two samples was 7.44 years and had a p-value of .000 indicating that the difference

between the two samples was statistically significant. Given these results we can confirm our hypothesis that rural respondents are on average older than non-rural residents.

In our sample 40.4% of rural residents reported being employed full time compared to 53.00% of non-rural respondents. The difference in percent of respondents employed full time between the two samples was 3.3% and had a p-value of .000 indicating that the difference between the two samples was statistically significant. Given these results we can confirm our hypothesis that rural respondents have on average less stable employment than non-rural residents.

In our sample the average scaled level of education was of rural respondents 3.69 indicating an average of high school completion compared to 4.11 for non-rural respondents indicating the mean level of education among that group was some college. The difference in the mean education between the two samples was .42 and had a p-value of .000 indicating that the difference between the two samples was statistically significant. Given these results we can confirm our hypothesis that rural respondents have on average less education than non-rural residents.

In our sample the 64.00% of rural respondents reported having or using a laptop computer at home compared to 75.5% of non-rural respondents. The difference in the mean laptop use between the two samples was 11.5% and had a p-value of .000 indicating that the difference between the two samples was statistically significant. Given these results we can confirm our hypothesis that rural respondents are on average have less access to computing equipment beyond a desktop computer than non-rural respondents.

Taken together these results confirm our hypothesis that on key demographic variables our rural respondents were statistically distinguishable for their non-rural counterparts. Confirmation of this hypothesis indicates that our rural sample is a

unique population, and if the literature were correct should exhibit lower rates of broadband adoption than their non-rural counterparts.

H6. Rural Communities will exhibit a lower probability of broadband adoption than their non-rural counterparts.

Our final hypothesis explores whether being located in are rural community reduces the probability that individuals will purchase broadband speed internet. To test this hypothesis we use logistic regression and include a dummy variable indicating whether the respondent is located in a rural or non-rural community.

The regression coefficients in table one are reported as odds ratio's indicating whether an increase in the independent variable makes broadband adoption more or less likely. Values below 1 indicate lower likelihood and values over 1 indicate an increased likelihood.

Table One about Here

Our analysis shows that controlling for response type (cell or non-cell phone number), gender, access to technology such as a laptop computer, knowledge of provider options, age, marital status, full time employment status, race, and willingness to pay, no statically significant difference in likelihood of adoption between rural and non-rural respondents.

We do find, however, that those who own or have access to a laptop computer are substantially more likely than those with limited technological access to have broadband internet service. We also find that married respondents and those willing to pay more for service are more likely than those who are not to have broadband internet in home.

Table Two: Summary of Hypothesis Tests

Hypothesis	Confirmed
H1. Utah's rural communities will have lower broadband adoption rates than their non-rural counterparts.	No
H2. Respondents in Utah's rural communities will identify fewer broadband internet options in their communities than their non-rural counterparts.	Mixed
H3. Utah's rural communities will report higher prices for internet service than their non-rural counterparts.	No
H4. Respondents in Utah's rural communities will express a lower willingness to pay for broadband speed internet than their non-rural counterparts.	No
H5. Rural Communities in Utah will have exhibit substantially different demographic profiles than their urban counter-parts on: ***Age*** ***Employment Status*** ***Education Level*** ***Access to Technology***	Yes
H6. Rural Communities will exhibit a lower probability of broadband adoption than their non-rural counterparts.	No

As noted in table two only one of our hypothesis tests resulted in clear confirmation in the expected direction, H5. This hypothesis was focused primarily on whether rural respondents were substantively different than their non-rural counterparts. We also find mixed evidence about the ability of respondents to identify broadband providers in their areas. A larger percentage of rural respondents could identify a provider in their area but on average they identified fewer providers than their non-rural counterparts.

We were unable to confirm any of the other hypotheses, especially those directly focused on differences in broadband use between rural and non-rural respondents. Given these results we find no evidence for the existence of a substantial broadband gap between rural and non-rural communities in the state of Utah.

Implications

The fact that the survey found no broadband gap between rural and non-rural communities in Utah must be tempered by recognizing that the survey was limited to households, not businesses. There may be a broadband gap between rural and non-rural businesses. That is, faster, more reliable services may be required for economic development in rural areas. But, our survey did not address that possibility.

It is clear that the market for residential service is functioning well throughout Utah. That is startling, given the published reports about how markets fail to serve broadband needs in rural areas, According to our respondents, there is no evidence of broadband market failure. Indeed, rural respondents are as pleased with their service quality and cost as are non-rural respondents.

Although the survey does not provide data sufficient to explain fully why there is no evidence of a residential broadband gap, we have some suggestions. First, most markets, including those for broadband services, respond more quickly than market critics assume. In just a few years firms have entered Utah's rural broadband market with a range of new technologies that allow them to provide service despite the physical constraints of rural Utah. These technologies have allowed firms to provide relatively low cost and high quality service despite low population levels and densities. Given the market's response throughout rural Utah, we assume that the drive to satisfy rural broadband demand will continue to improve rural broadband access, cost, and quality.

Second, the spread of broadband technology throughout rural Utah suggests there is strong demand among rural Utahns for access to broadband service. That suggestion is contrary to the assumptions of many that rural people are too poor, too poorly

educated, and too old, in general, to demand good service. Rural Utahns may be, on average, older, poorer, and less well educated than their non-rural counterparts, but their demand for broadband services is not systematically different.

Third, a great deal of state and federal money has been spent to subsidize rural broadband access in Utah. Federal monies subsidize Utah's rural phone carriers, for example. Utah's Universal Service Fund has provided nearly $45 million to rural carriers since 2004. The state and federal subsidies have allowed rural DSL providers to build out networks and charge less than full cost prices to their telecommunication and DLS customers. Our study did not measure the impact of these investments, but we assume they were substantial.

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Survey Methodology

Survey Methodology

Our core goal in this survey was to explore the penetration of broadband speed internet across the state of Utah with a particular interest in rural areas and whether citizens in those areas have access to broadband speed internet, when and why they choose to purchase broadband speed internet, and how much citizens are willing to pay for this service. From this core goal, two primary explanations about the penetration of broadband speed internet across the state of Utah emerge. Broadband penetration, or lack thereof, has been hypothesized to be a function of two primary factors which limit consumer choice and thus restrict uptake: restricted availability and cost.

Increasing broadband uptake from a public policy perspective will vary greatly depending on which impediment is primarily active. If the primary impediment is one of lack of infrastructure to provide service, one policy option is to provide incentives for the expansion of the technological infrastructure necessary to increase uptake to a market which is primed for purchase if the service is available. However, the second impediment, namely cost, suggests that the preferences of individuals may not align with the desire to increase broadband uptake and thus only by underpricing broadband speed service will significant expansion be possible. Both of these hypotheses, however, rest on the notion that rural areas are under-served by broadband providers and testing this assumption is a priority in this study.

To test these hypotheses we surveyed 900 Utah residents about their actual internet use, the availability of high-speed internet in their community, their willingness to pay for broadband service, and their perceptions of the internet services market. In this survey we sought to explore whether substantial differences in consumers' perceptions about the access and quality existed between rural and urban areas of the state, and to provide a clearer understanding of the marketplace providing broadband speed internet in both rural and urban areas of Utah.

To achieve these goals we conducted a public opinion survey by telephone of 900 Utah residents exploring their internet use and preferences. Thirty two percent of respondents were contacted on their cell phones and the remainder on land lines. The telephone survey was conducted from 10/4/2011 to 10/10/2011 with a response rate of 17.80%. Completion of the full survey took on average 11.88 minutes. Because we were largely interested in how rural residents perceive, use, and demand high-speed internet products, the survey was designed to oversample rural areas. This oversample attempted to limit respondents from the urban parts of the state to no more than ½ of the total sample. Further, because we were interested in ensuring that each region of the state was represented and had data sufficient to evaluate the preferences of survey respondents, our sampling methodology ensured that each region had a minimum of 100 completed surveys.[3]

[3] The six regions and counties within each region are as follows: 1. Bear River Region- Cache, Box Elder, and Rich Counties 2. Wasatch Front Region- Weber, Morgan, Davis, Tooele, and Salt Lake Counties 3. Mountainland Region- Summit, Wasatch, and Utah Counties 4. Uintah Basin Region- Duchesne, Daggett, and

Because we oversampled rural areas, the aggregate results from all 900 respondents are of substantially less value than the comparison between rural and urban areas and each of the six regions we surveyed.[4]

Classifying Areas of the State:

To classify areas as Rural or Non-Rural we used the United States Census metropolitan statistical areas as the metric whereby respondents were classified as being rural or non-rural. Respondents residing in counties classified as being "MSA" (metropolitan statistical area) counties are counted as non-rural and those residing in "Non-MSA" counties are counted as rural in our analysis.

Uintah Counties 5. Six County Region- Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties 6. Five County Region- Beaver, Iron, Garfield, Washington and Kane Counties

[4] The six regions and counties within each region are as follows: 1. Bear River Region- Cache, Box Elder, and Rich Counties 2. Wasatch Front Region- Weber, Morgan, Davis, Tooele, and Salt Lake Counties 3. Mountainland Region- Summit, Wasatch, and Utah Counties 4. Uintah Basin Region- Duchesne, Daggett, and Uintah Counties 5. Six County Region- Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties 6. Five County Region- Beaver, Iron, Garfield, Washington and Kane Counties

Rural Non-Rural County Classification by US Census MSA Classification	
Rural	**Non-Rural**
Sanpete	Salt Lake
Iron	Tooele
Uintah	Summit
Carbon	Davis
Sevier	Weber
Duchesne	Morgan
San Juan	Box Elder
Millard	Wasatch
Emery	Utah
Grand	Juab
Kane	Cache
Beaver	Washington
Garfield	
Wayne	
Rich	
Piute	
Daggett	

Regional Definitions

In addition to significant differences across rural urban populations, different areas of the state are also likely to face substantially different barriers to broadband internet uptake. To facilitate these analyses we identified six regions across the state.

Our regional definition primarily follows the logic of the multi-county associations of governments that has developed across the state of Utah. Our logic in using this approach is premised on the idea that these associations of governments are formed precisely because the counties which choose to band together share common geography, demographics, economics, culture, policy concerns, problems, and may share commons solutions.

Bear River

The Bear River Region is located across the Northern most portion of the state and includes Cache, Box Elder, and Rich Counties and has an estimated population of 164,895[5]. The majority of the population in this region resides in the population centers of Cache and Box Elder Counties but the region shares a common history, similar economic conditions, and has been traditionally aligned in the provision of social services.

Wasatch Front

The Wasatch Front Region is the most heavily urban portion of the state and includes Weber, Morgan, Davis, Tooele, and Salt Lake Counties, with an estimated population of 1,635,054[6]. The bulk of the population of this region is concentrated along the Western foothills of the Wasatch mountain range and concentrated along the I-15 corridor from Ogden to South Salt Lake County.

[5] According to the 2010 US Census.
[6] According to the 2010 US Census.

This region shares a largely urban and suburban character and a dominate position in the population of the state. Areas of Morgan and Tooele counties demonstrate a decidedly more suburban and somewhat rural character but are increasingly tied directly to the economic, social, and cultural realities of their urbanized neighbors.

Mountainland

The Mountainland Region includes Summit, Wasatch, and Utah Counties and has a population of approximately 576,418[7]. The Mountainland area, which includes the resort towns of Heber and Park City along with the Wasatch front communities form American Fork to Provo, is an interesting contrast in orientations political, cultural, and economic. This region is dominated by the urban and suburban communities located in Utah County, with the bulk of the region's population residing along the South I-15 corridor that transects Utah County from north to south.

Uintah Basin

The Uintah Basin Region includes Duchesne, Daggett, and Uintah Counties and has an estimated population of 52,254[8]. The Uintah Basin, which is nestled among the Uinta Mountains, has a long regional history with substantial similarities in population patterns, economic activities, and cultural history. Often known as the 'Basin,' the region has been home to substantial oil and gas

[7] According to the 2010 US Census
[8] According to the 2010 US Census

development in recent years. The effects of that development can be readily identified in the local communities. The Uintah Basin has a substantial Native American Population and is home to large portions of the Uintah and Ouray Indian Reservation.

Six County

The Six County Region includes Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties with a combined estimated population of 75,707[9]. The Six County Region includes most of Central Utah. Communities in the Six County region have a clear rural character with substantial resource extraction, farming, ranching, and other agricultural production activities being the primary economic activities of the region. Small rural communities typify the region with population centers such as Richfield, Ephraim and Manti serving as regional centers for access to services.

Five County

The Five County Region is located in the Southwest corner of the state and includes Beaver, Iron, Garfield, Washington and Kane Counties with combined estimated population of 203,204[10]. This region is dominated by public lands issues, and the bulk of the population is located in and around the Iron and Washington County areas. St. George and Cedar City are the largest municipalities

[9] According to the 2010 US Census
[10] According to the 2010 US Census

in the region and have traditionally been the region's dominate areas. However, increased growth in the more rural areas has substantially increased the visibility and influence of those areas.

Southeastern

The Southeastern Region includes Carbon, Emery, Grand, and San Juan Counties, with a combined estimated population of 56,350[11]. The region covers the area of Utah which has the fewest transportation options, especially options transecting the region from north to south (as well as significantly isolated populations - especially those in the four corners region.) The area included in San Juan County represents a population and geography that is substantially different from those in Emery and Carbon Counties. Like its southern neighbors, the Southeastern Region is dominated by large scale public lands ownership, and relies primarily on extractive and agricultural industries for the bulk of the region's economic activities. The region is also home to a substantial Native American Population that has a significant influence in the region's culture, history, and orientation.

Sample Selection

Because we were interested in selecting a sample that met our requirements for both urban and rural diversity as well as regional diversity across the state, it was necessary to both stratify the sample on the rural urban axis and draw a quota from each of the regions identified. As can be seen from the population numbers presented above, a random sample would by its very nature

[11] According to the 2010 US Census

have limited participation from the bulk of regions. The major population centers of the Wasatch Front, Utah County and to a lesser extent Cache and Washington counties, would dominate the sample.

Our approach returned respondents from every county except Rich. This provides a full picture of the circumstances facing consumers across the state. However, because the sample is stratified in this way, the aggregate numbers should not be interpreted as fully representative of the state as a whole, but rather are the weighted average of the regional responses.

To identify our relatively complex sample, we contracted with Opinionology, a well-established survey company, to conduct the actual sampling and telephone survey. Using their in house survey lists they generated a survey sample stratified by multi-county regions in the state of Utah and conducted direct dial of both land line and cell phone numbers to meet the identified quota for each region.

The availability of households varied widely in each region. In order to provide any reliable information, we established a quota system that required full responses from 100 respondents in each region, except for the Wasatch Front and the Southeastern Region where the quota was set at 200. Only those who completed surveys counted toward the quota contacts calculation. For each of the completed surveys, 5.16 surveys were refused or incomplete yielding a response rate of 17.80% for the survey. From October 4th to October 10th Opinionology's surveyors conducted live phone interviews across the state. For information about the response rate and procedures please contact this study's authors.

Survey Instrument

The survey consisted of thirty nine multi-dimension questions which were focused on the respondent's perceptions of the availability, reliability, and desirability of broadband internet service. All questions were directed specifically at the respondent's perception of the answer, rather than reaching some objective measure that was demonstrably correct. In developing the questionnaire used, we wanted to ensure that the key hypotheses of the literature could be addressed, and that there was not some exogenous factor related to demography, geography, or other individual characteristic that was dominate in the decision to use broadband speed internet in home. Thus our questions focused on six areas.

The first area of questions probed the respondents' demographic profile and included items such as race, employment status, life quality, education, age, etc. The second set of questions sought to assess the type and frequency of access to the internet and specifically broadband speed internet. The third area of questions asked respondents about their use of and the provision of the internet and broadband speed internet in particular. These questions included information about the frequency, provider, bundling, and quality of their internet service. The fourth set questions asked respondents to identify price and preferences about their current and preferred internet service. These questions included the importance of speed or access, payment history, willingness to pay and desire for faster internet service. The fifth set of questions sought to understand how the consumer perceives the availability of and marketplace for internet service. Questions in this area

included knowledge of providers, options, and multiplicity of provider options. The sixth and final set of question explored the Purchasing history of respondents for communication, and media related services. These question probed the financial impact of these services and asked respondents if they had cancelled or cut back on these services due to price concerns both within the last twelve months and ever. [12]

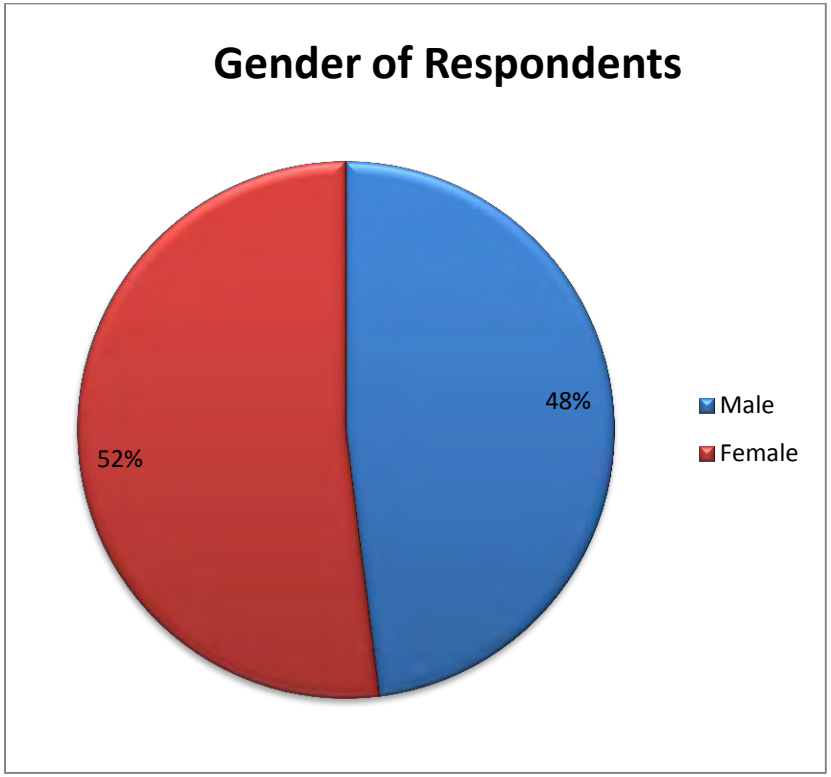
In what follows we present the responses to each of the asked questions divided by Urban and Rural, as well as for each of the identified region. We also include the aggregate responses for informational purposes.

[12] The Full Survey can be viewed in Appendix One of this report.

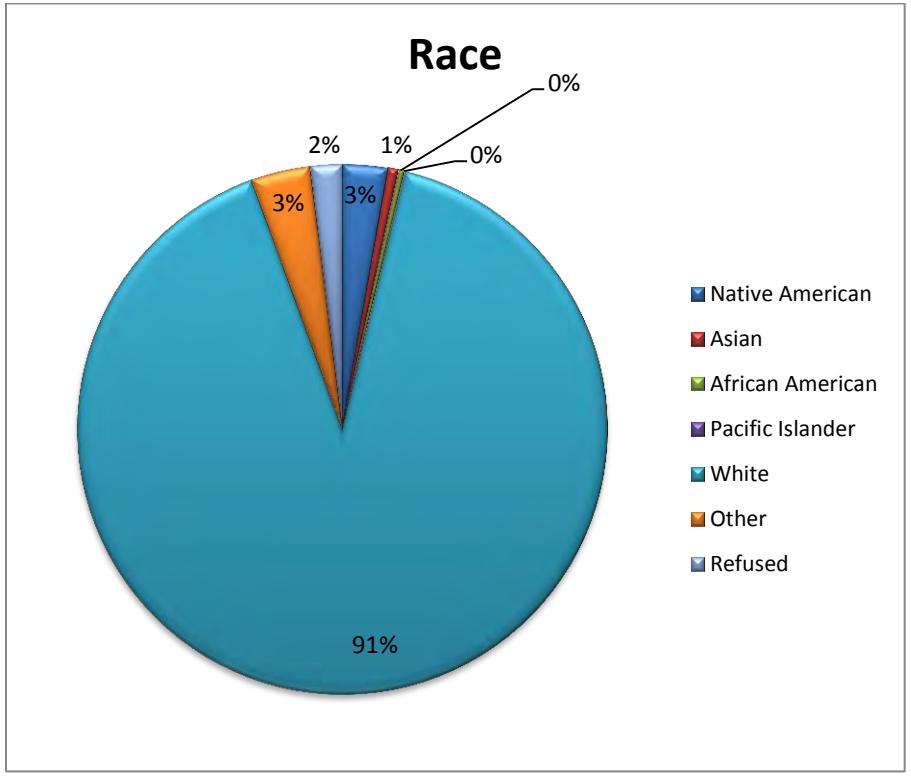
Aggregate Results

I. Demographics

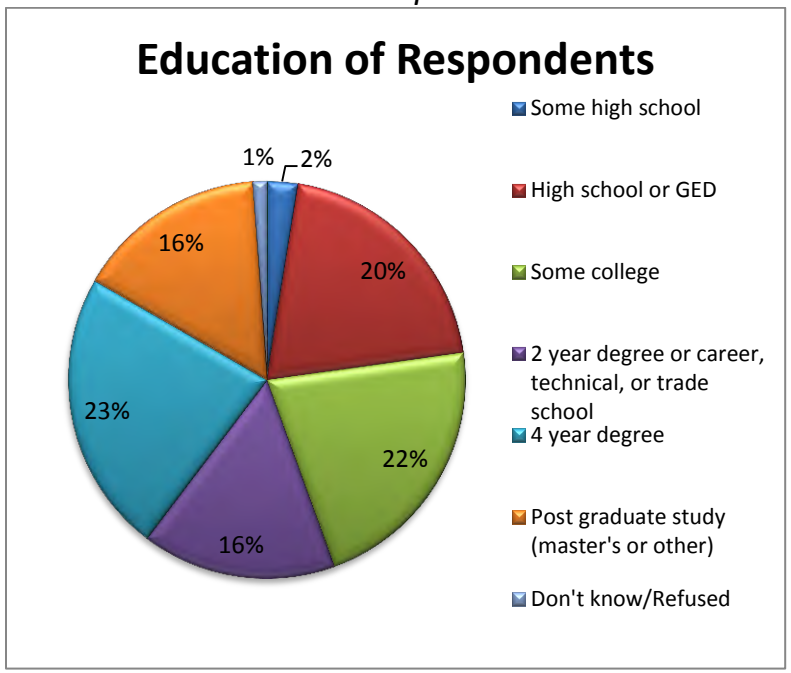
Survey participants were asked to disclose their gender.



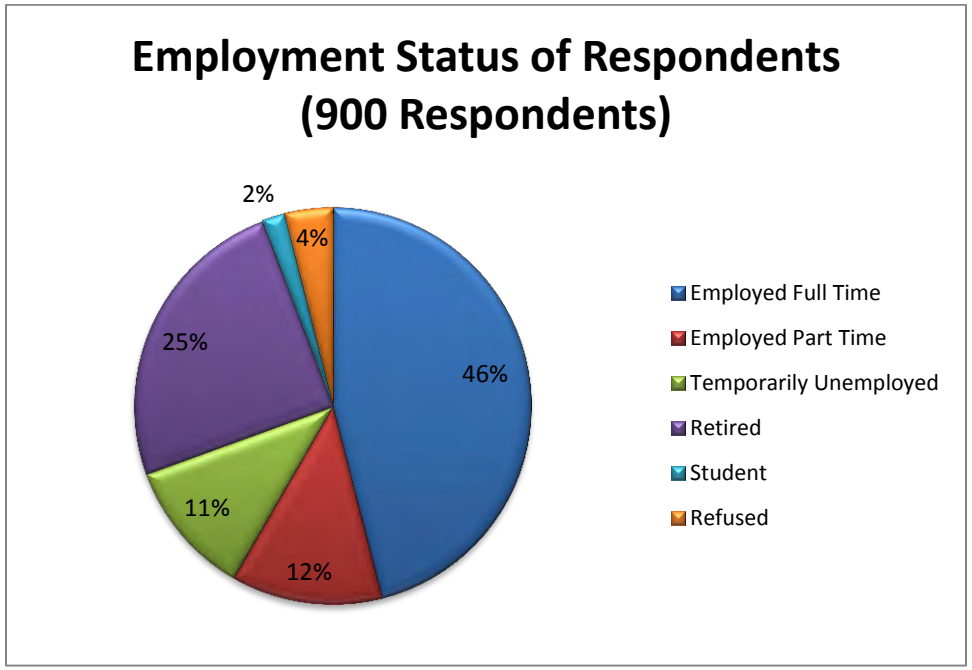
What is your race? You can choose more than one



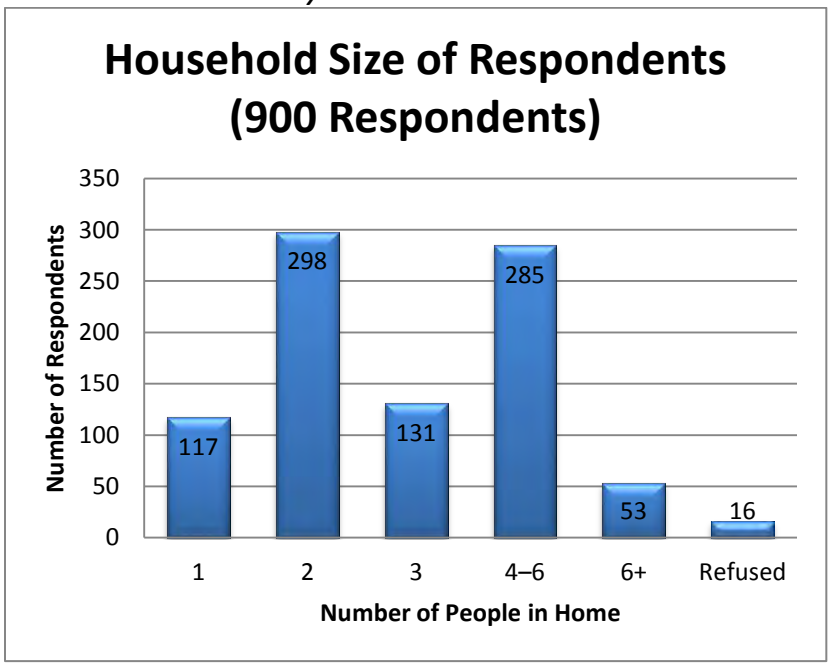
What is the highest level of formal education you have completed?



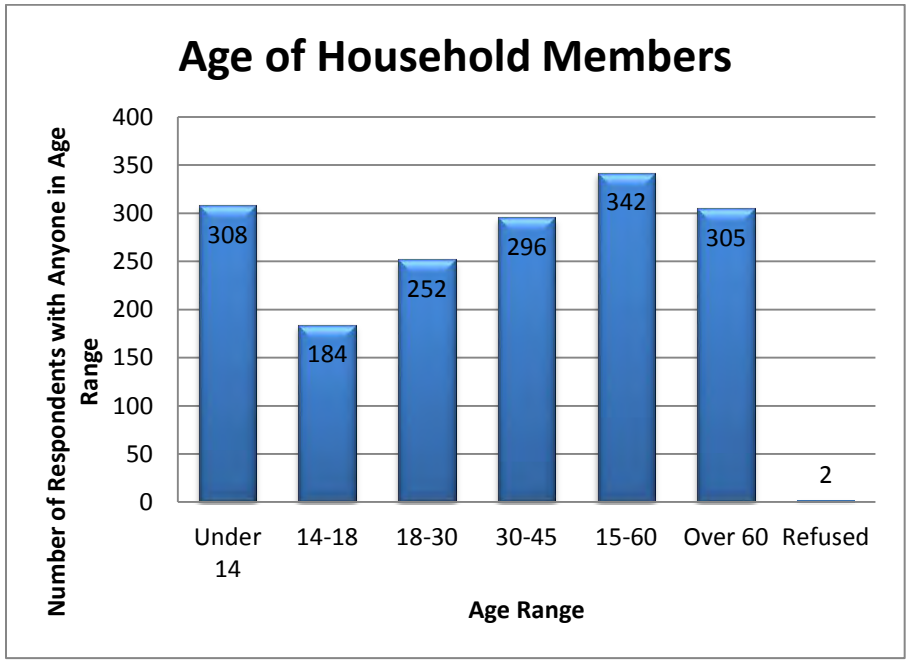
How would you describe your current employment status?



How many individuals are currently living or staying in your household?

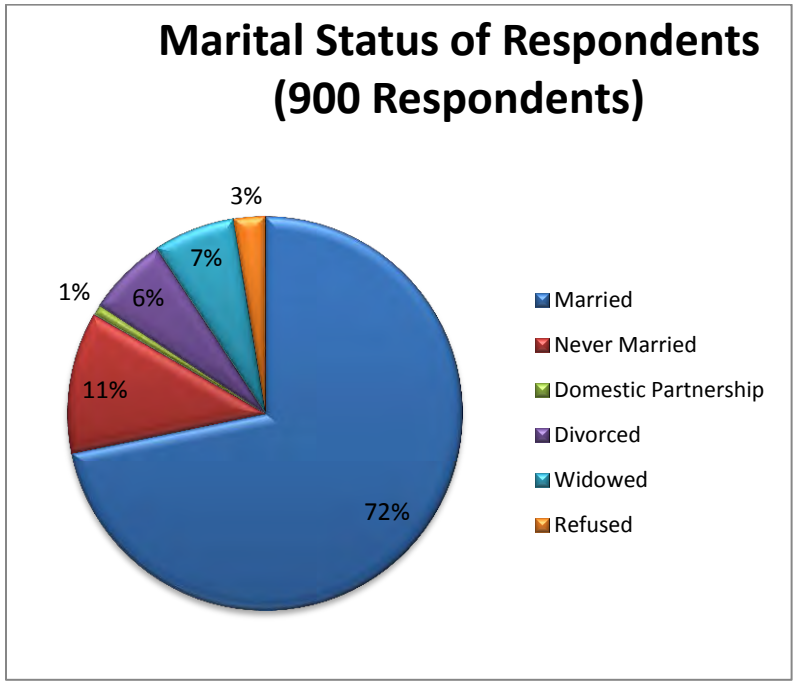


Are any members of your household:

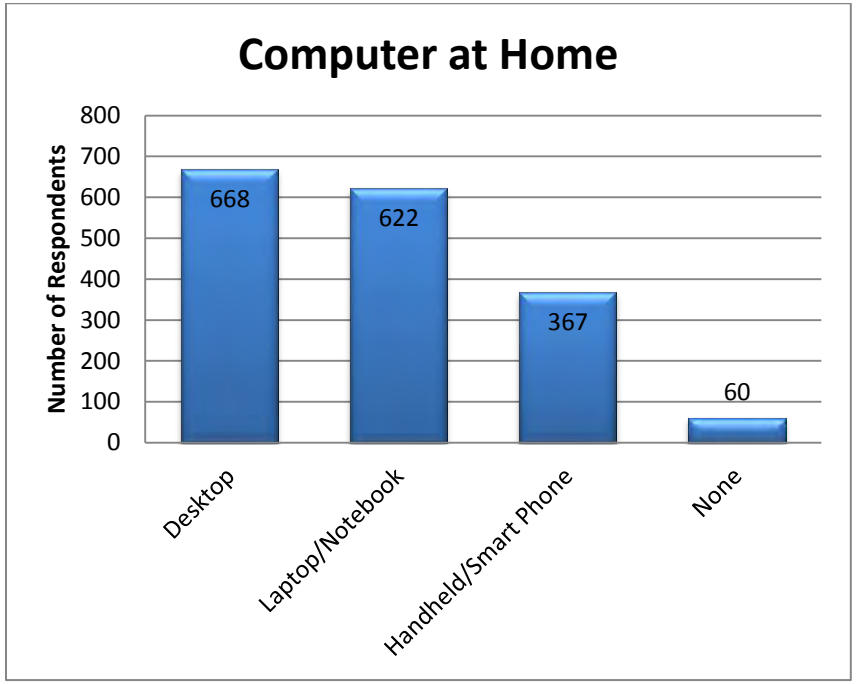


II. Access

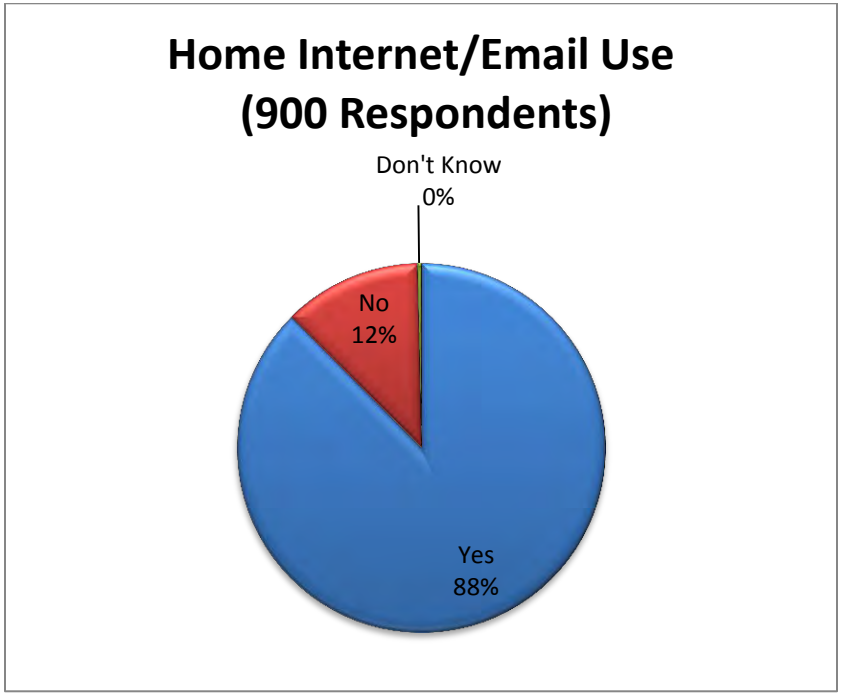
What is your current marital status?



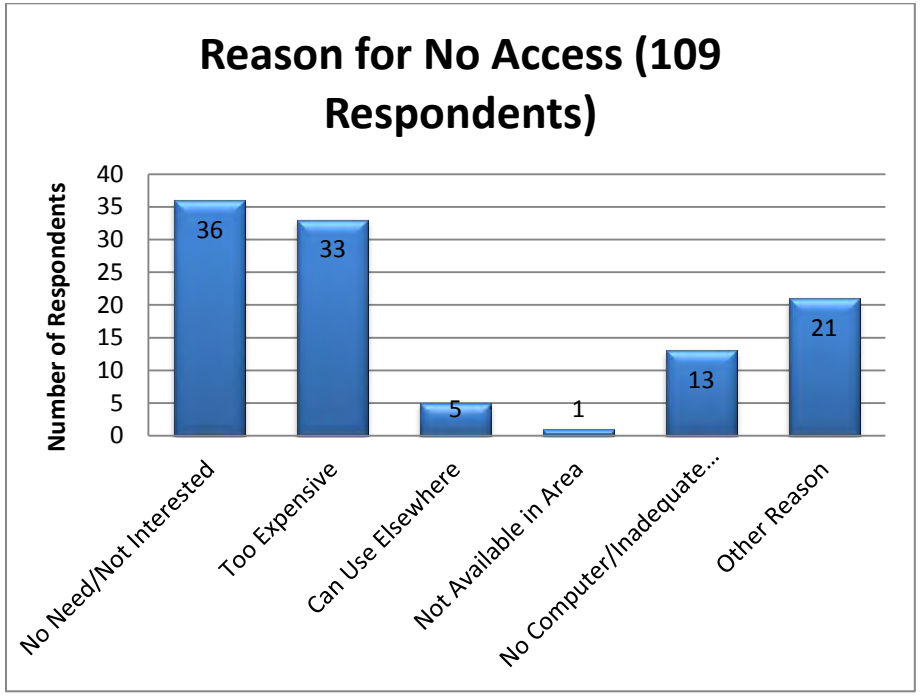
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

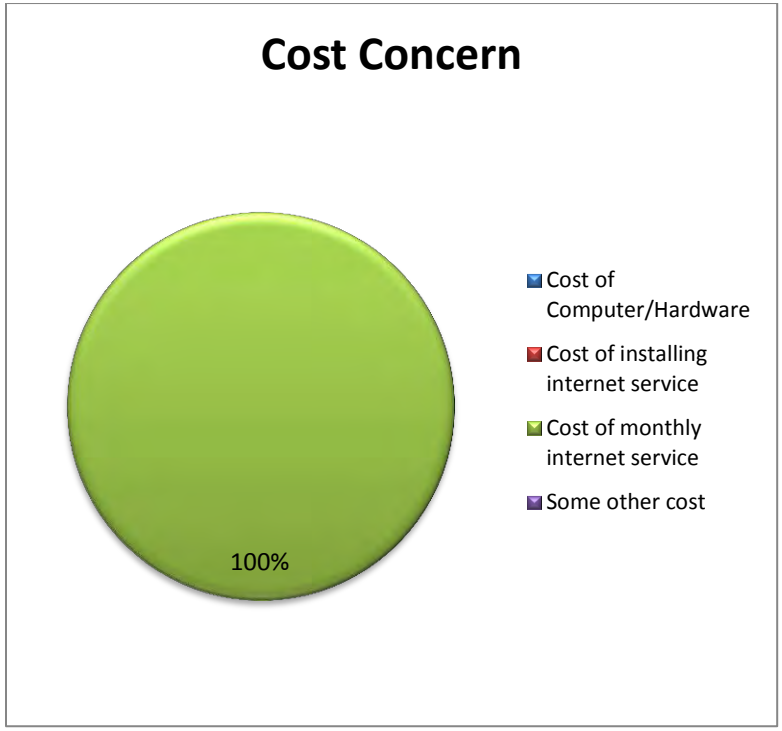


What is the main reason you do not have internet access in your home?

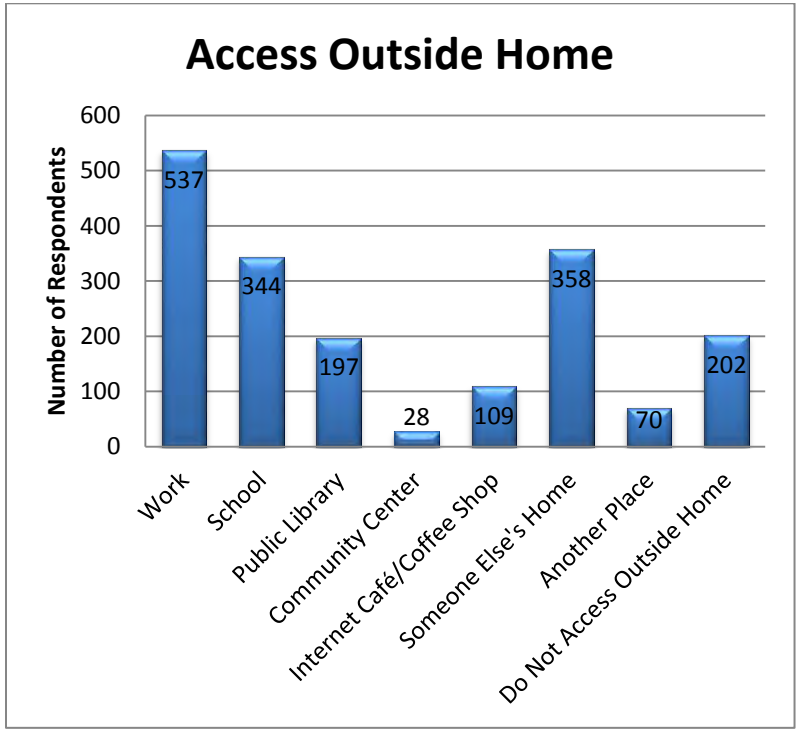


Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?

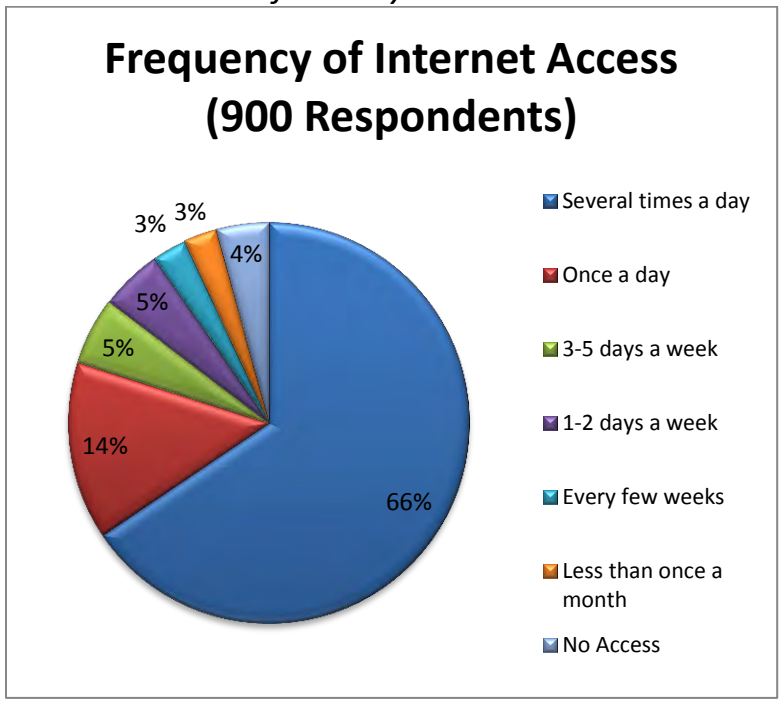


Do you or any member of your household access the internet at any of the following locations outside the home?

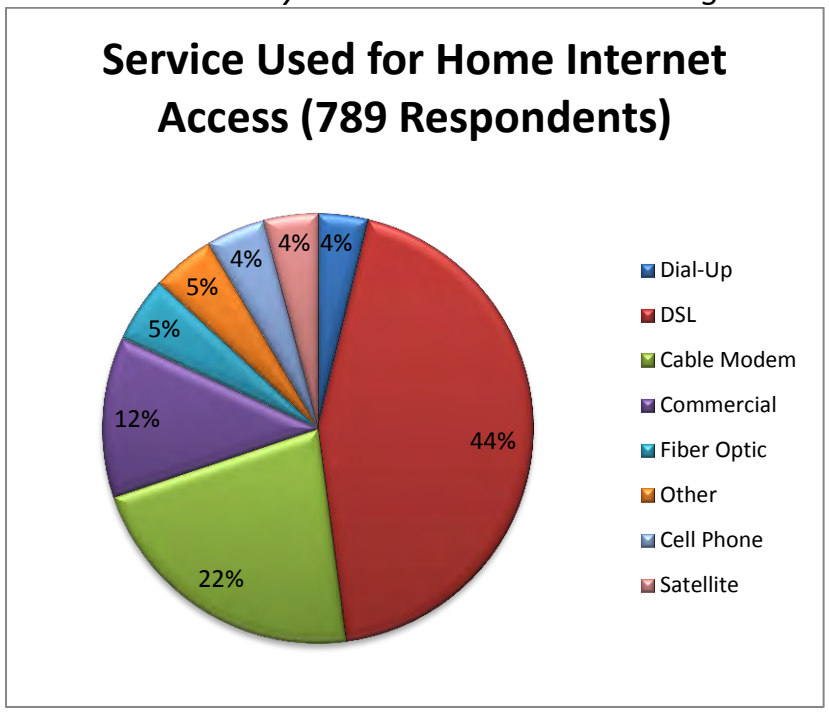


III. Use and Service

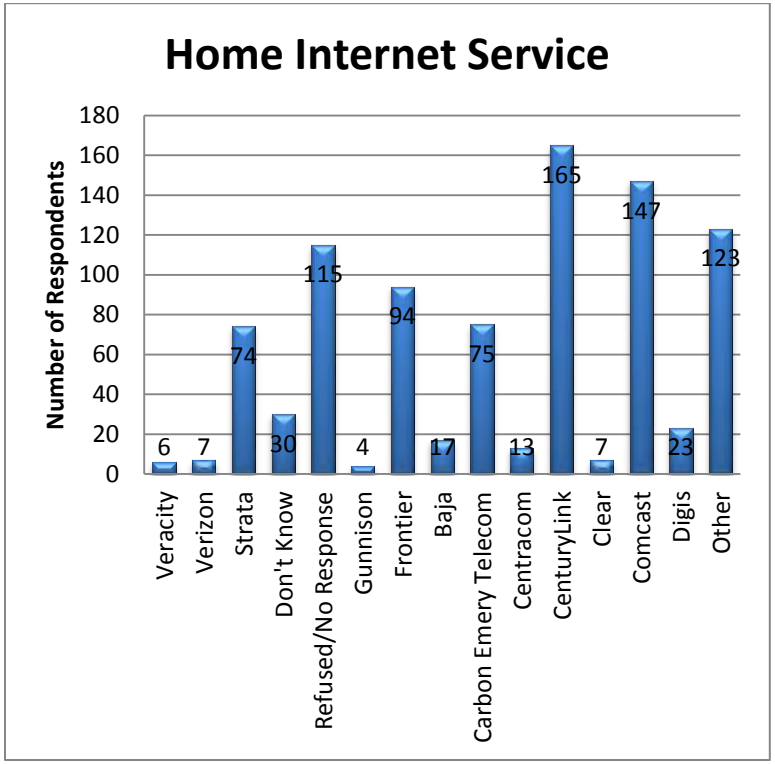
About how often do you access the internet?



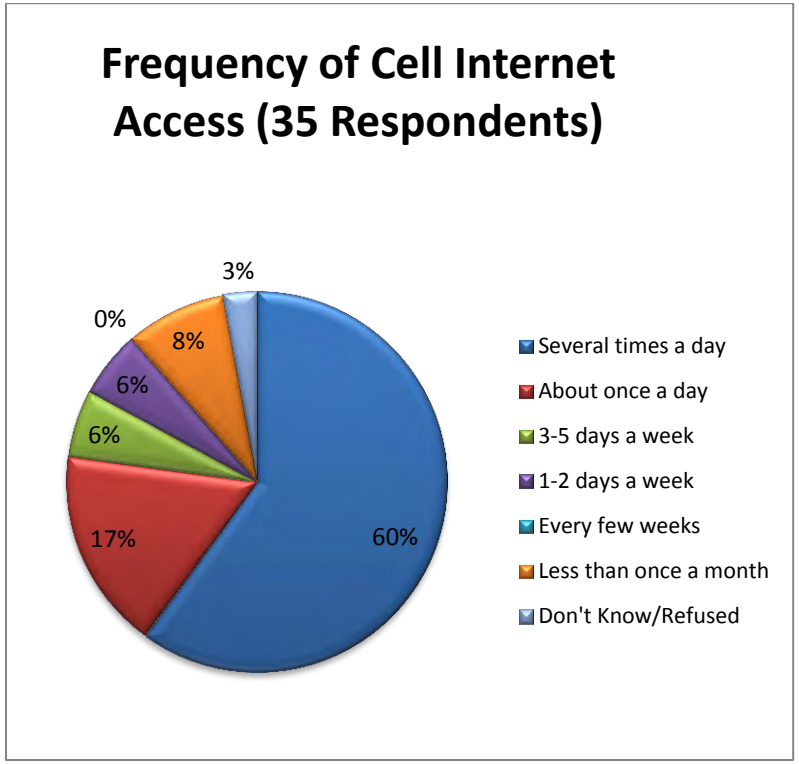
At home do you access the Internet using:



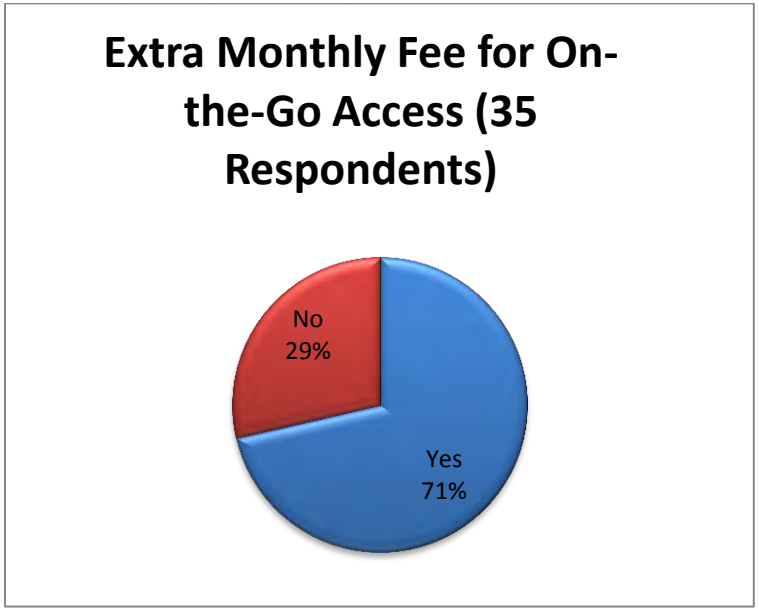
Thinking about your internet service at home, which company provides that service?



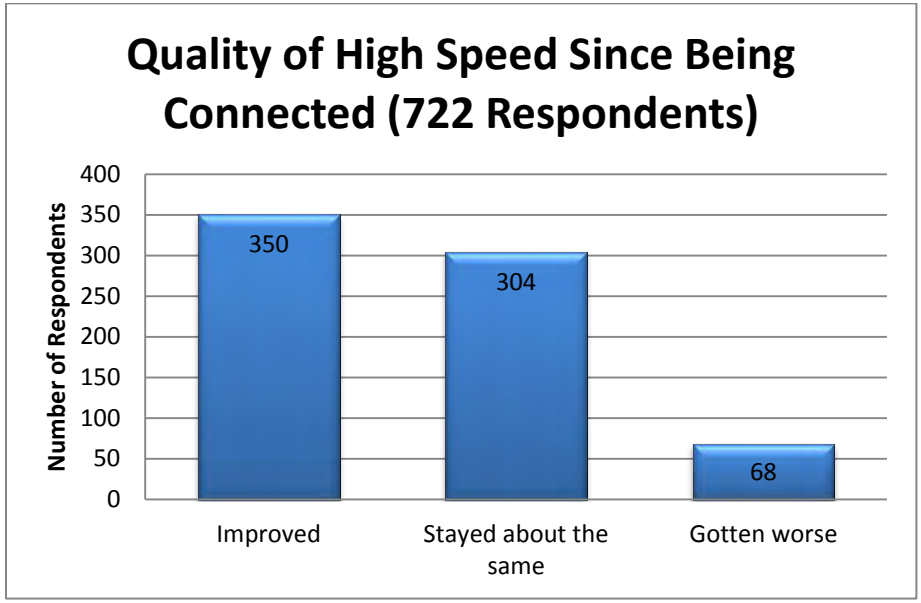
How often do you access the internet from your cell phone?



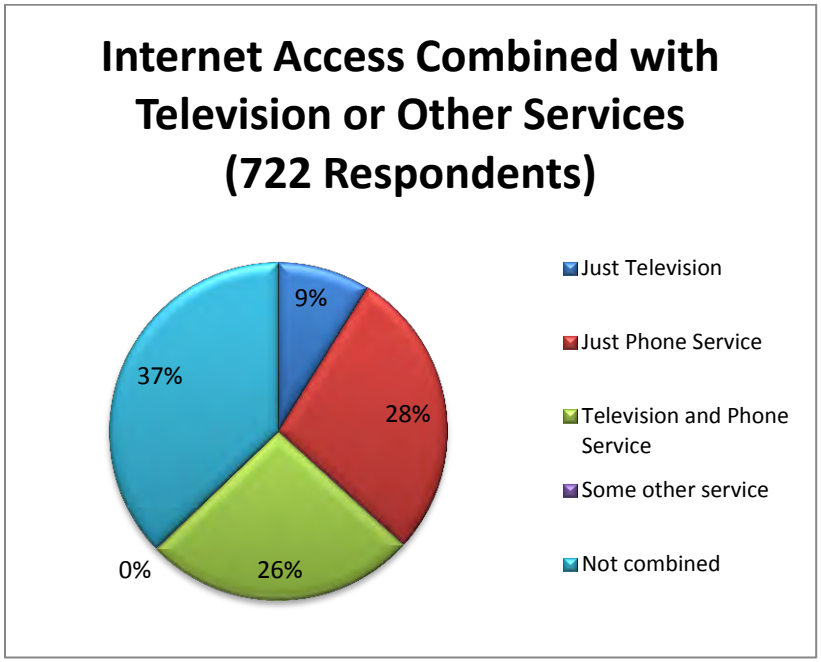
Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



Since you first got high speed internet at home would you say the quality of your high speed connection has:



Is your internet access combined with television or other services?



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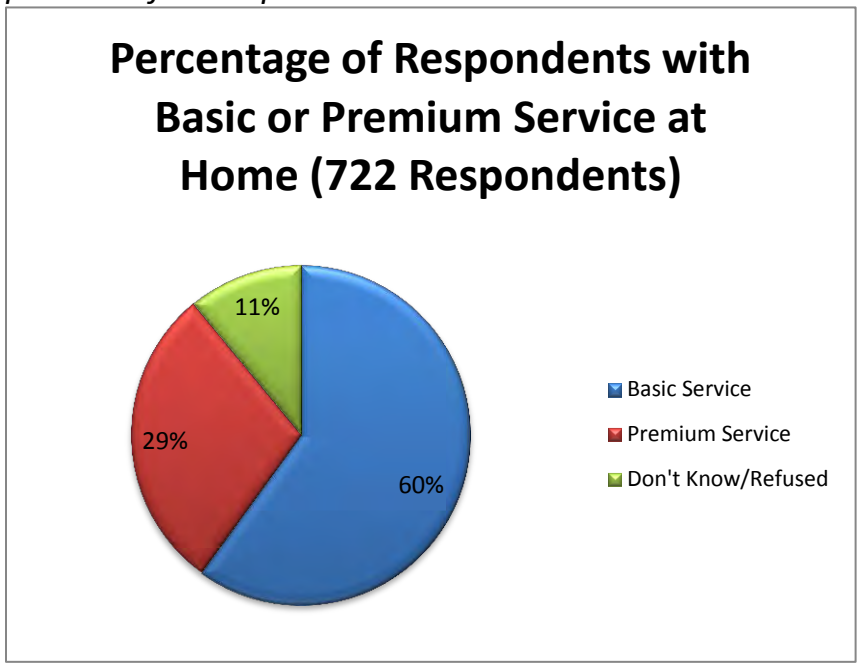
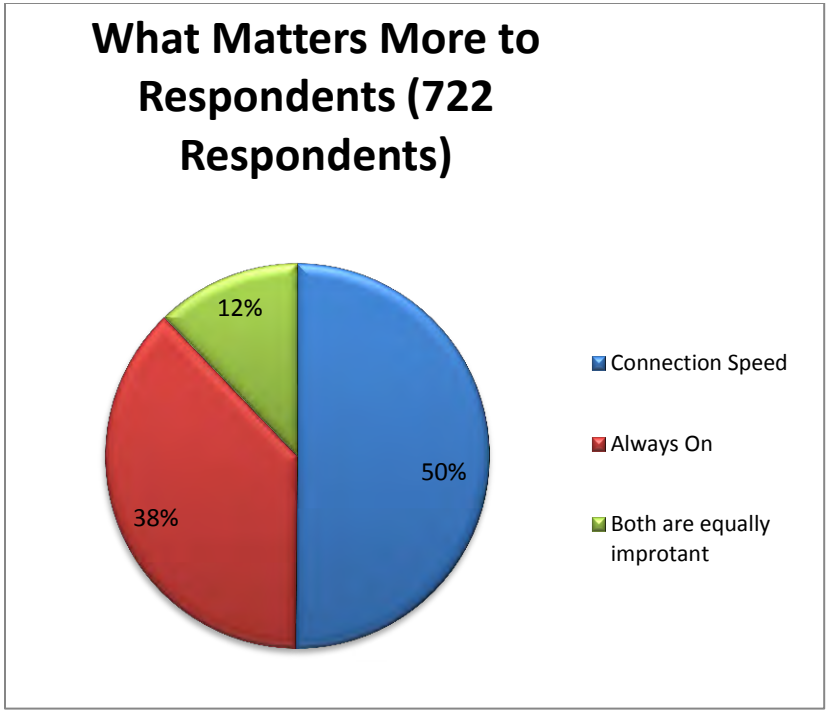
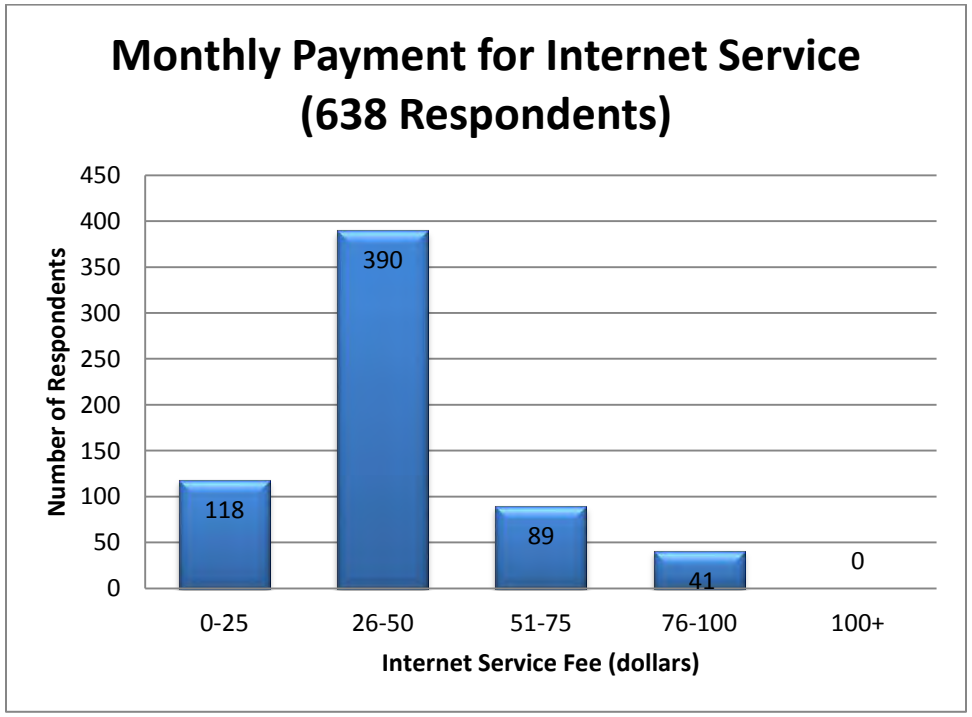


IV. Price and Preference

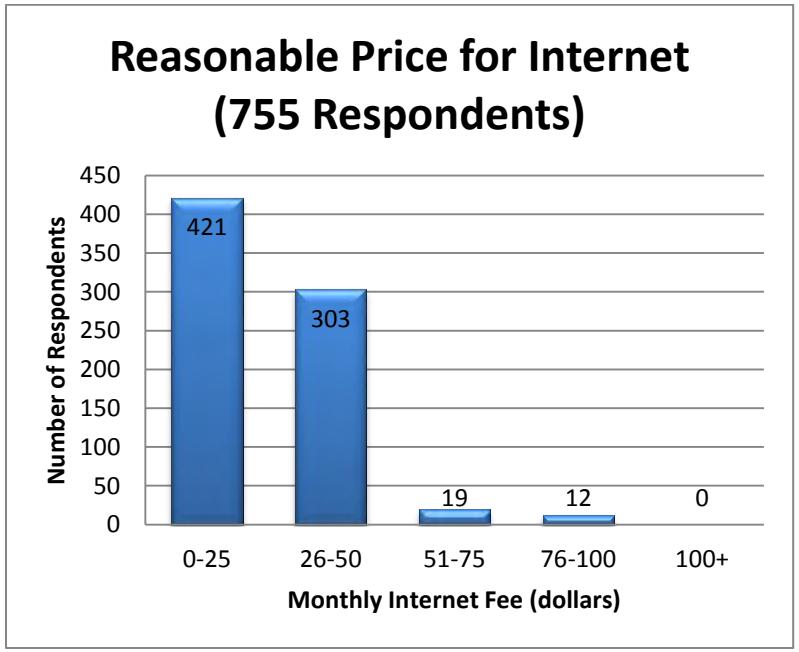
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



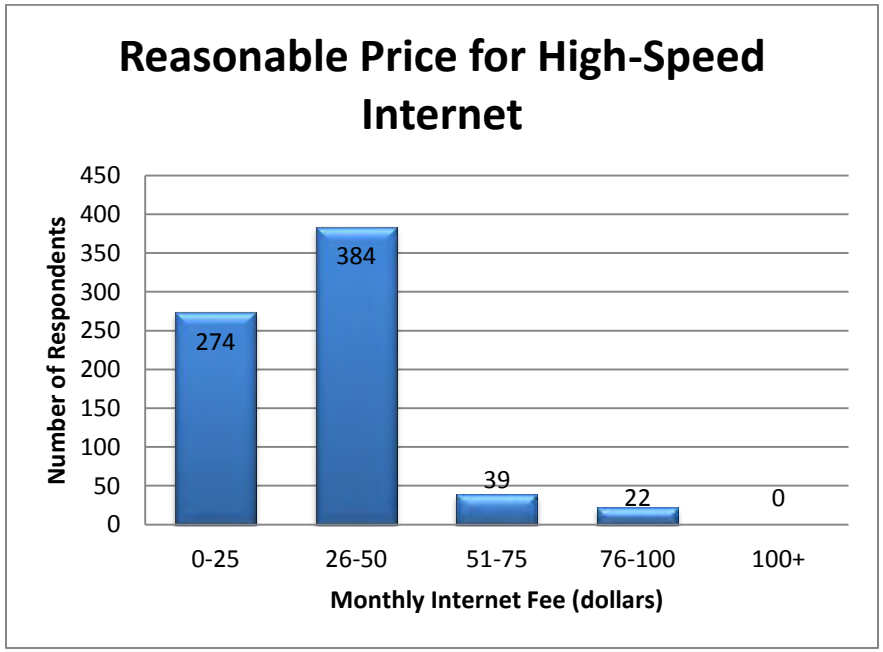
To the nearest dollar, how much per month do you pay for internet service?



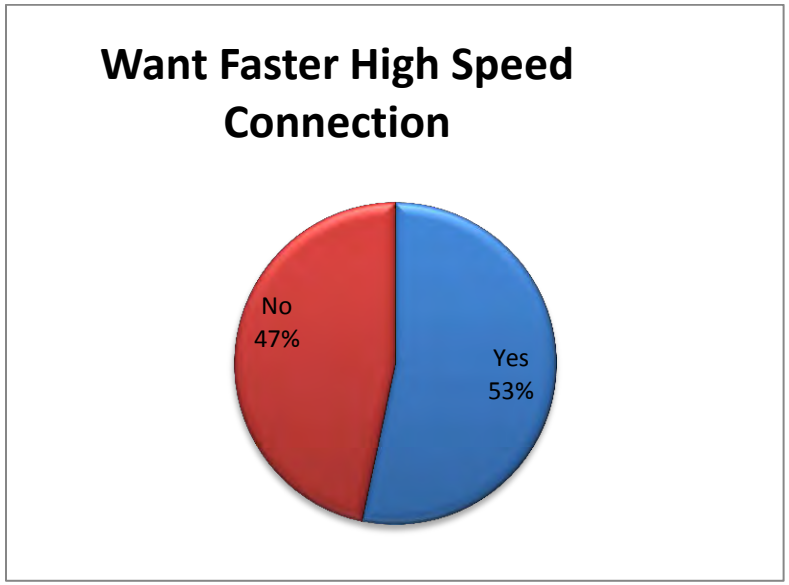
What do you think a reasonable price for internet service would be?



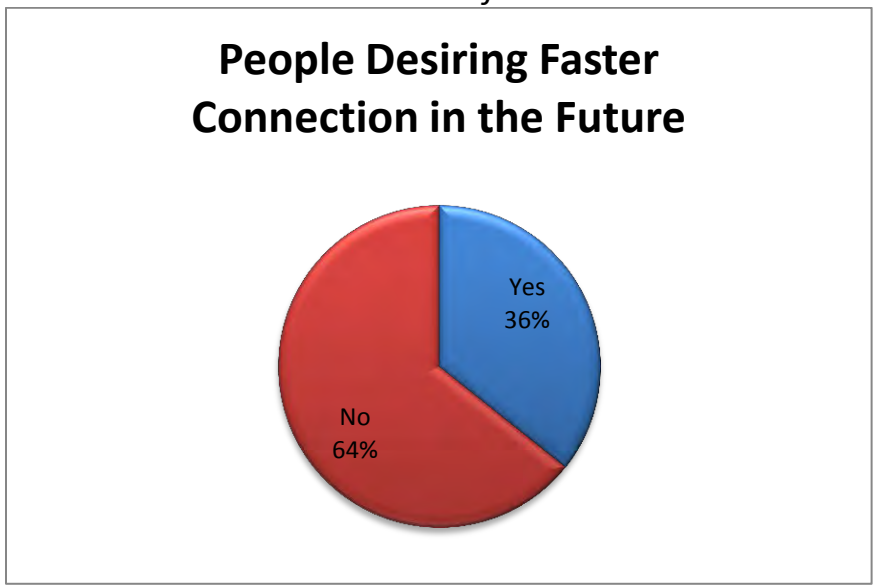
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

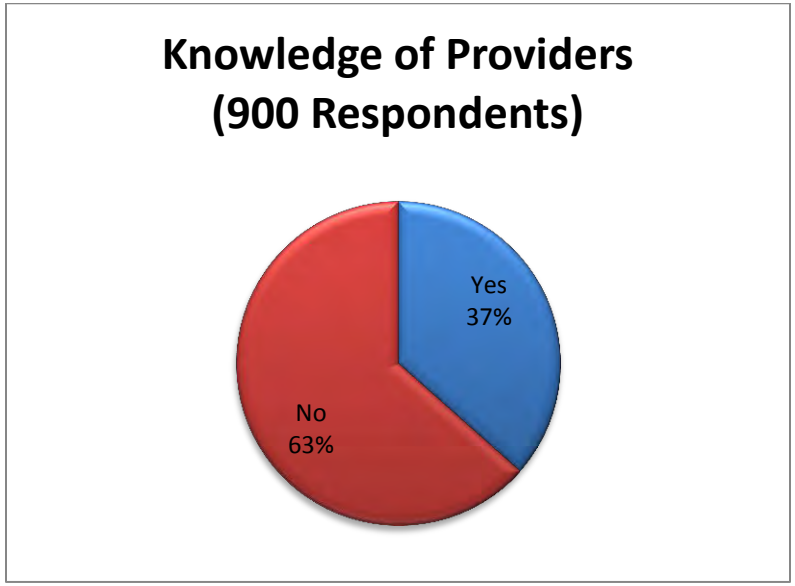


Do you think you would like a faster connection sometime in the future?

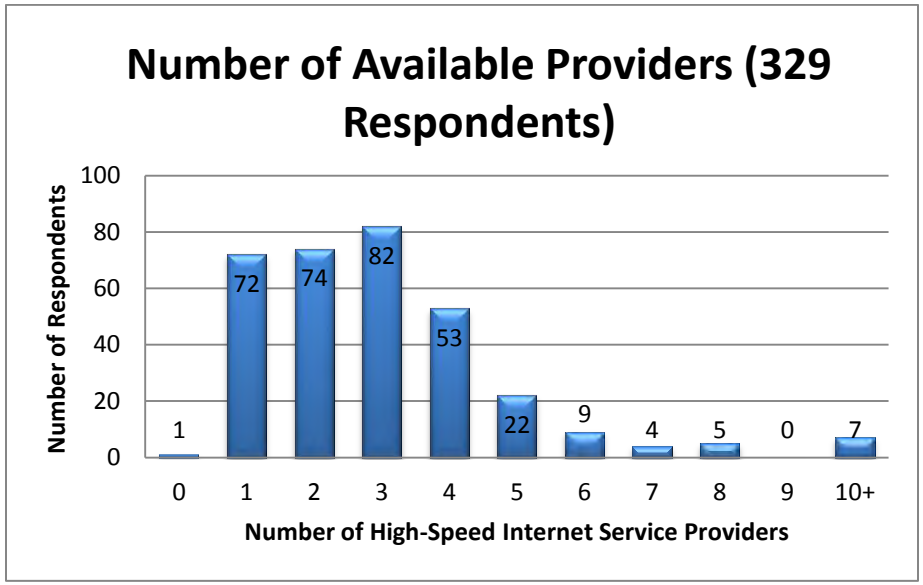


V. Consumer Perceptions

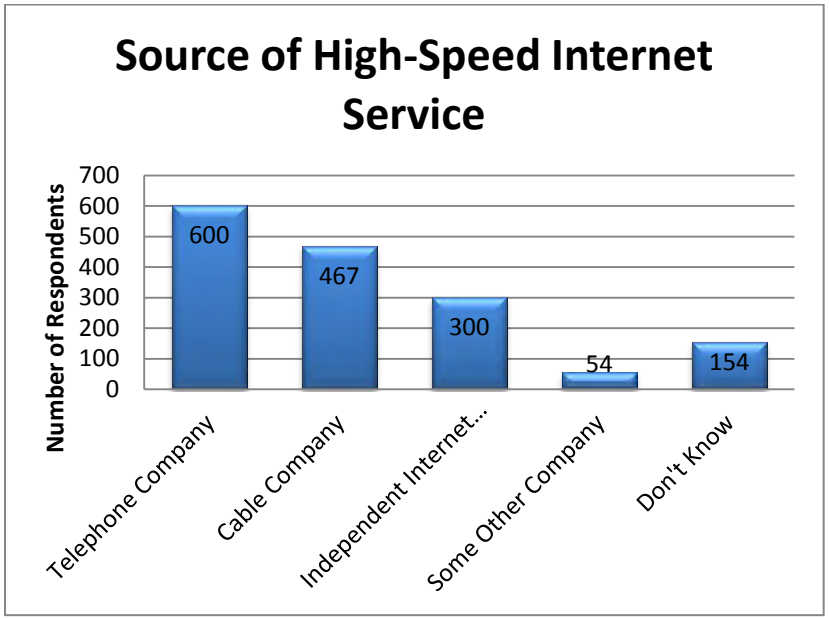
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?

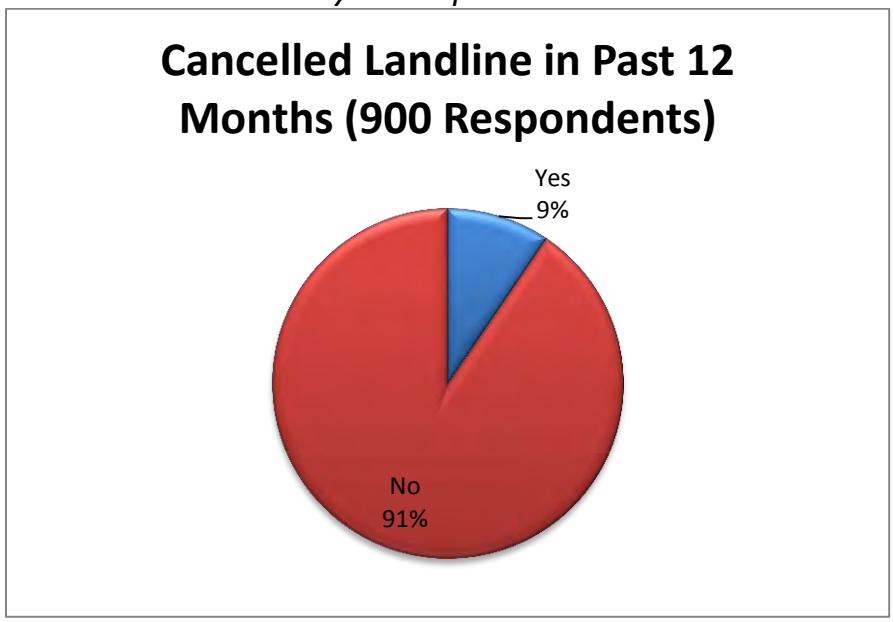


Do you happen to know whether high-speed internet service is available in your neighborhood from:

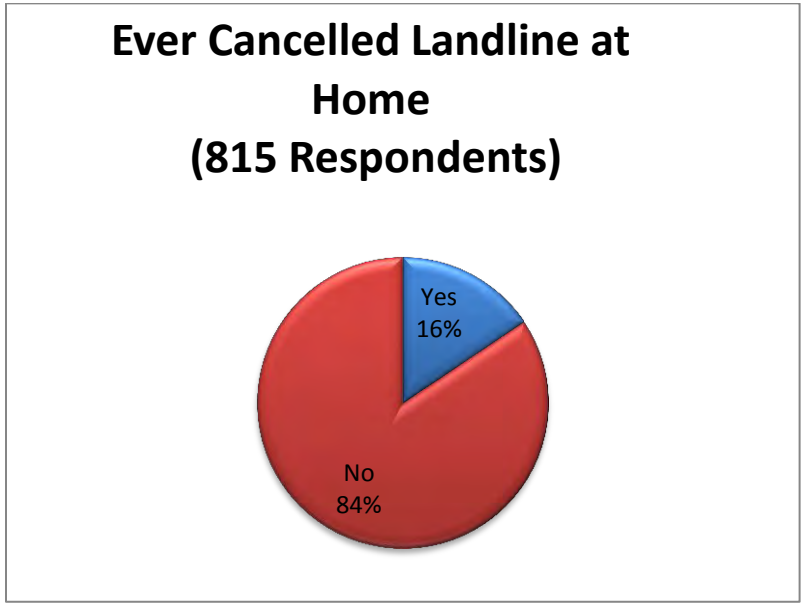


VI. Respondents' Purchasing Behavior

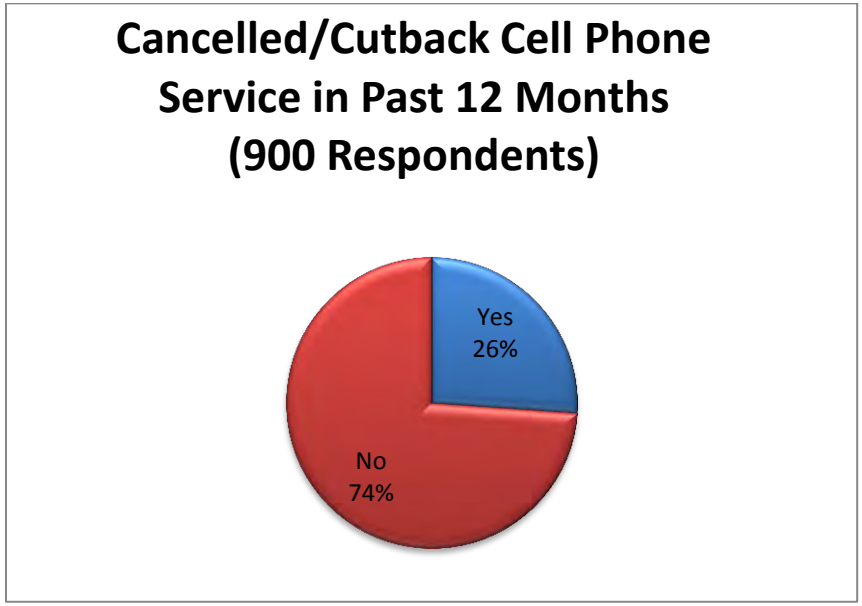
Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



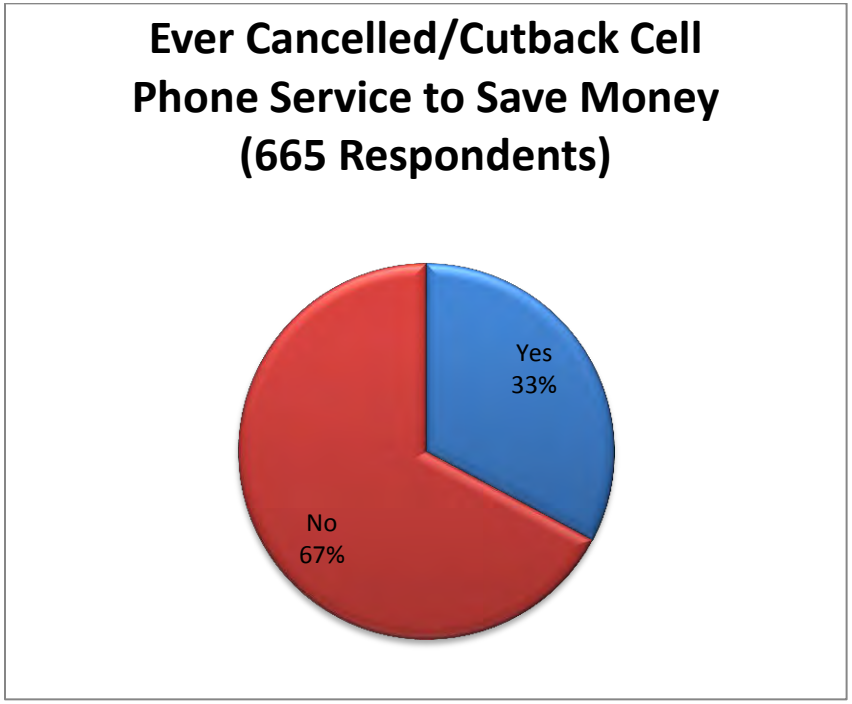
Have you ever cancelled a landline phone at home to save money?



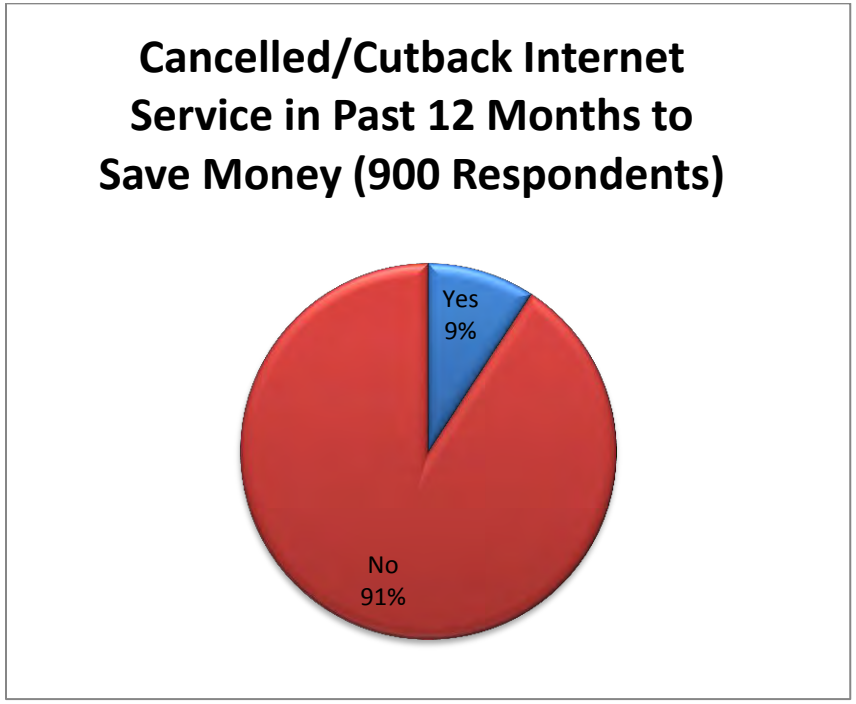
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



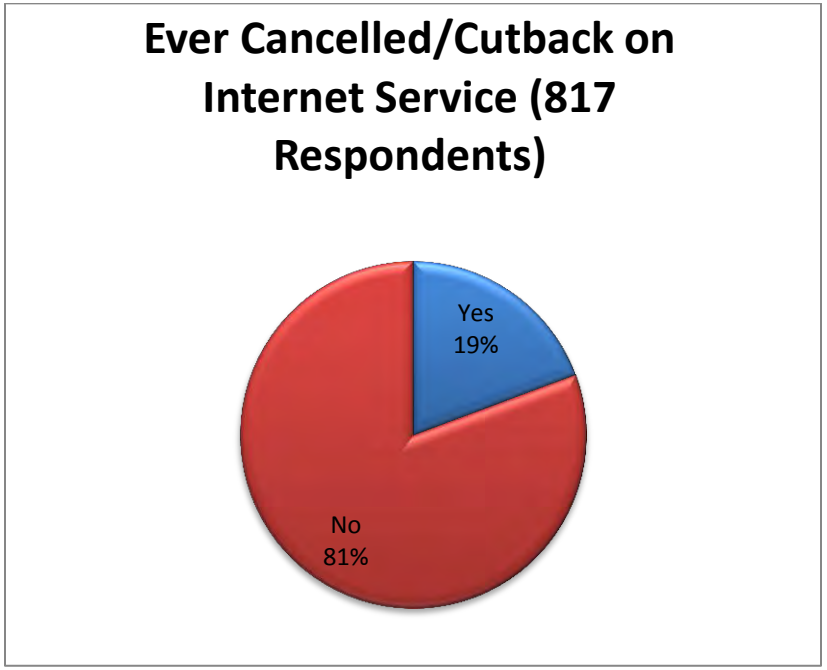
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



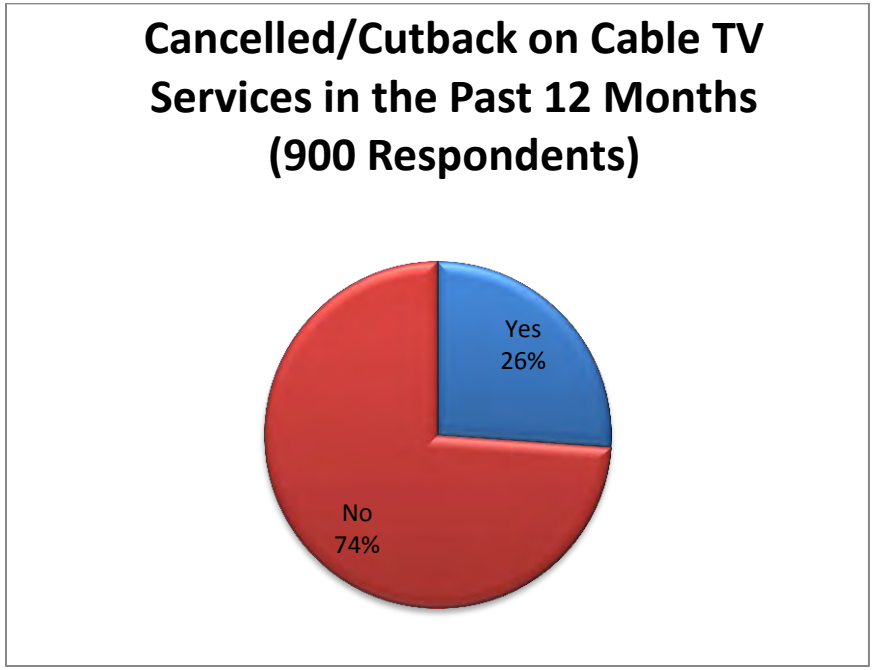
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



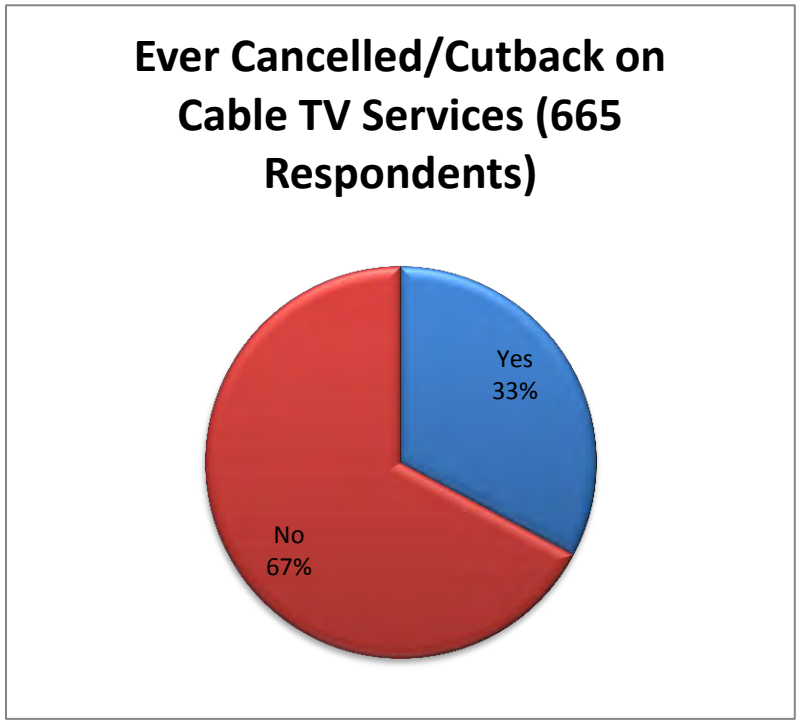
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



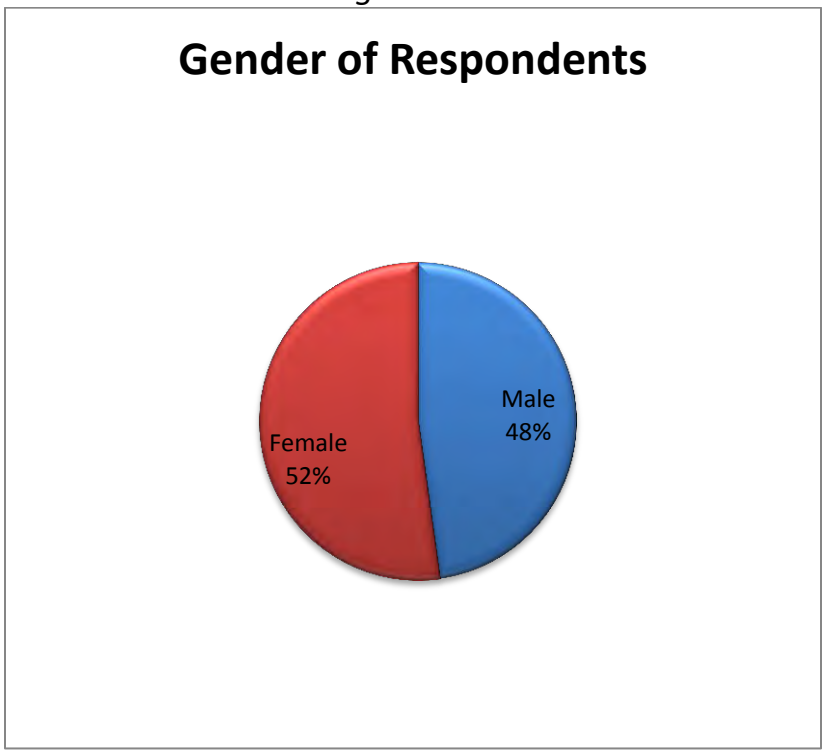
Have you ever cancelled or cutback on cable TV services?



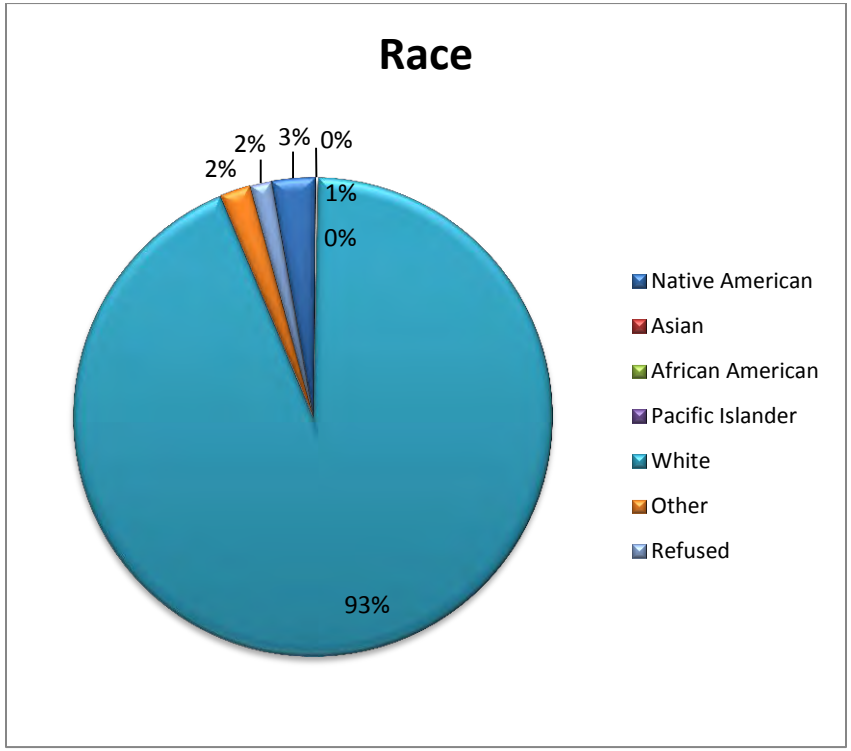
Rural Counties Results

I. Demographics

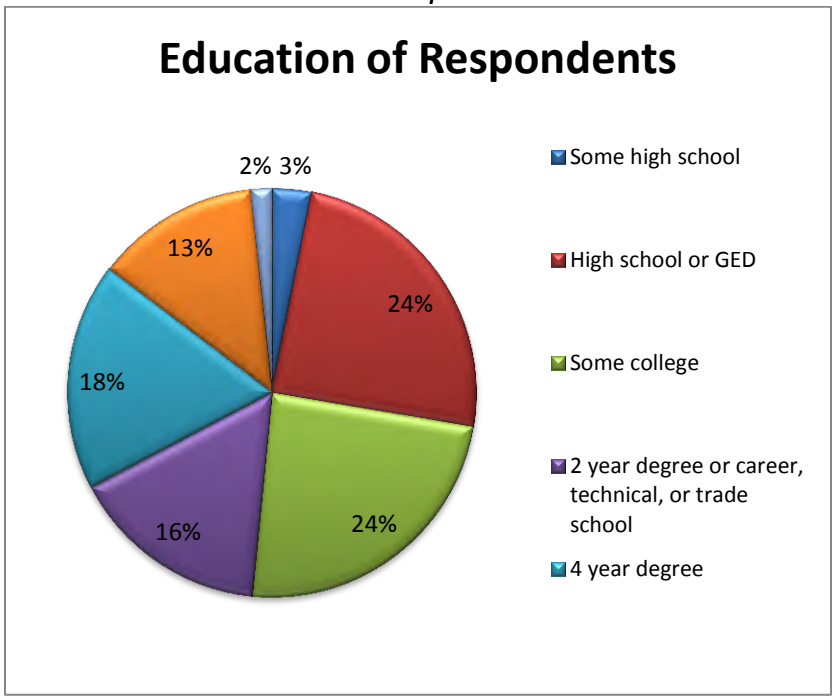
Survey participants were asked to disclose their gender.



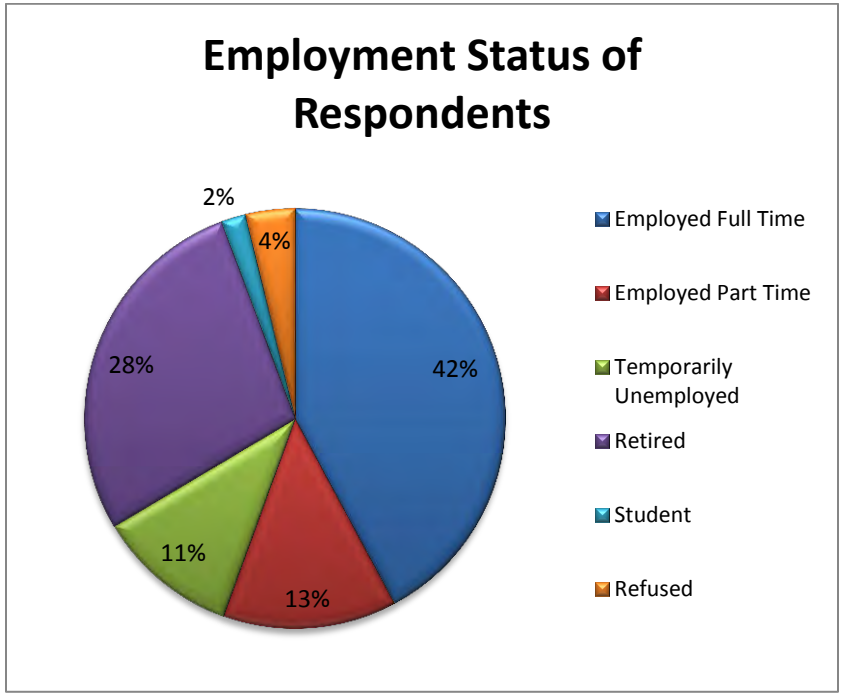
What is your race? You can choose more than one



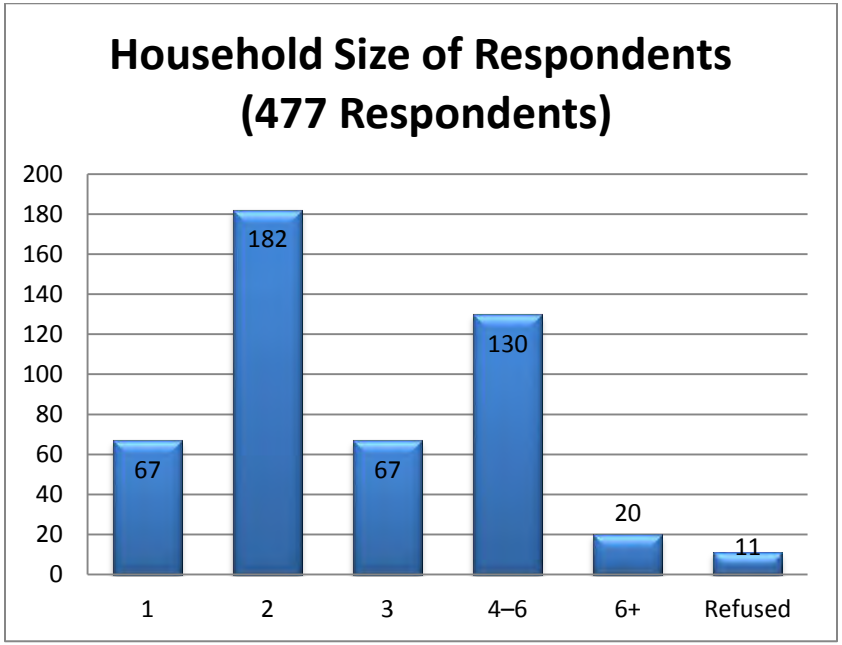
What is the highest level of formal education you have completed?



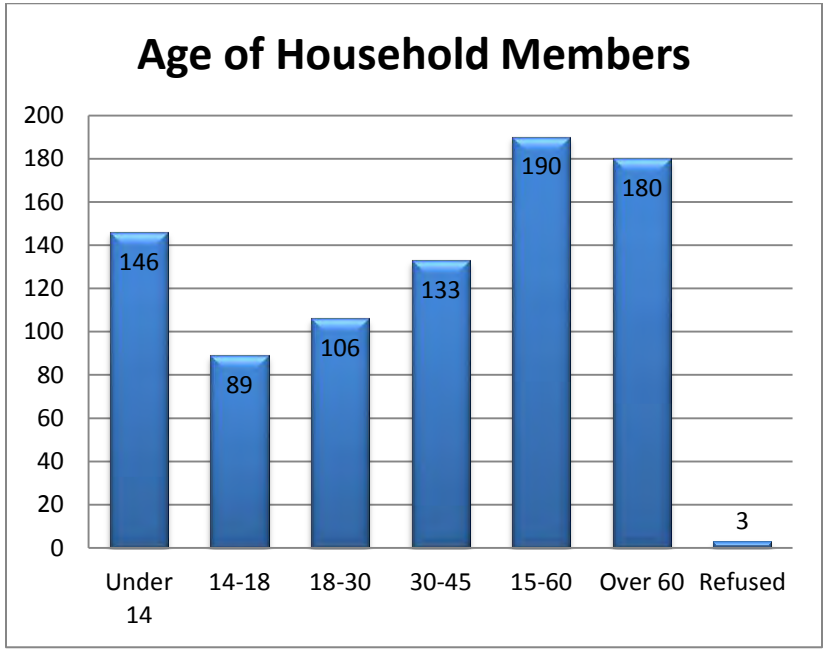
How would you describe your current employment status?



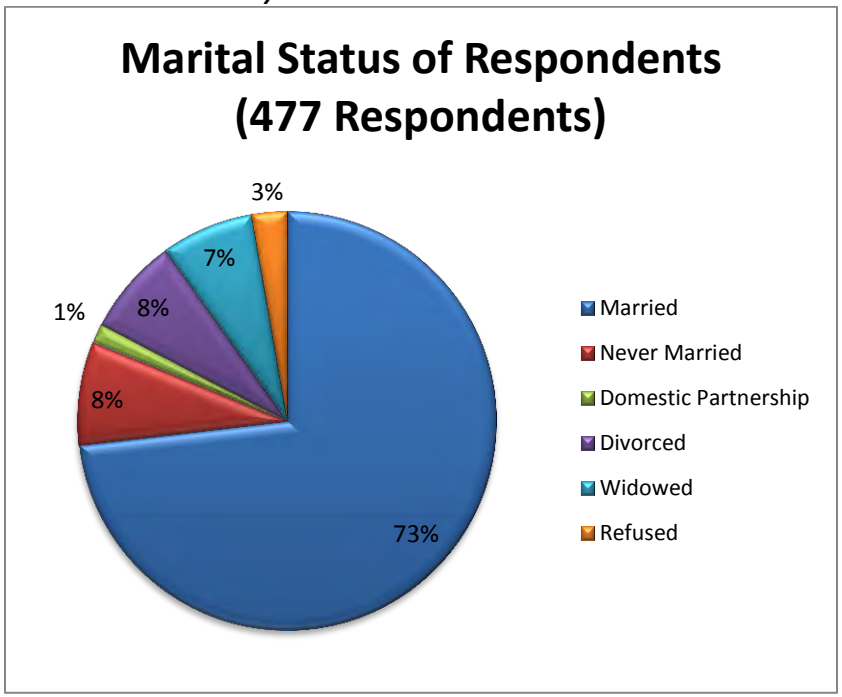
How many individuals are currently living or staying in your household?



Are any members of your household:

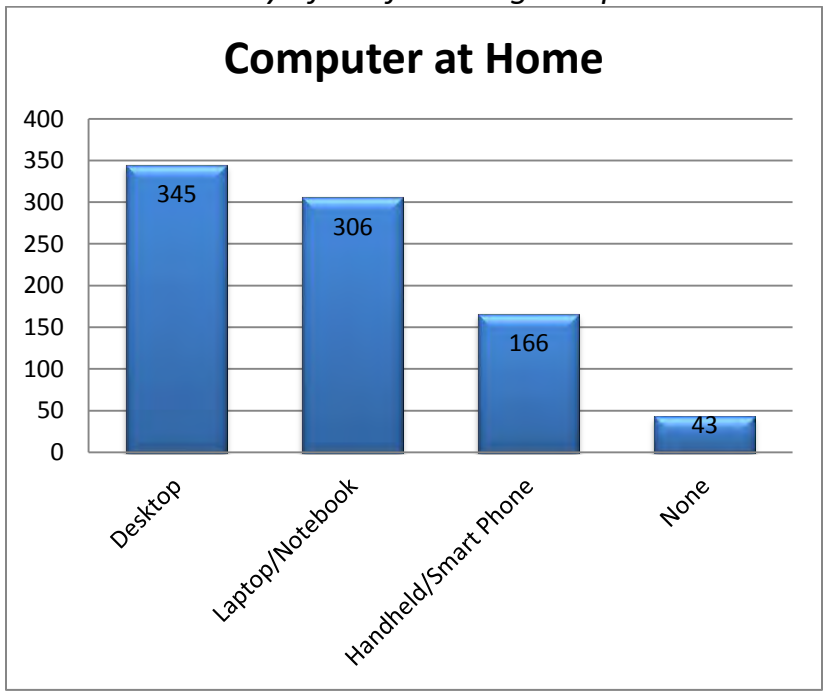


What is your current marital status?

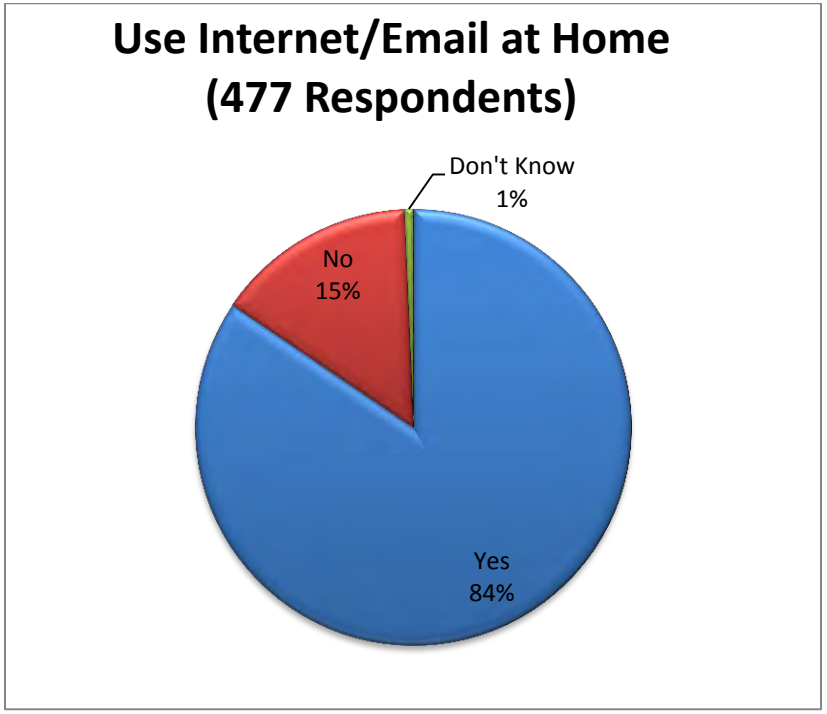


II. Access

At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?



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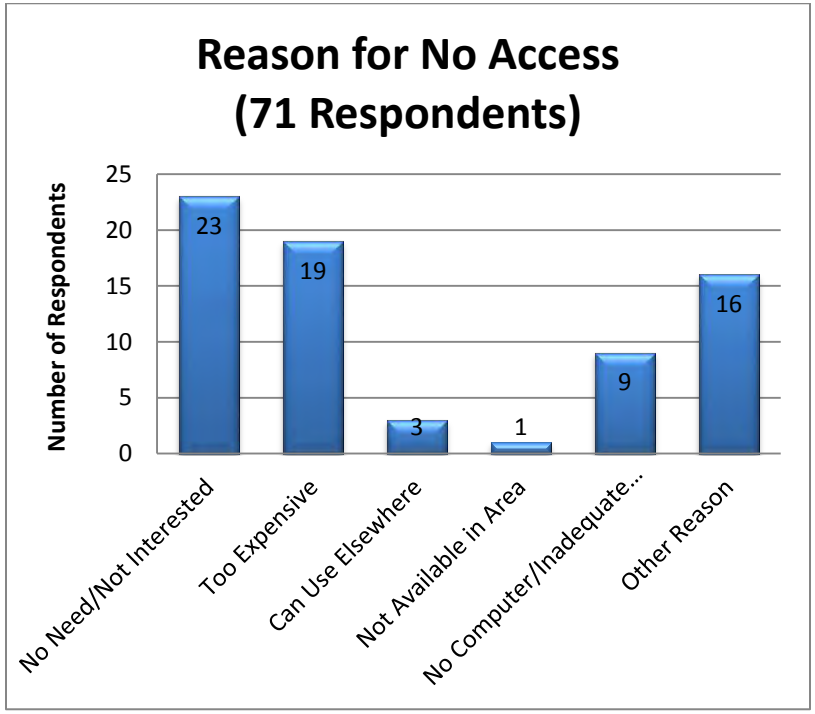

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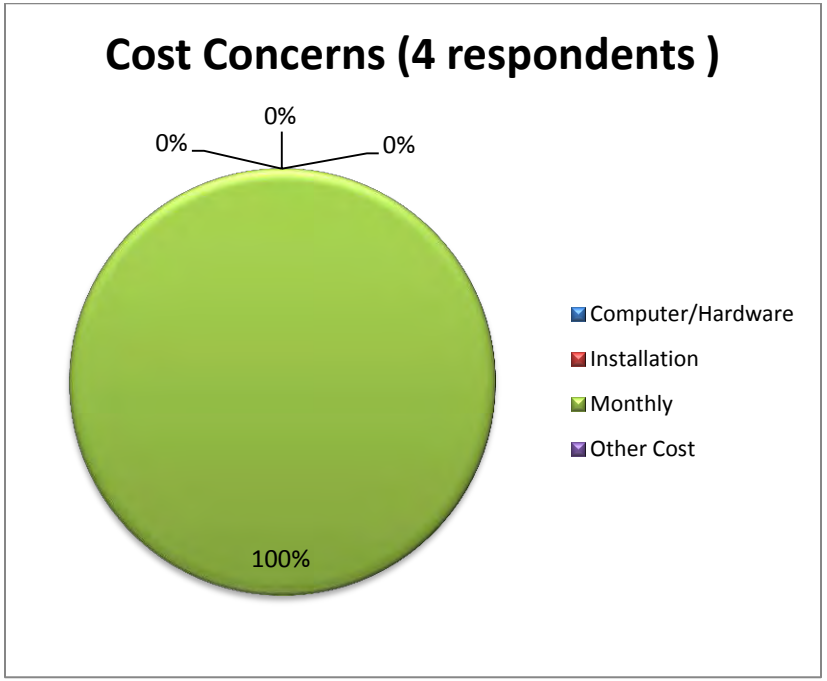

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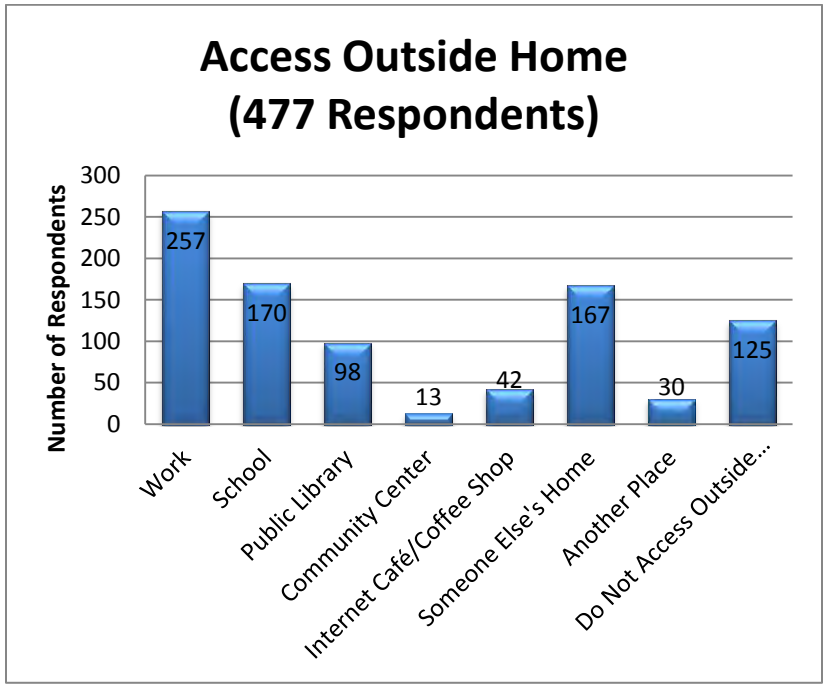

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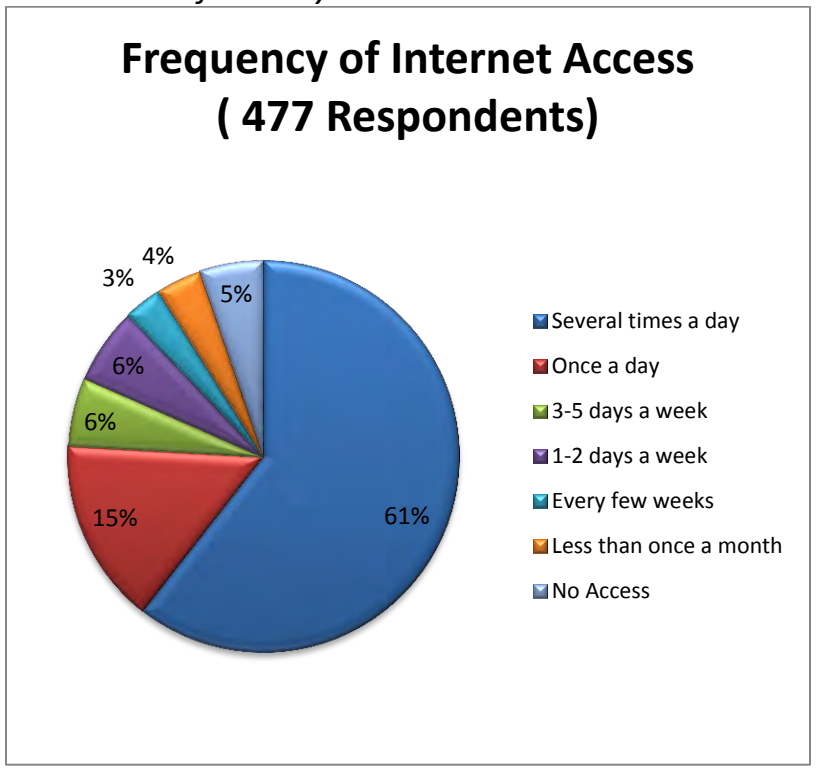

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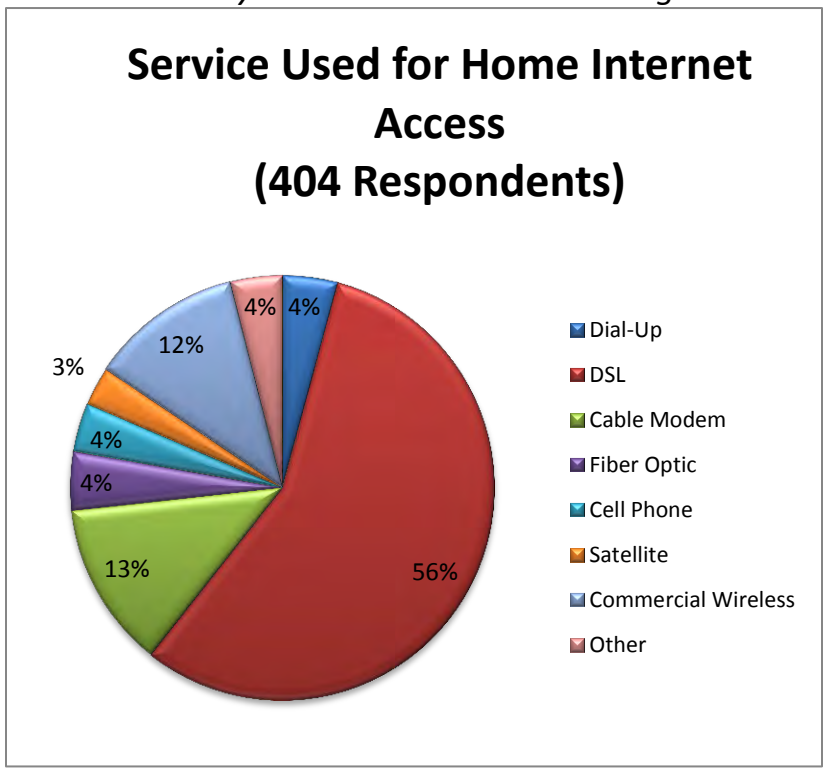

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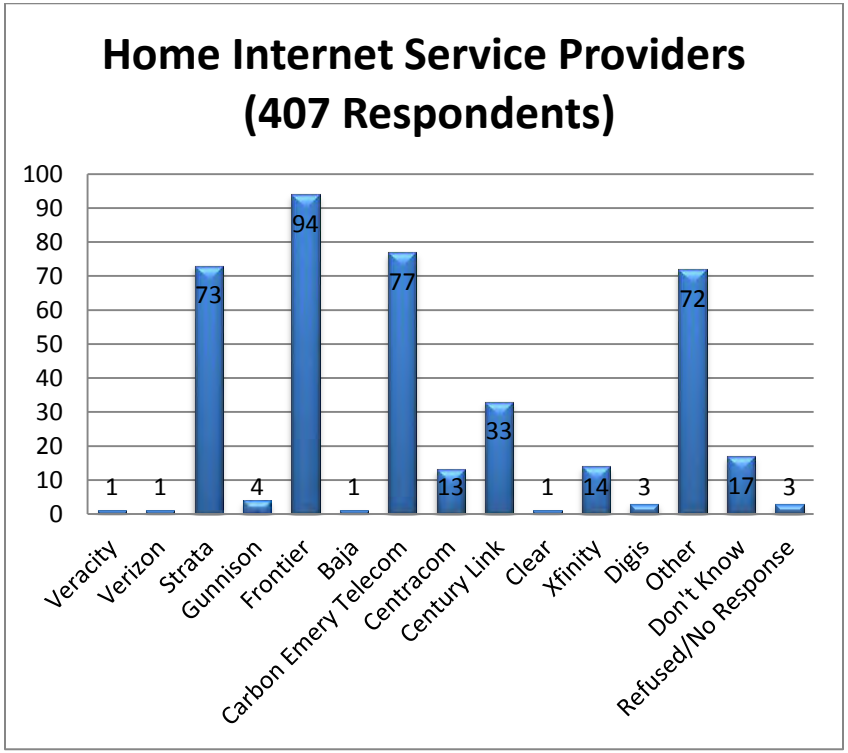

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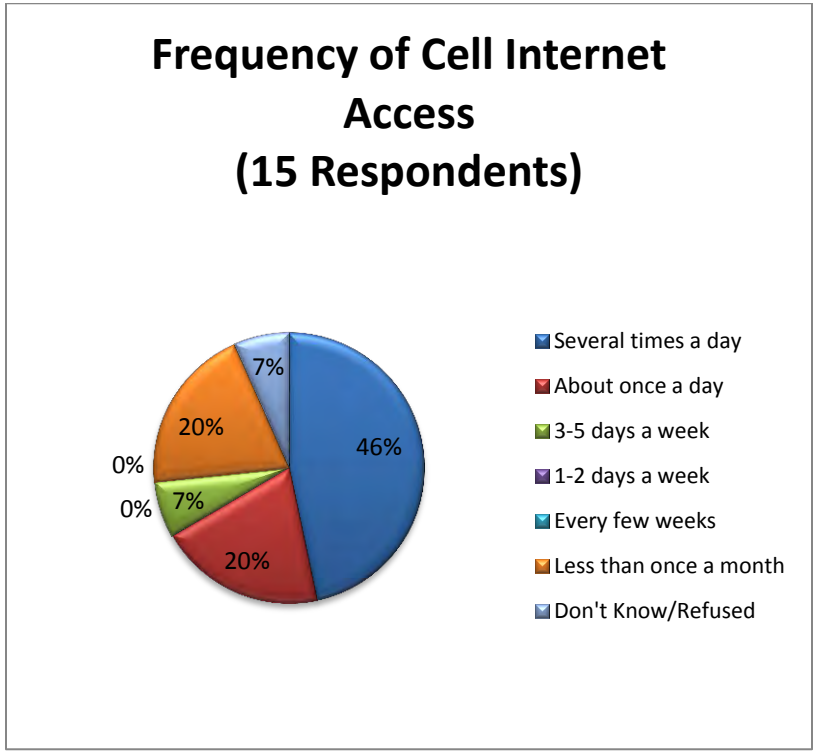

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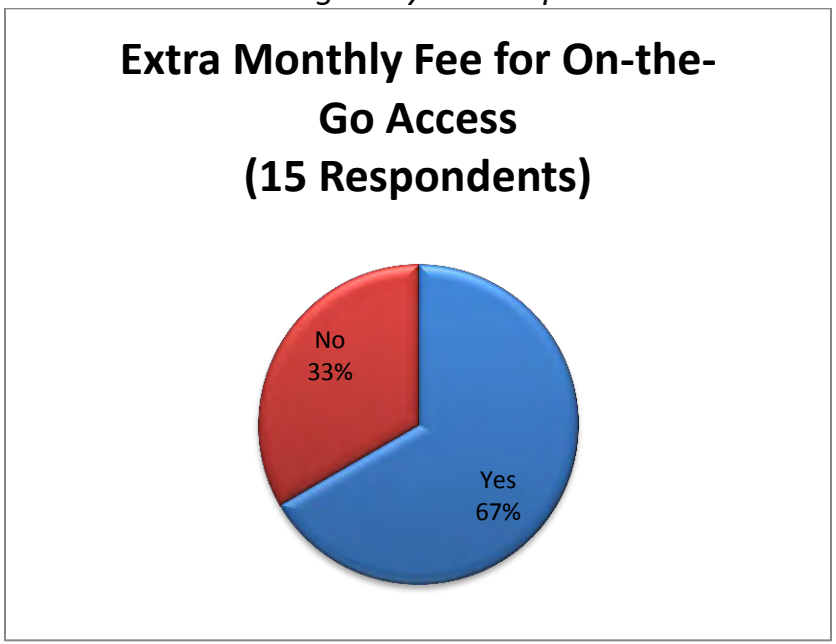

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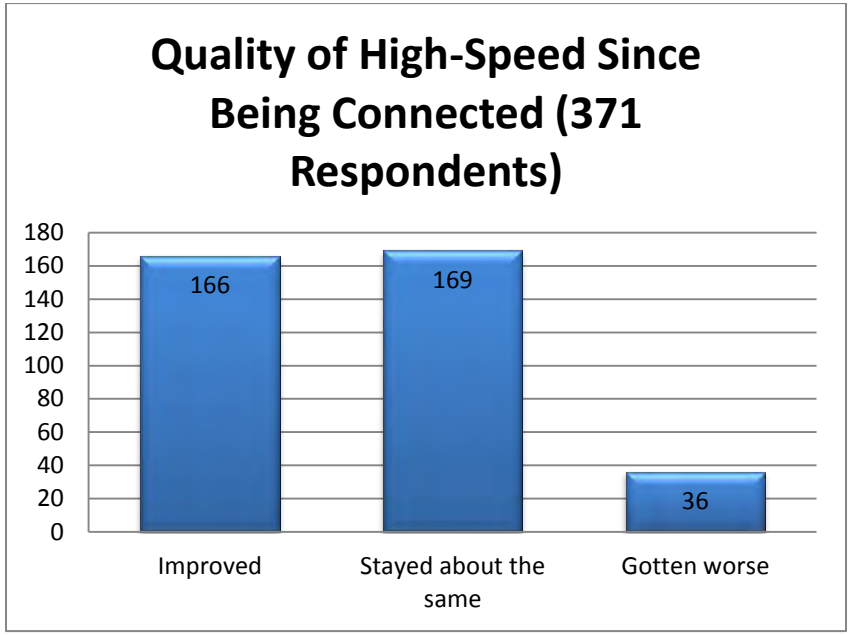

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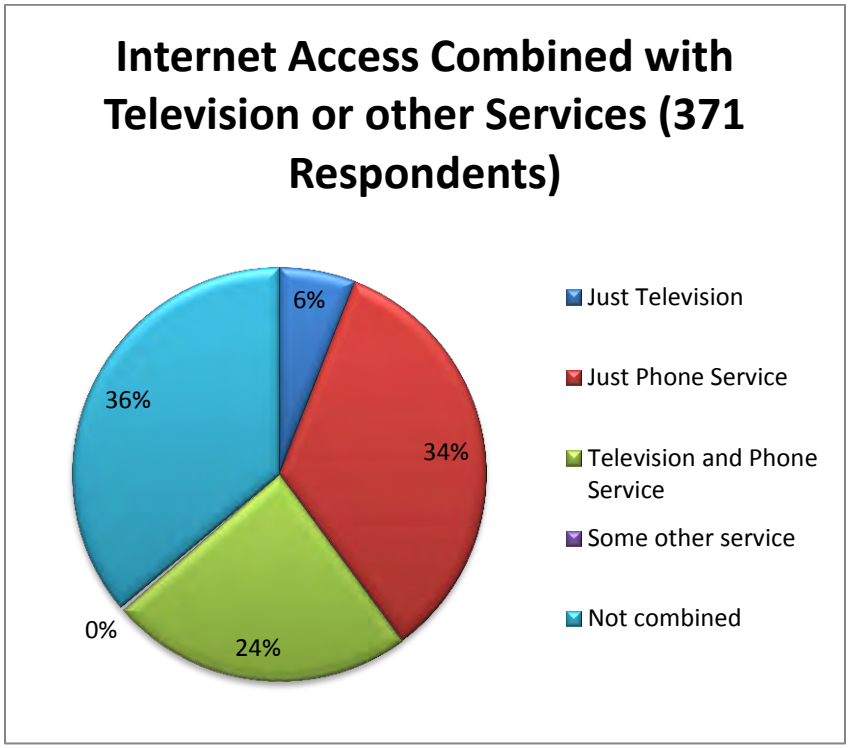

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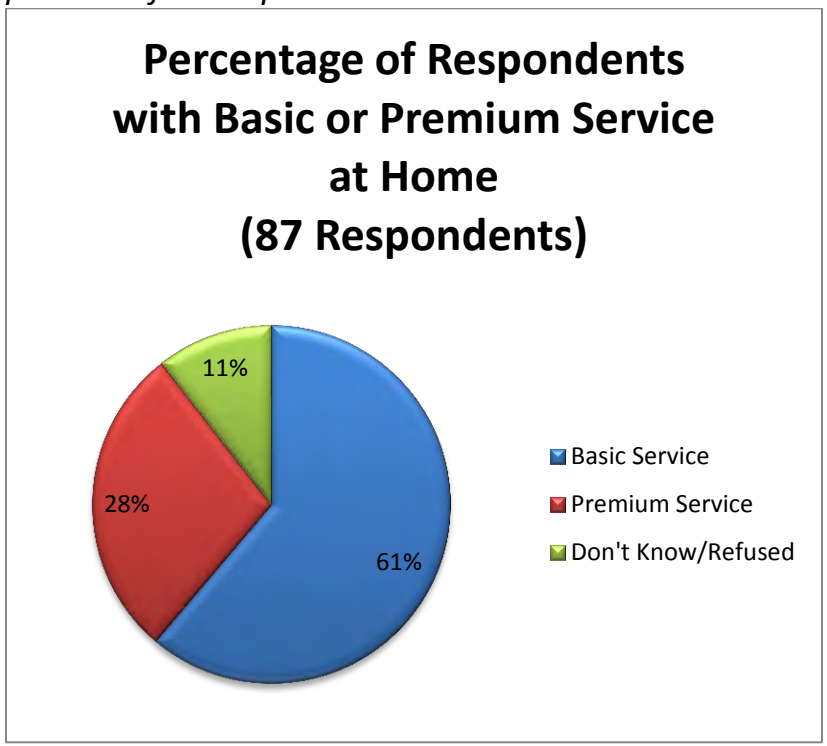

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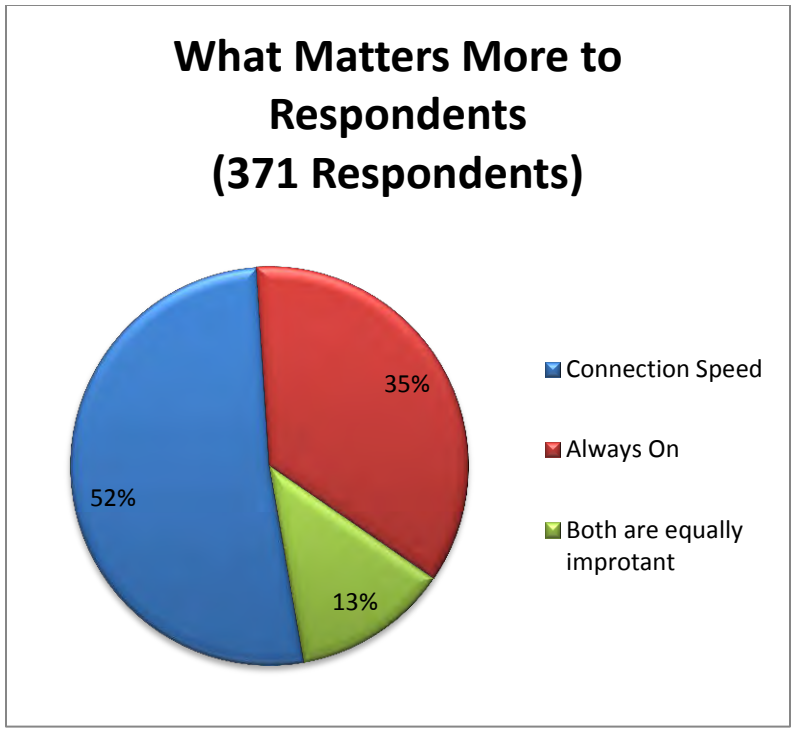
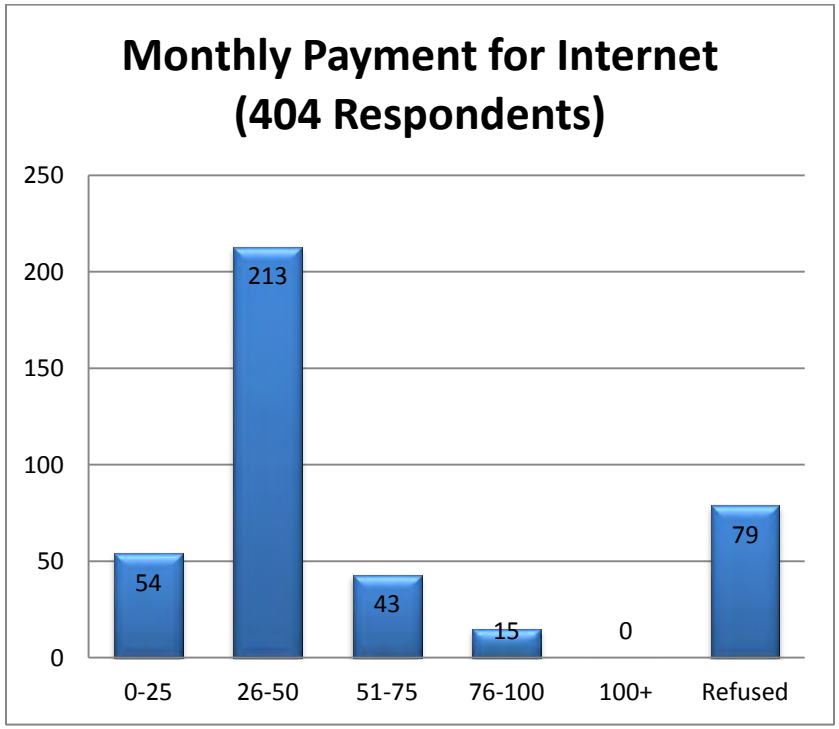
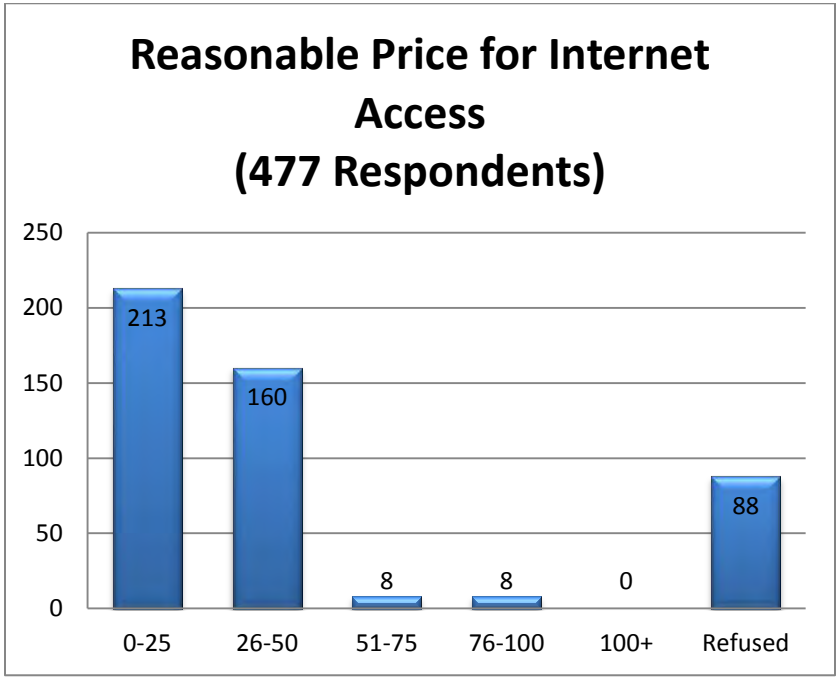


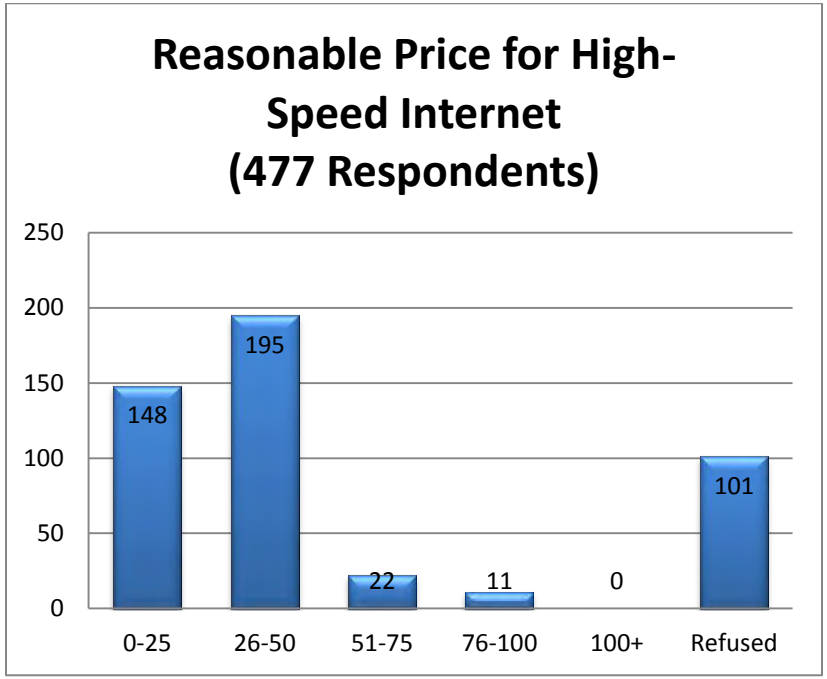
To the nearest dollar, how much per month do you pay for internet service?



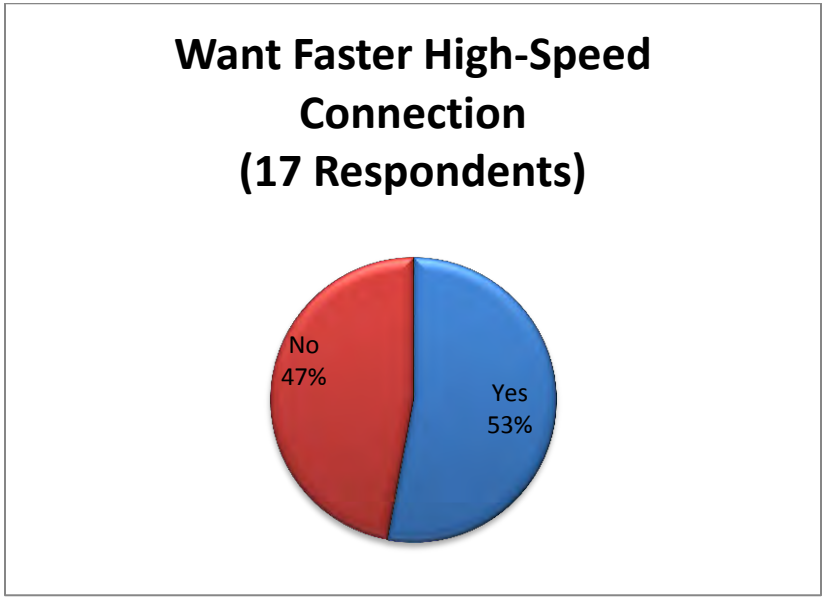
What do you think a reasonable price for internet service would be?



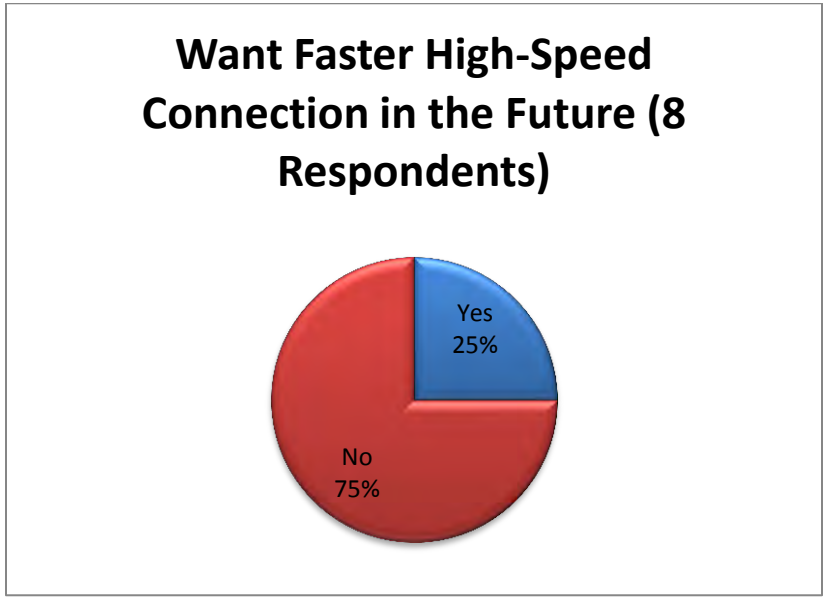
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

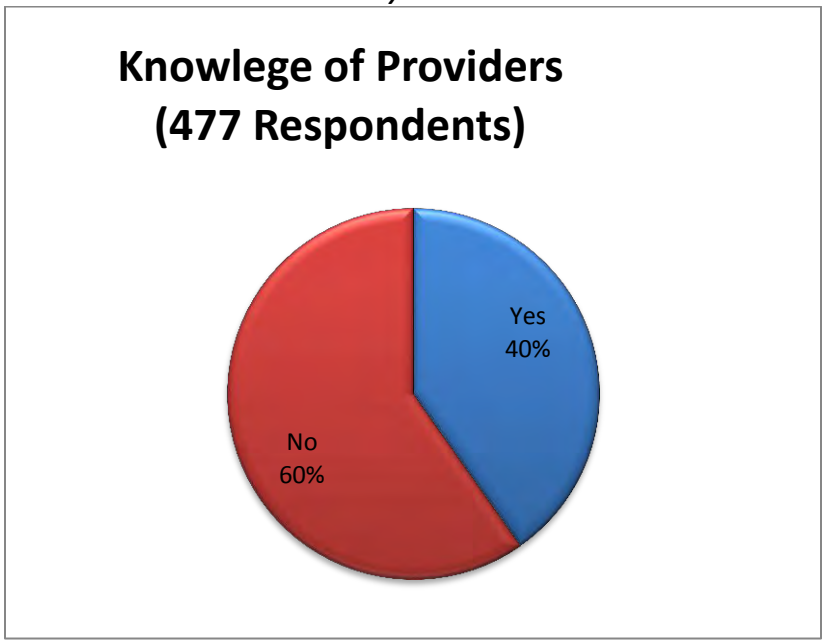


Do you think you would like a faster connection sometime in the future?

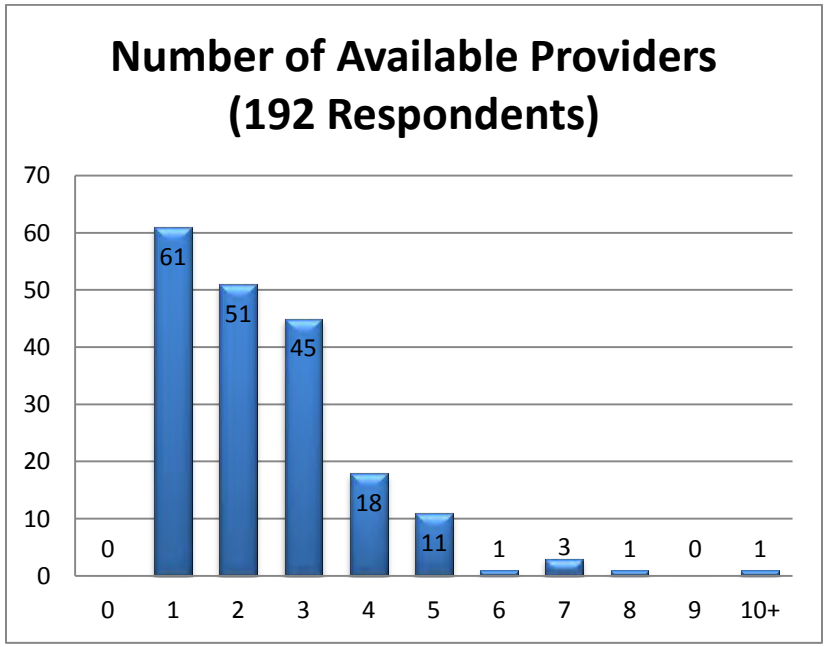


V. Consumer Perceptions

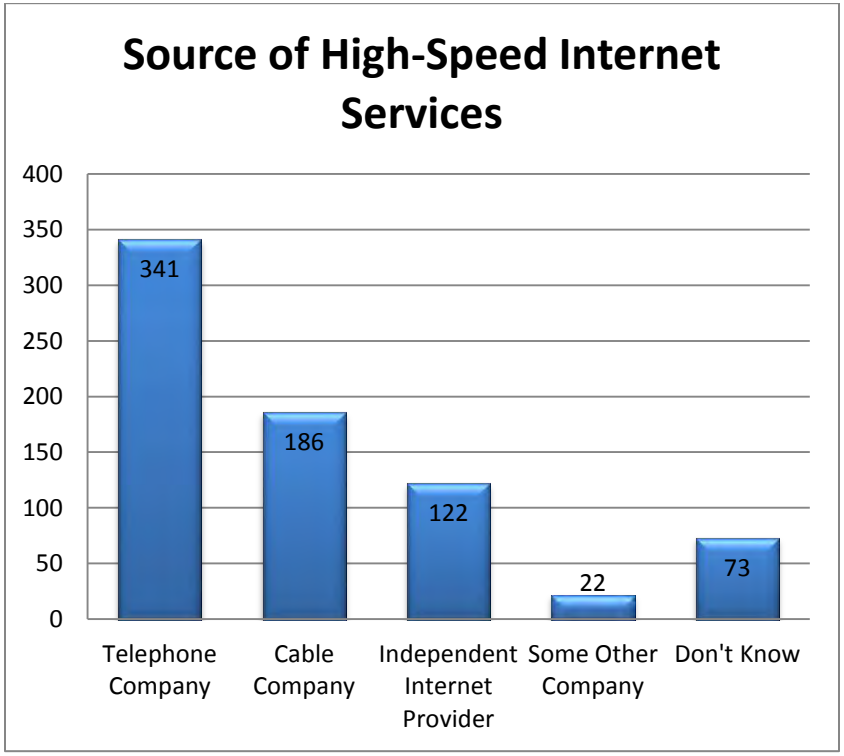
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?

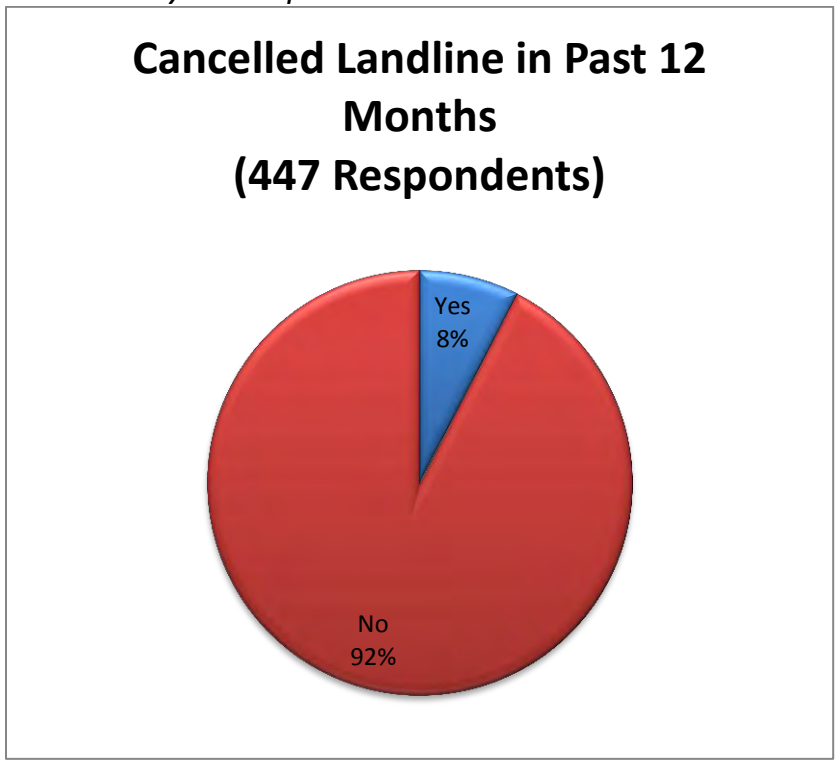


Do you happen to know whether high-speed internet service is available in your neighborhood from:

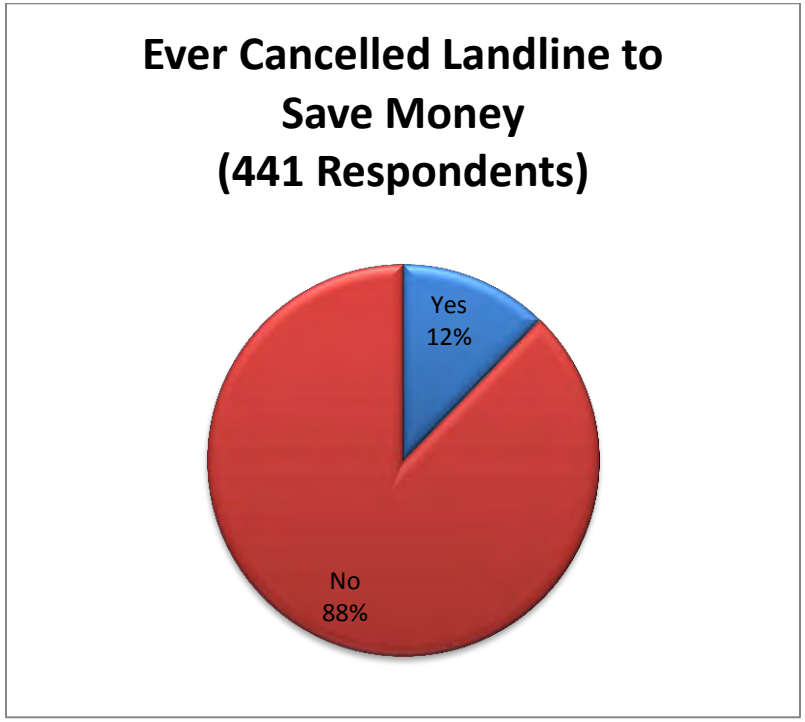


VI. Respondents' Purchasing Behavior

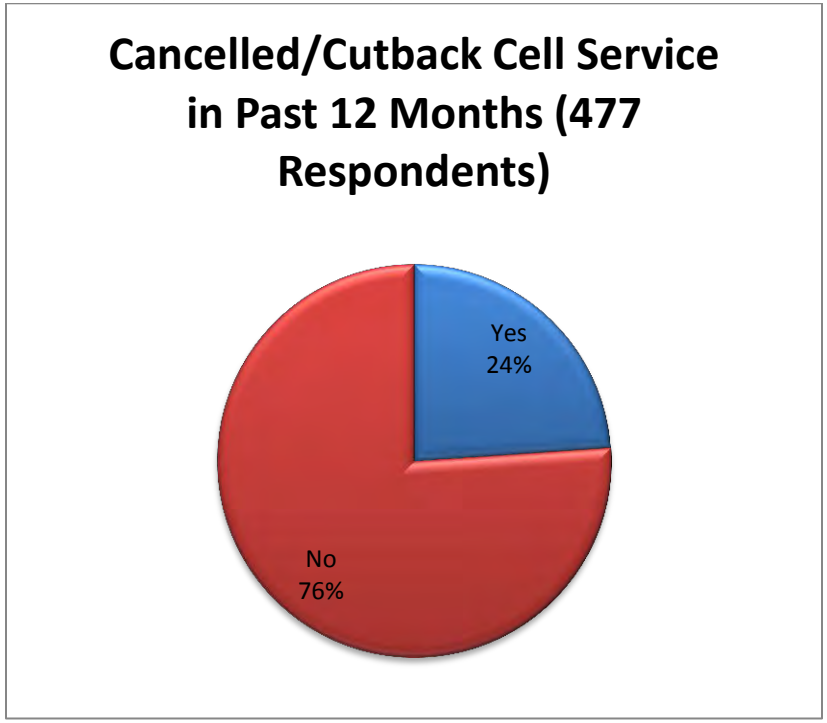
Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



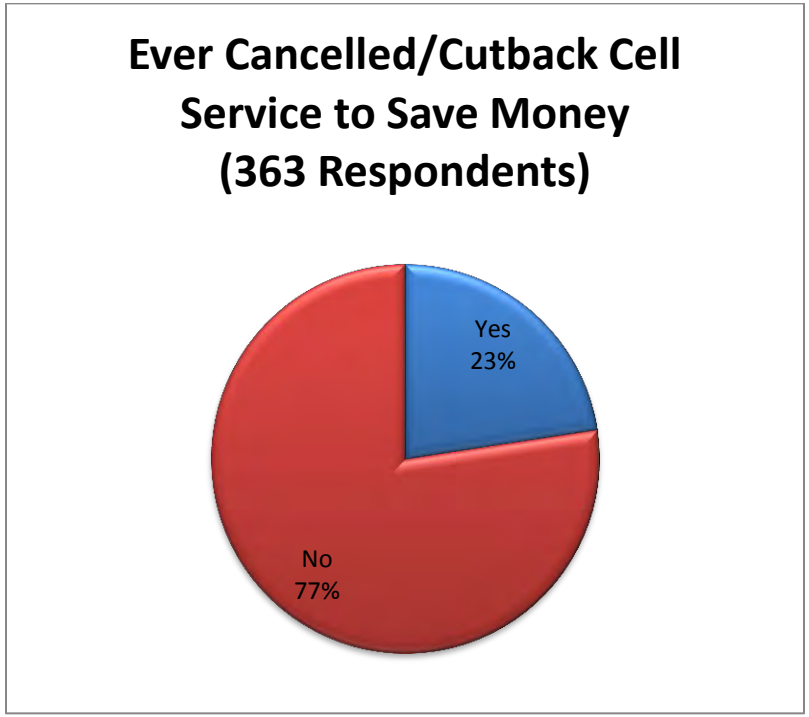
Have you ever cancelled a landline phone at home to save money?



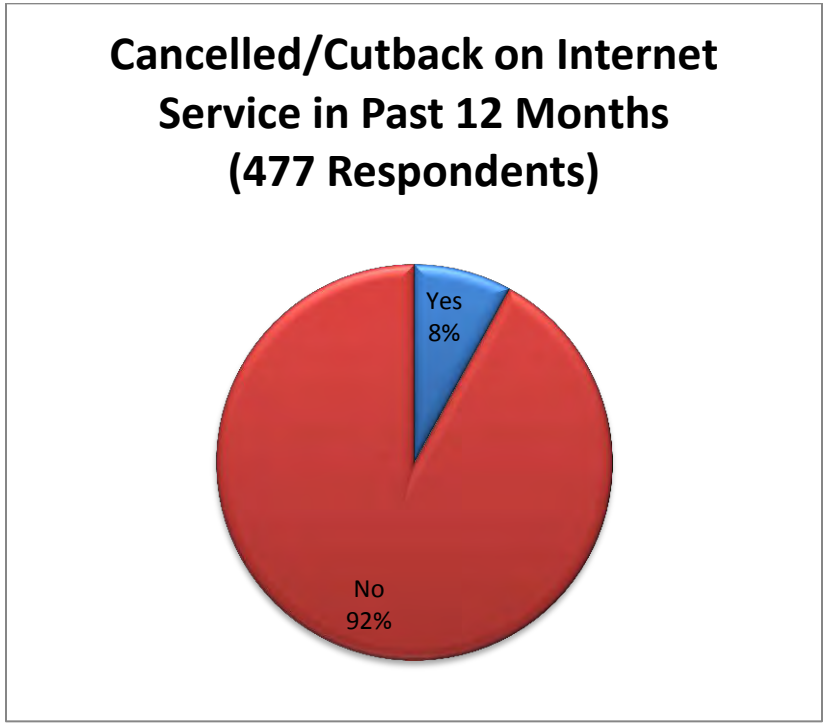
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



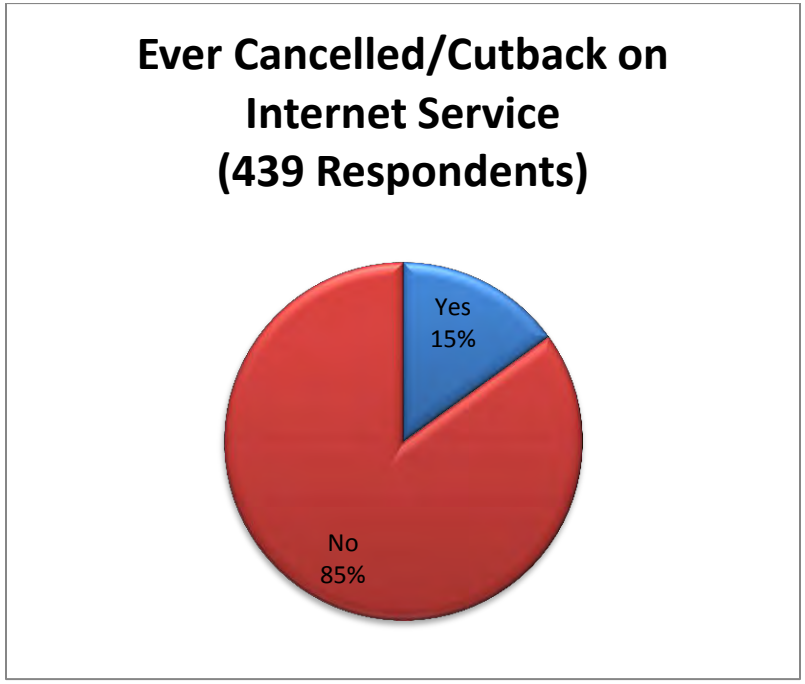
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



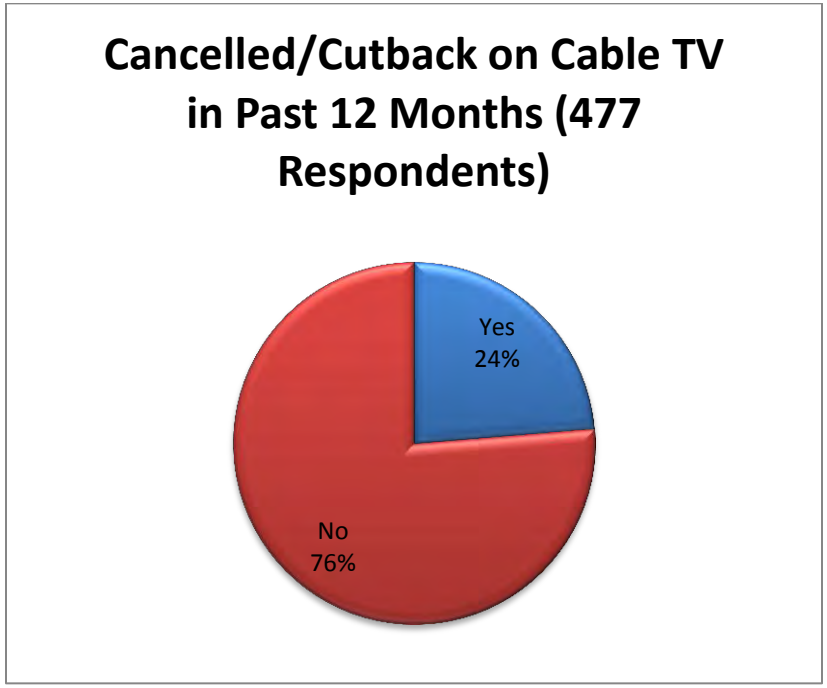
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



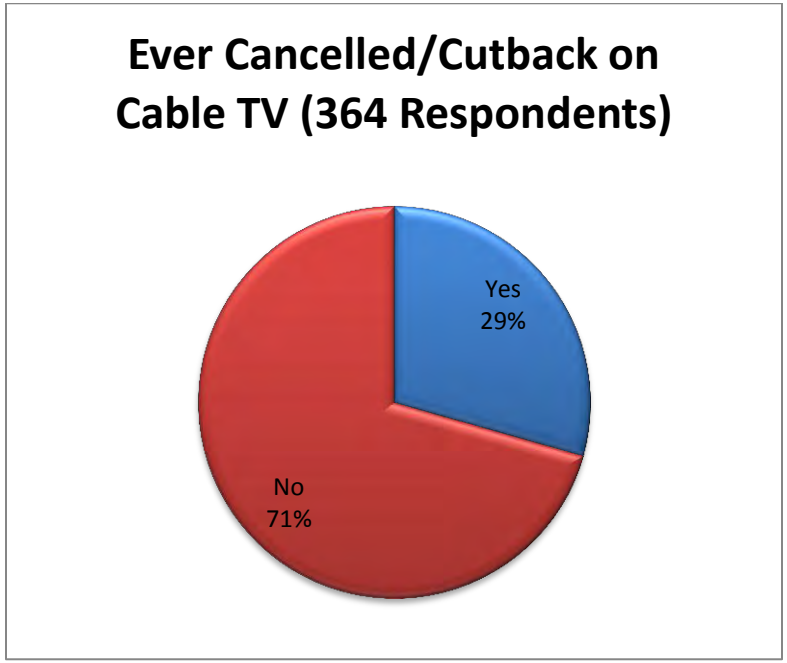
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



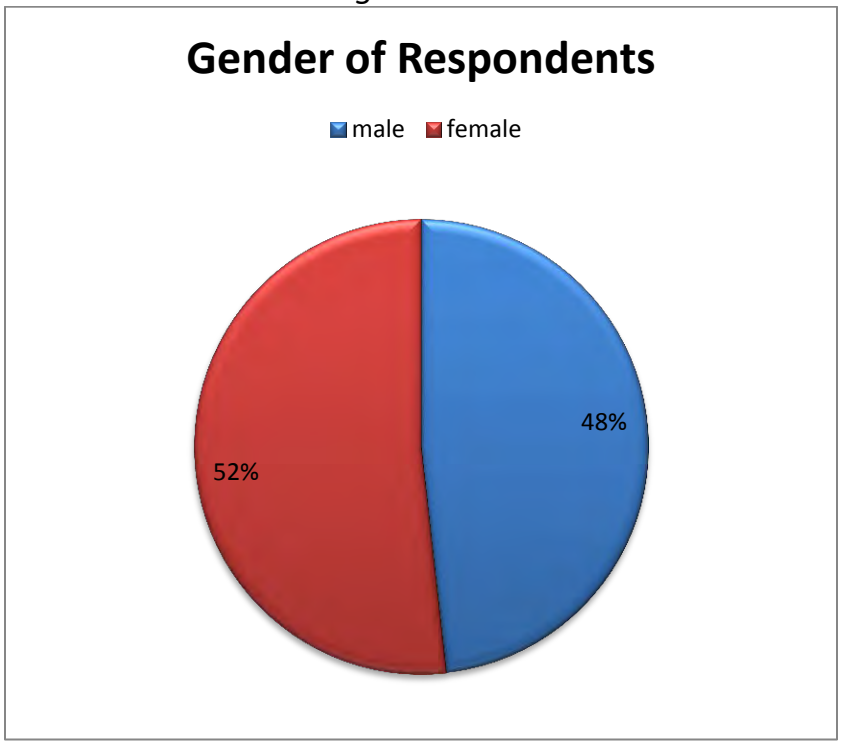
Have you ever cancelled or cutback on cable TV services?



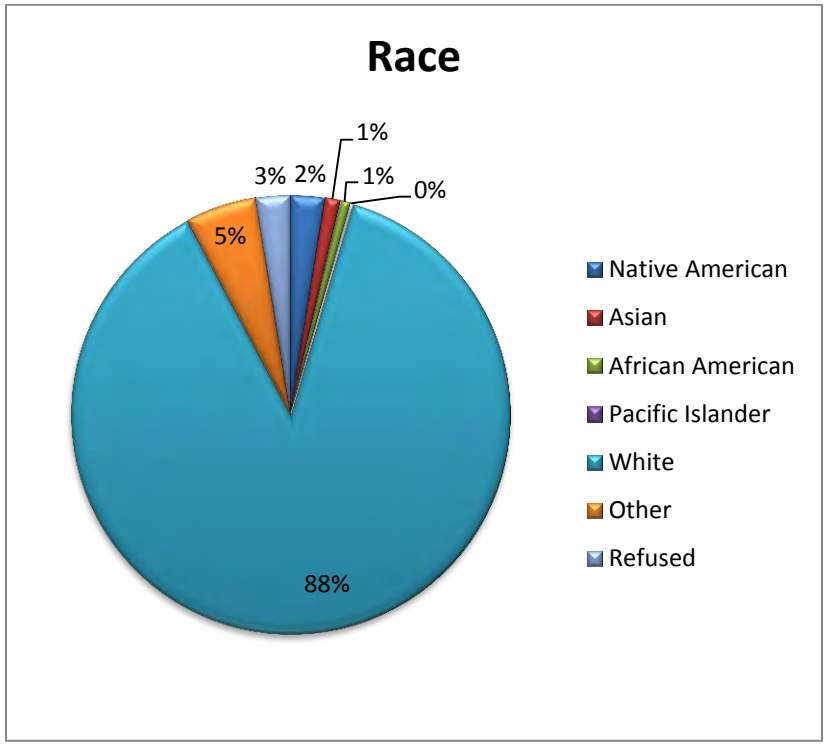
Non-Rural Counties Results

VII. Demographics

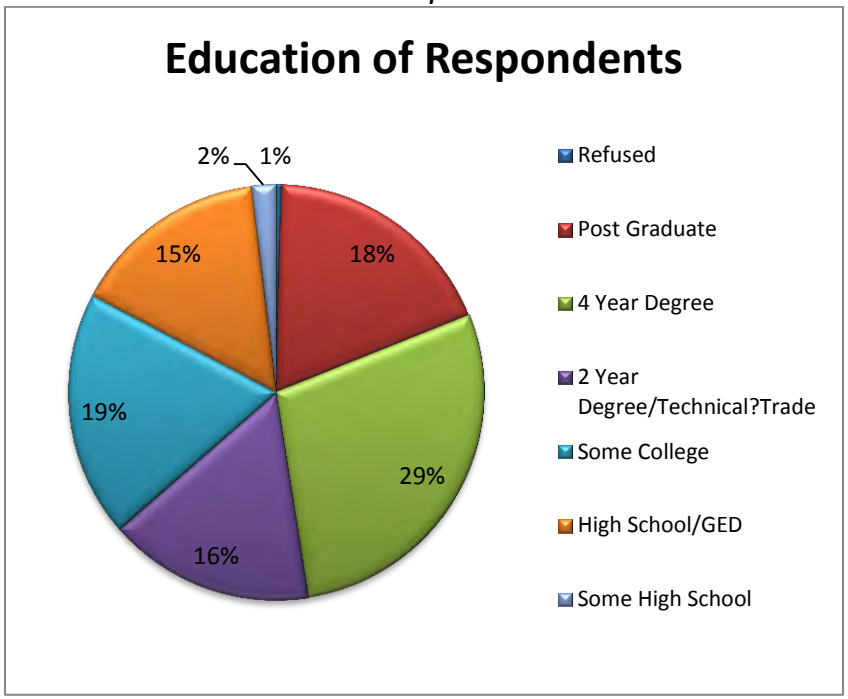
Survey participants were asked to disclose their gender.



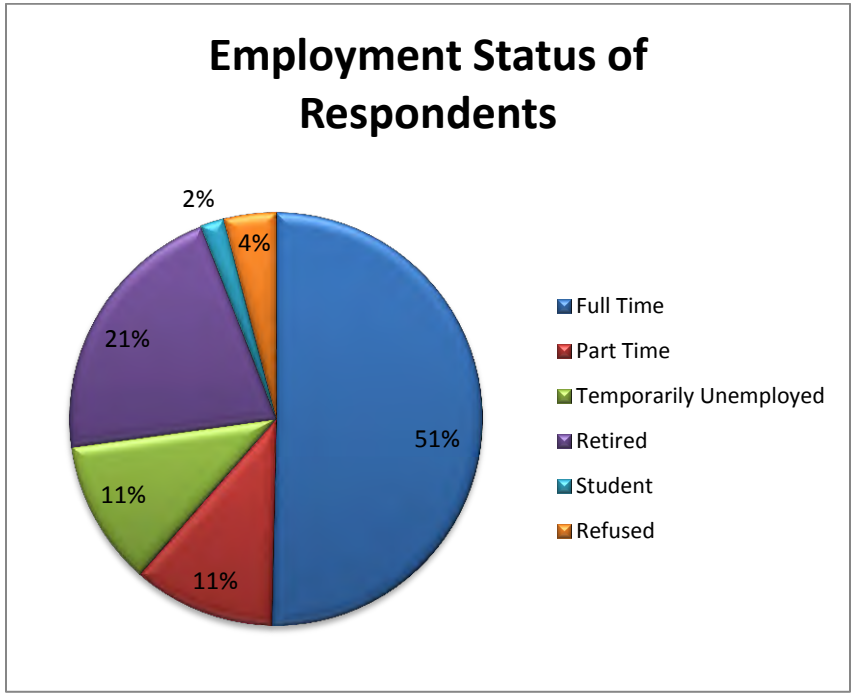
What is your race? You can choose more than one



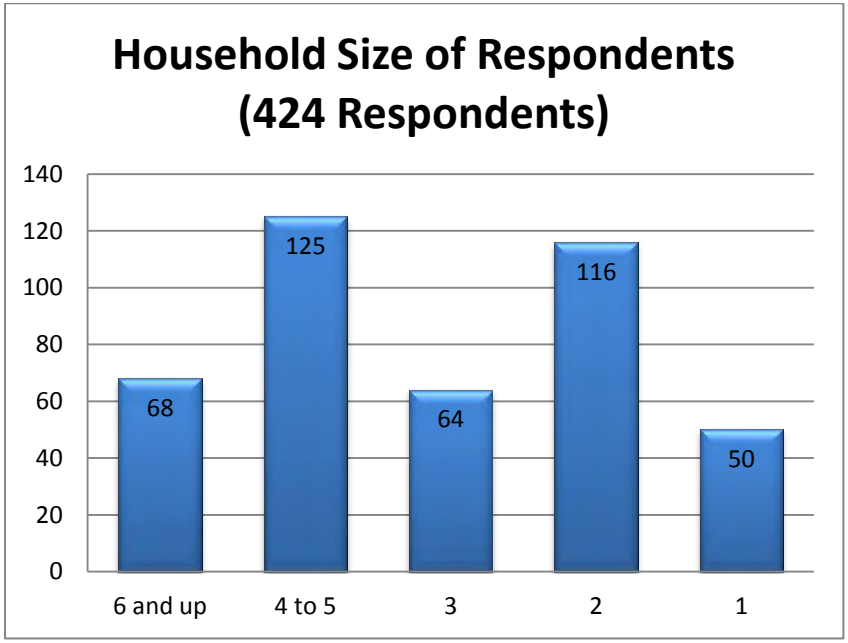
What is the highest level of formal education you have completed?



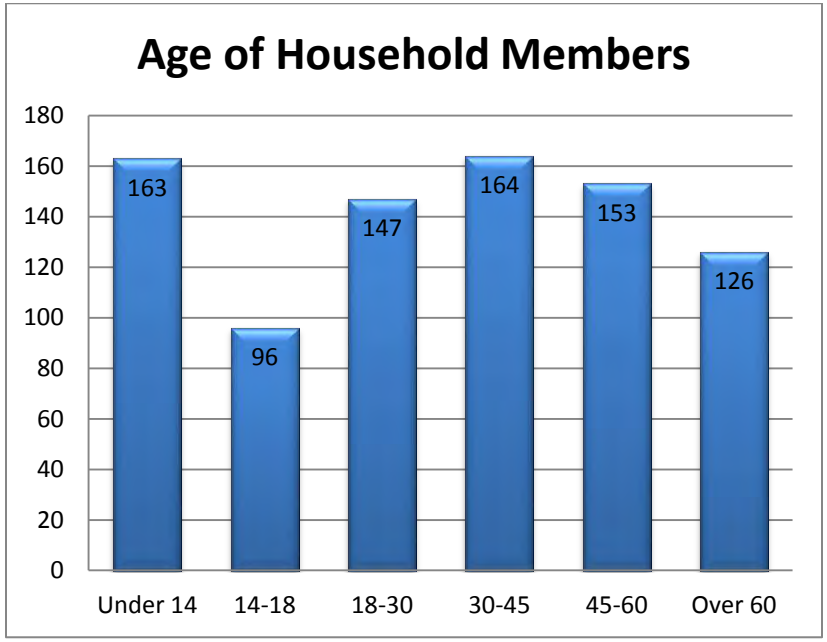
How would you describe your current employment status?



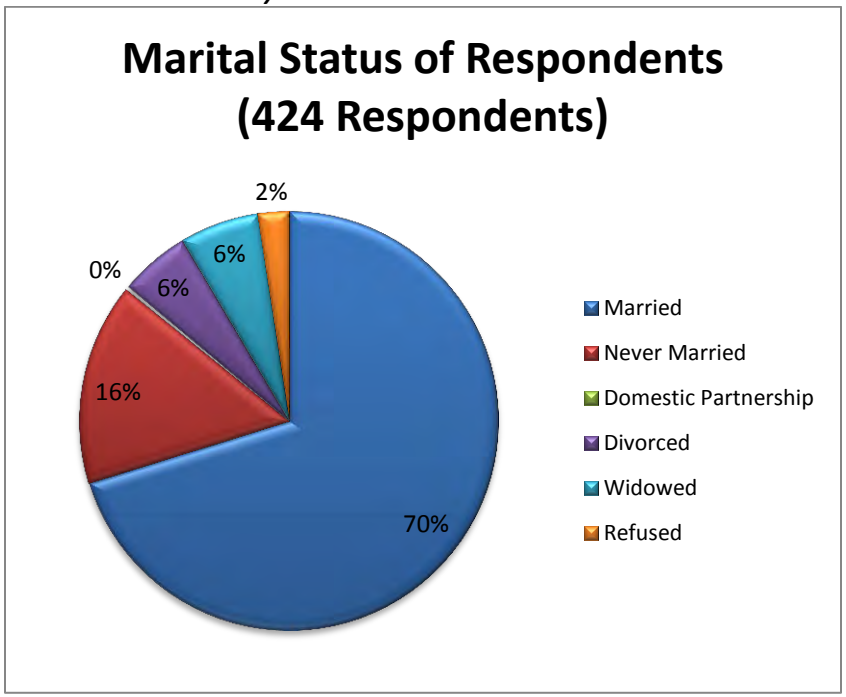
How many individuals are currently living or staying in your household?



Are any members of your household:

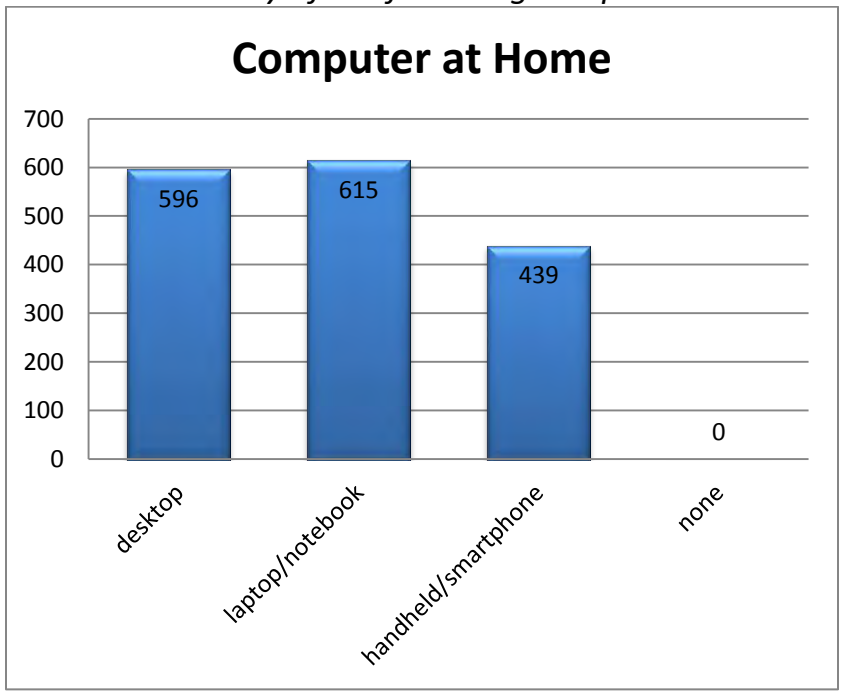


What is your current marital status?

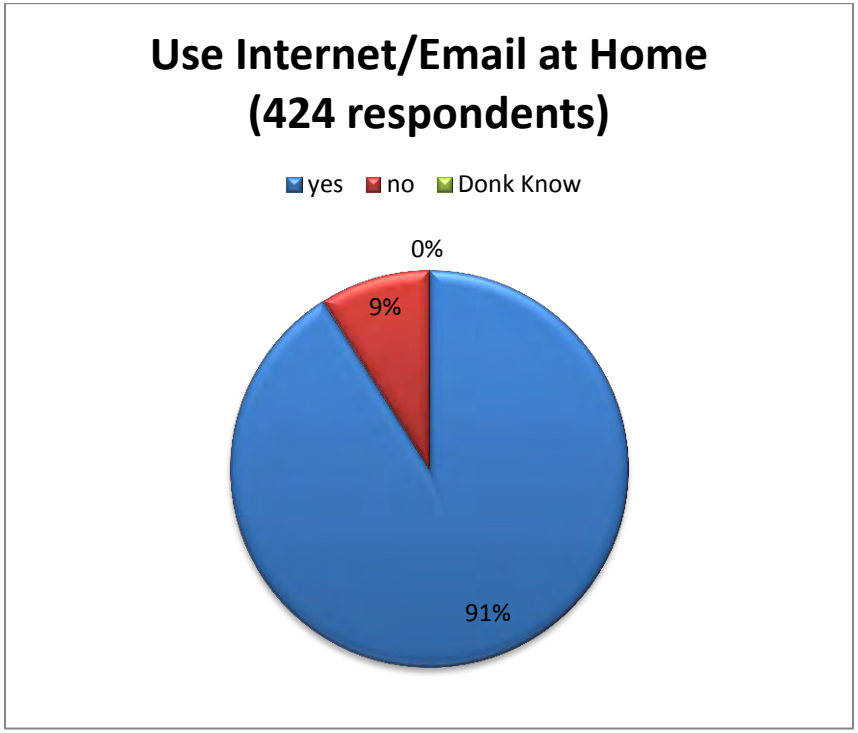


VIII. Access

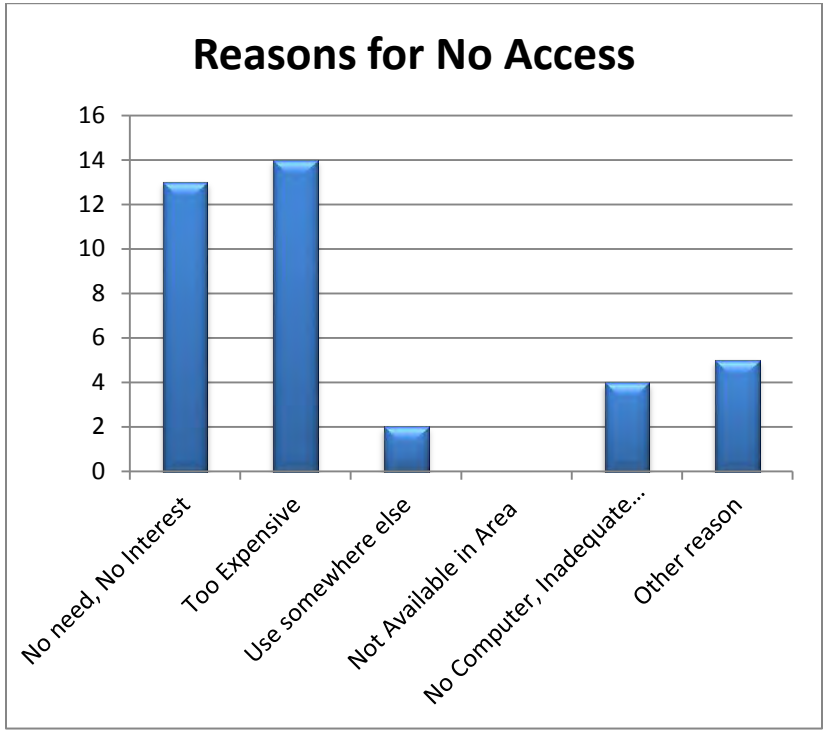
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

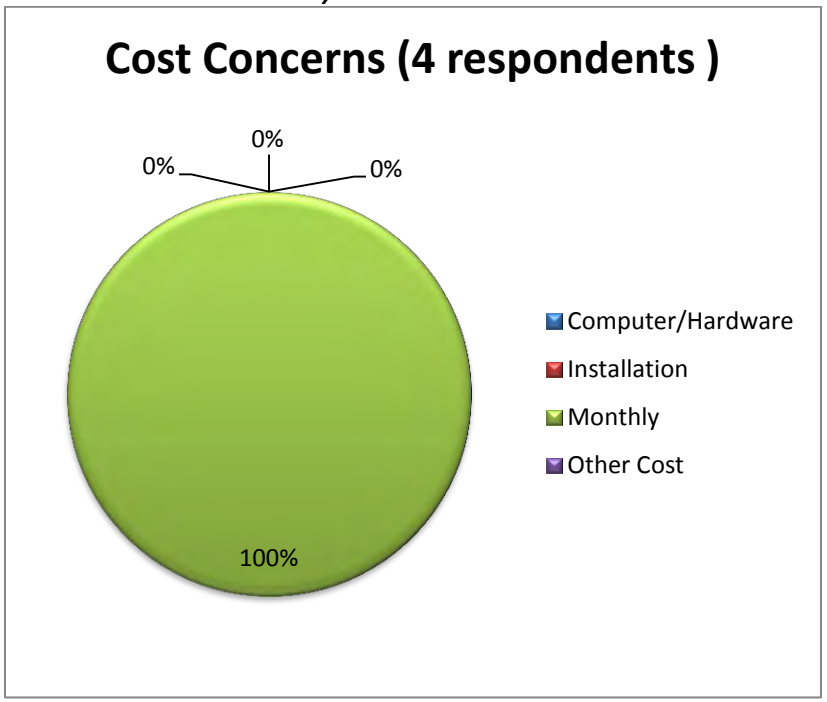


What is the main reason you do not have internet access in your home?

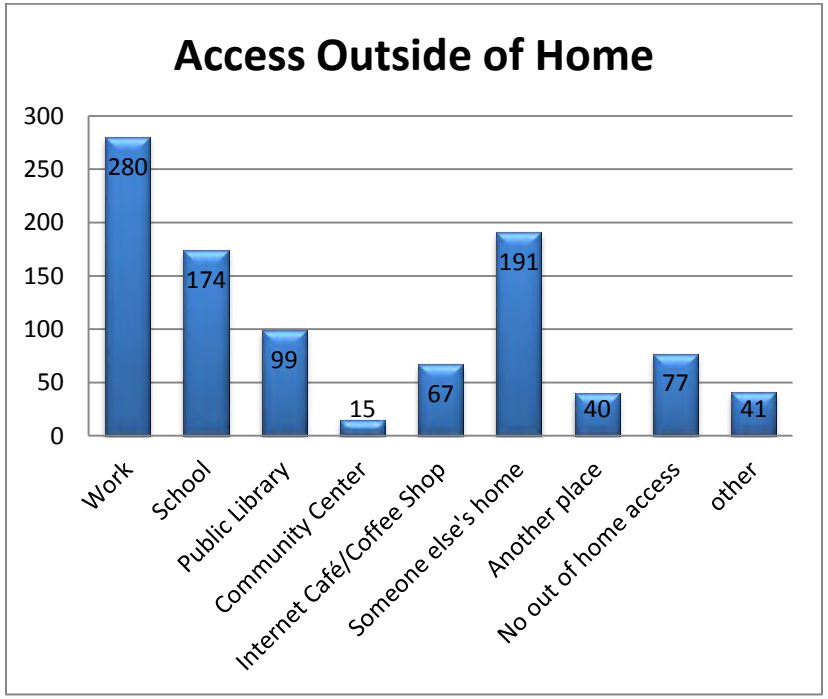


Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?

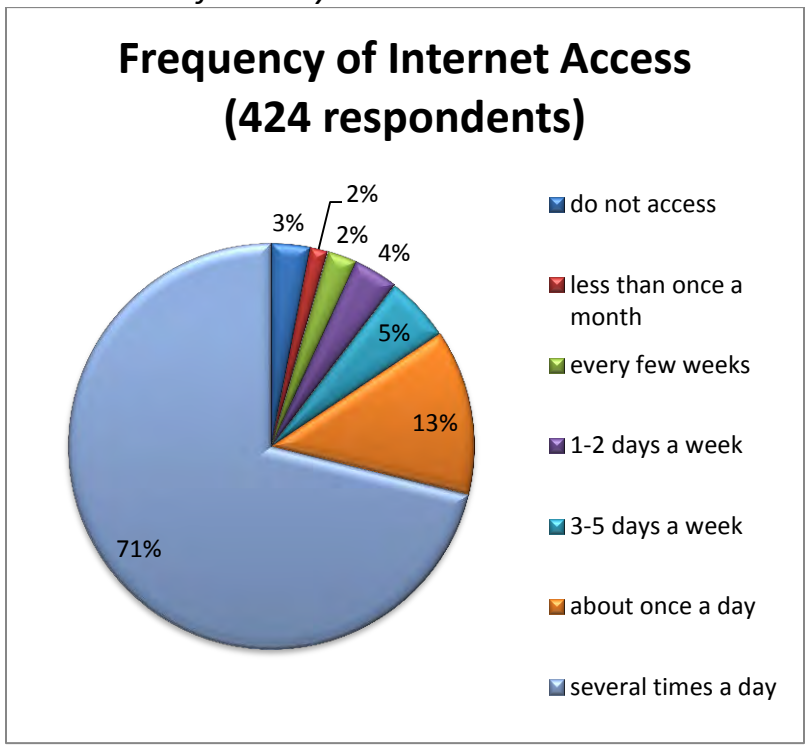


Do you or any member of your household access the internet at any of the following locations outside the home?

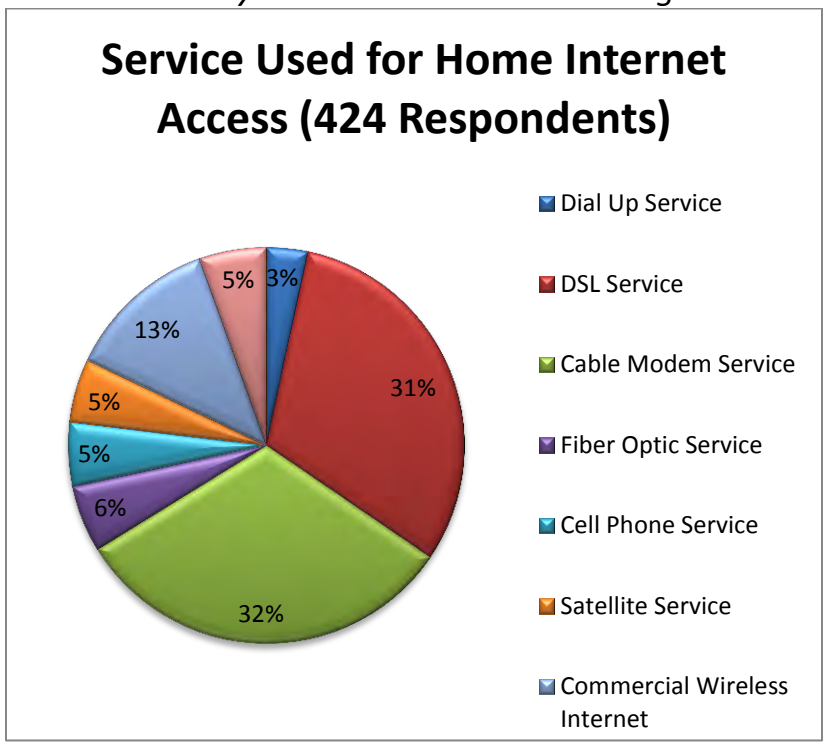


IX. Use and Service

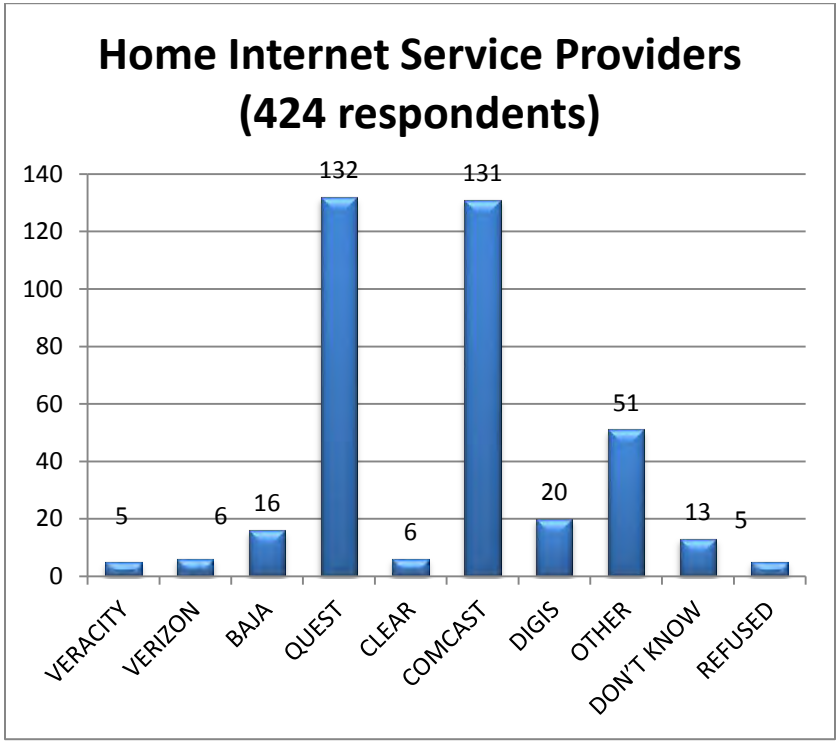
About how often do you access the internet?



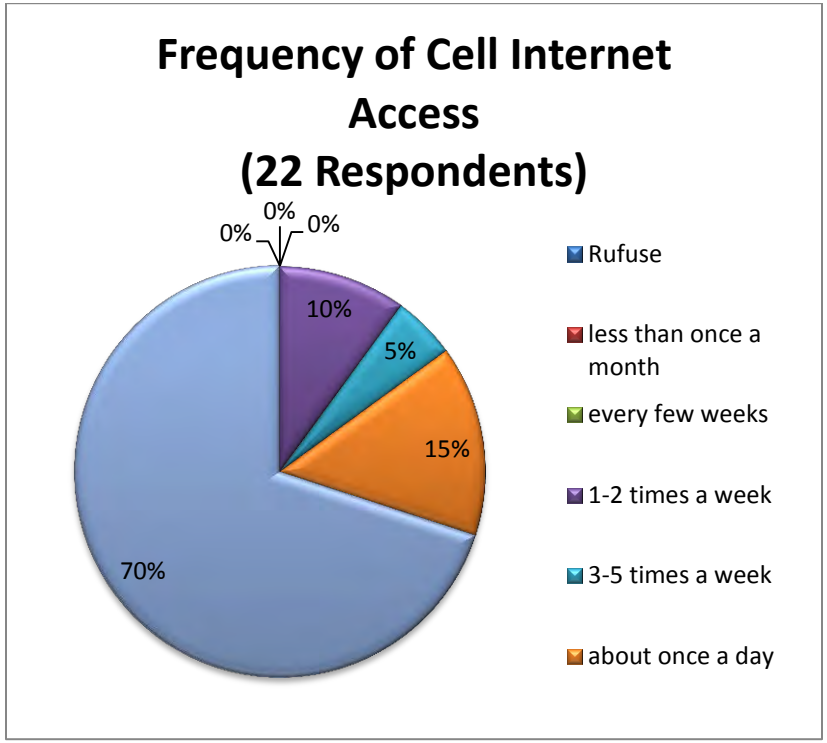
At home do you access the Internet using :



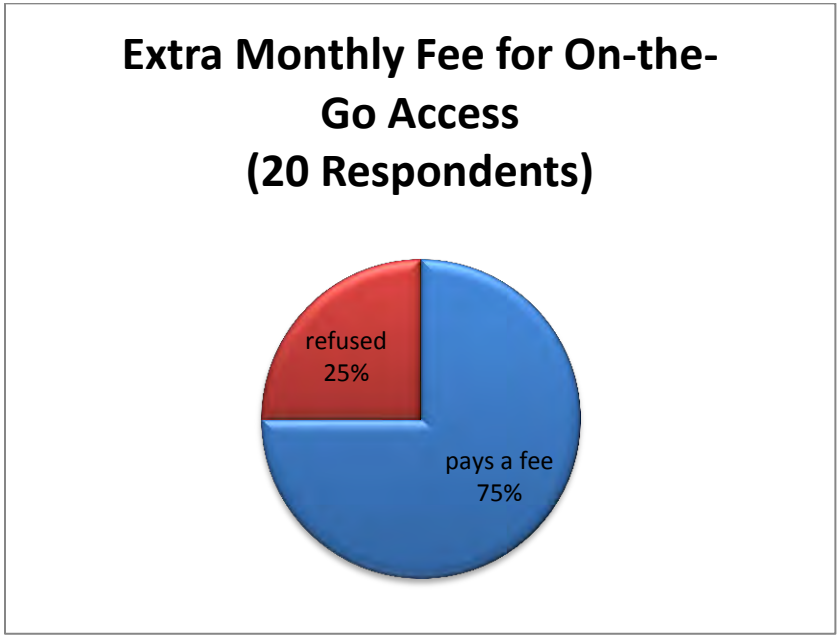
Thinking about your internet service at home, which company provides that service?



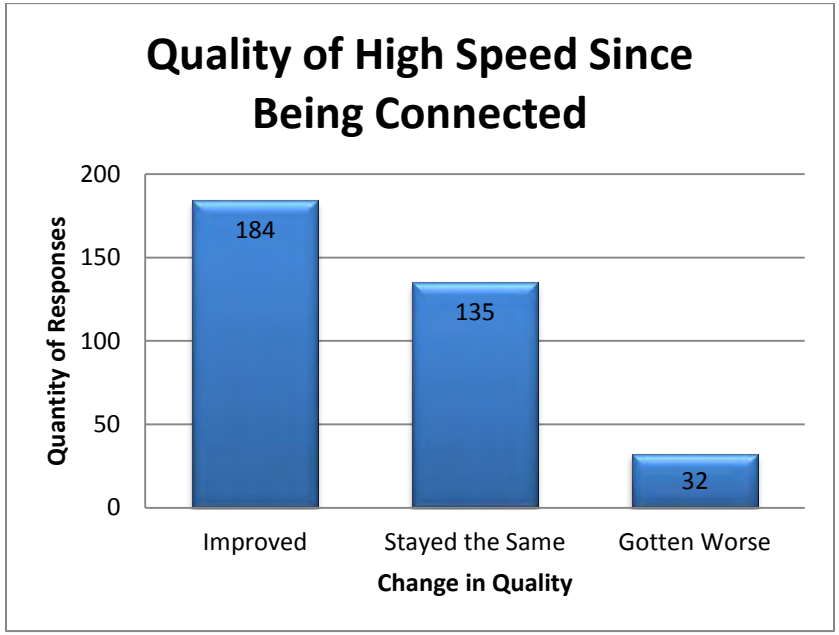
How often do you access the internet from your cell phone?



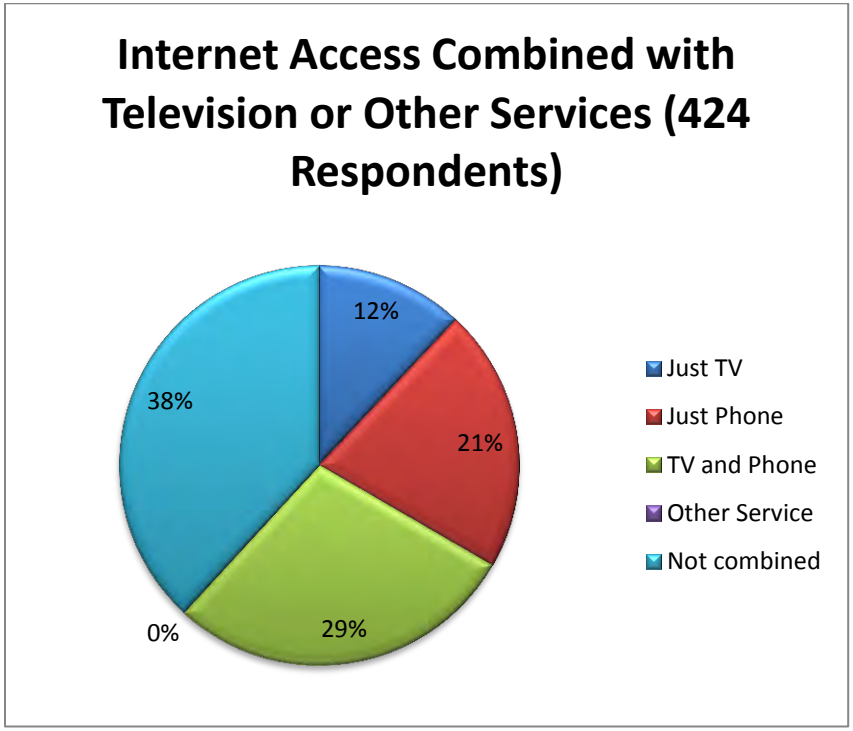
Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



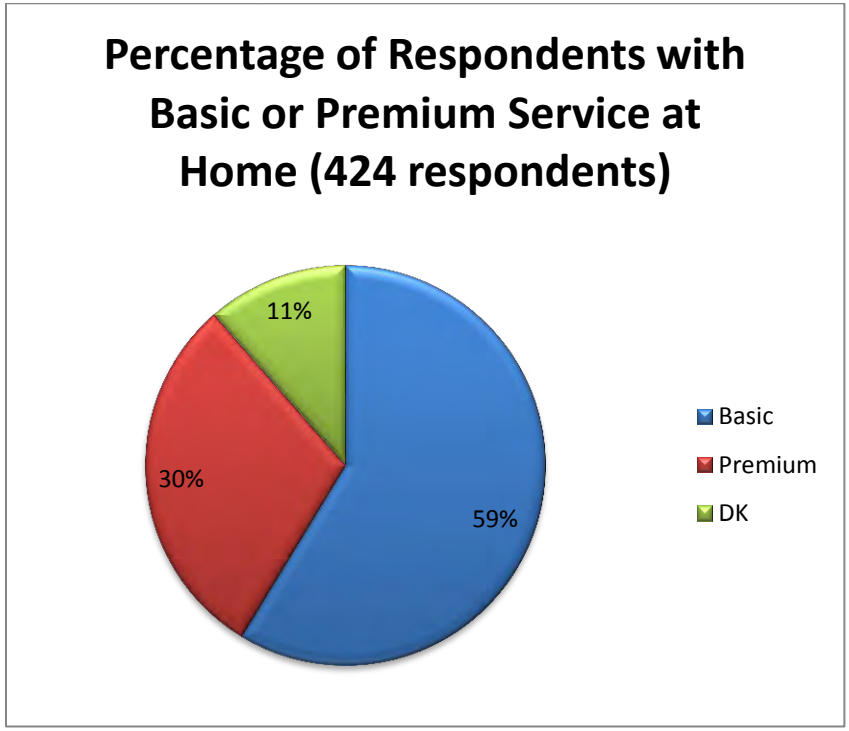
Since you first got high speed internet at home would you say the quality of your high speed connection has:



Is your internet access combined with television or other services?

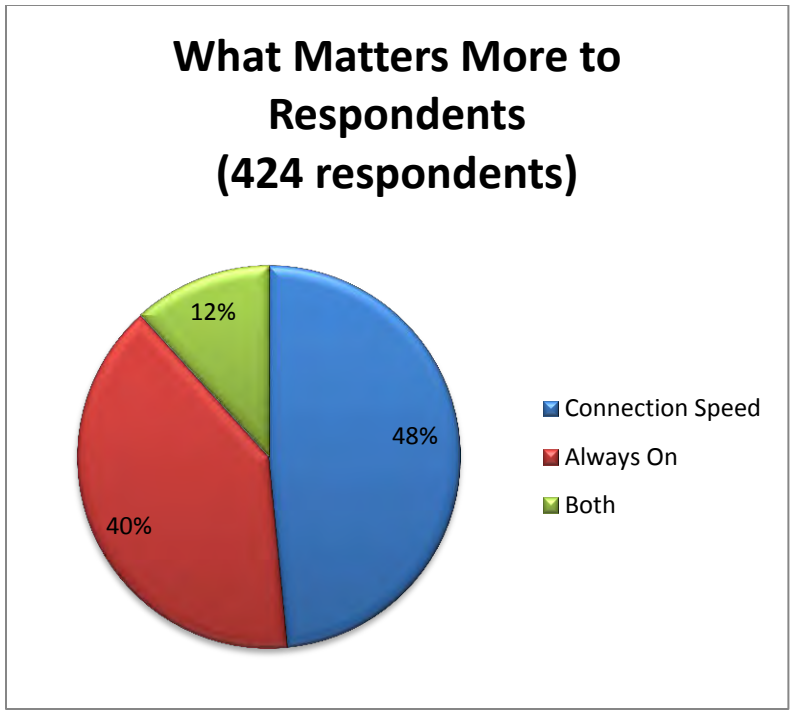


Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?

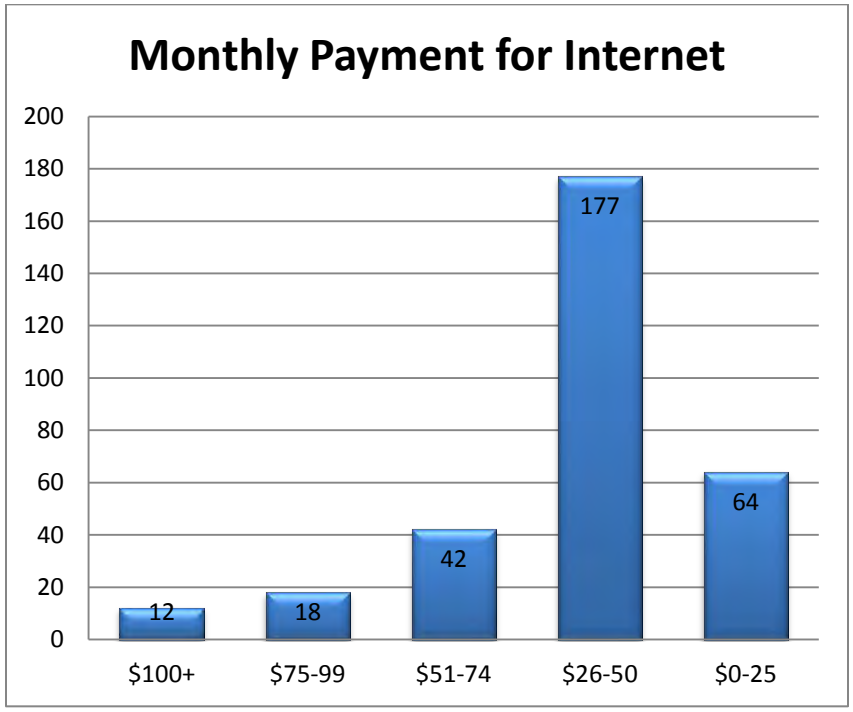


X. Price and Preference

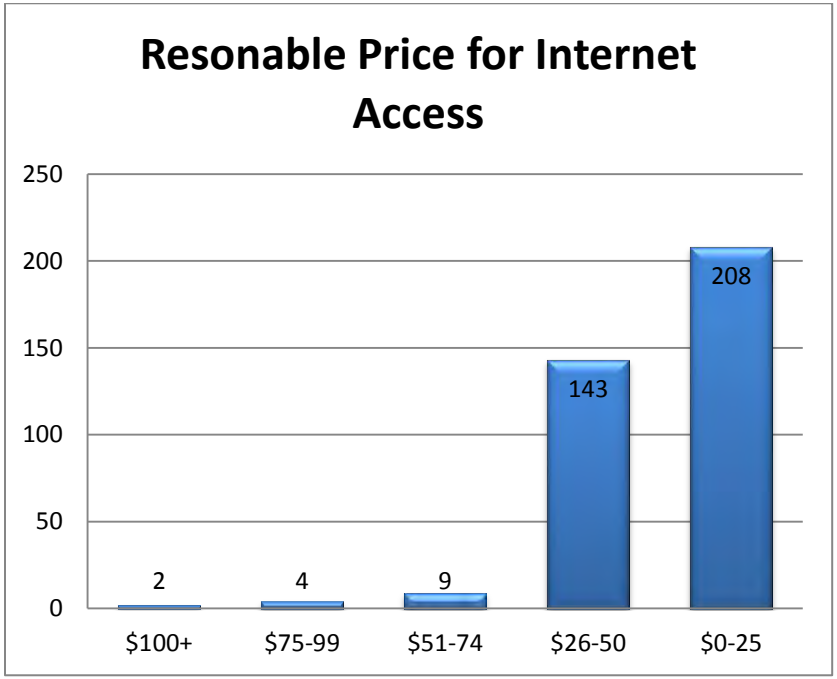
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



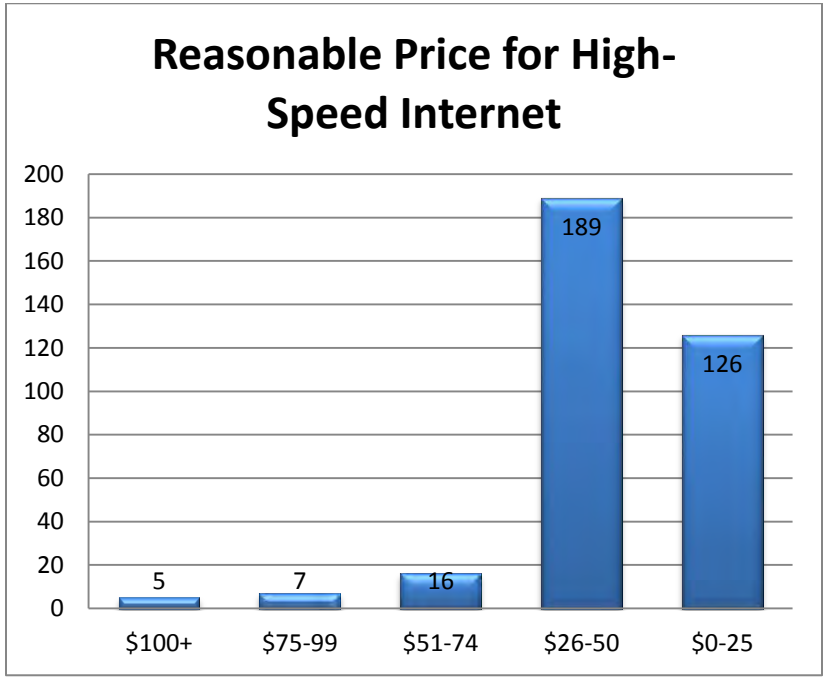
To the nearest dollar, how much per month do you pay for internet service?



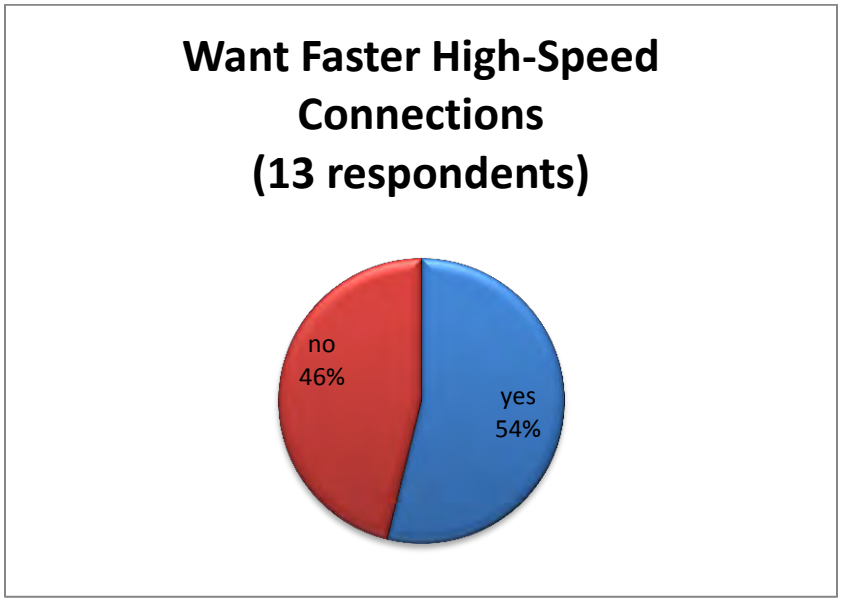
What do you think a reasonable price for internet service would be?



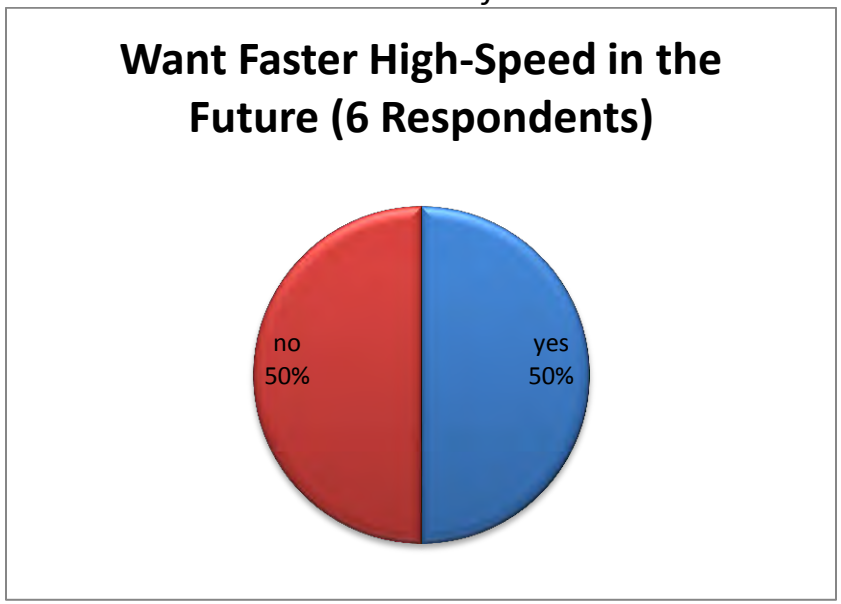
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

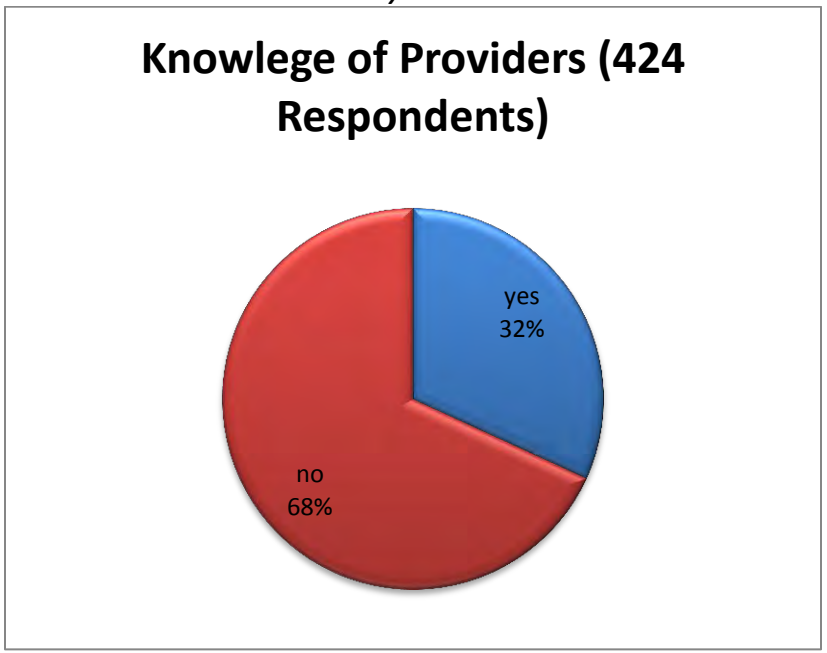


Do you think you would like a faster connection sometime in the future?

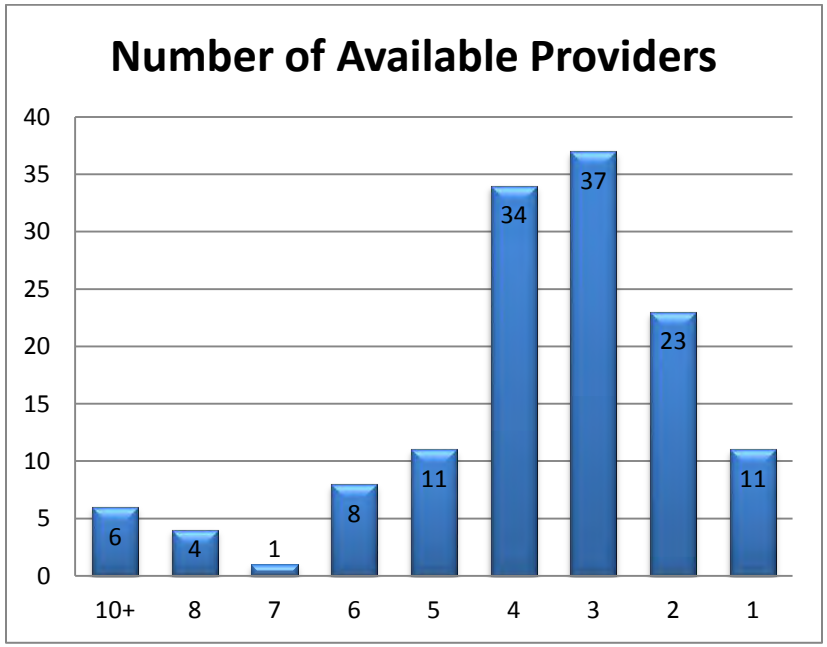


XI. Consumer Perceptions

Do you know how many providers of high-speed internet service are in your area?



How many providers are available?



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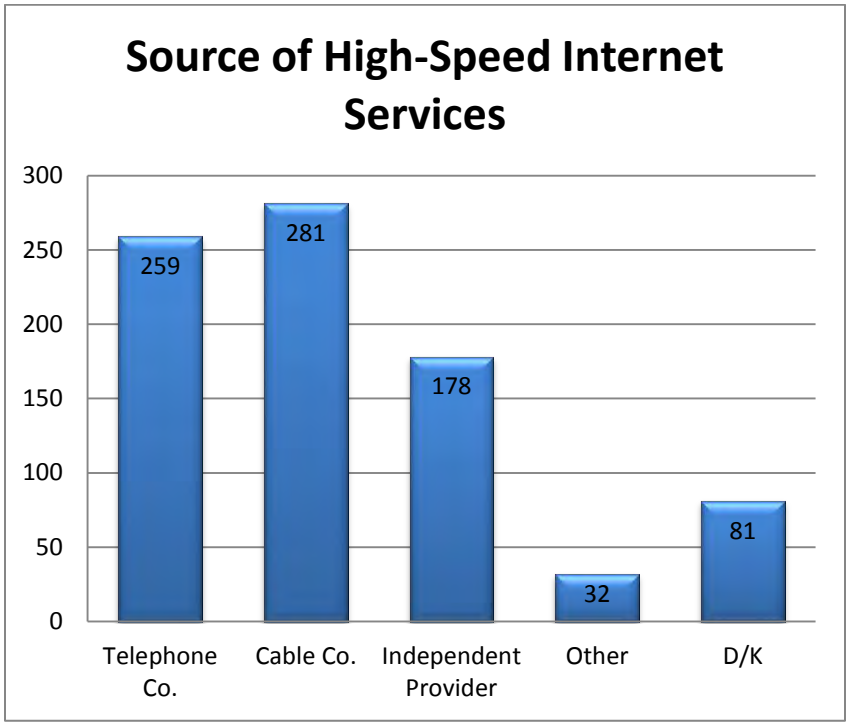
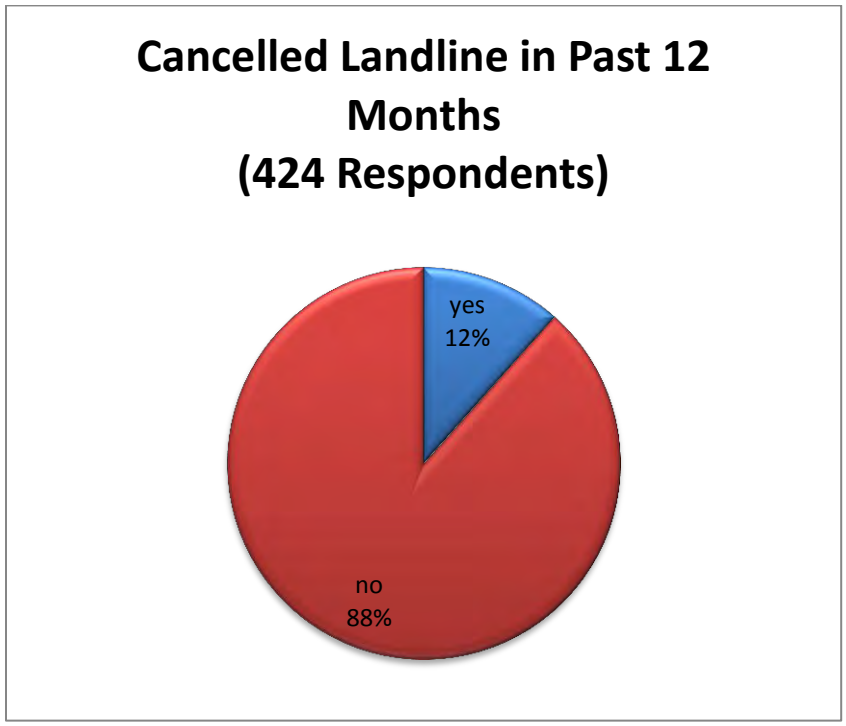
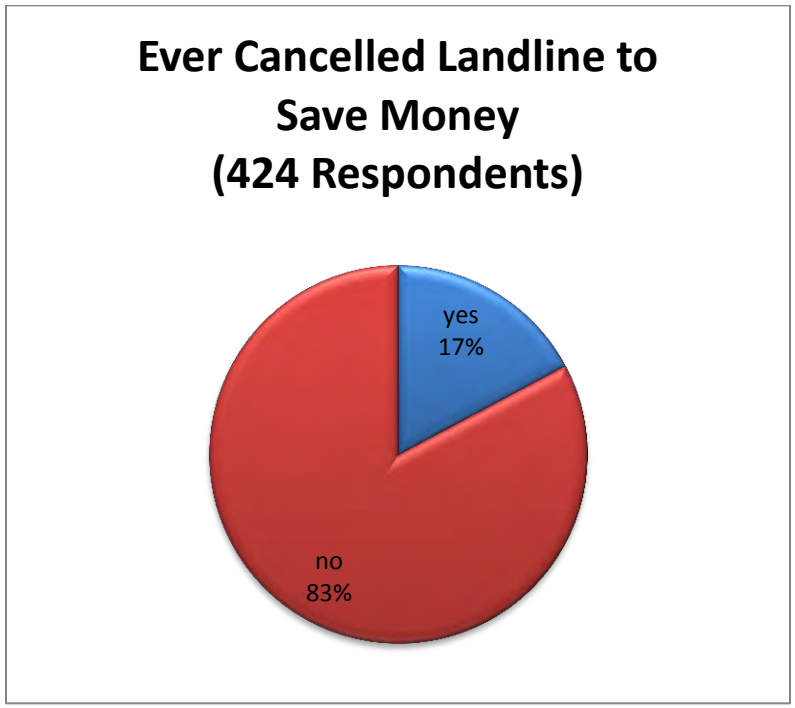


XII. Respondents' Purchasing Behavior

Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



Have you ever cancelled a landline phone at home to save money?



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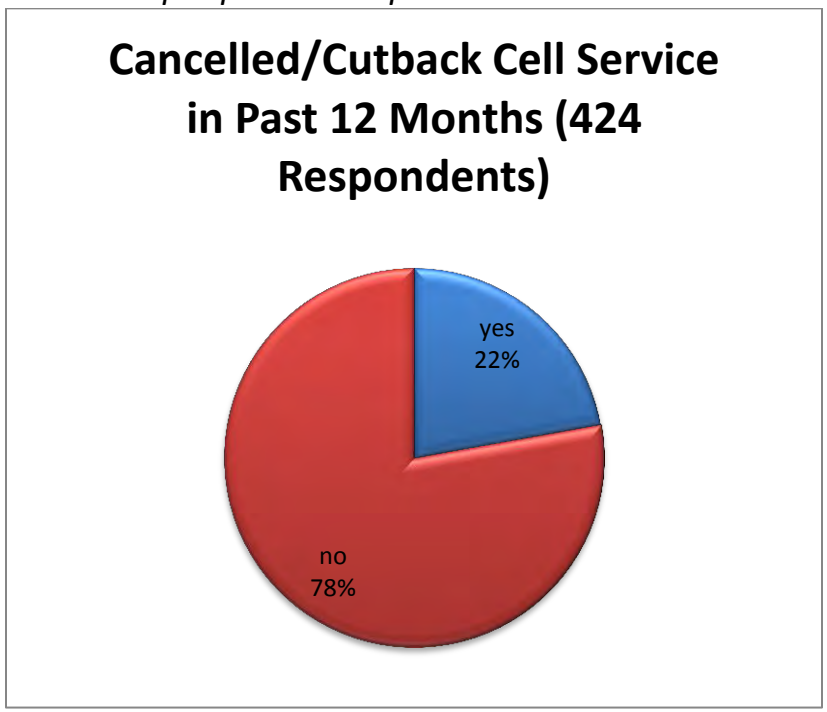
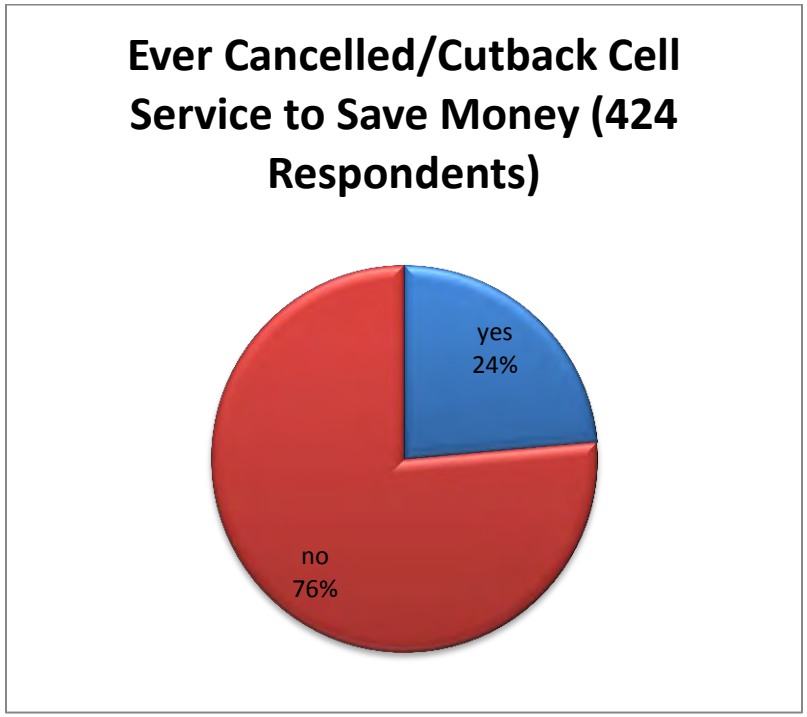
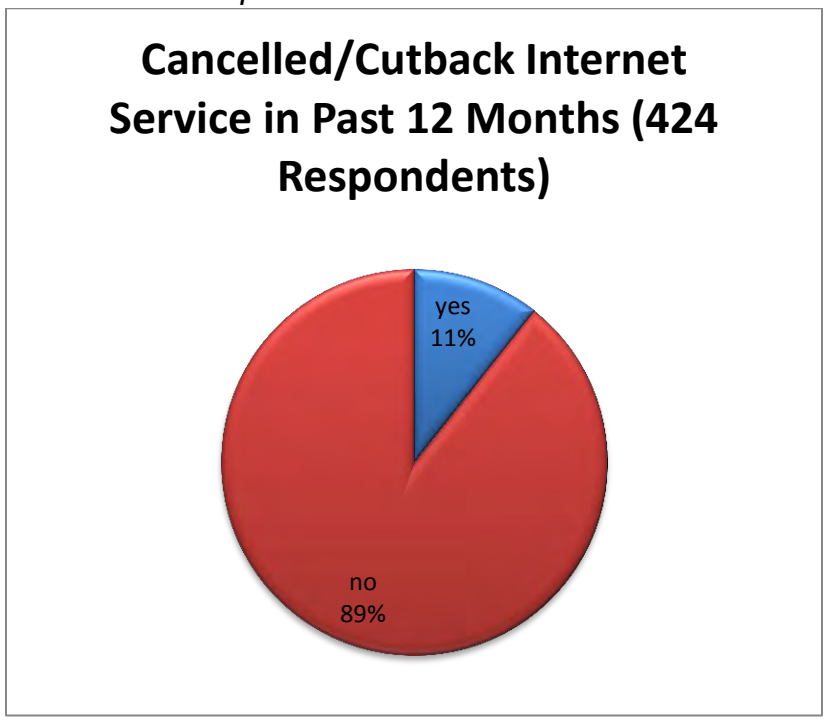
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



Have you ever cancelled your cell phone service or cutback to a cheaper plan?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



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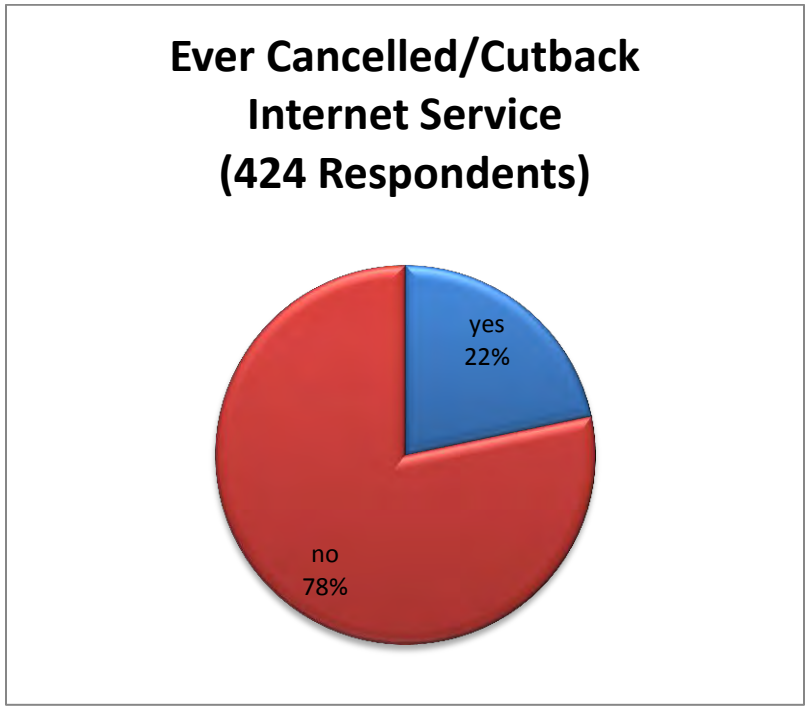
Have you ever cancelled or cutback on your Internet service?



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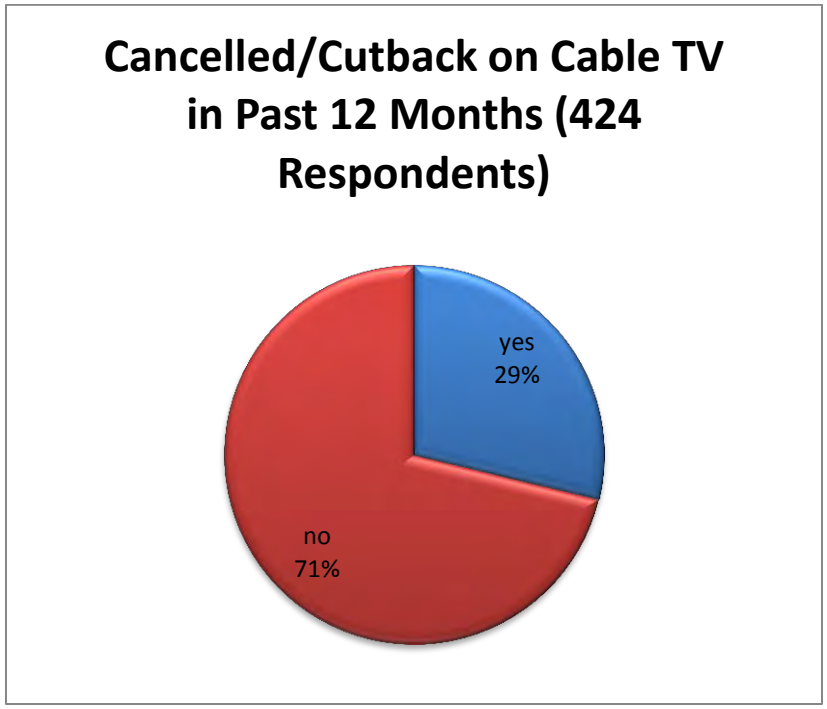
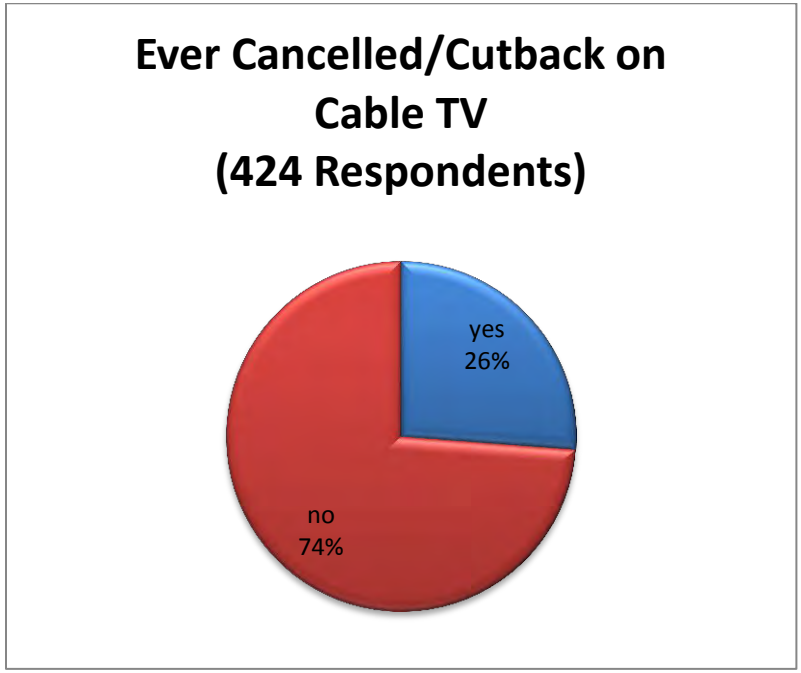


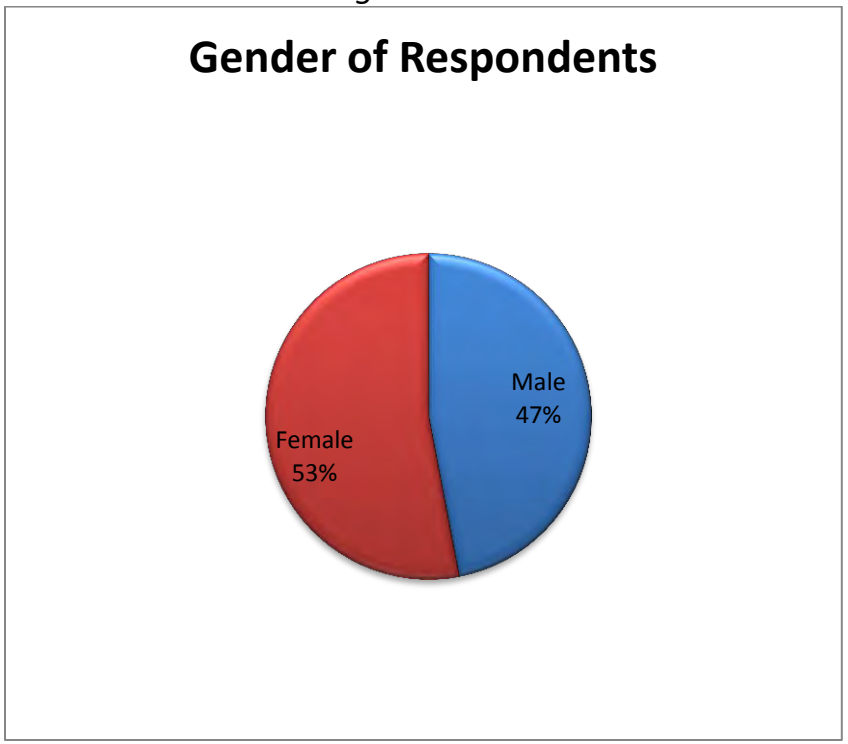
Have you ever cancelled or cutback on cable TV services?



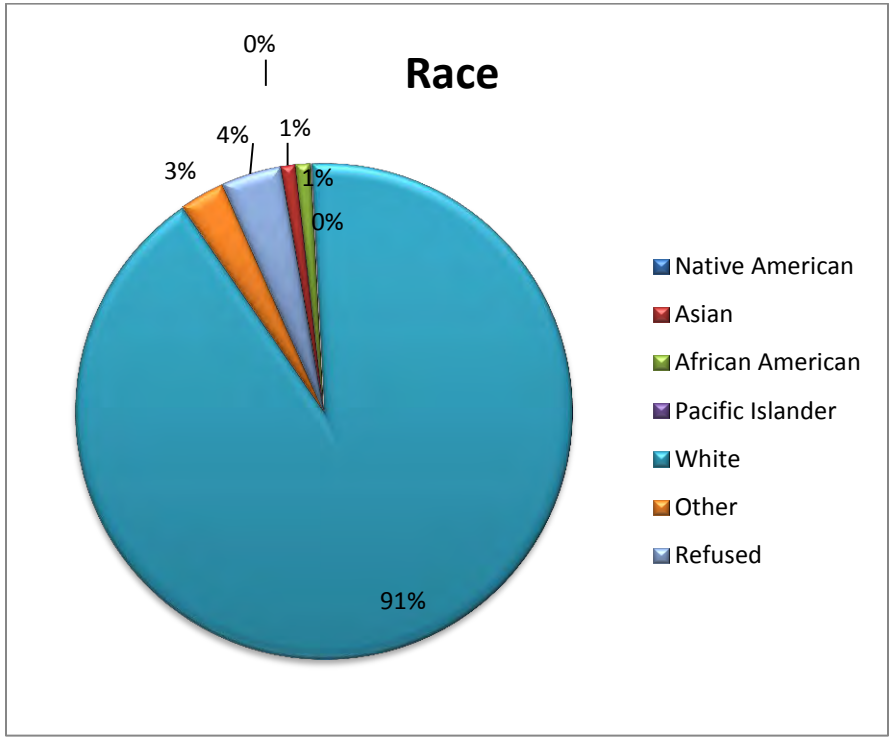
Bear River Region Results

I. Demographics

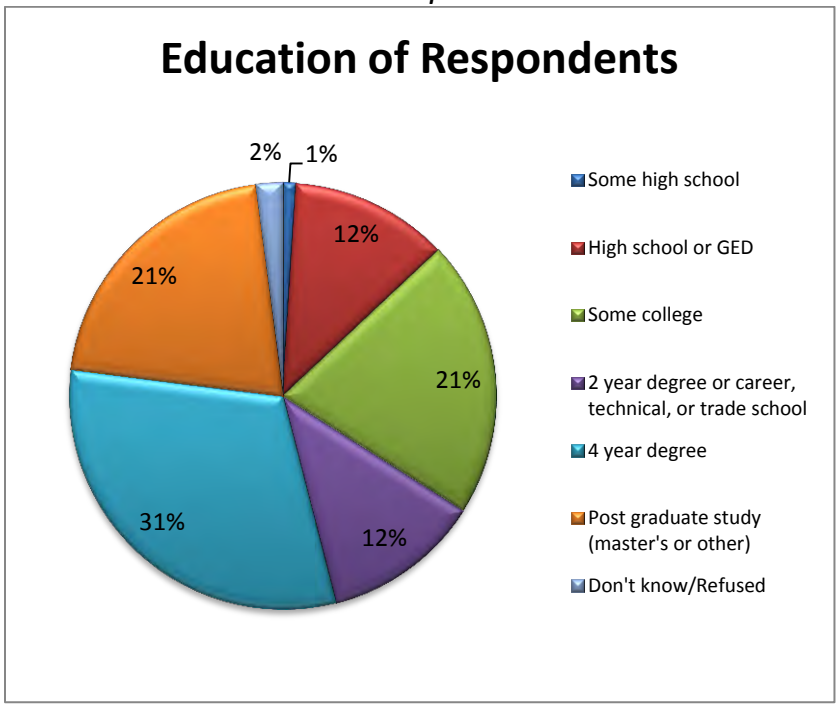
Survey participants were asked to disclose their gender.



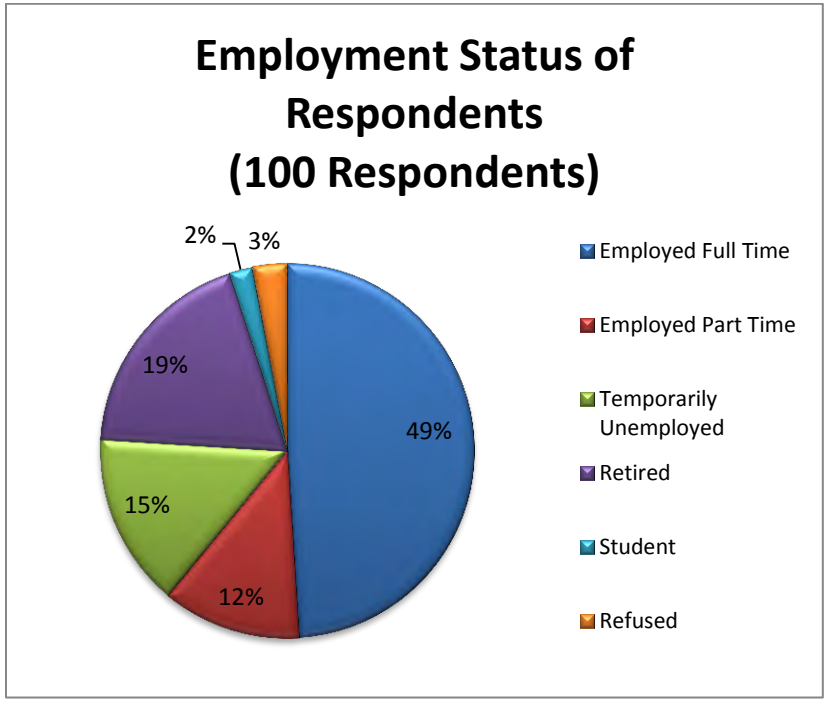
What is your race? You can choose more than one



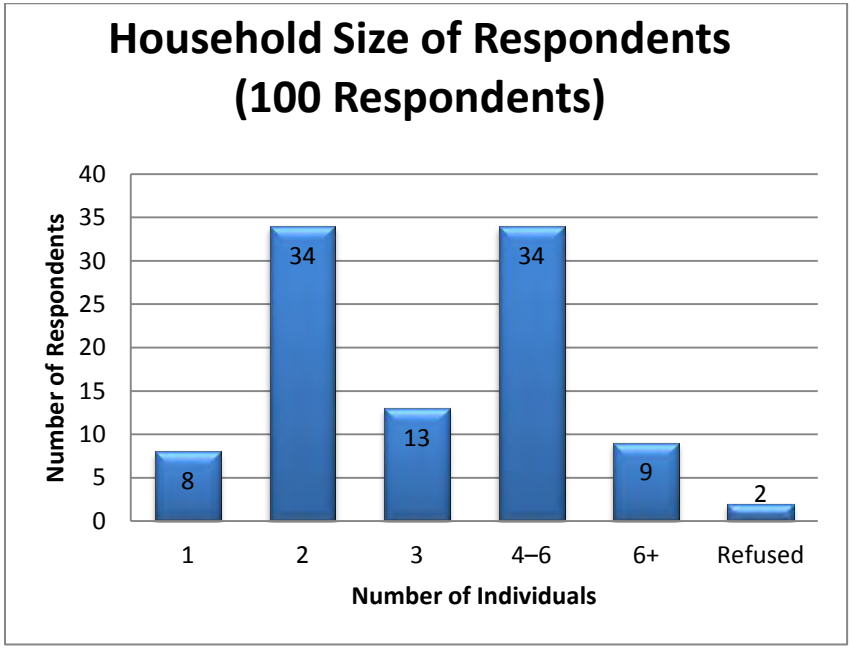
What is the highest level of formal education you have completed?



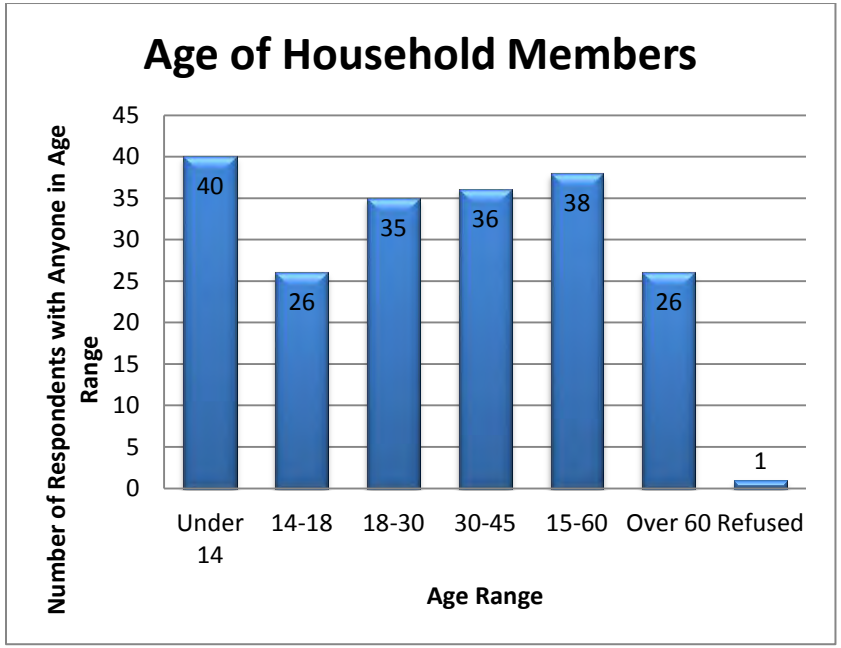
How would you describe your current employment status?



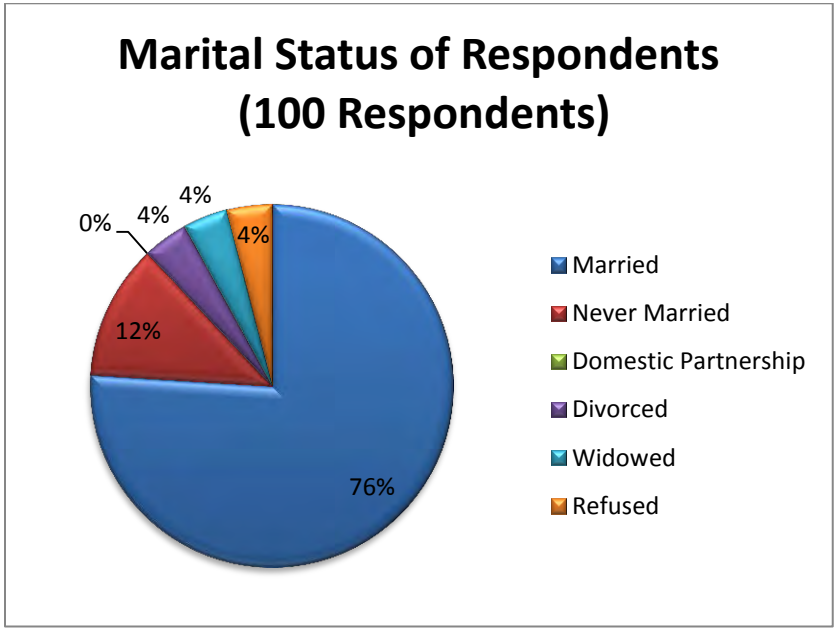
How many individuals are currently living or staying in your household?



Are any members of your household:

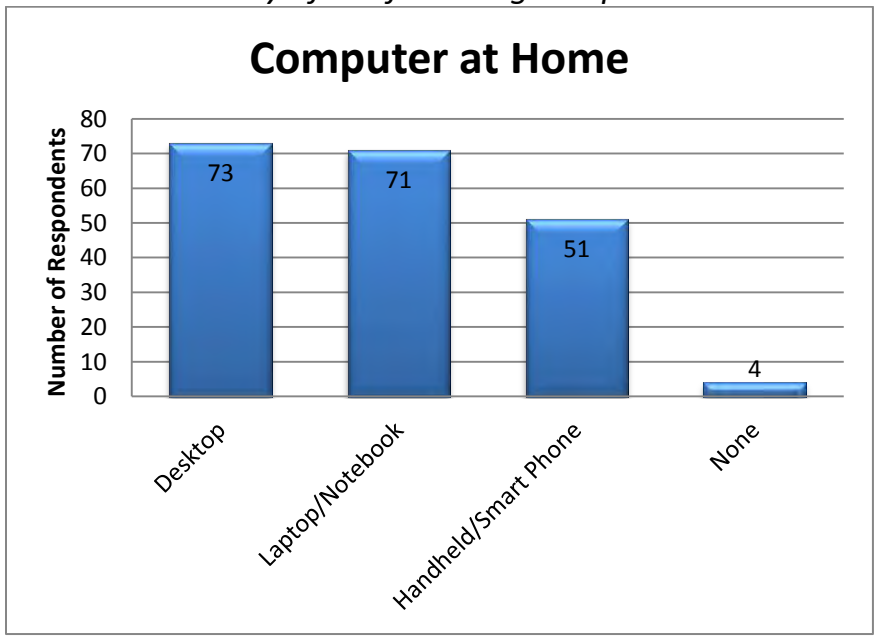


What is your current marital status?

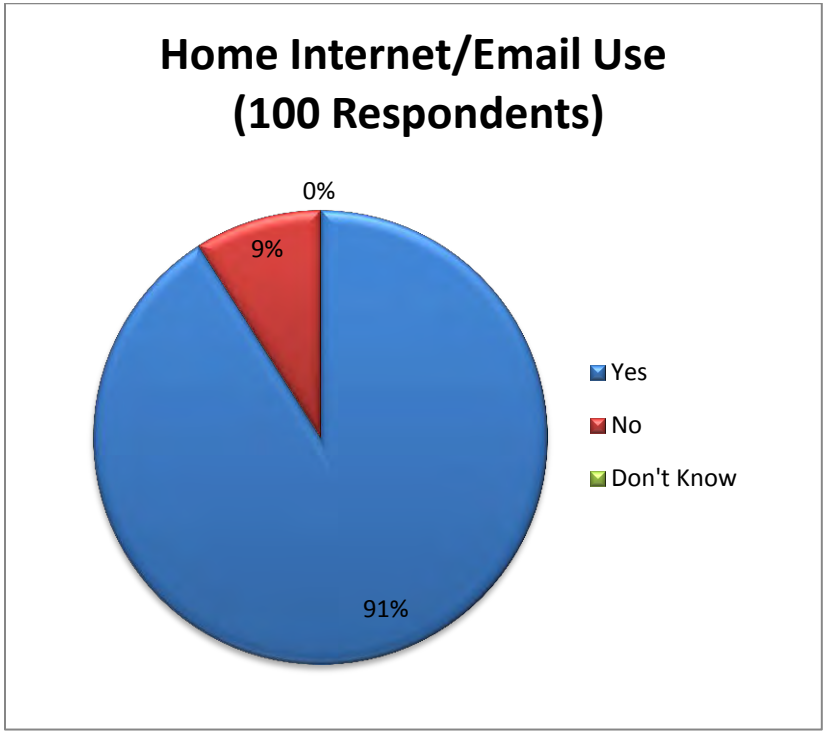


II. Access

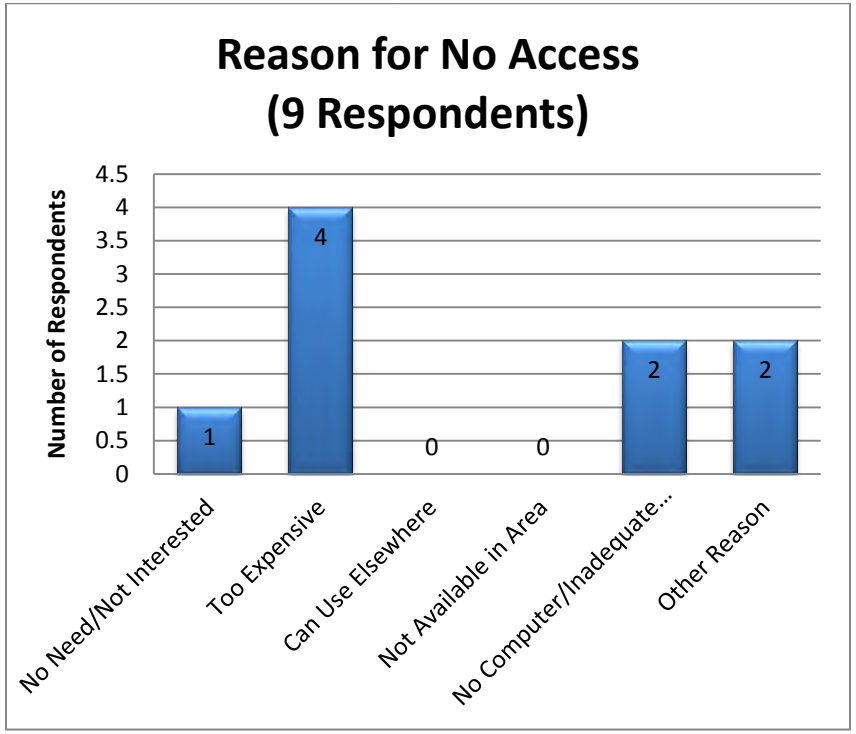
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

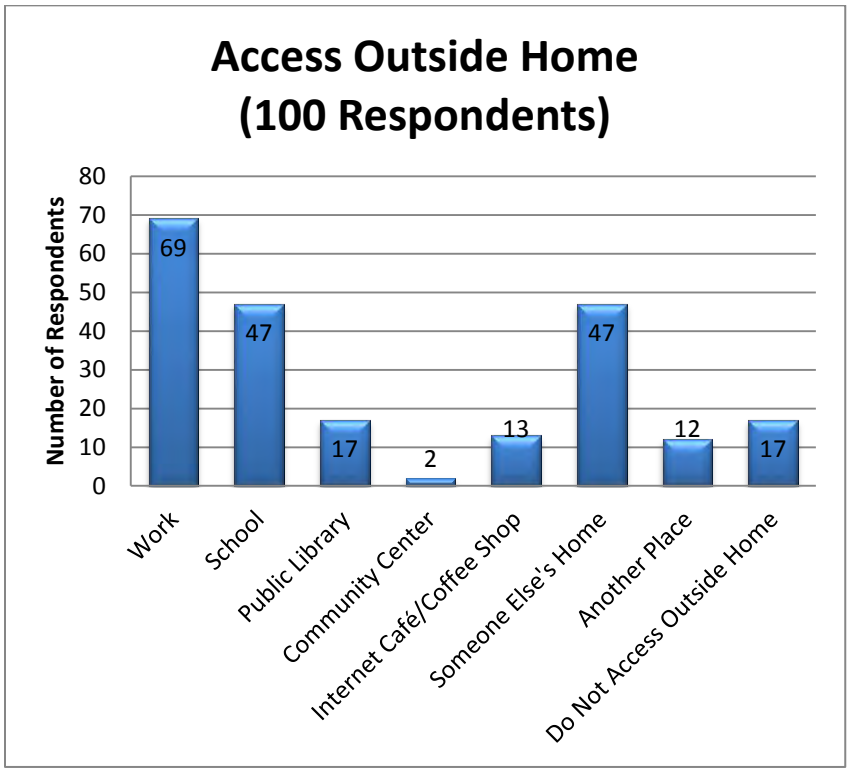


What is the main reason you do not have internet access in your home?

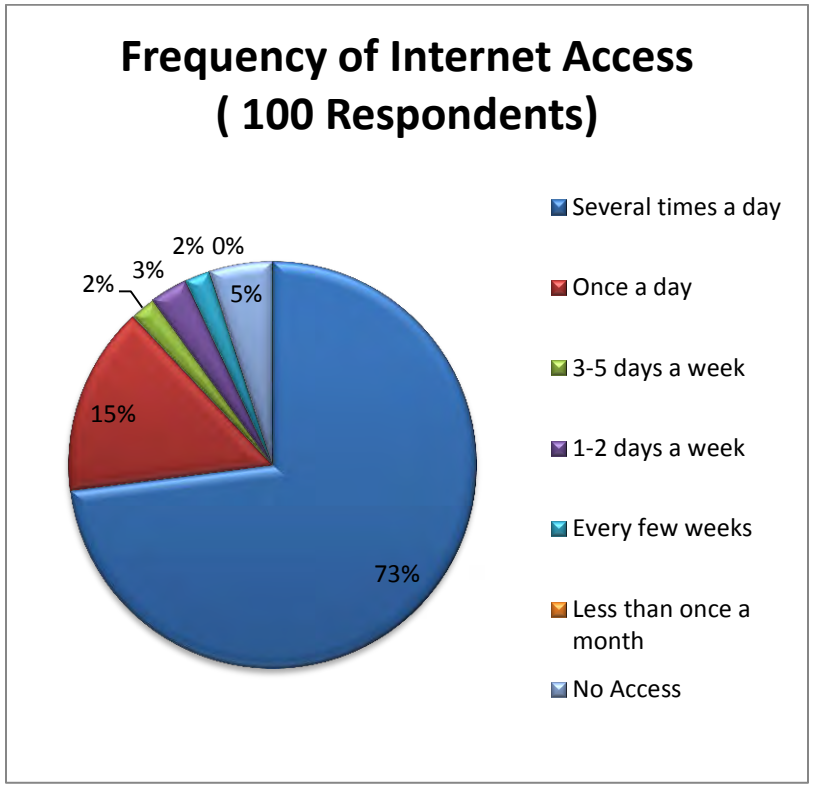


III. Use and Service

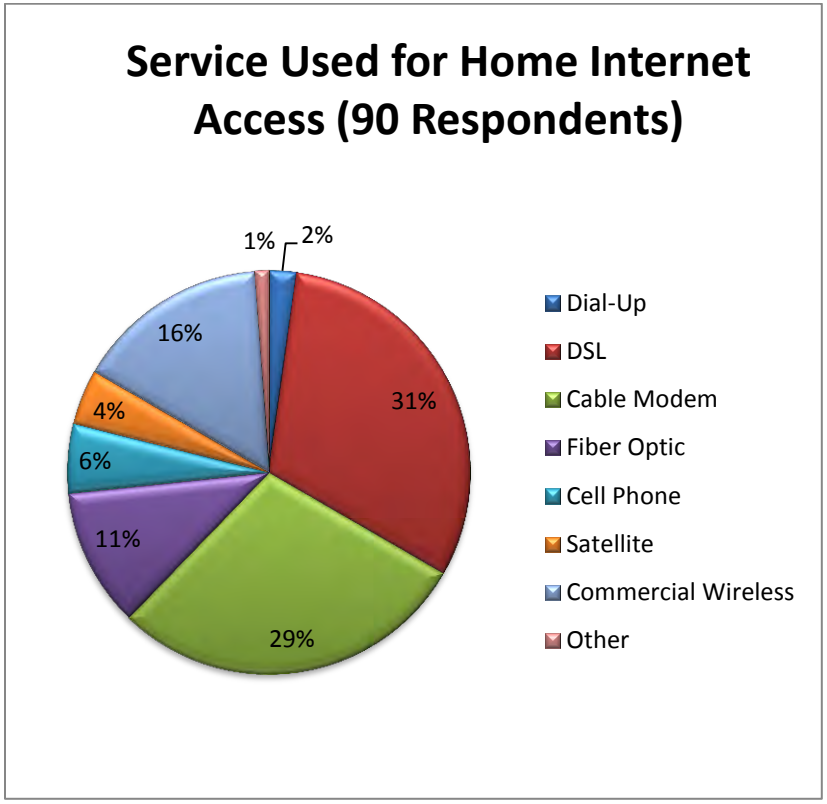
Do you or any member of your household access the internet at any of the following locations outside the home?



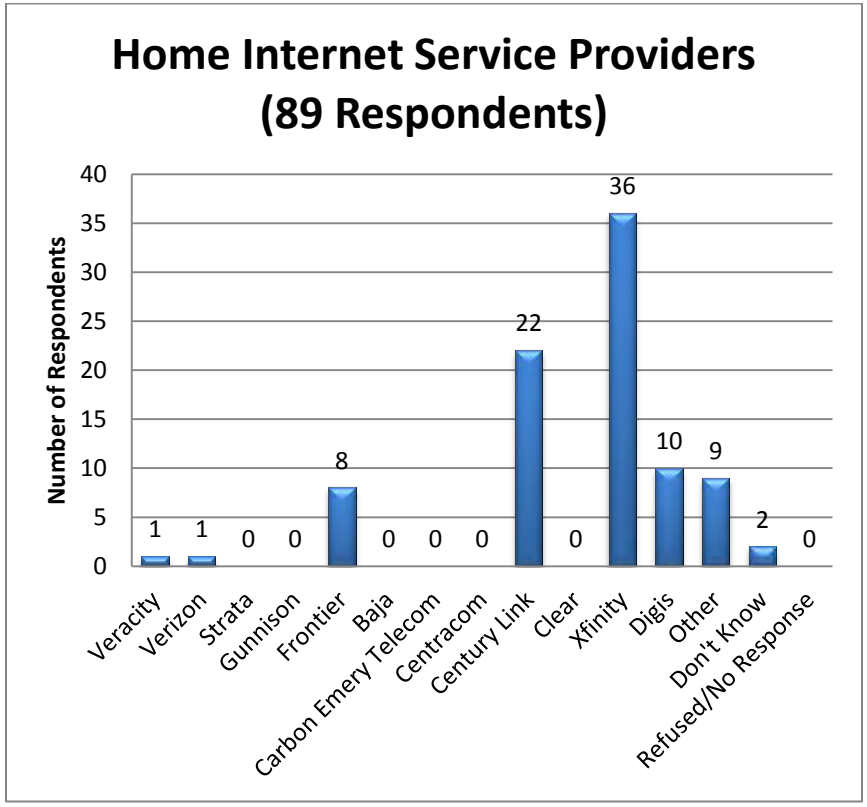
About how often do you access the internet?



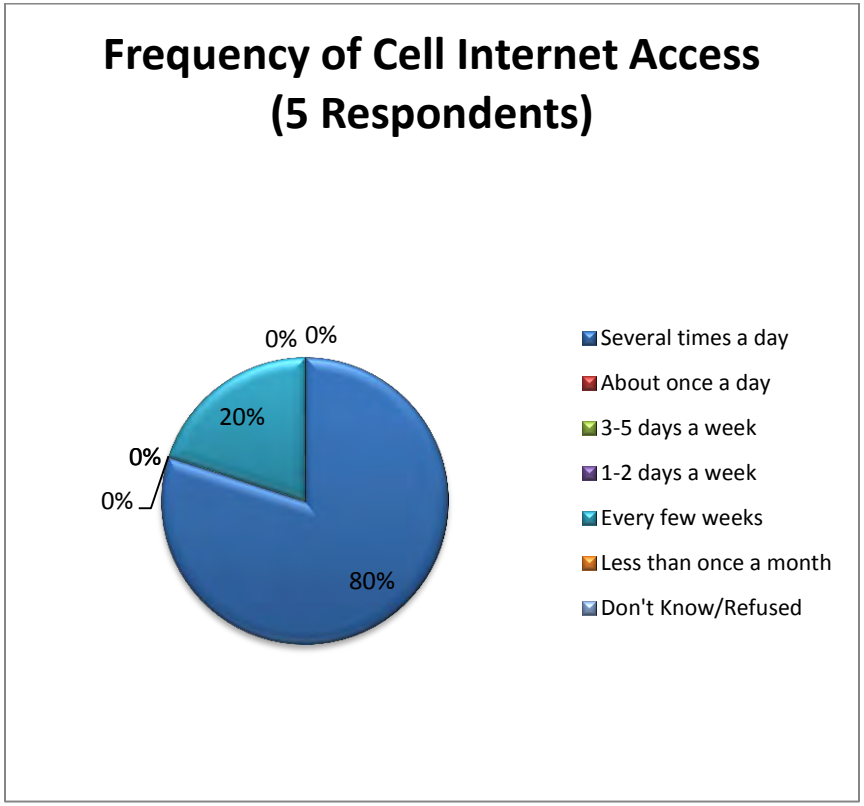
At home do you access the Internet using :



Thinking about your internet service at home, which company provides that service?



How often do you access the internet from your cell phone?



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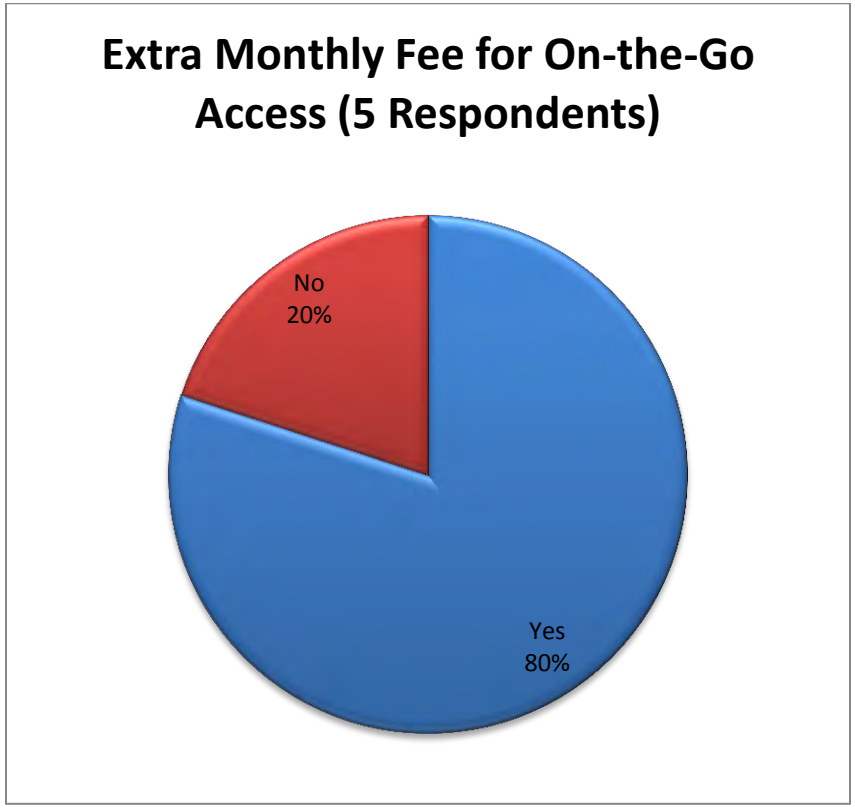
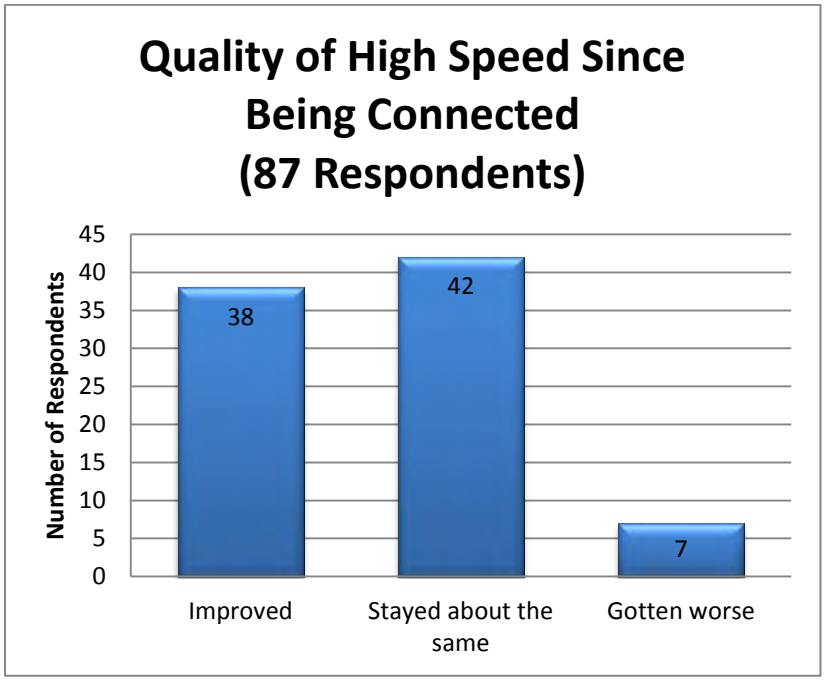
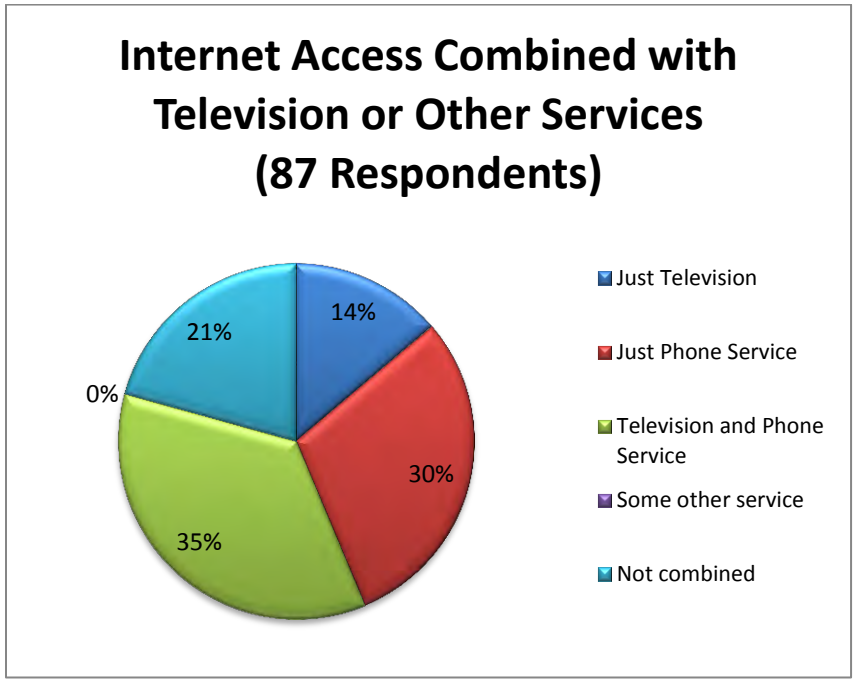


Since you first got high speed internet at home would you say the quality of your high speed connection has:

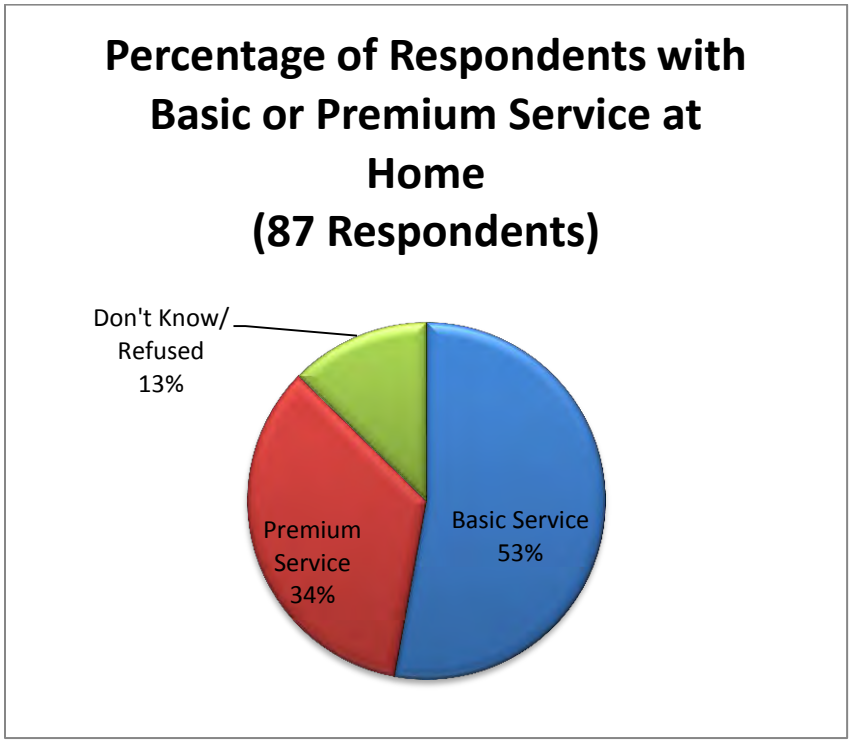


Is your internet access combined with television or other services?



IV. Price and Preference

Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?



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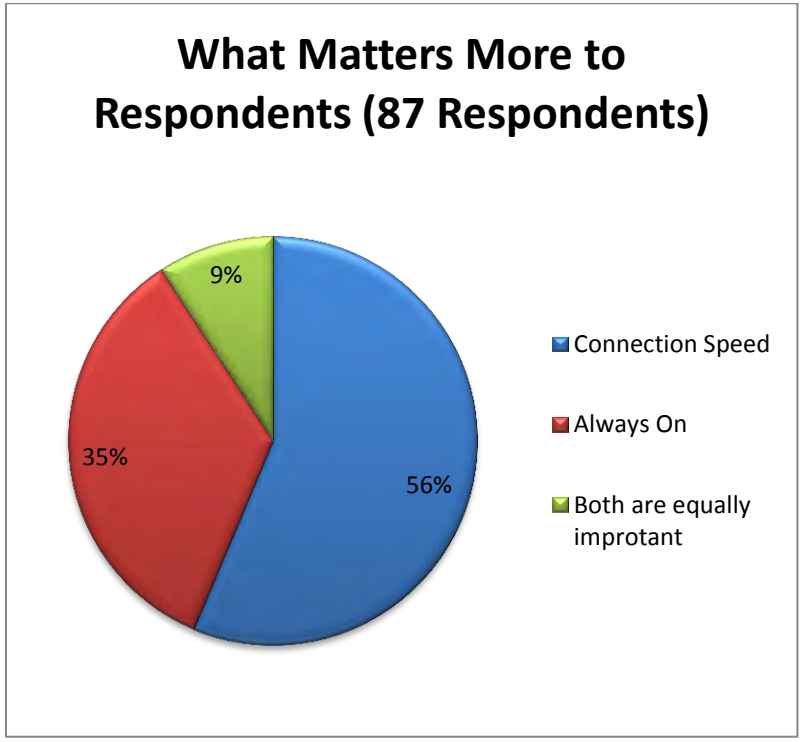
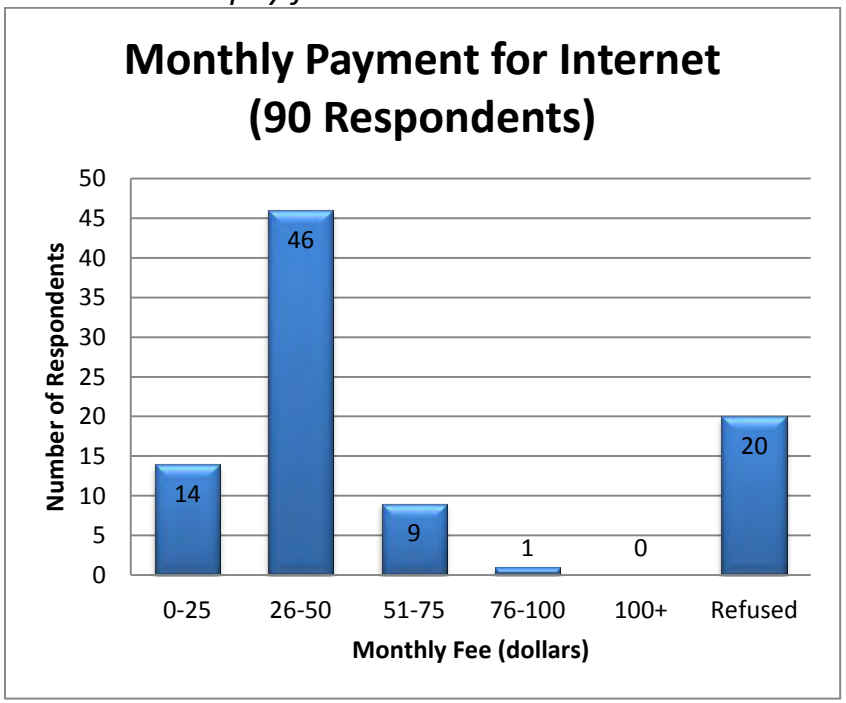
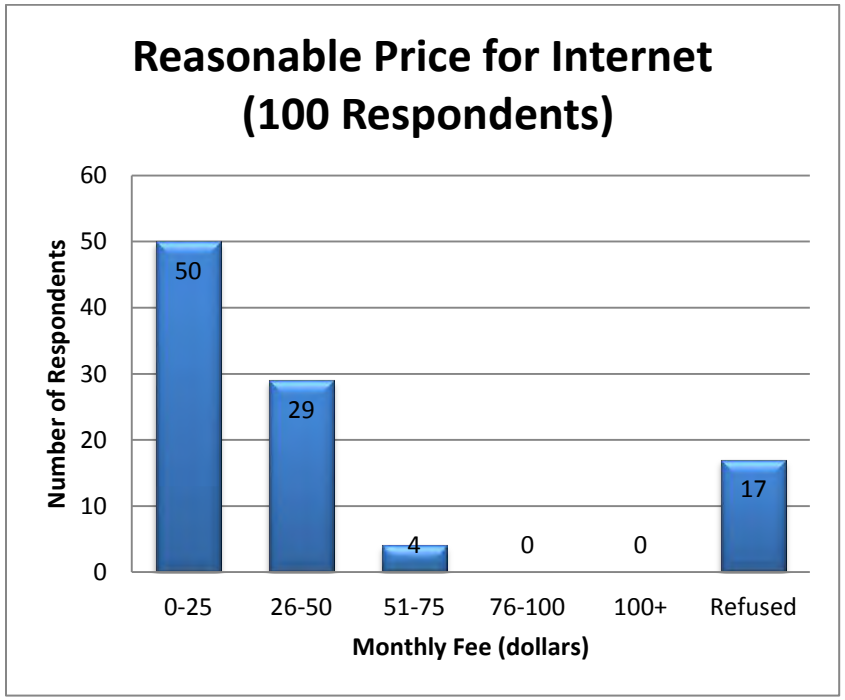


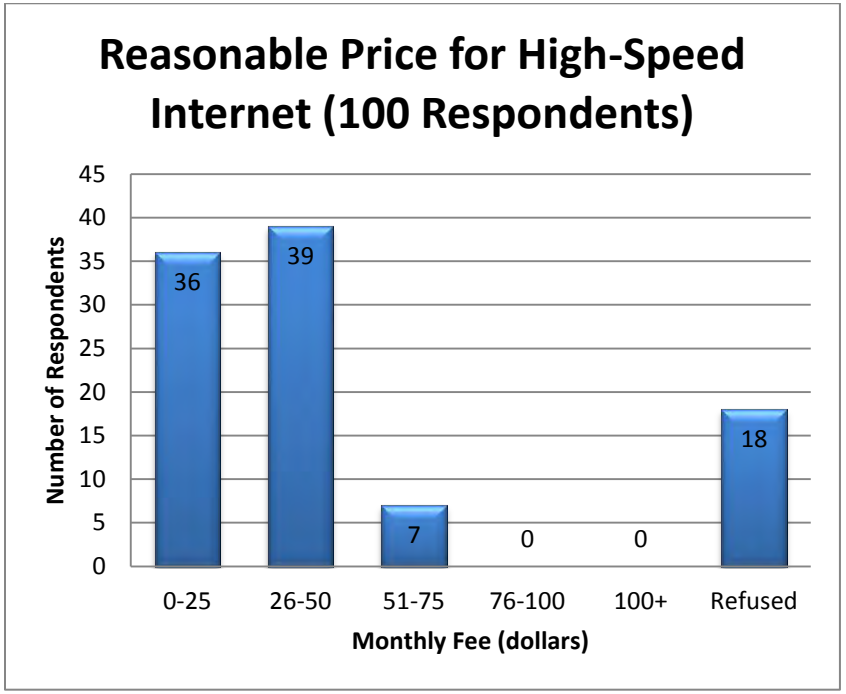
To the nearest dollar, how much per month do you pay for internet service?



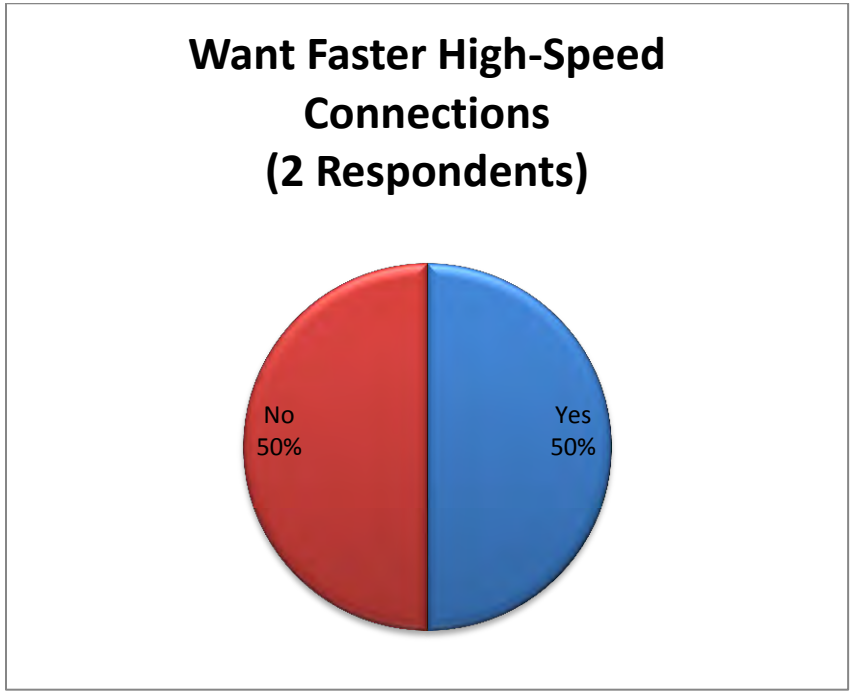
What do you think a reasonable price for internet service would be?



What do you think a reasonable price for High-Speed Internet would be?

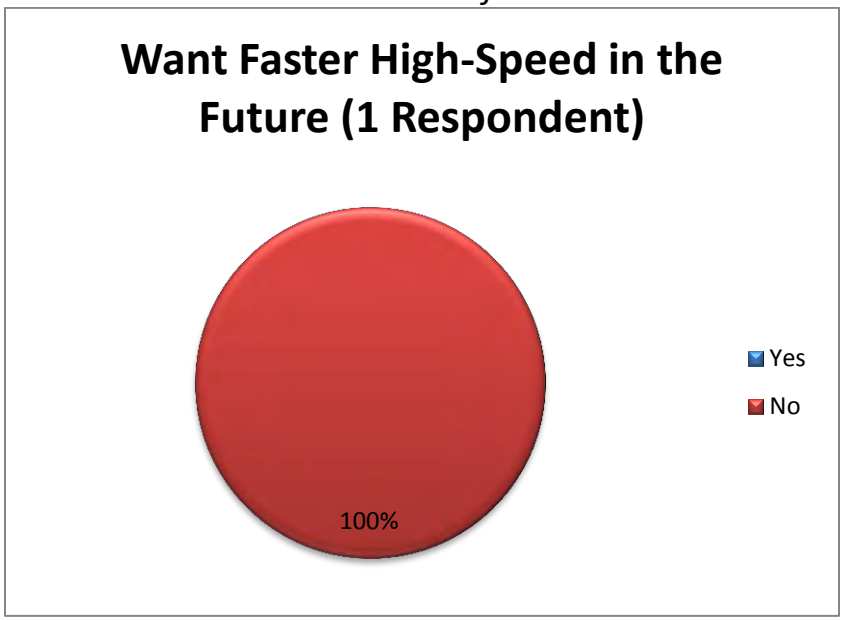


Would you like to have a faster high-speed connection?

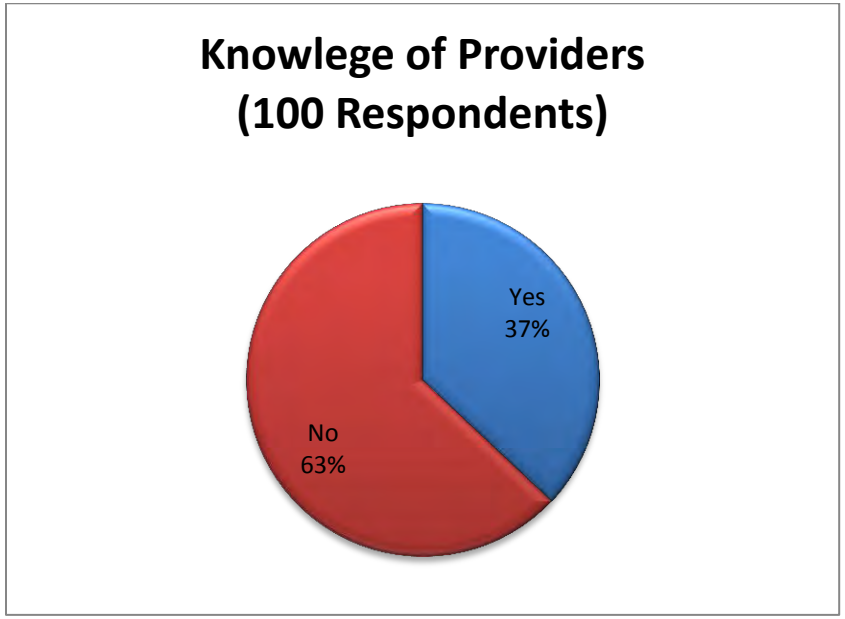


V. Consumer Perceptions

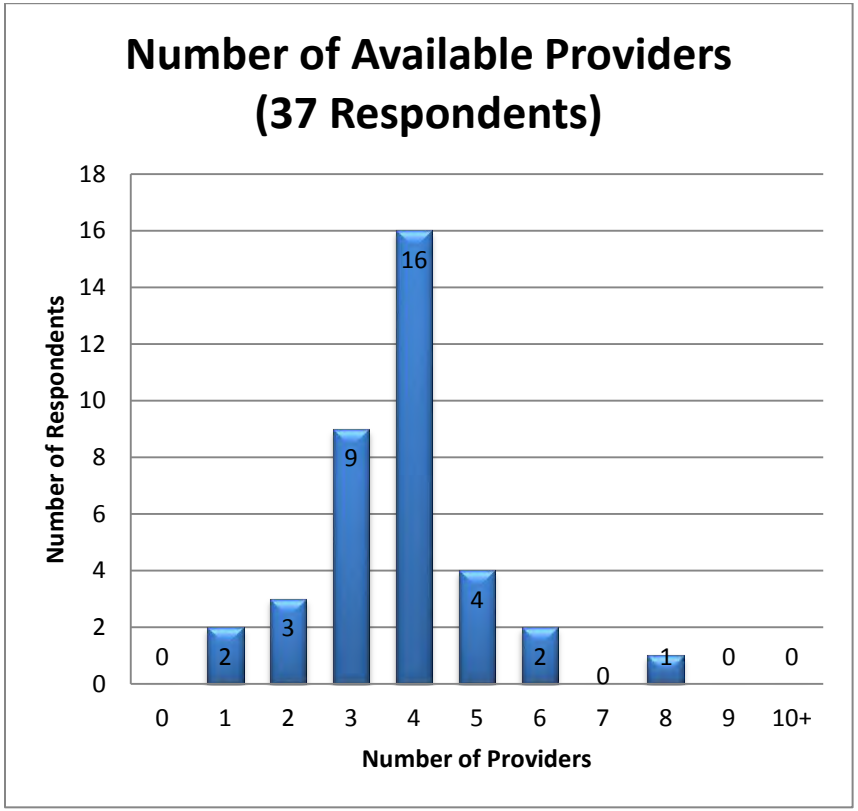
Do you think you would like a faster connection sometime in the future?



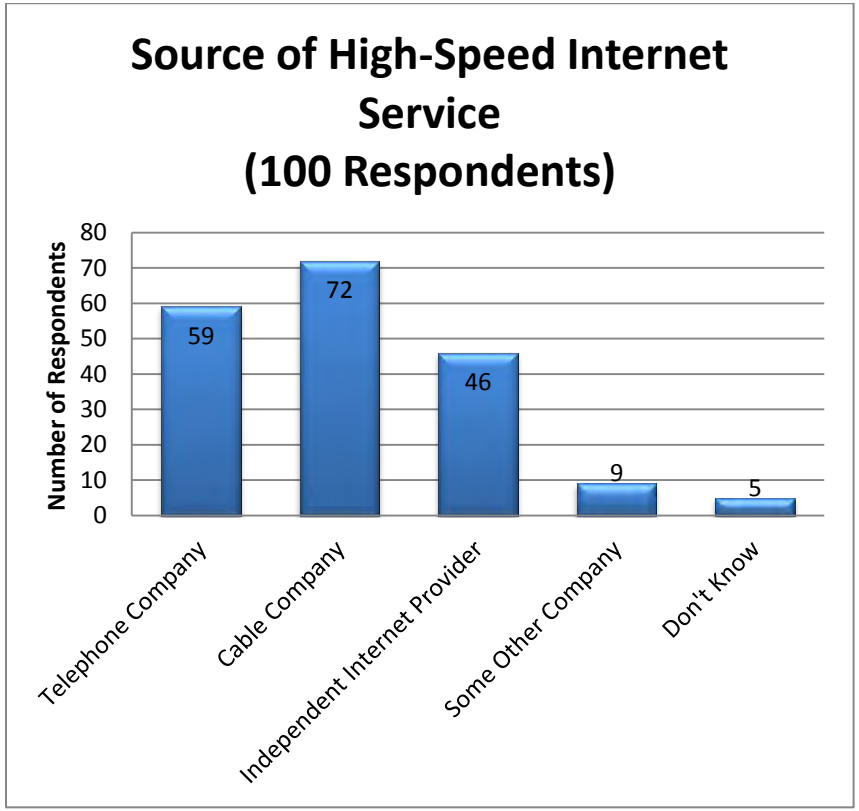
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?

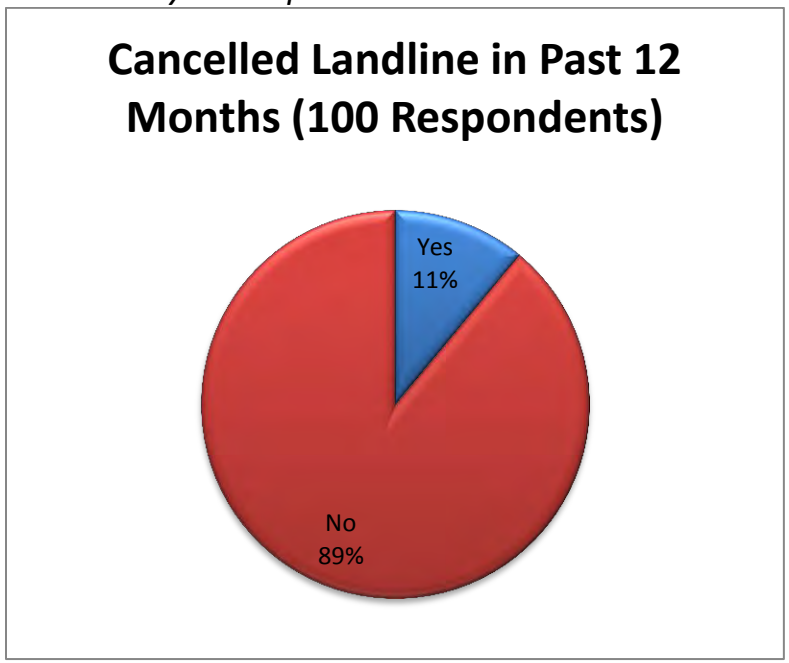


Do you happen to know whether high-speed internet service is available in your neighborhood from:

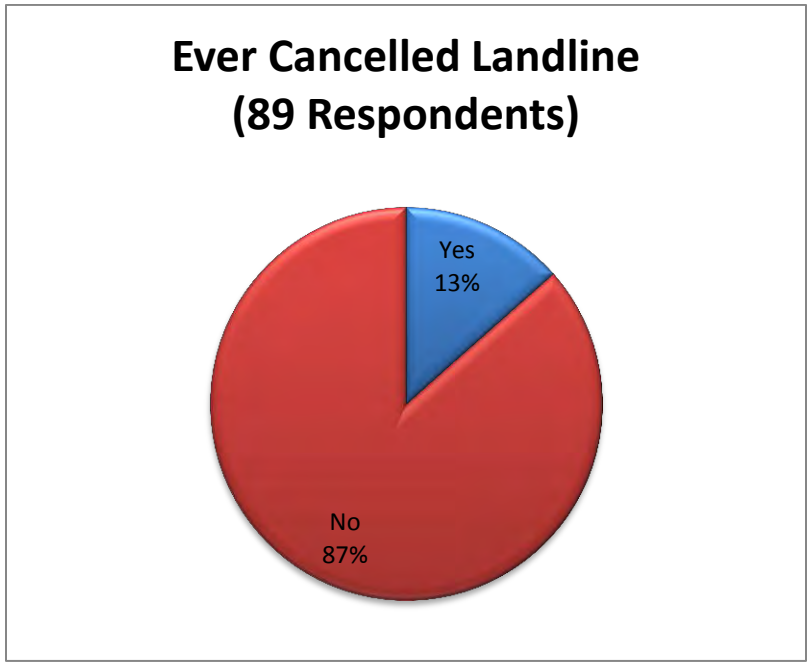


VI. Respondents' Purchasing Behavior

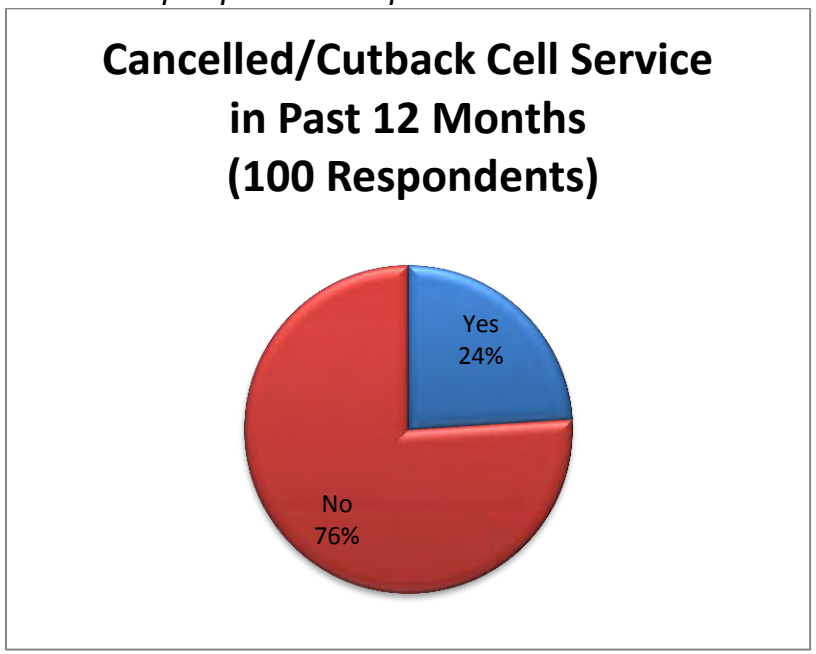
Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



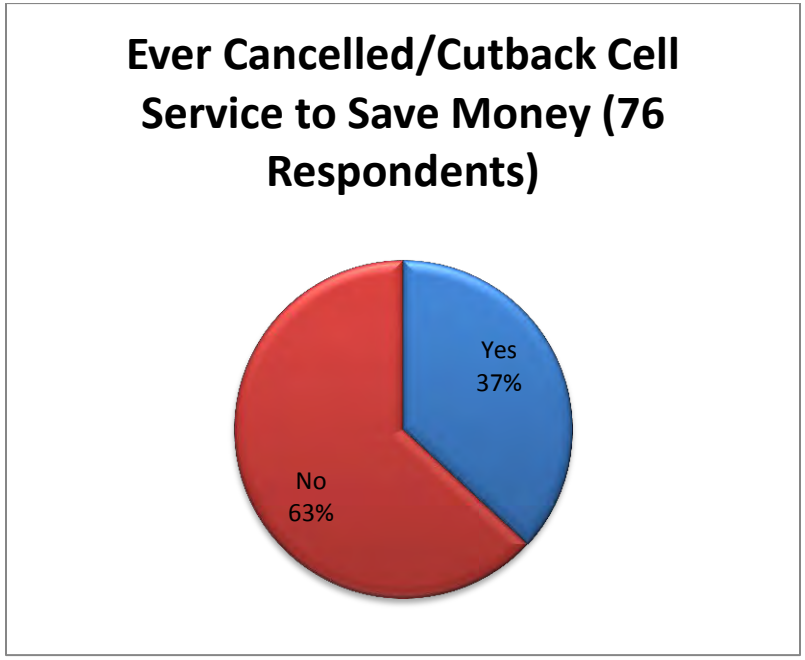
Have you ever cancelled a landline phone at home to save money?



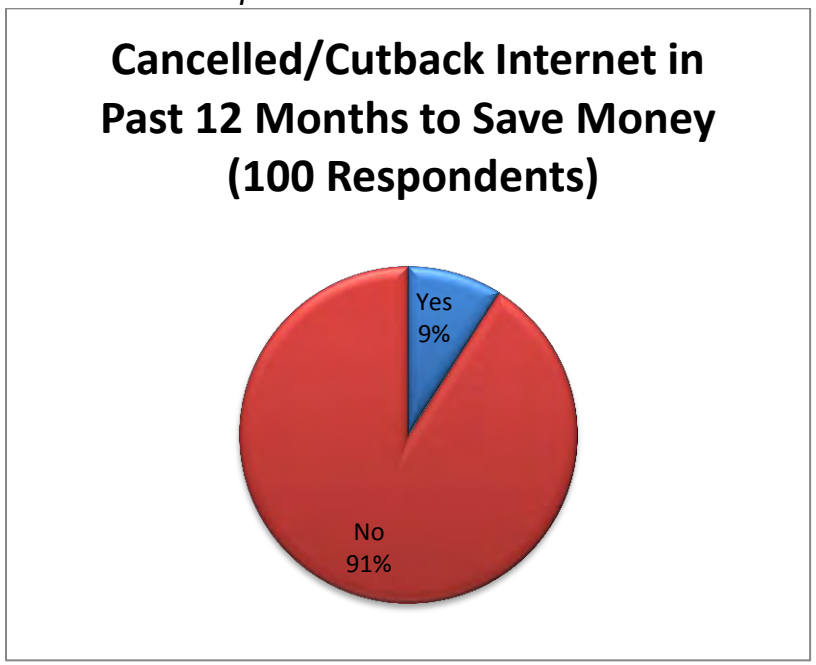
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



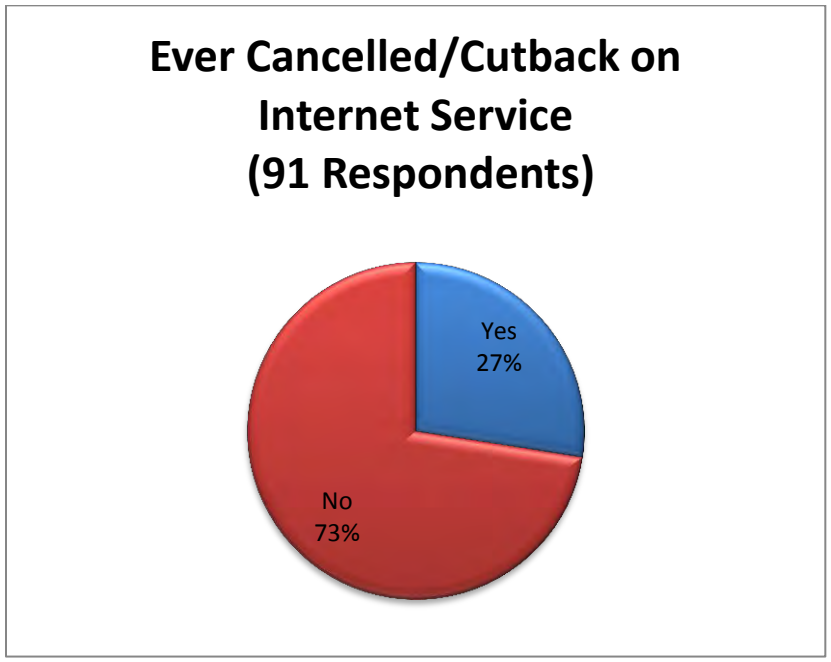
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



Have you ever cancelled or cutback on your Internet service?



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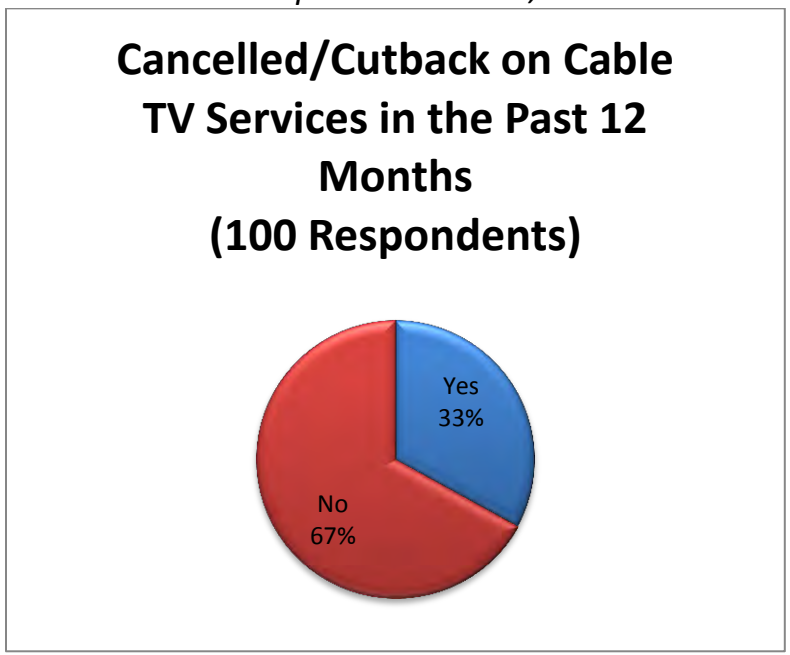
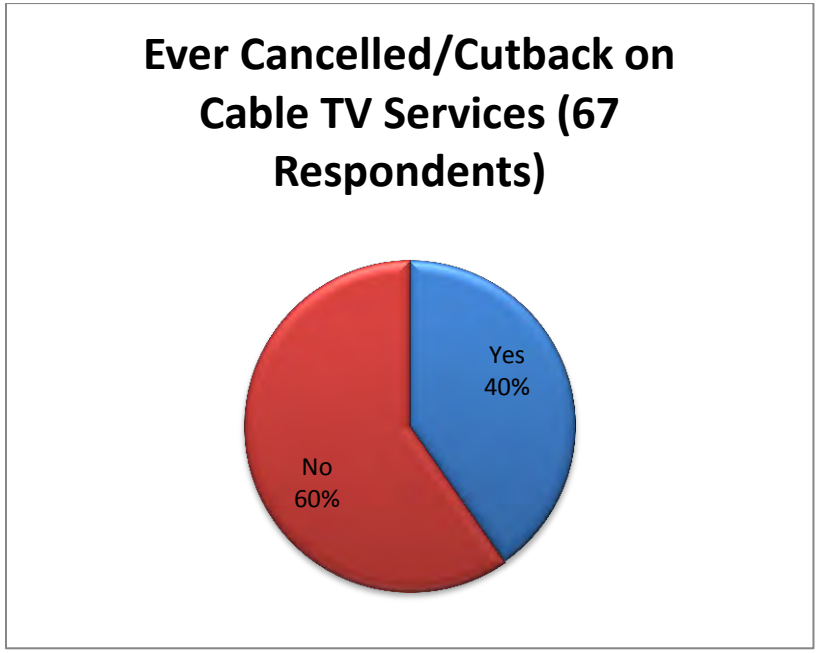
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



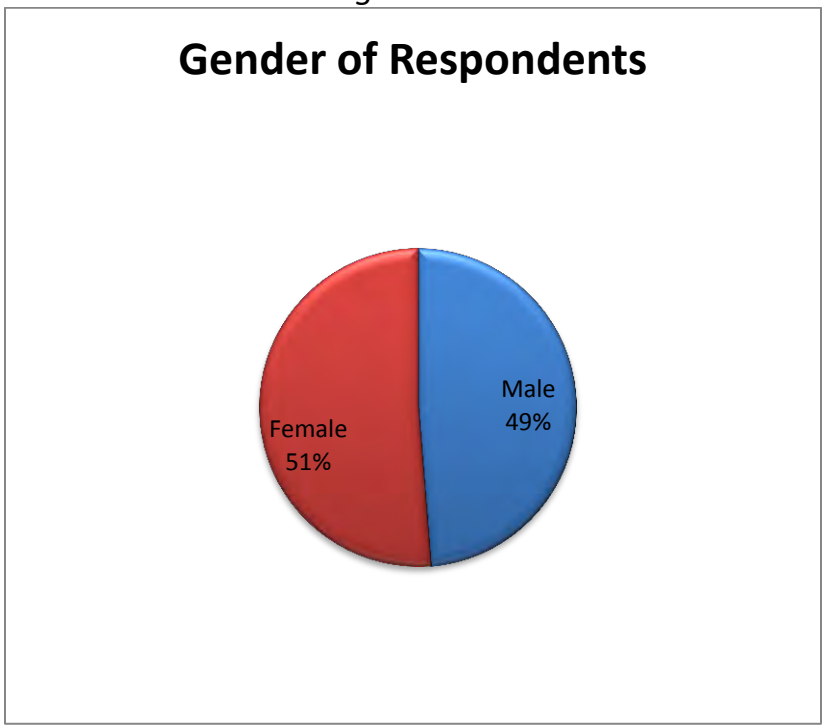
Have you ever cancelled or cutback on cable TV services?



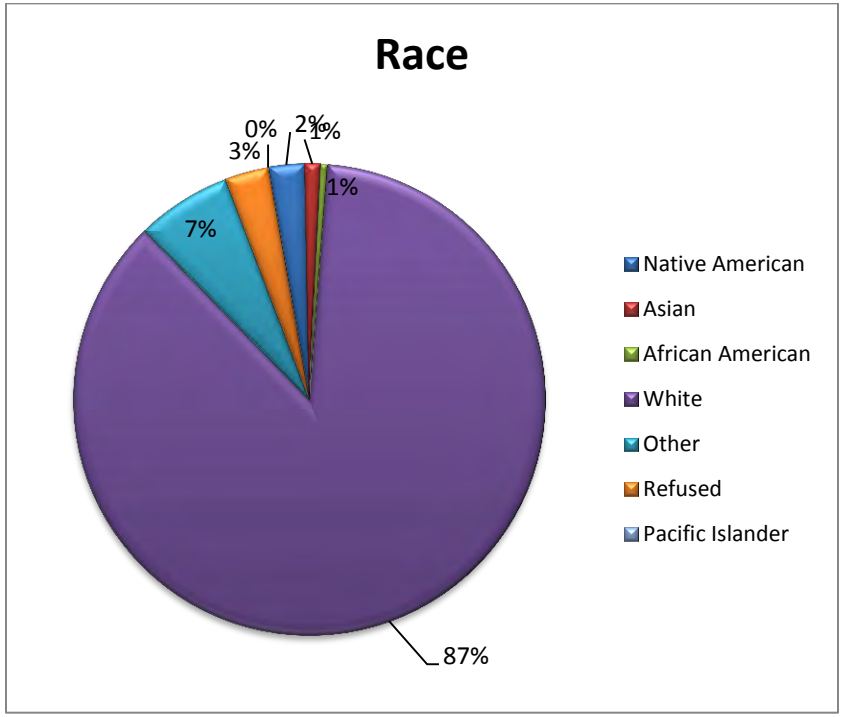
Wasatch Front Region Results

I. Demographics

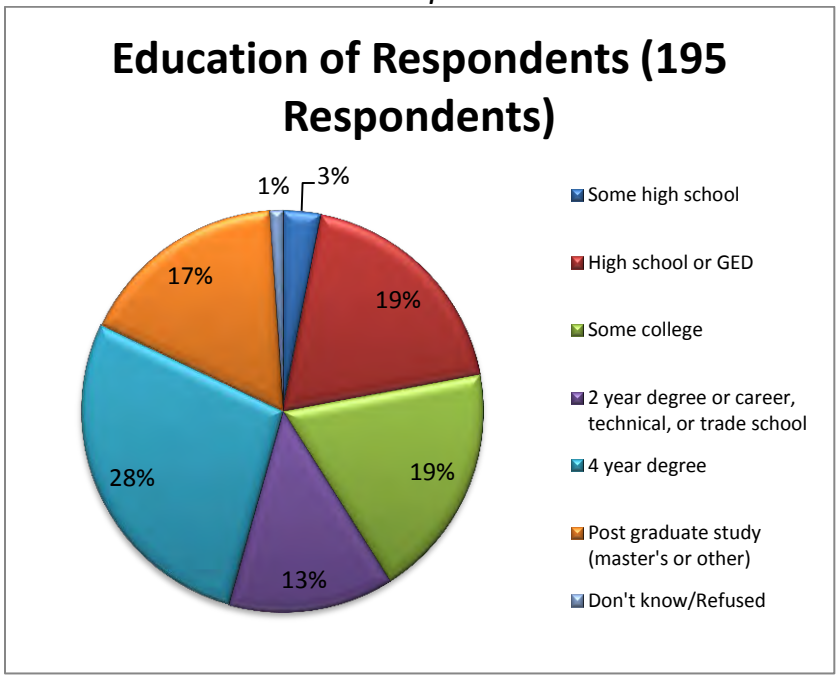
Survey participants were asked to disclose their gender.



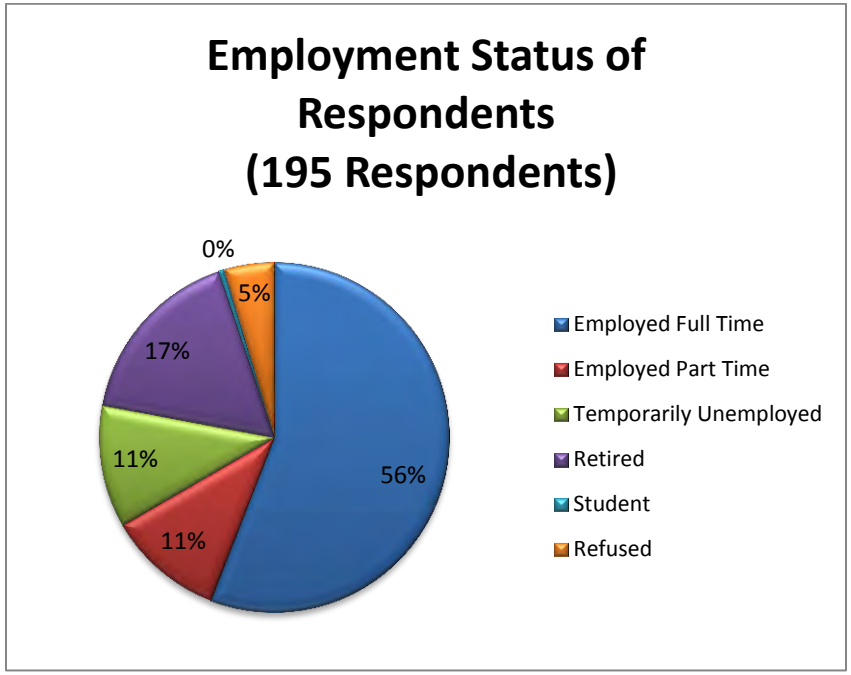
What is your race? You can choose more than one



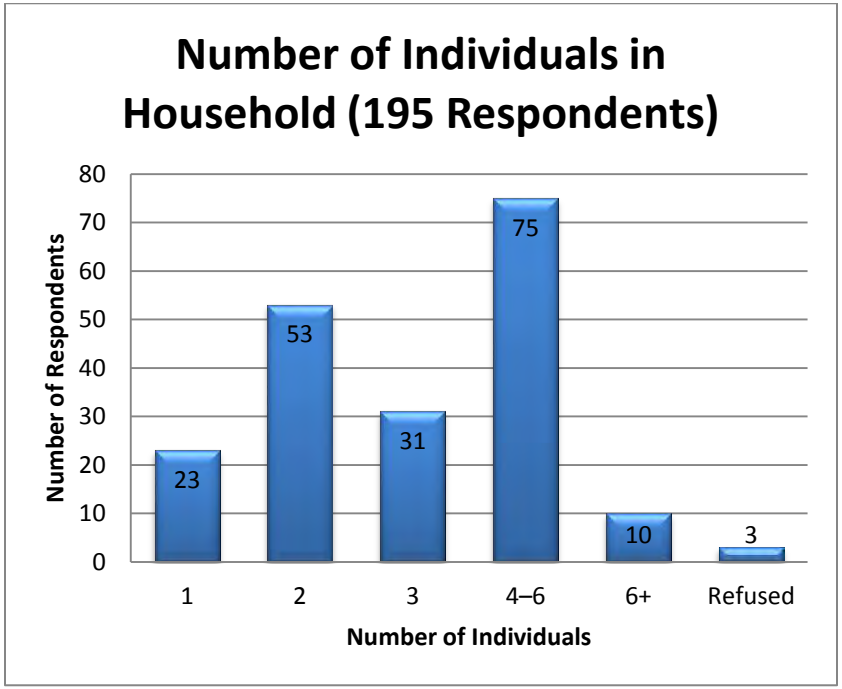
What is the highest level of formal education you have completed?



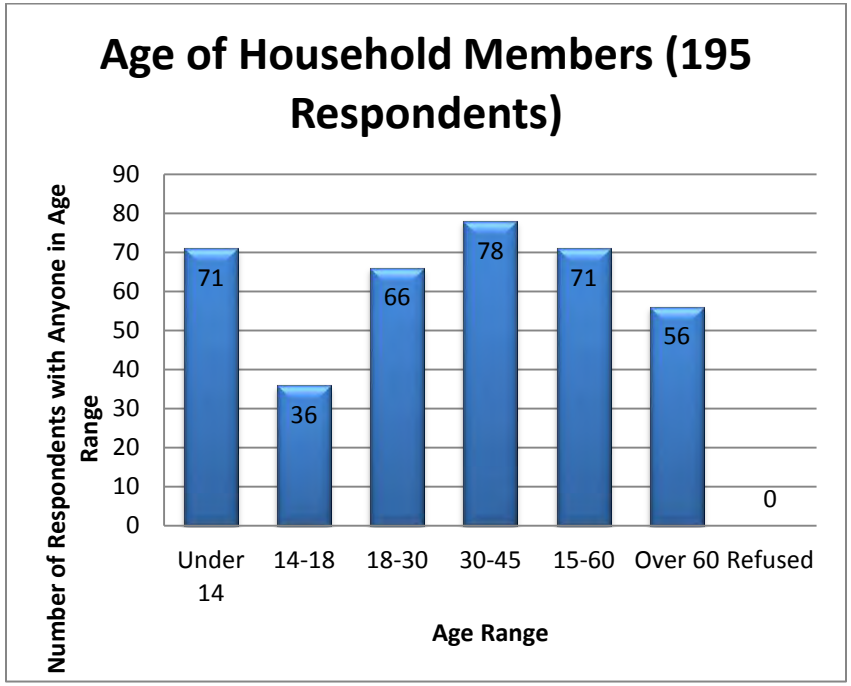
How would you describe your current employment status?



How many individuals are currently living or staying in your household?



Are any members of your household:



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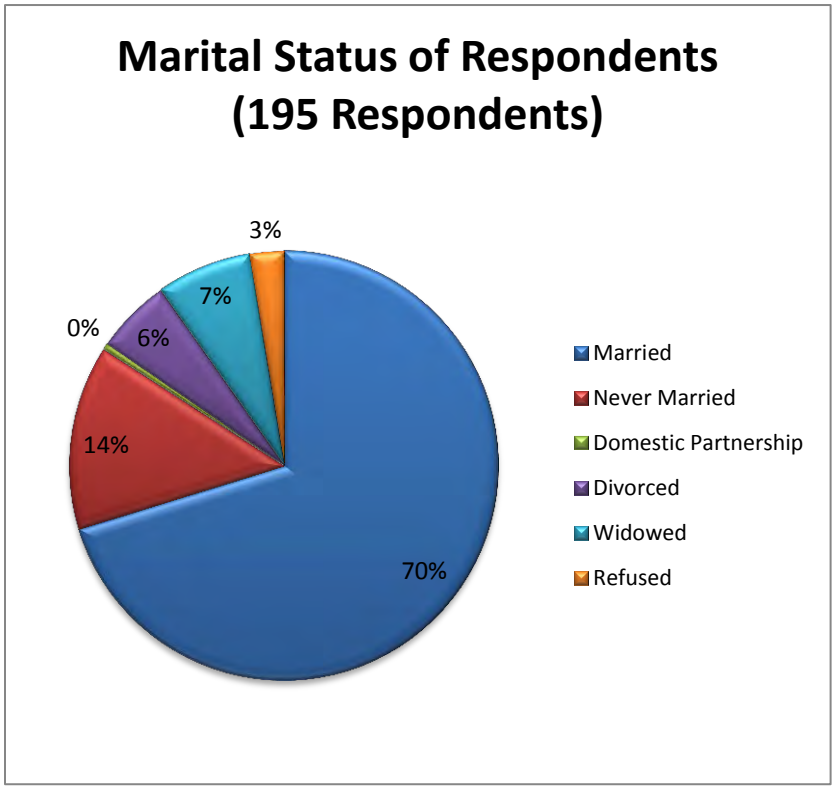

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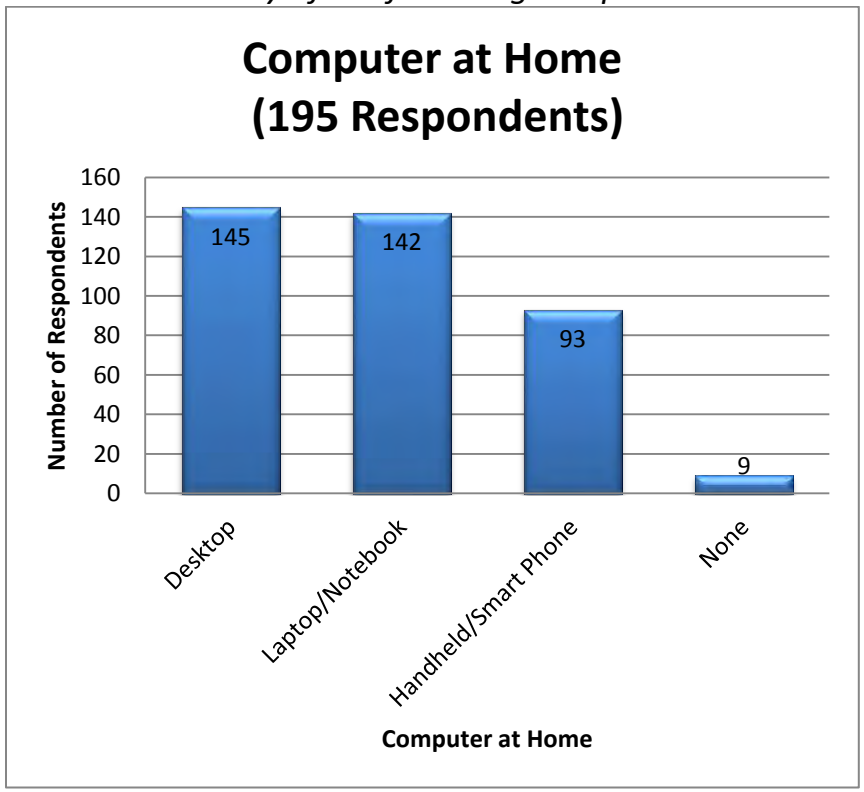
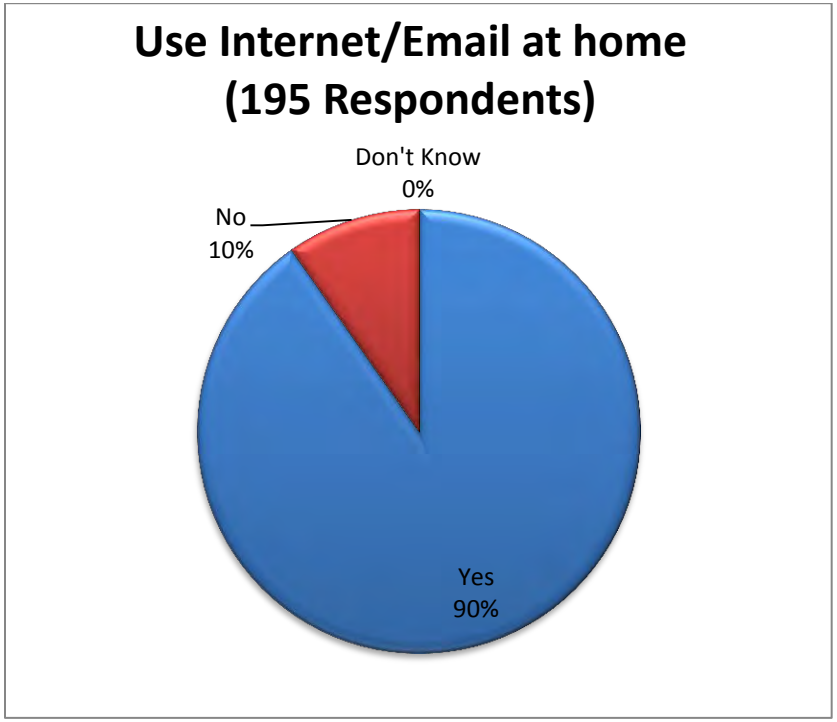
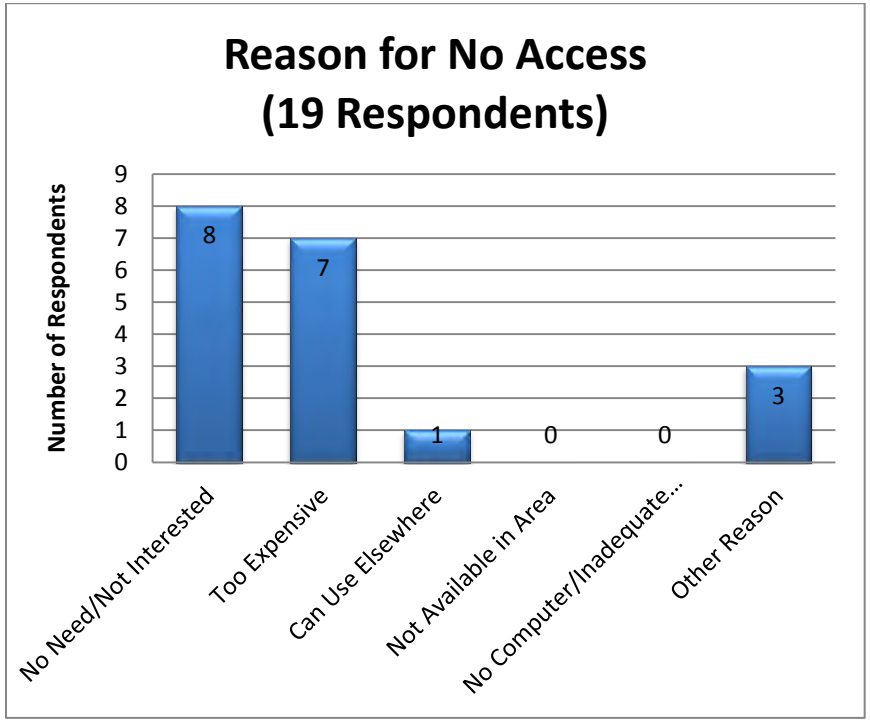


Does anyone in your household use the Internet from home or send and receive email from home?

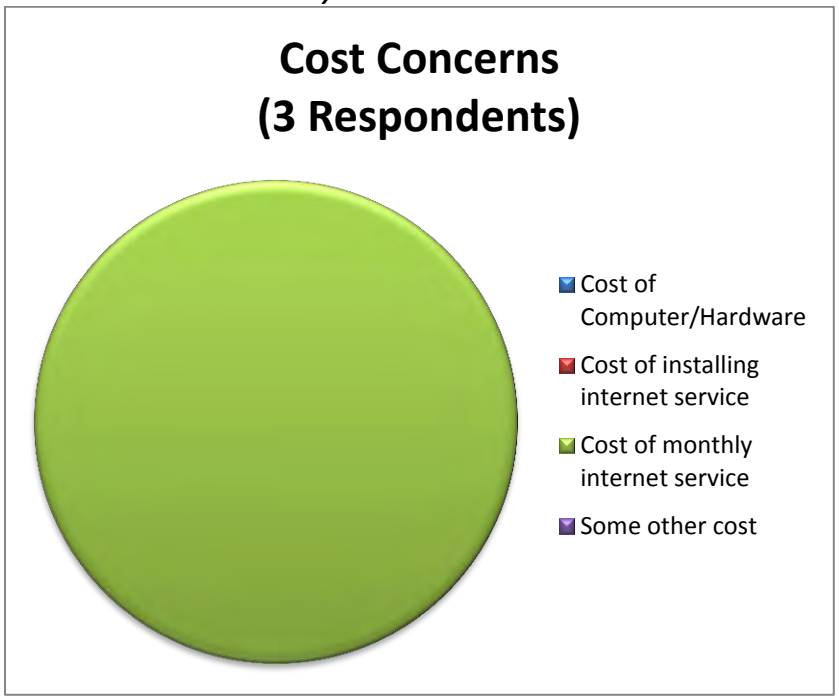


What is the main reason you do not have internet access in your home?



Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?



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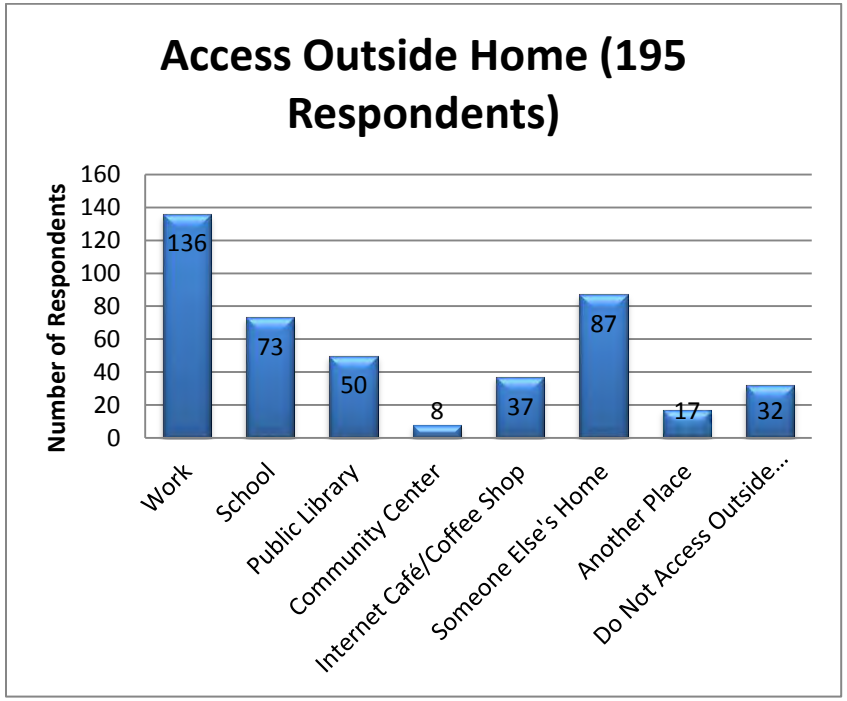

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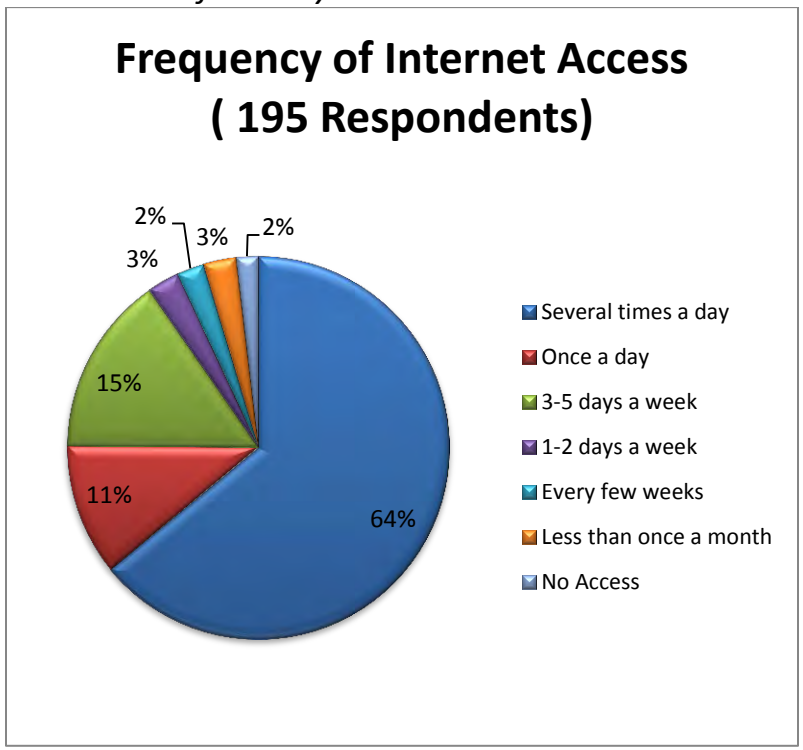
About how often do you access the internet?



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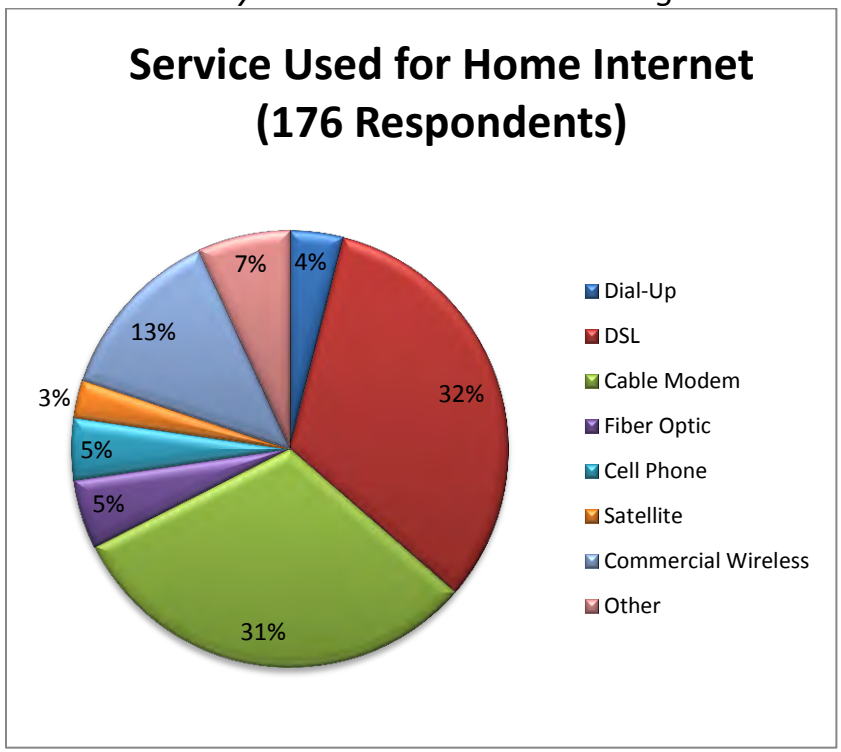

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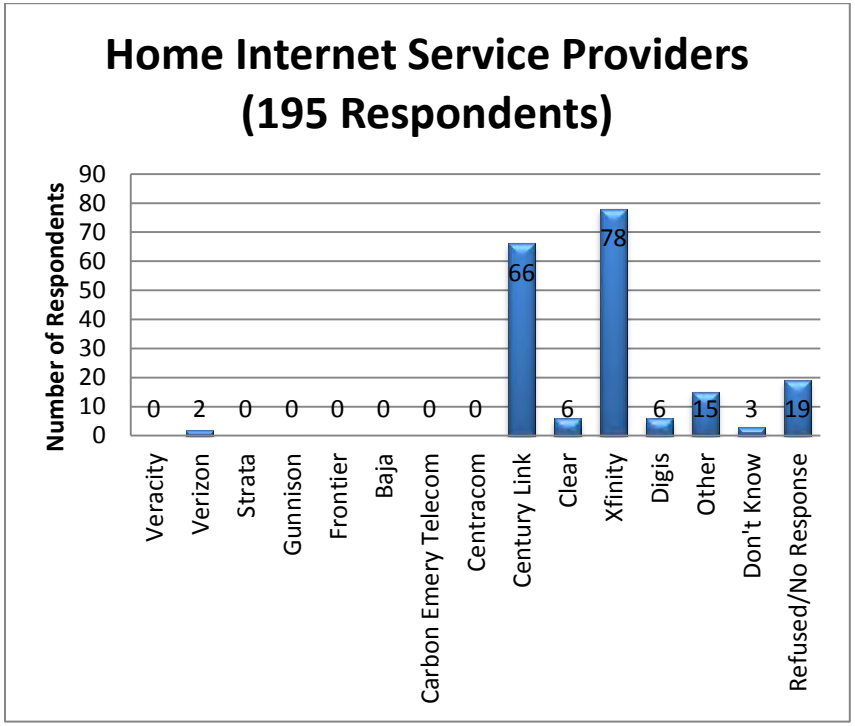

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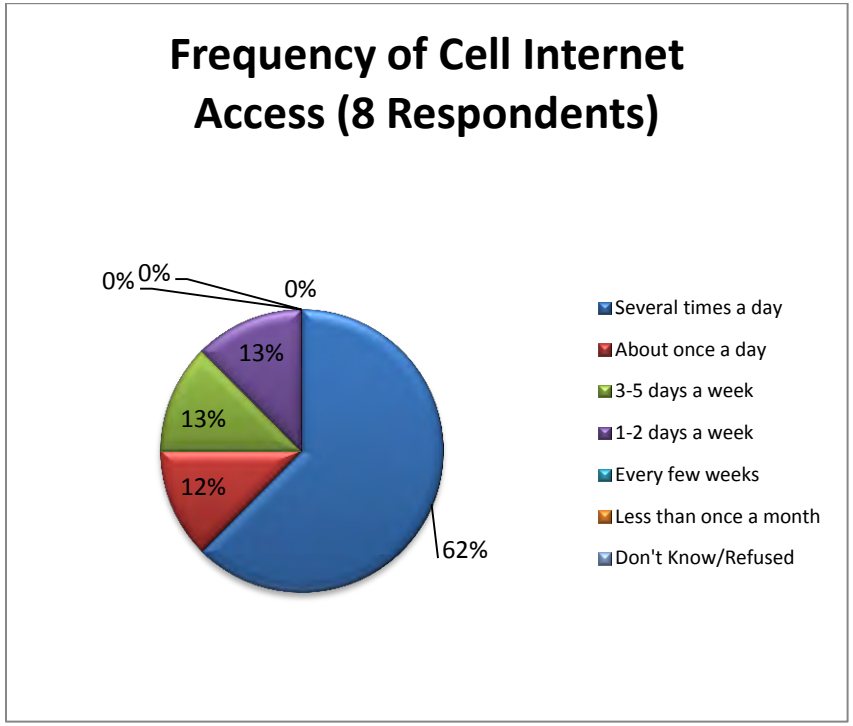

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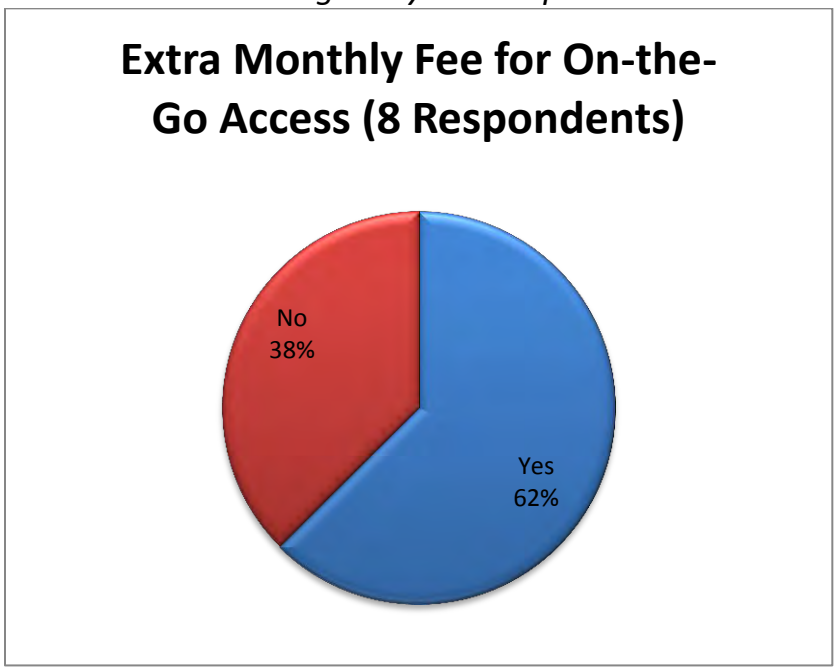

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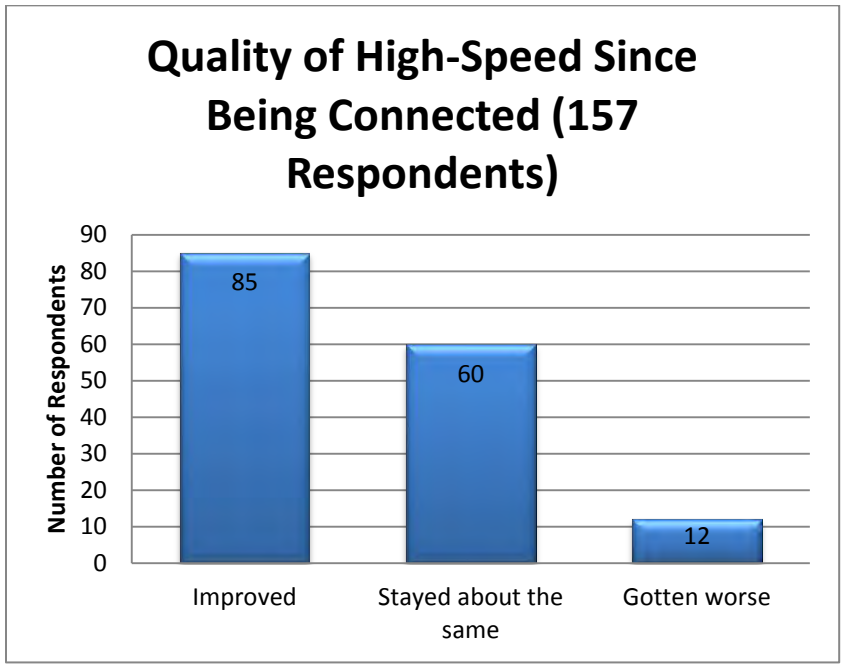

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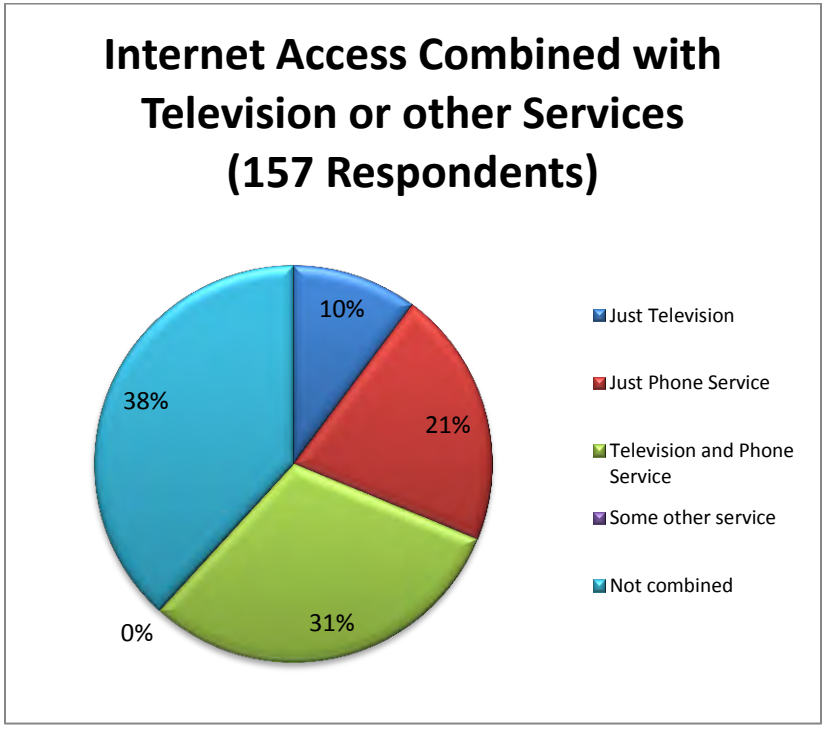

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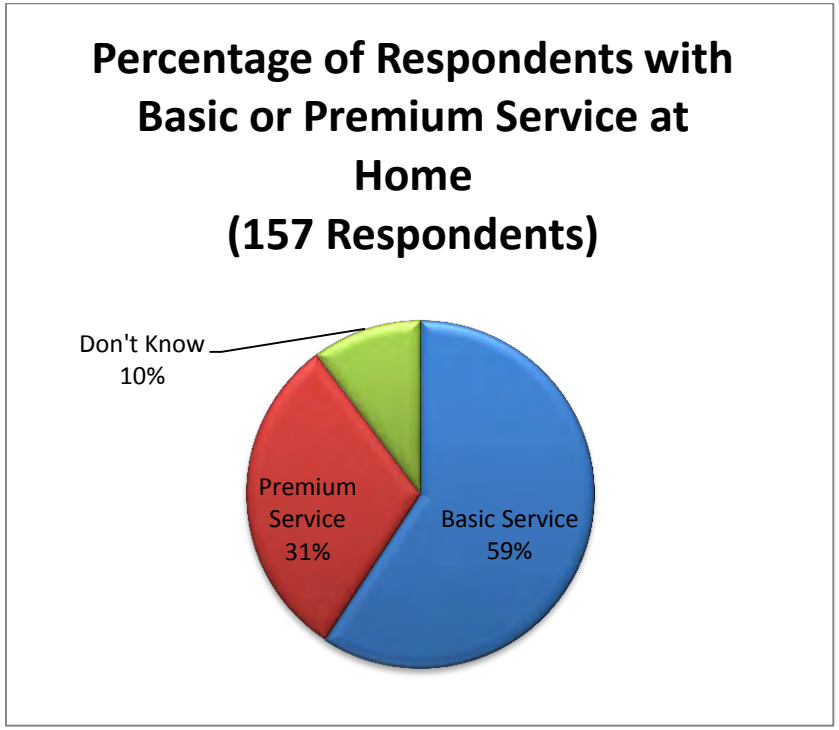
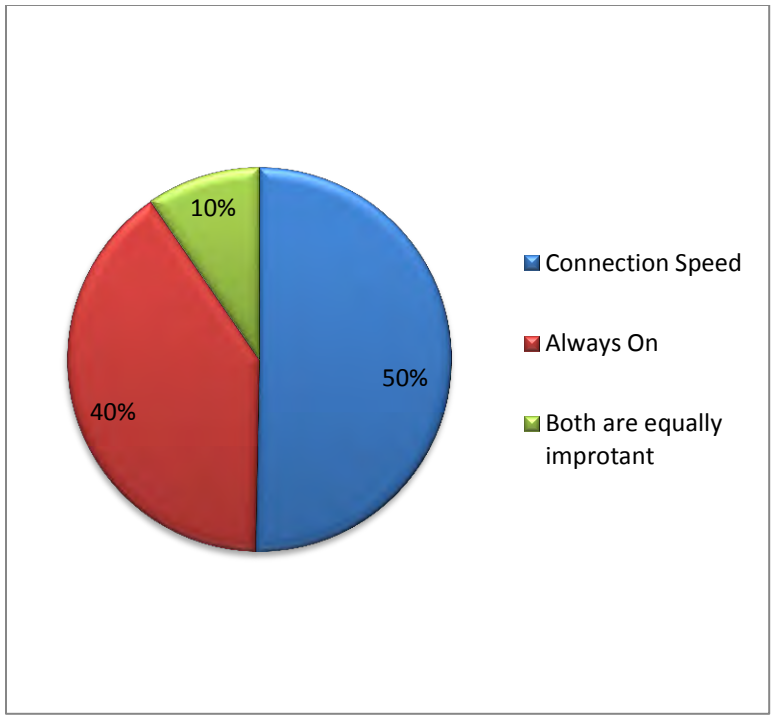
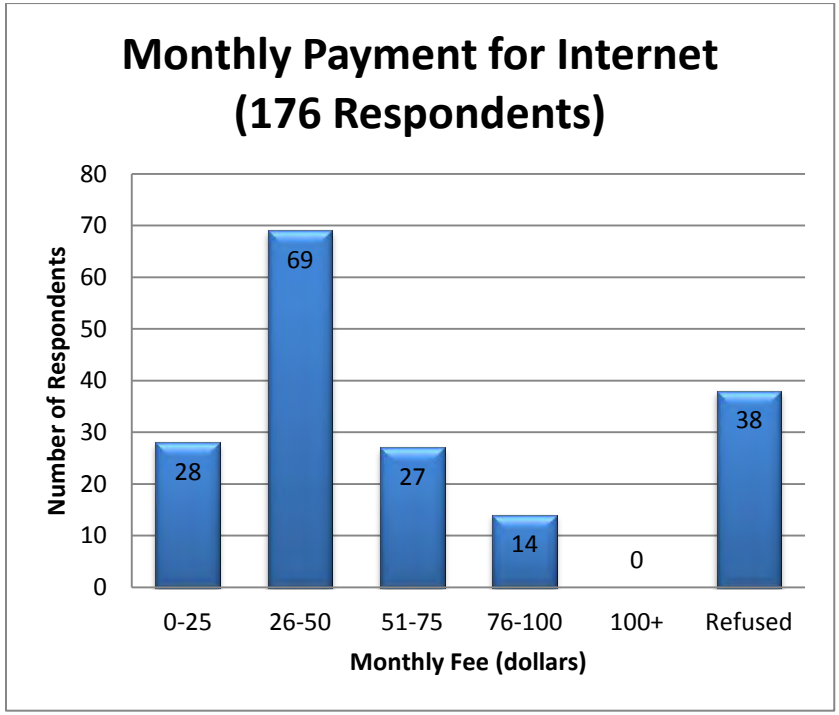


IV. Price and Preference

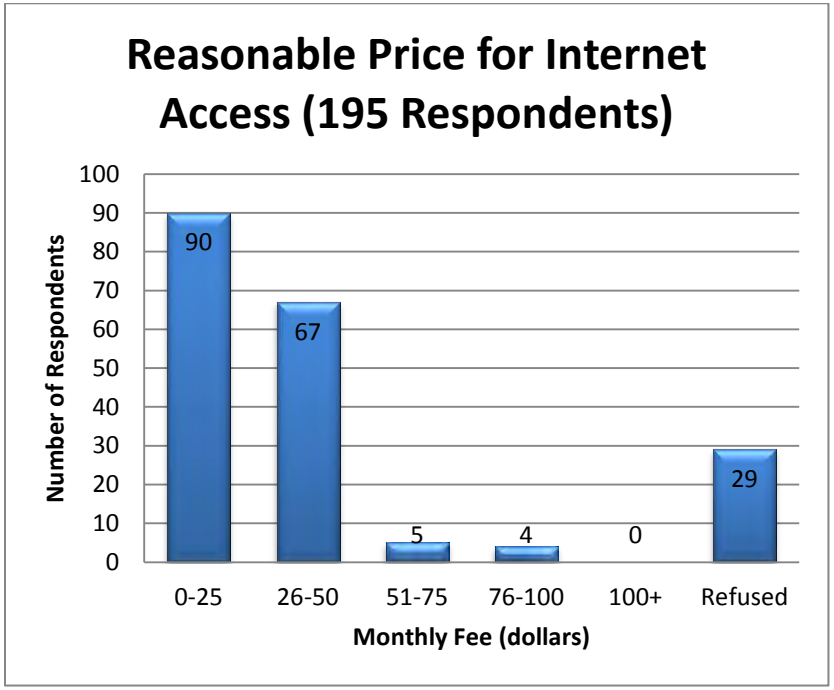
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



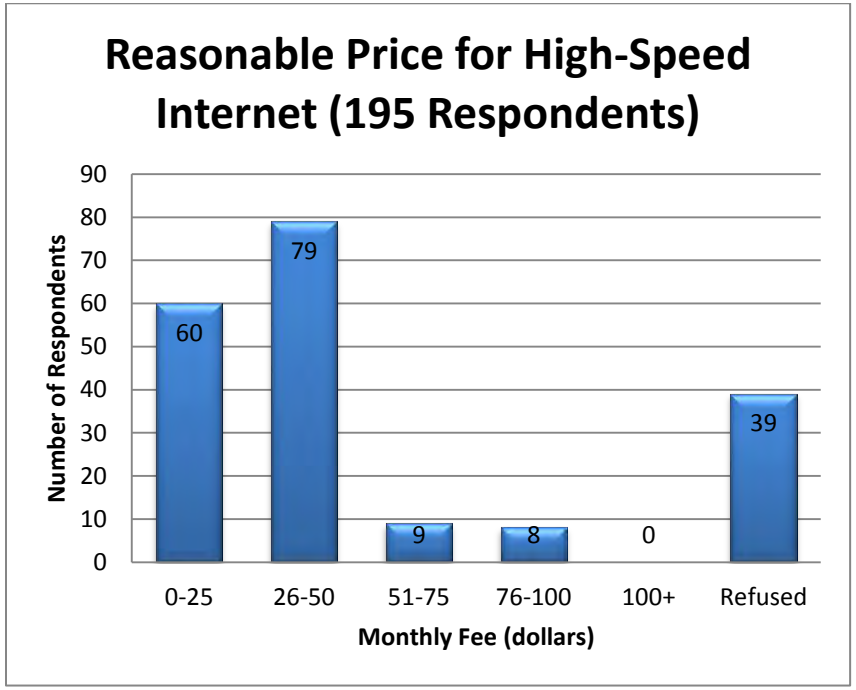
To the nearest dollar, how much per month do you pay for internet service?



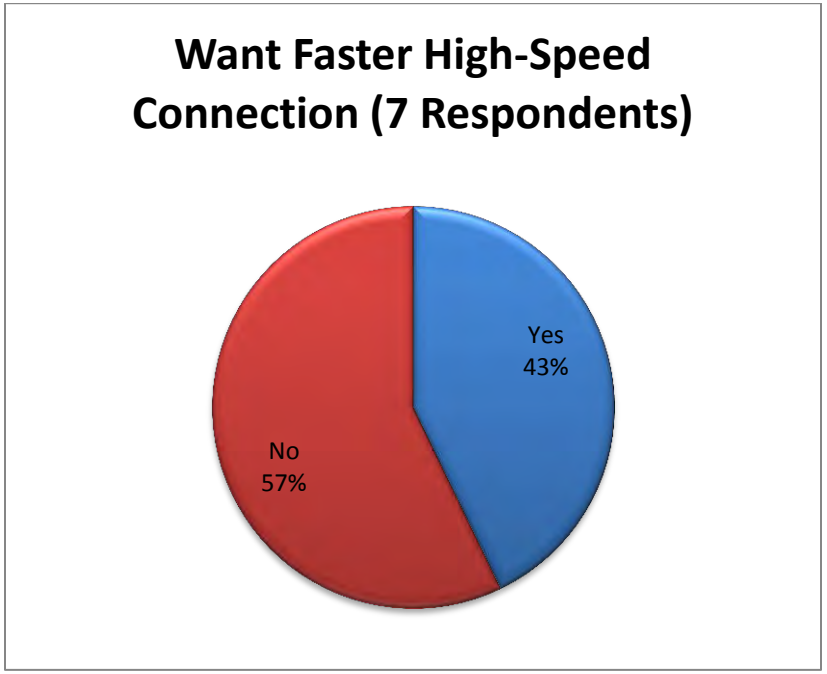
What do you think a reasonable price for internet service would be?



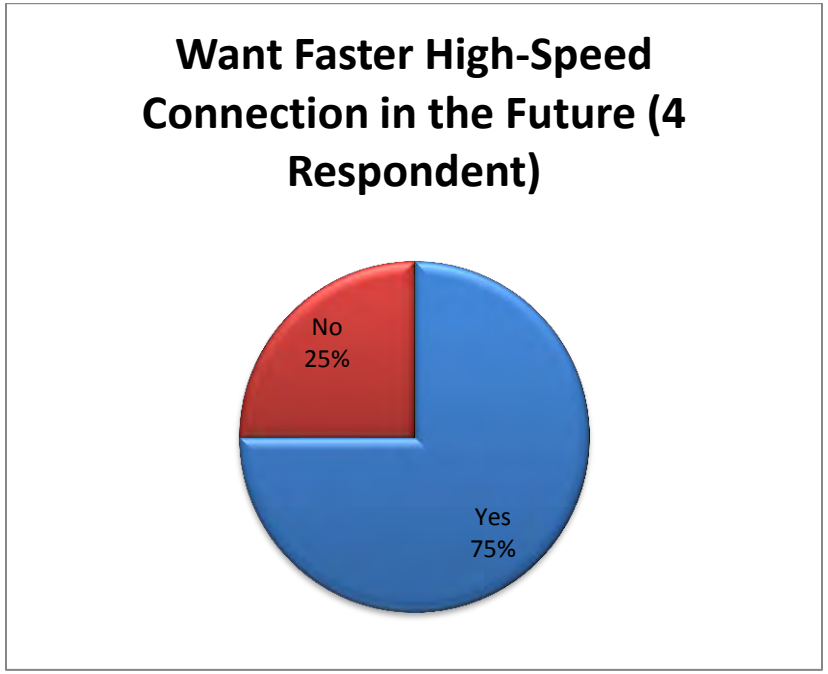
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

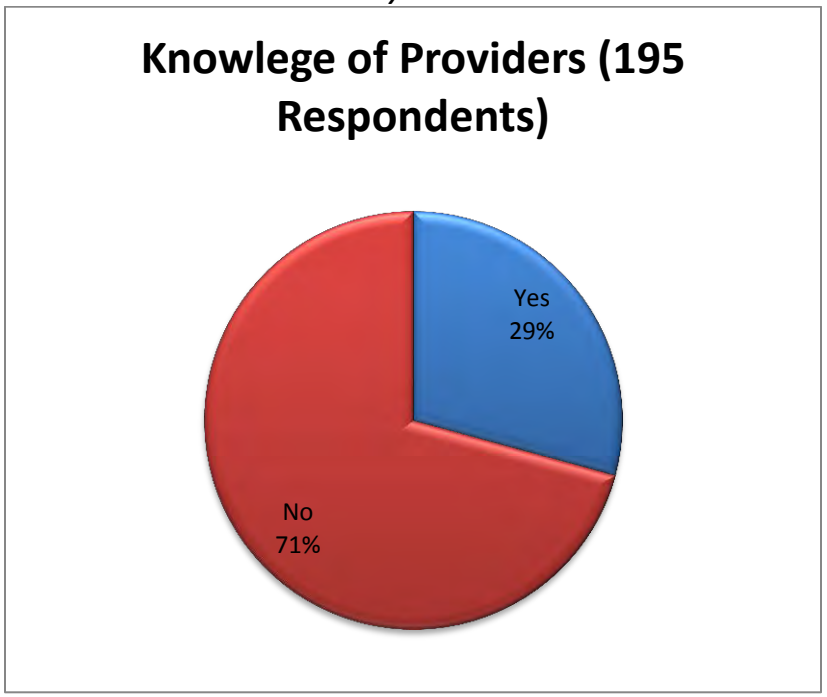


Do you think you would like a faster connection sometime in the future?

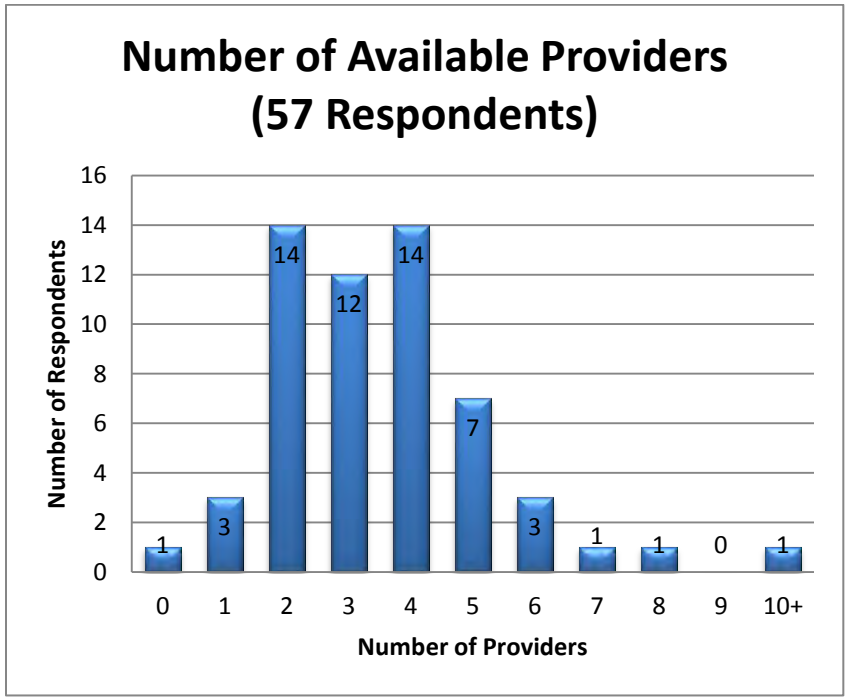


V. Consumer Perceptions

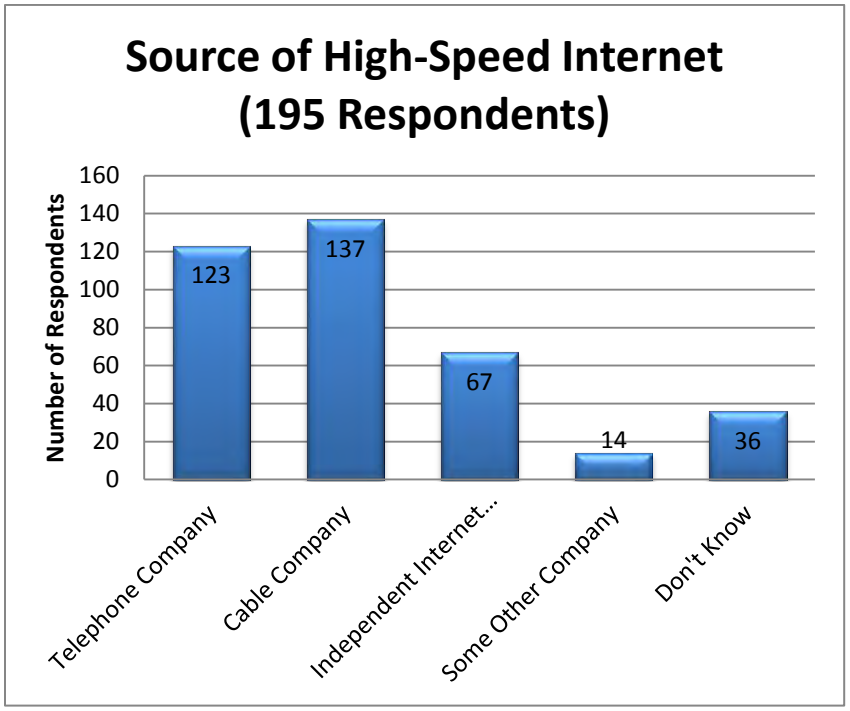
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?

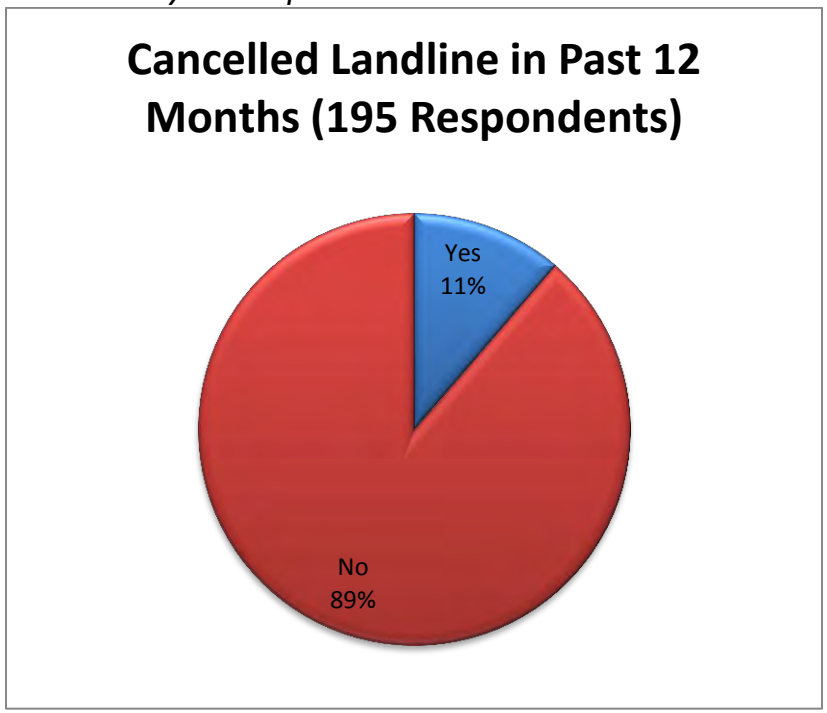


Do you happen to know whether high-speed internet service is available in your neighborhood from:

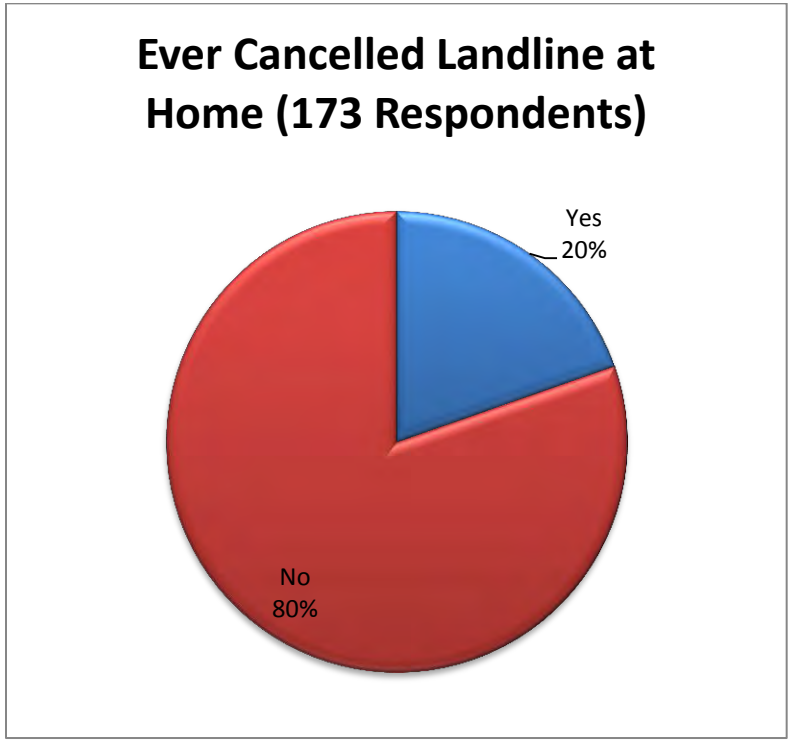


VI. Respondents' Purchasing Behavior

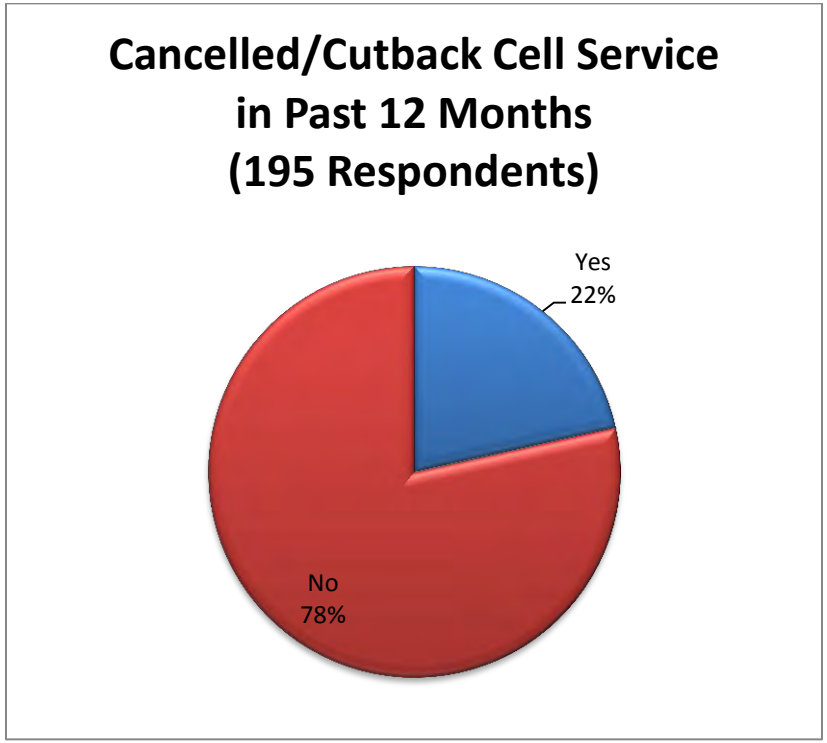
Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



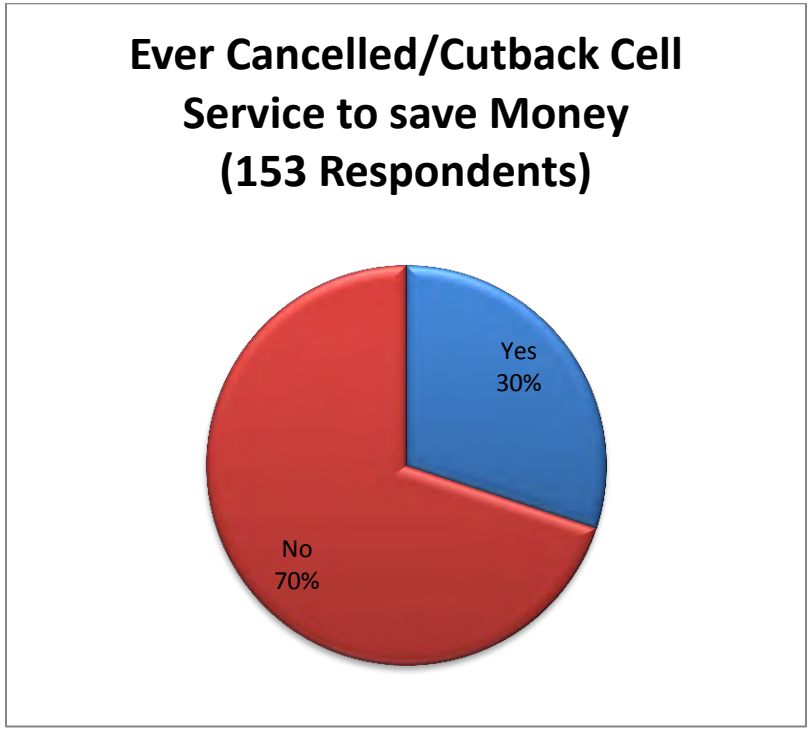
Have you ever cancelled a landline phone at home to save money?



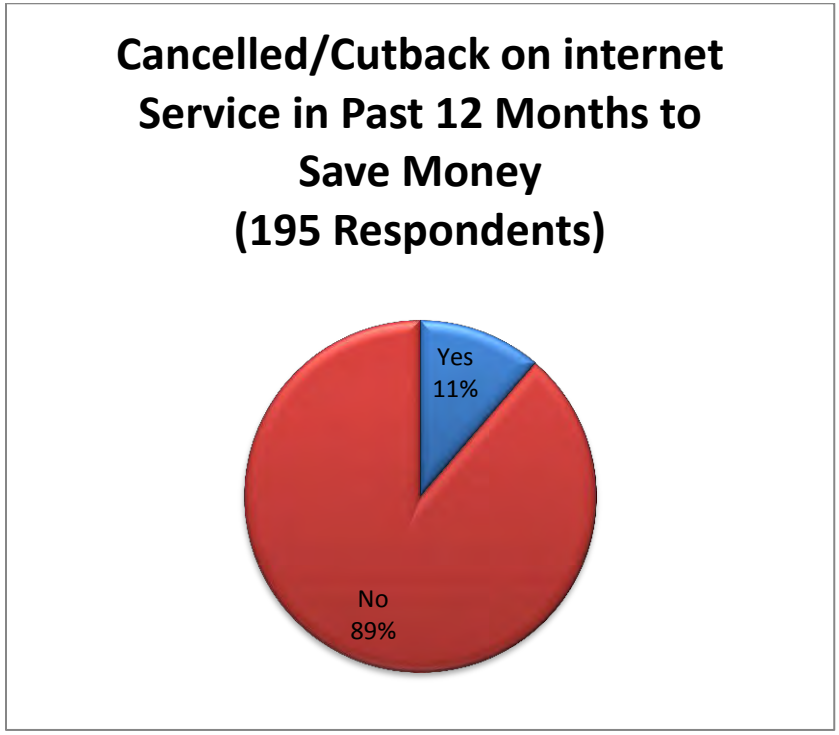
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



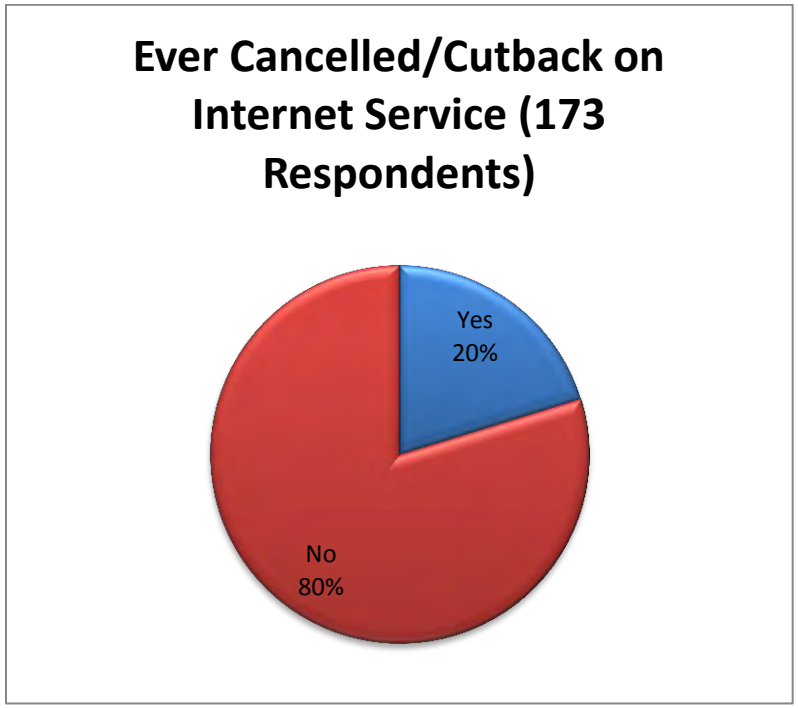
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



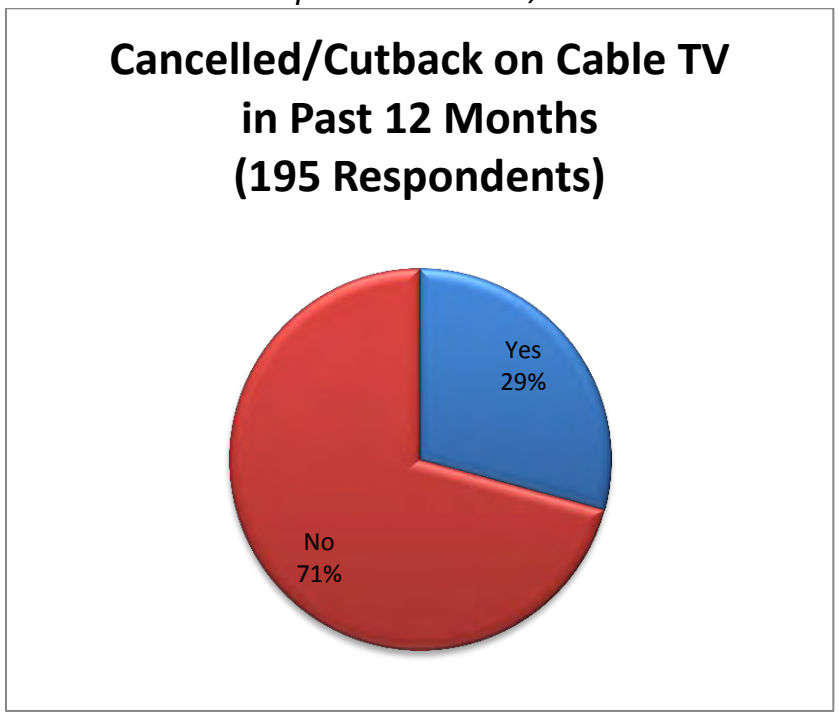
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



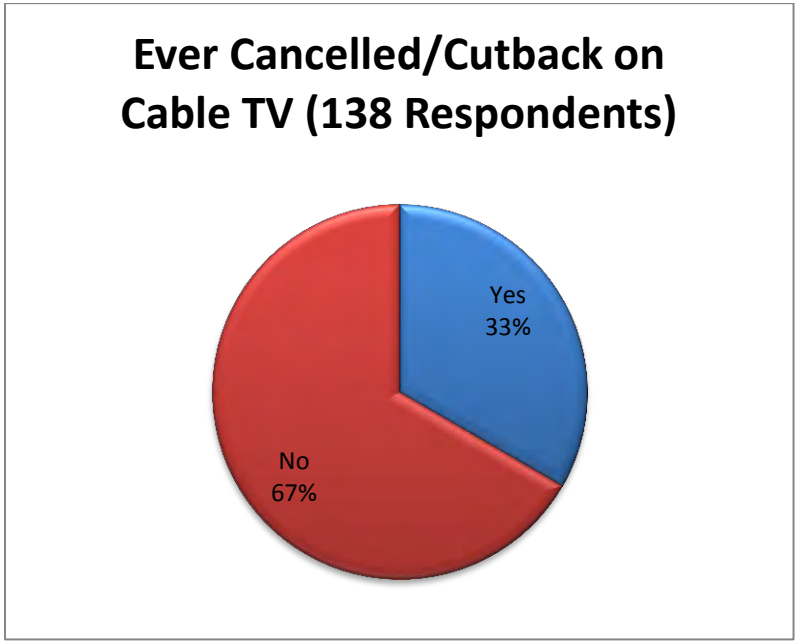
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



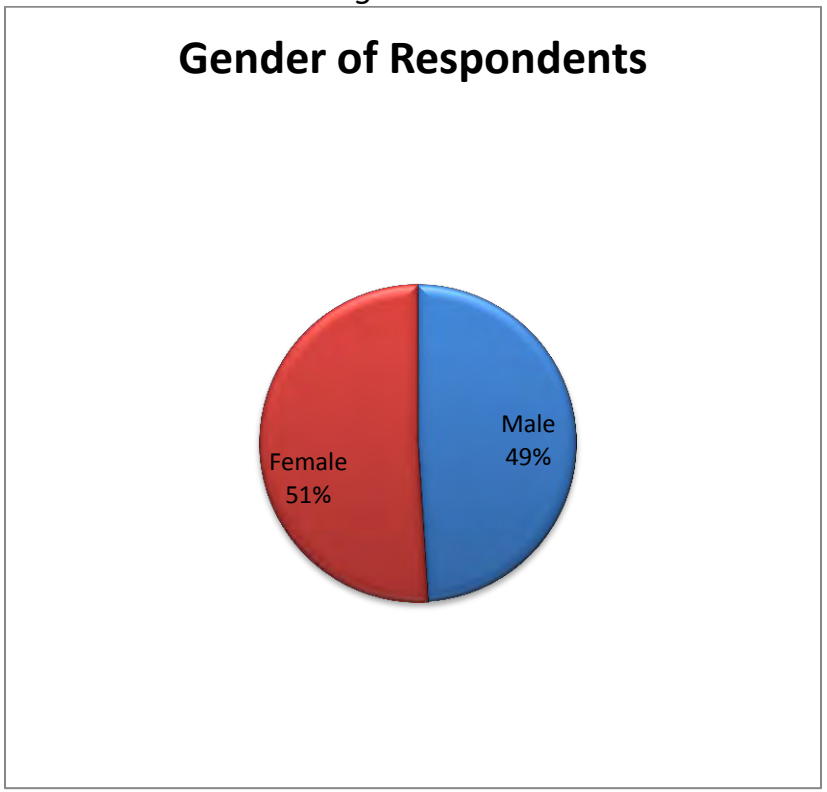
Have you ever cancelled or cutback on cable TV services?



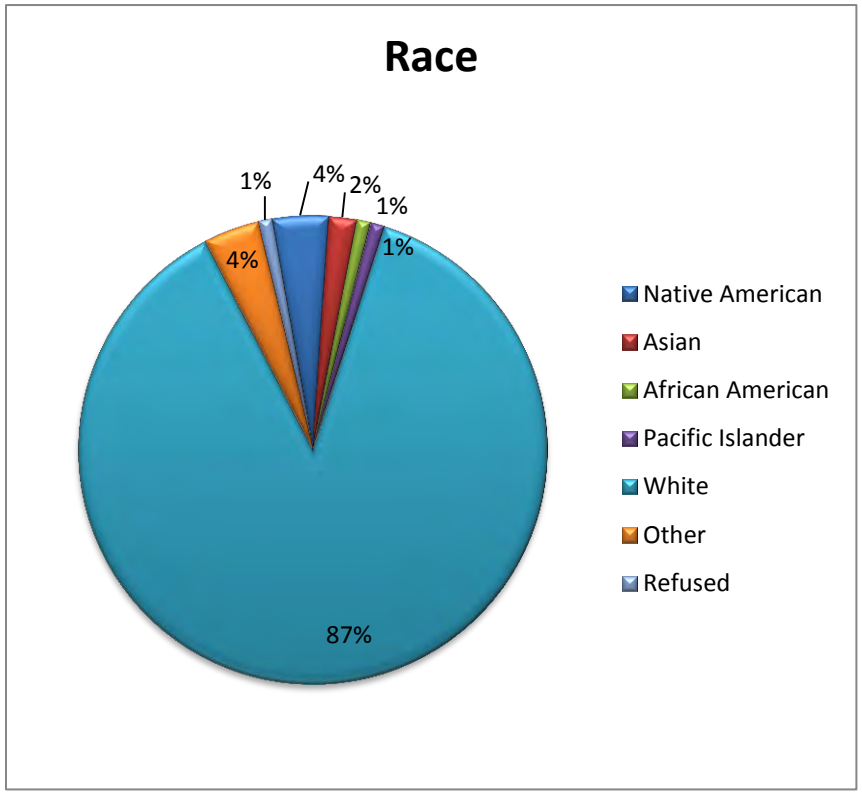
Mountainland Region Results

I. Demographics

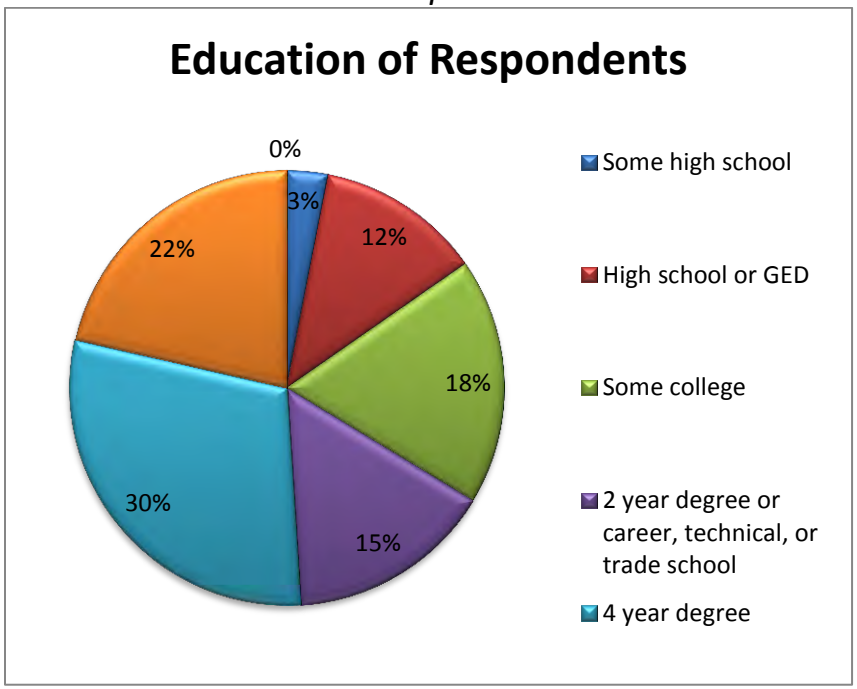
Survey participants were asked to disclose their gender.



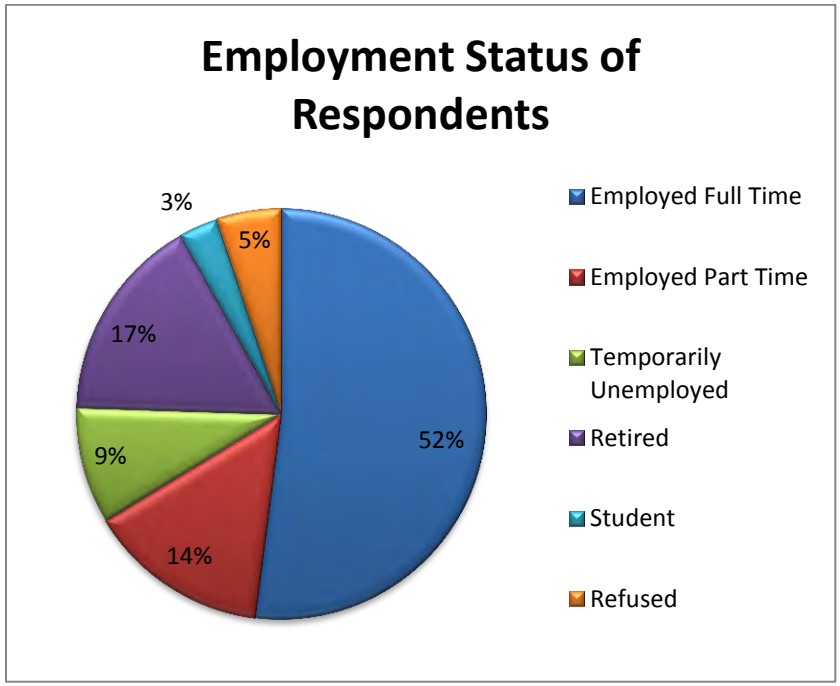
What is your race? You can choose more than one



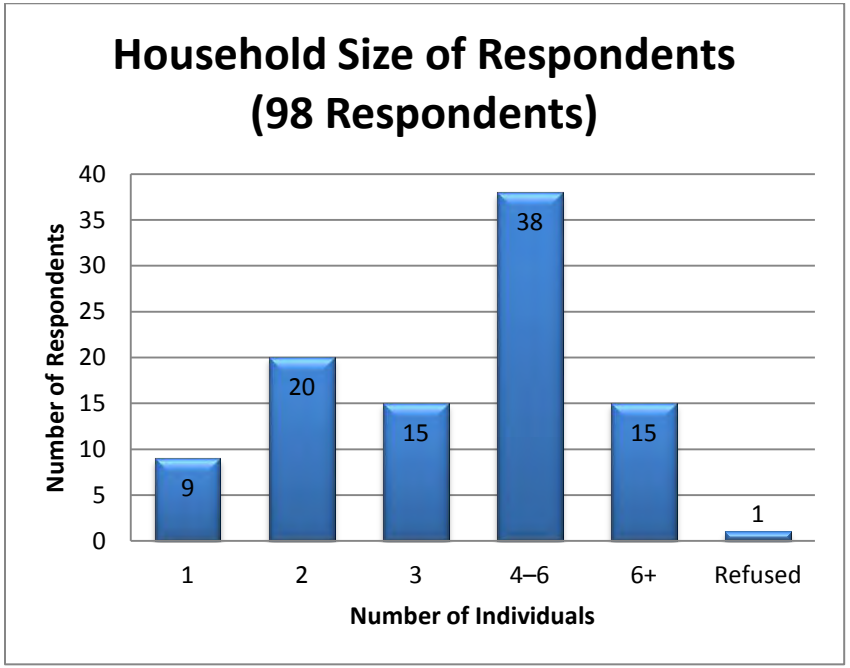
What is the highest level of formal education you have completed?



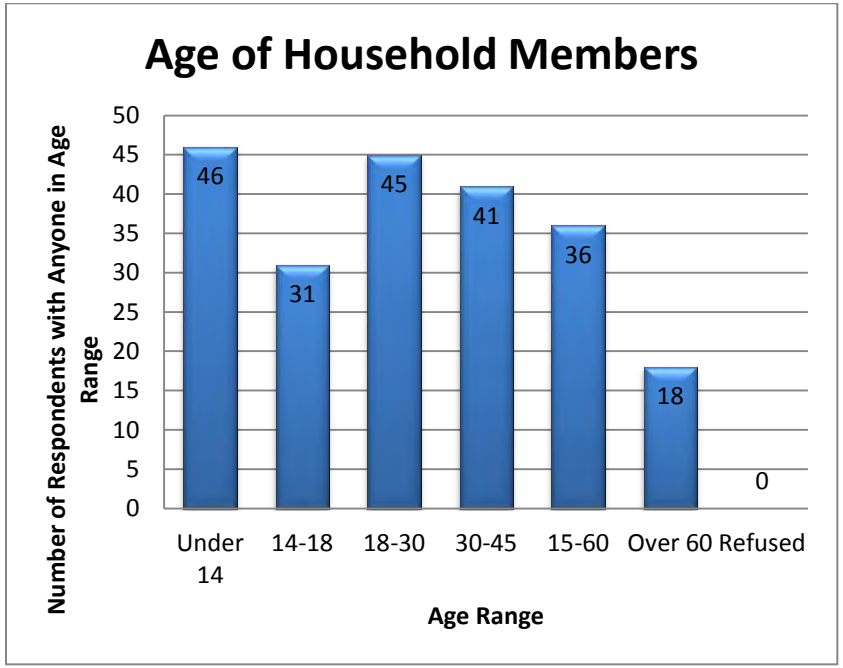
How would you describe your current employment status?



How many individuals are currently living or staying in your household?

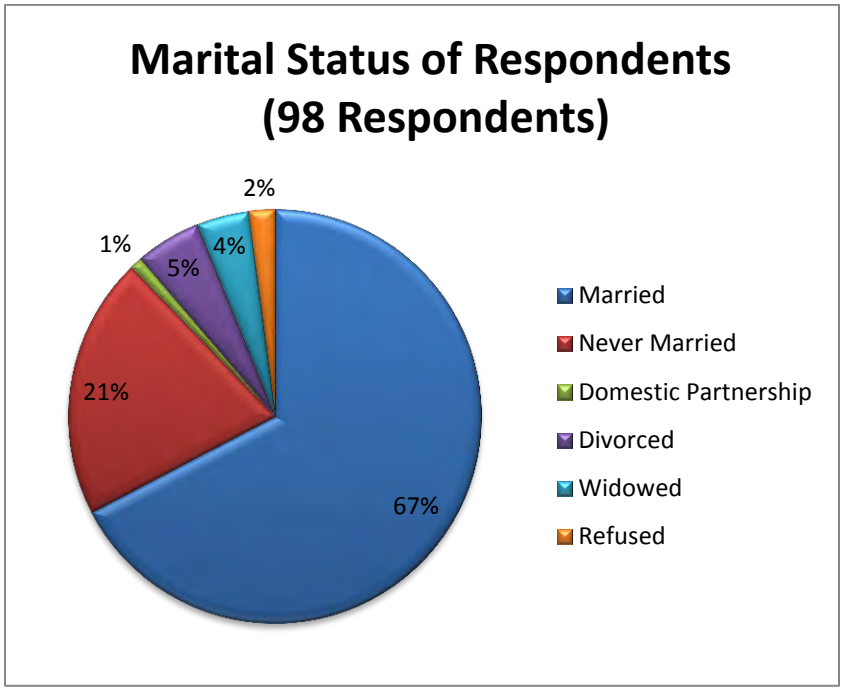


Are any members of your household:

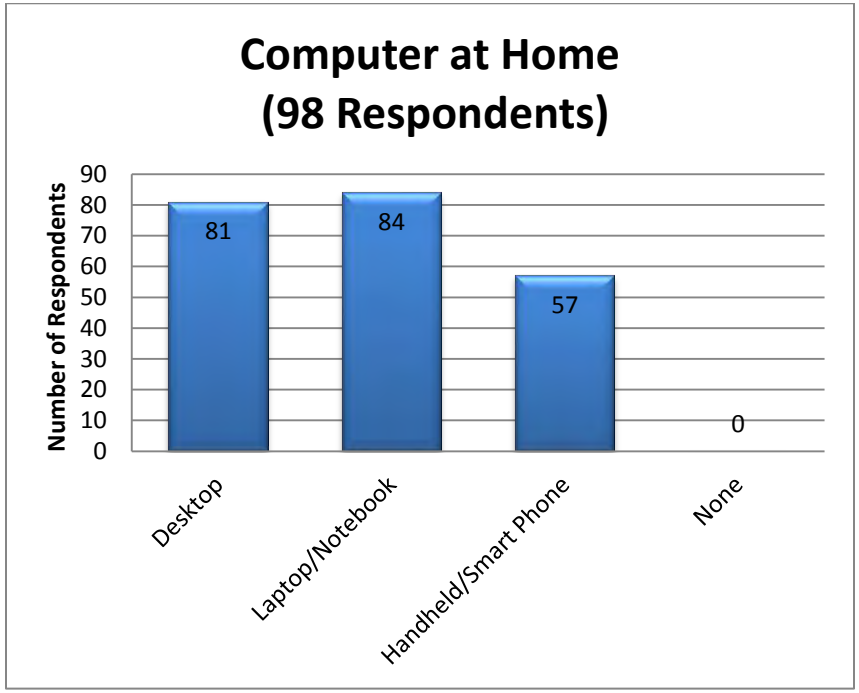


II. Access

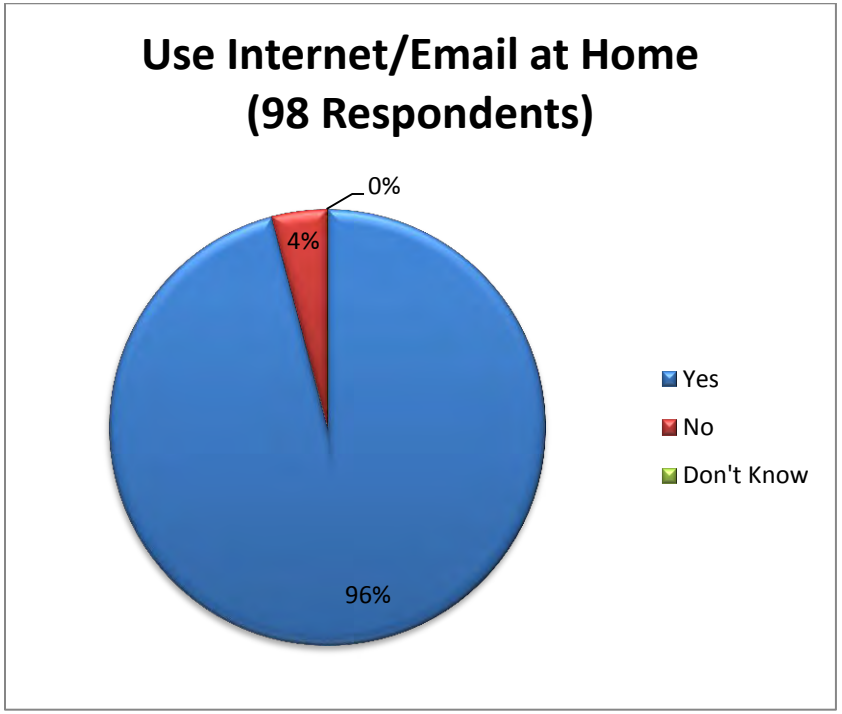
What is your current marital status?



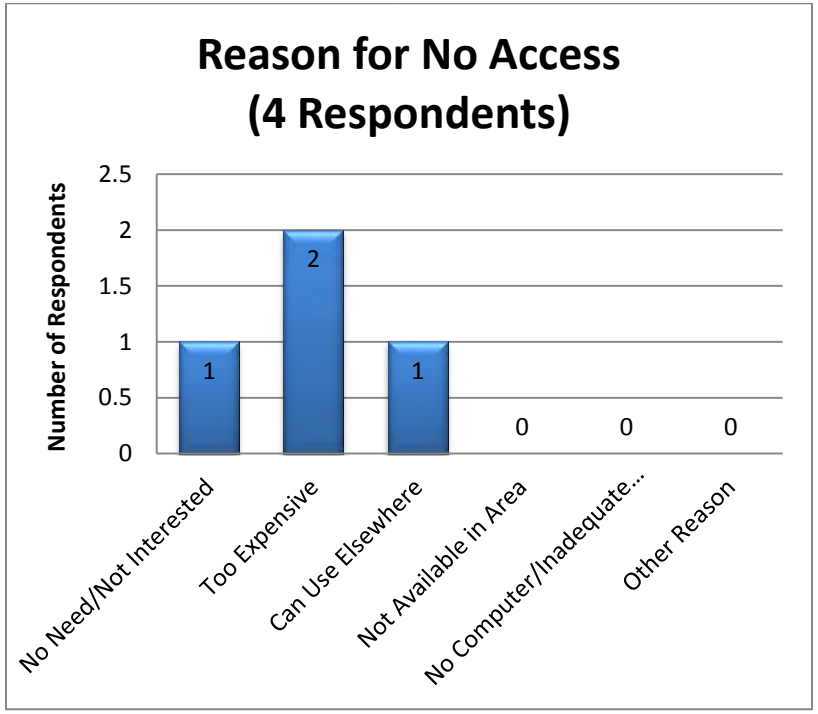
At home, do you or any member of you household own or use any of the following computers?



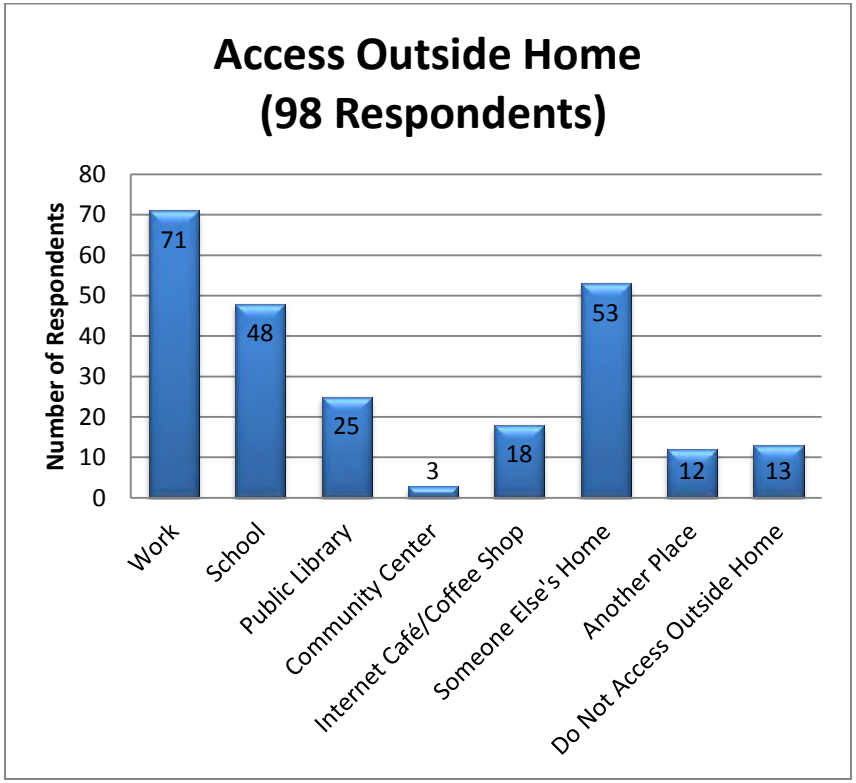
Does anyone in your household use the Internet from home or send and receive email from home?



What is the main reason you do not have internet access in your home?

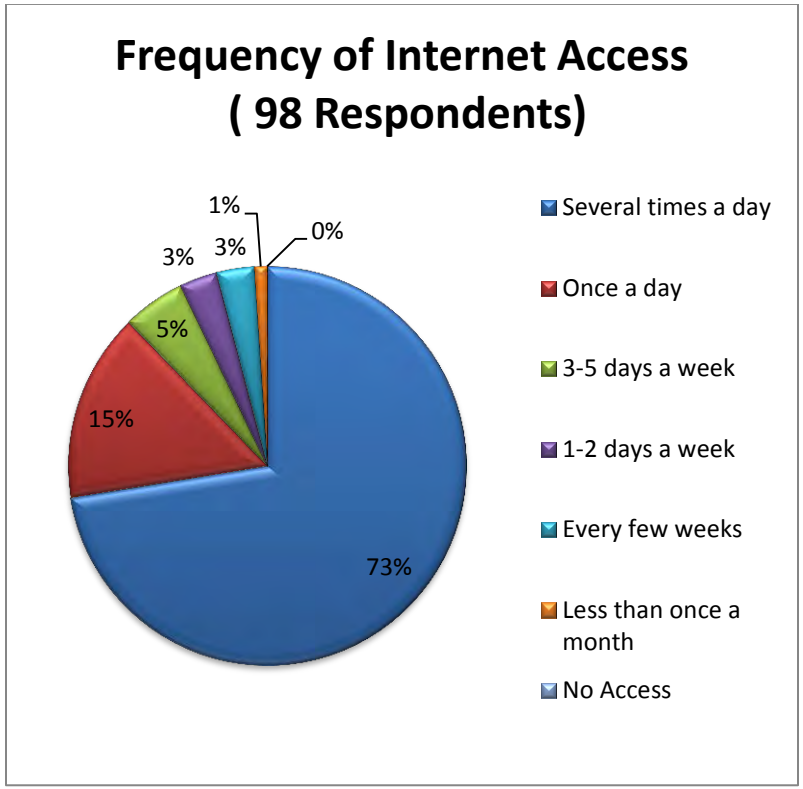


Do you or any member of your household access the internet at any of the following locations outside the home?

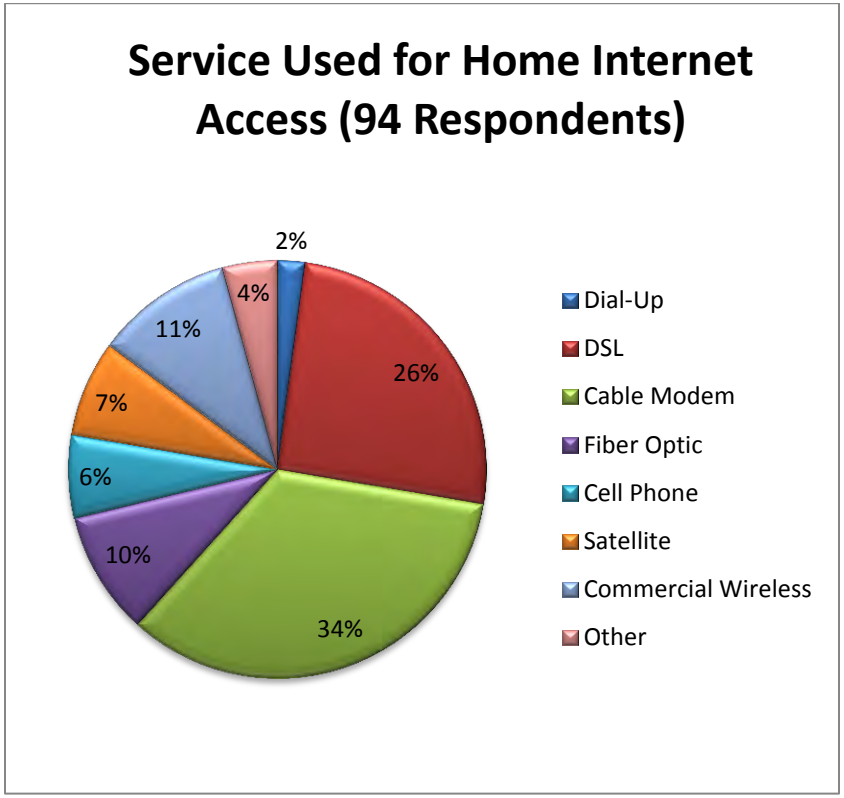


III. Use and Service

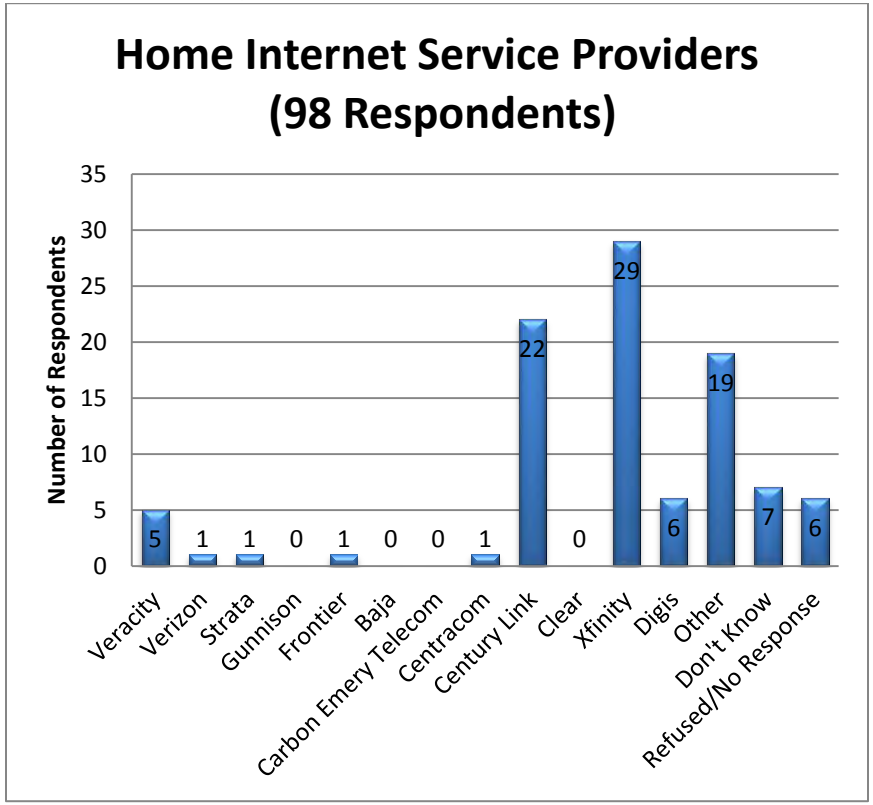
About how often do you access the internet?



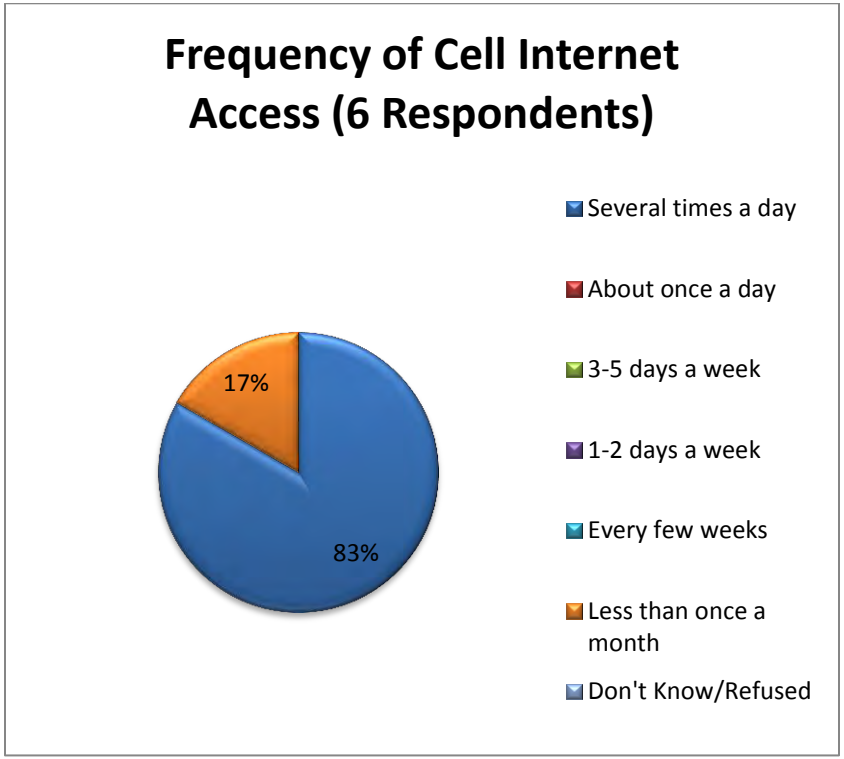
At home do you access the Internet using :



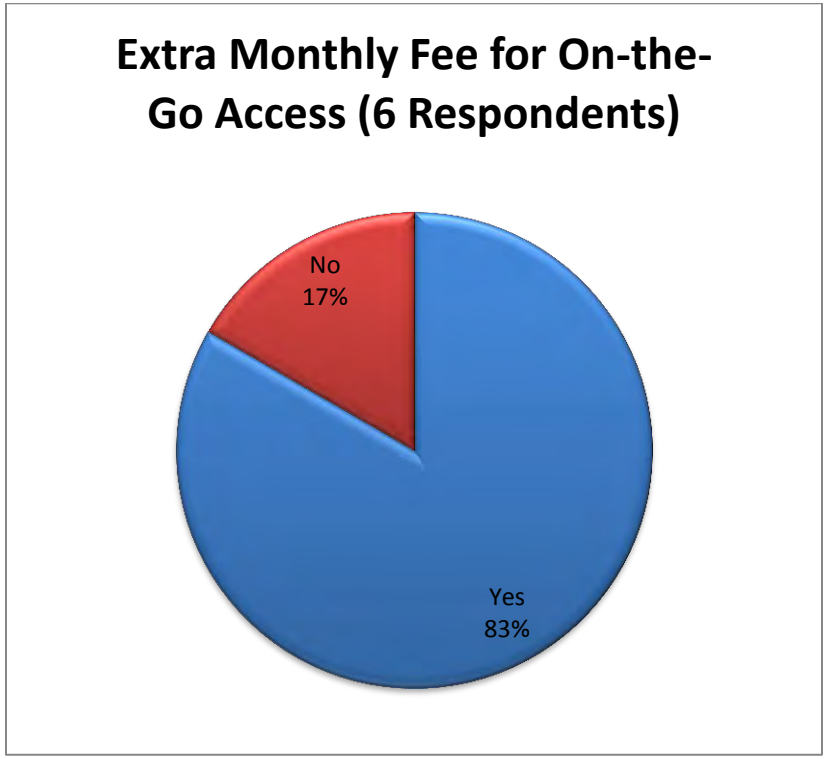
Thinking about your internet service at home, which company provides that service?



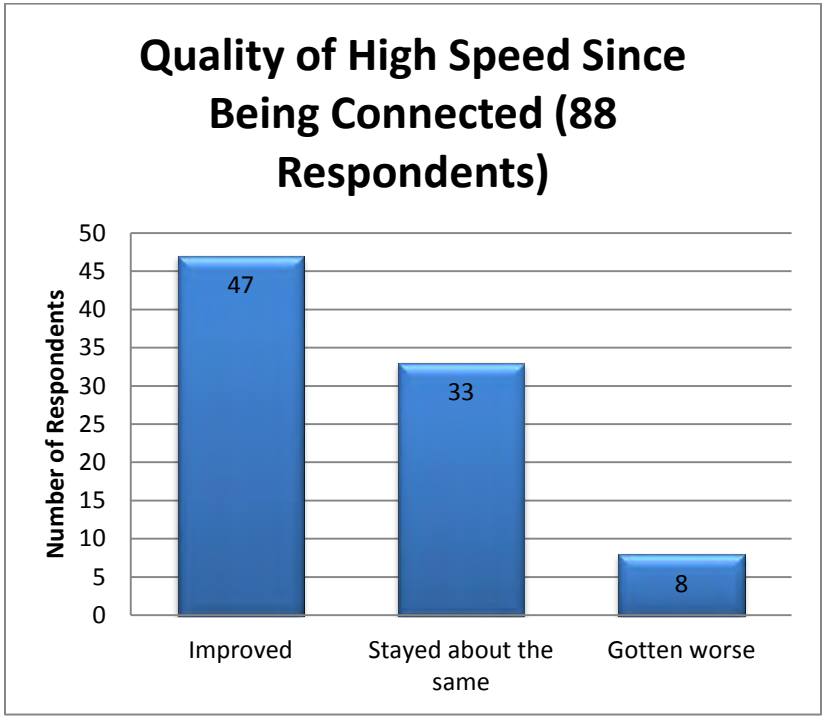
How often do you access the internet from your cell phone?



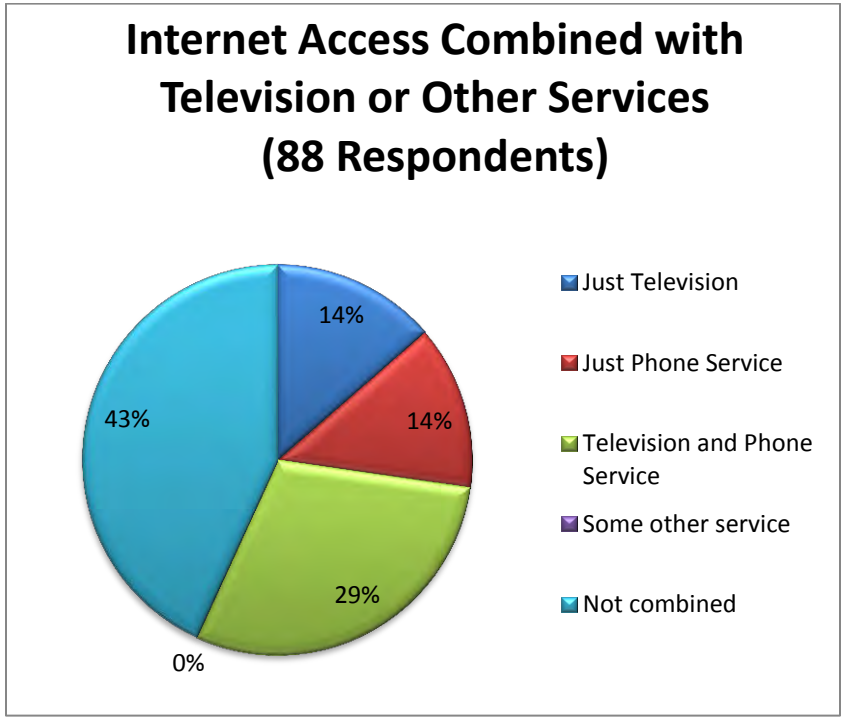
Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



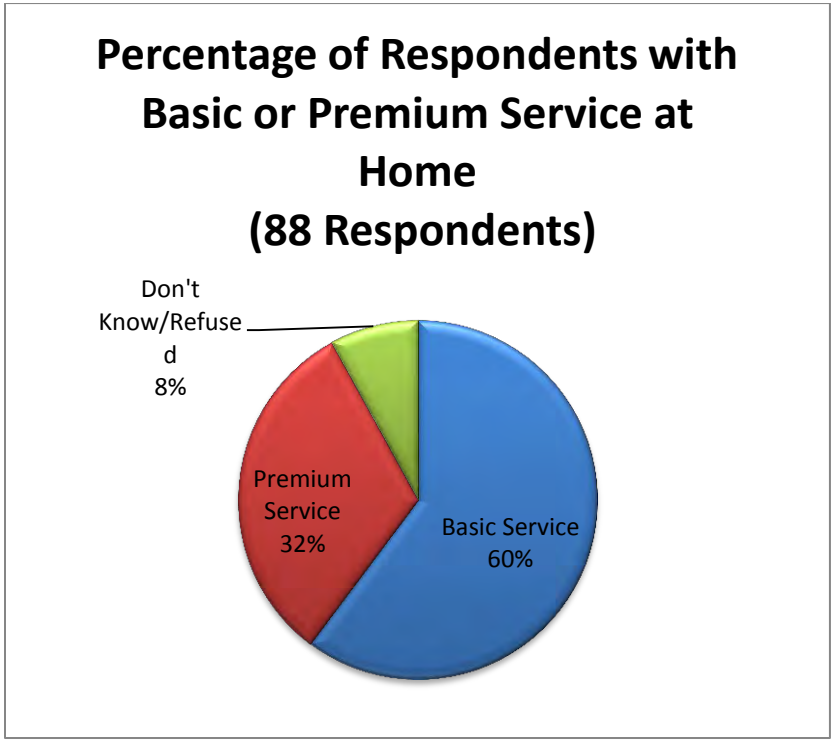
Since you first got high speed internet at home would you say the quality of your high speed connection has:



Is your internet access combined with television or other services?



Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?



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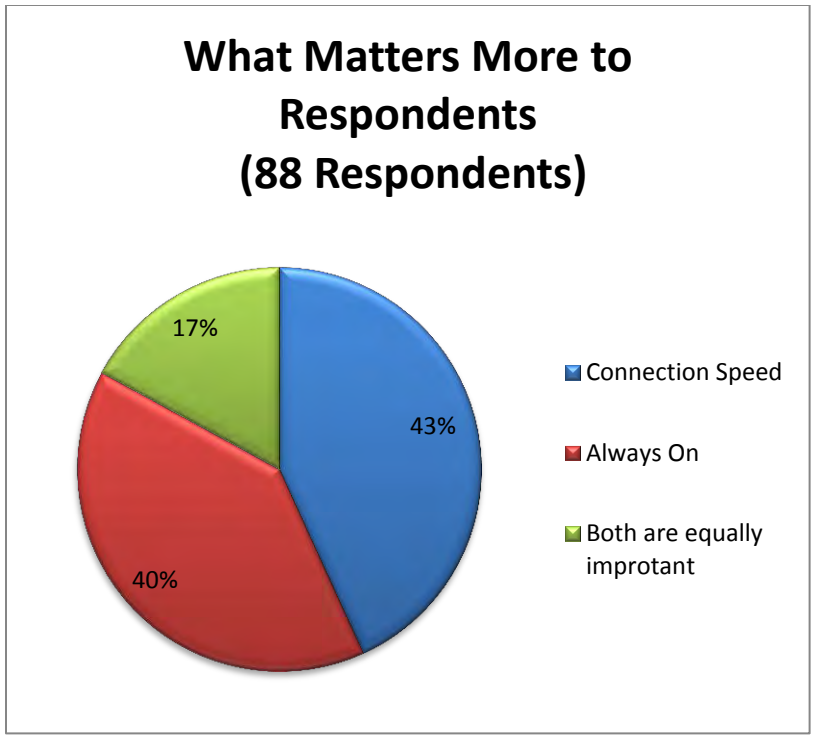
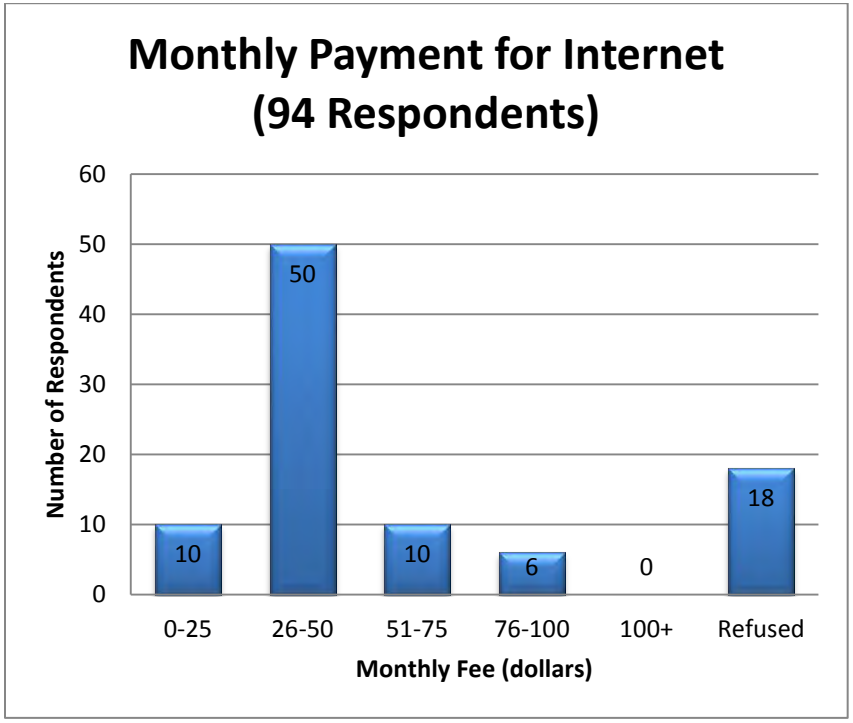
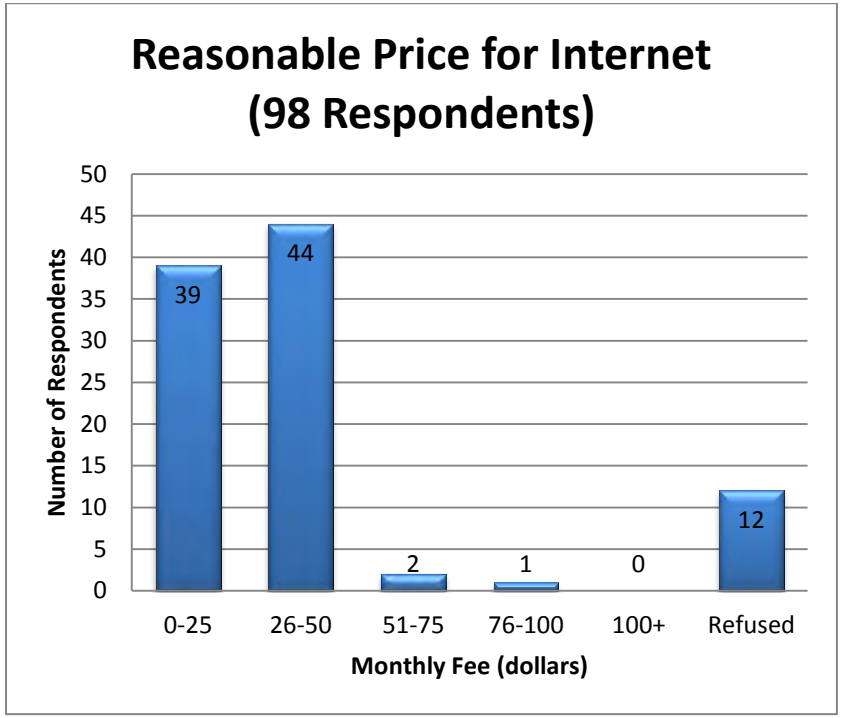


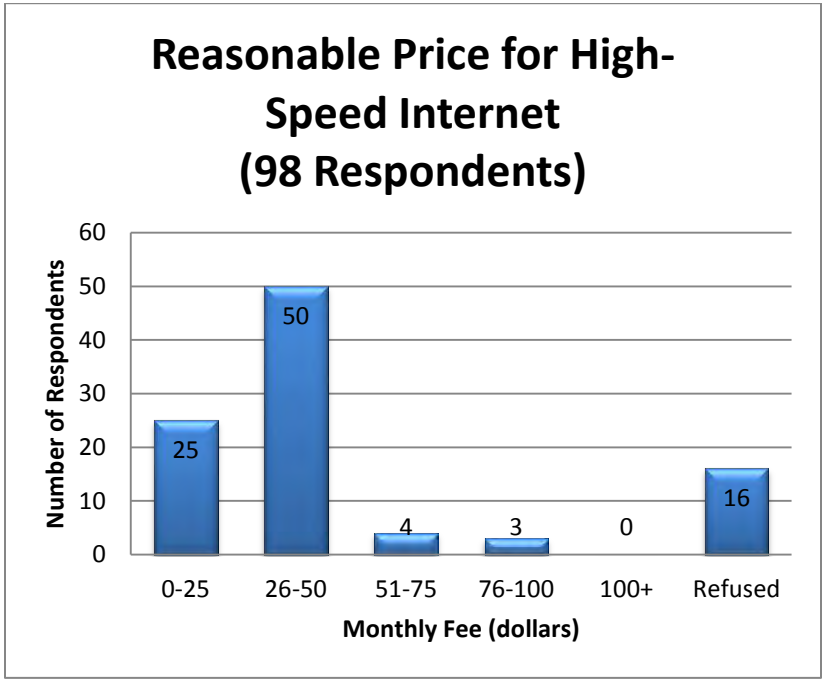
To the nearest dollar, how much per month do you pay for internet service?



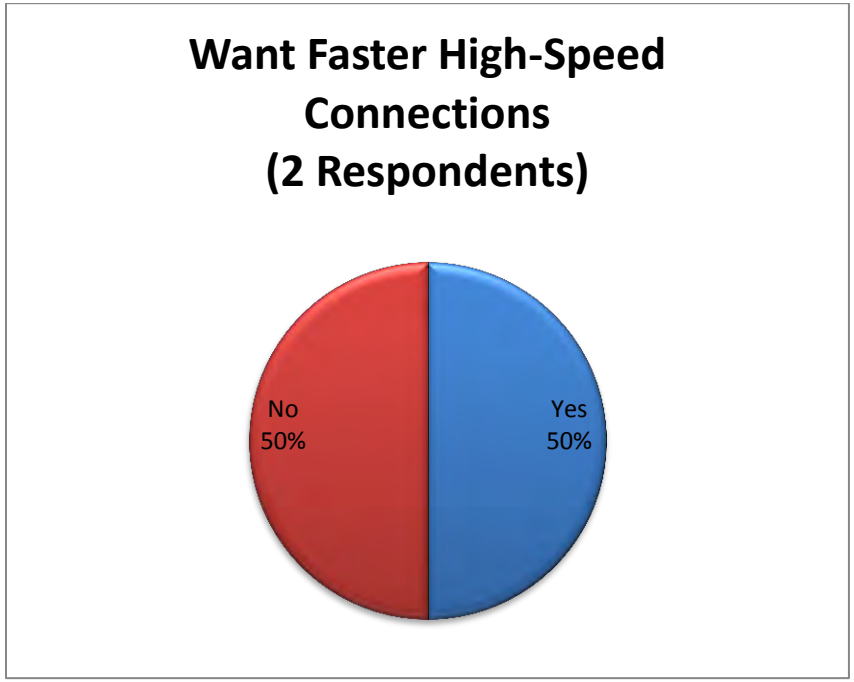
What do you think a reasonable price for internet service would be?



What do you think a reasonable price for High-Speed Internet would be?

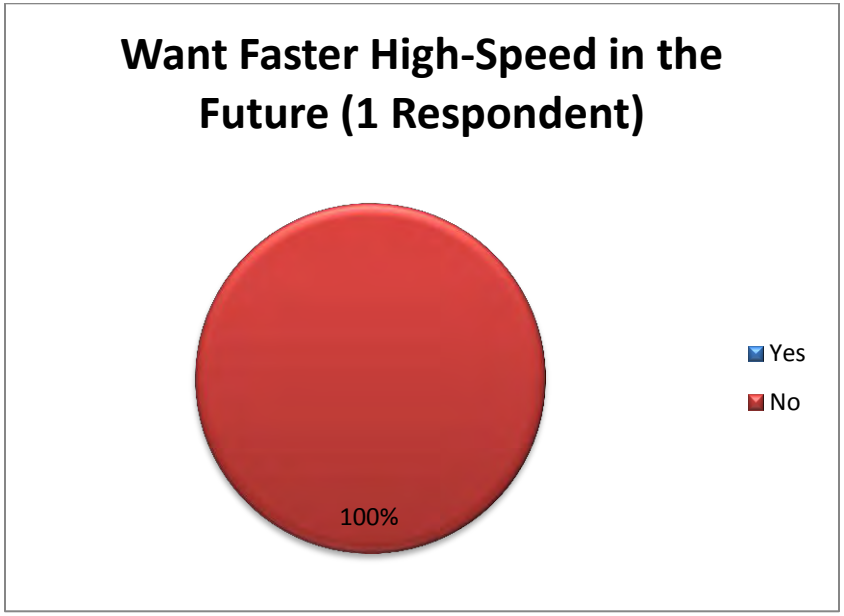


Would you like to have a faster high speed connection?

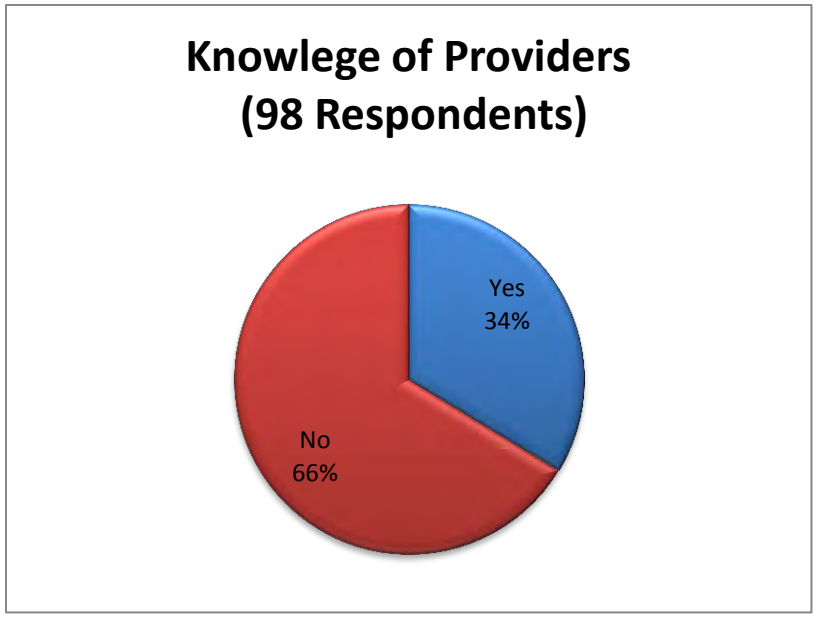


V. Consumer Perceptions

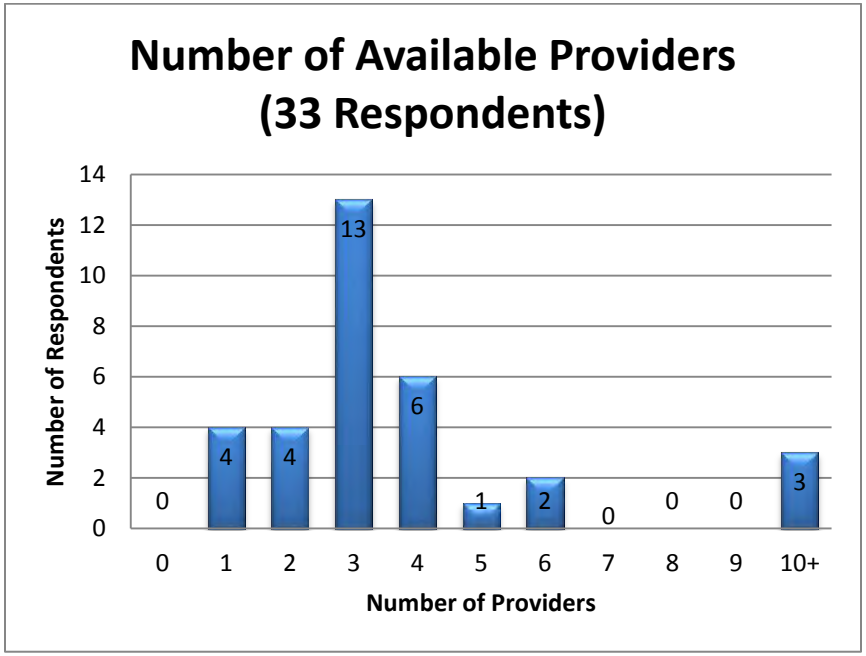
Do you think you would like a faster connection sometime in the future?



Do you know how many providers of high-speed internet service are in your area?



How many providers are available?



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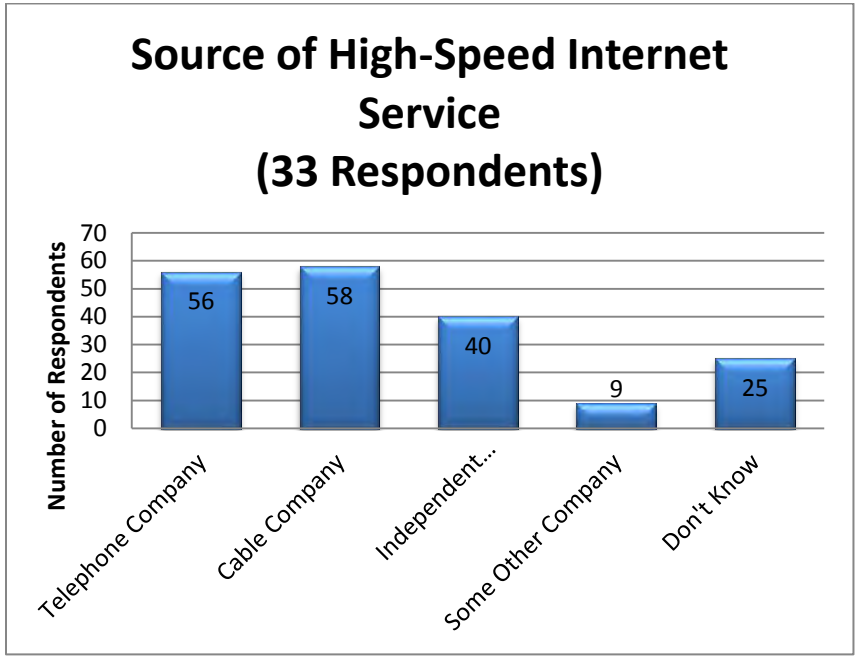

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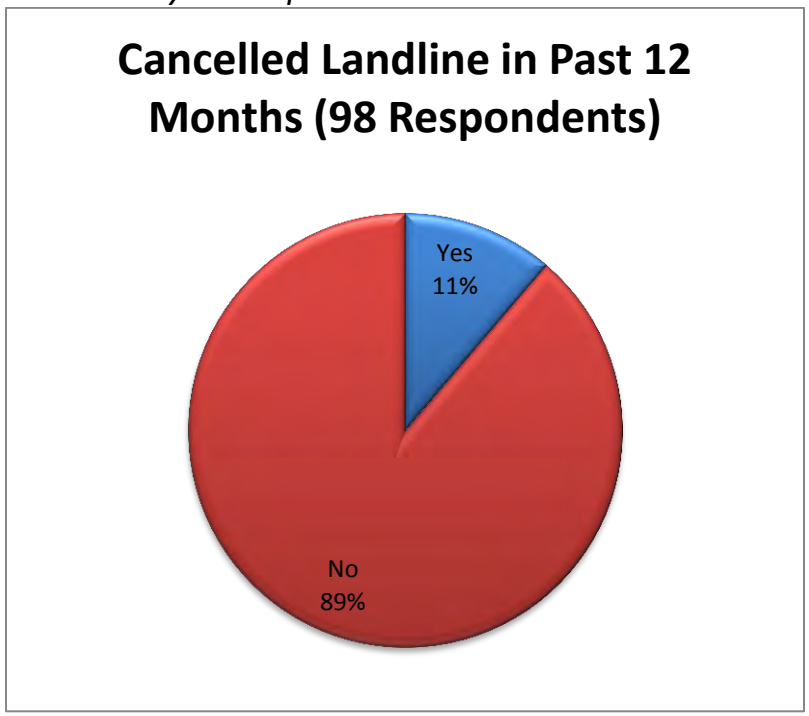
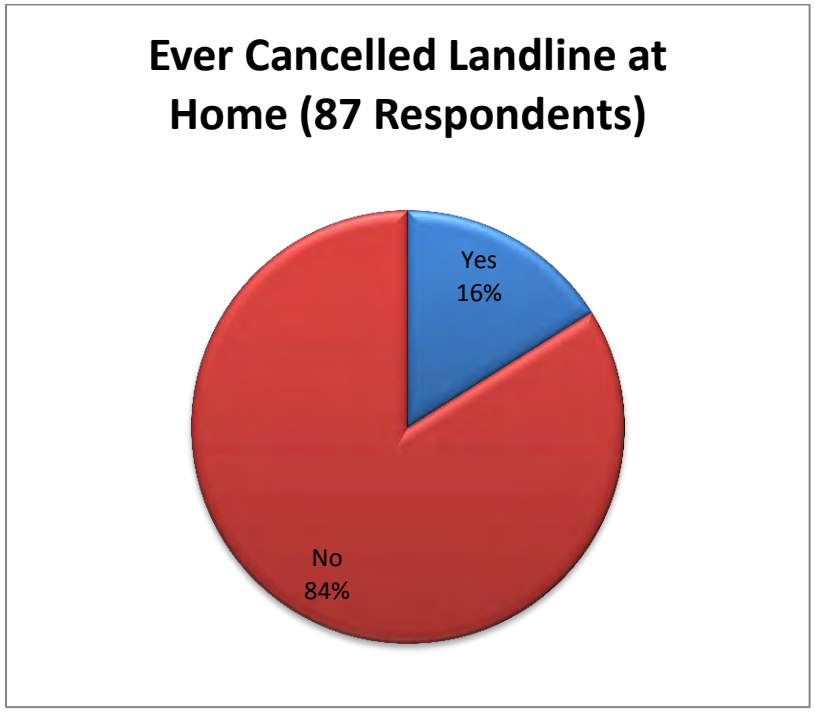


Have you ever cancelled a landline phone at home to save money?



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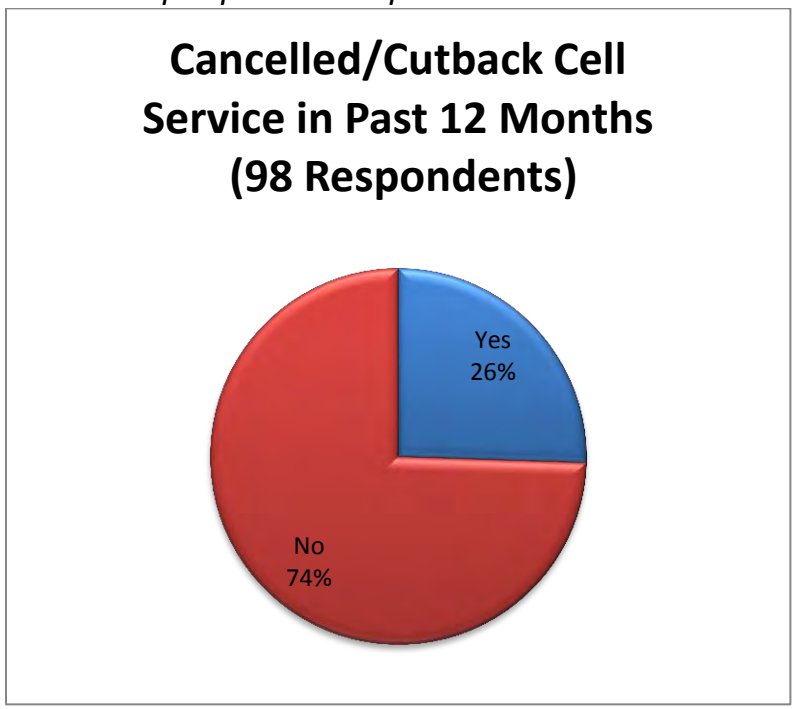
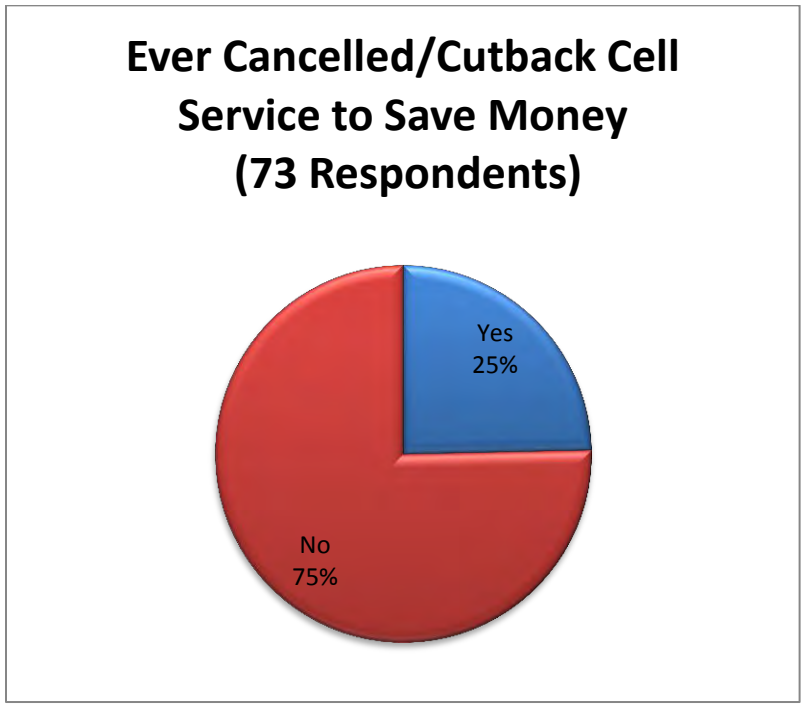
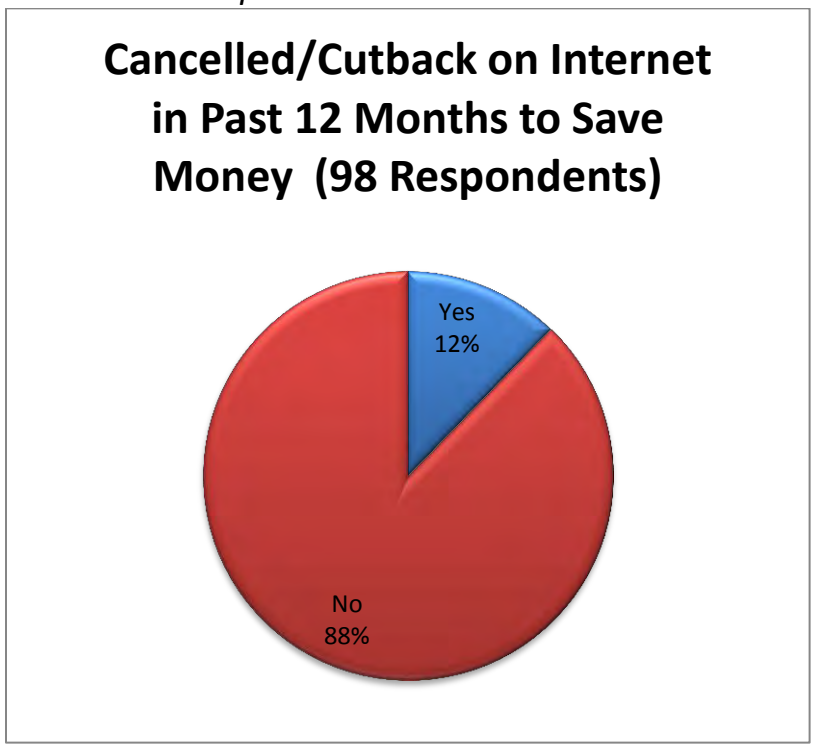


Have you ever cancelled your cell phone service or cutback to a cheaper plan?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



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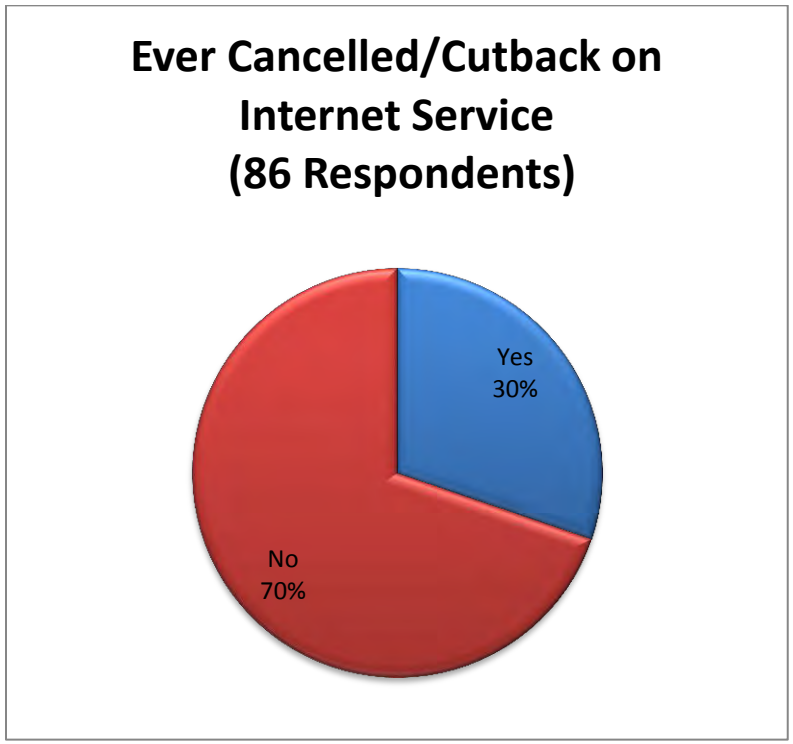

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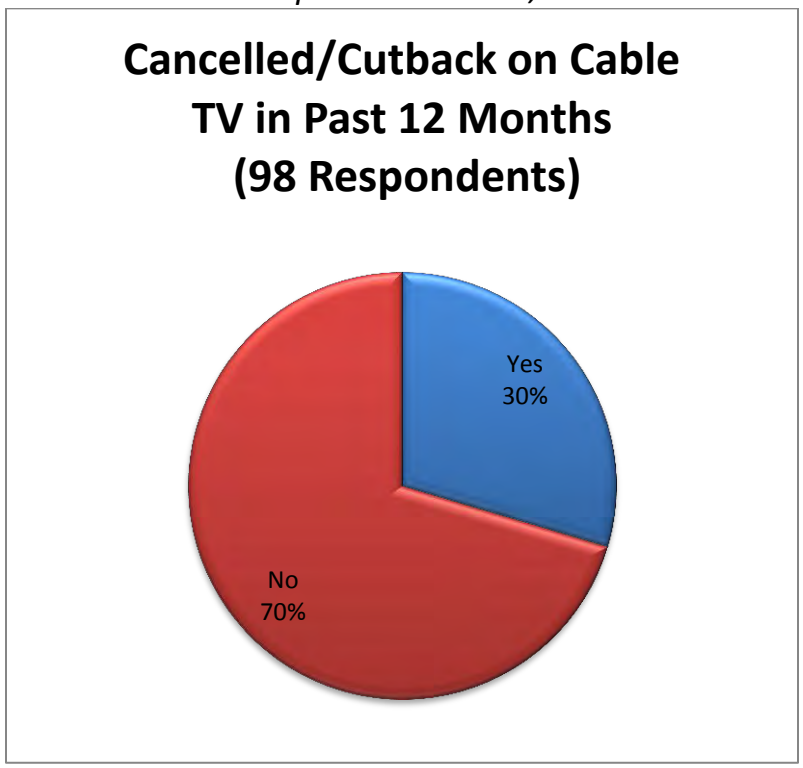
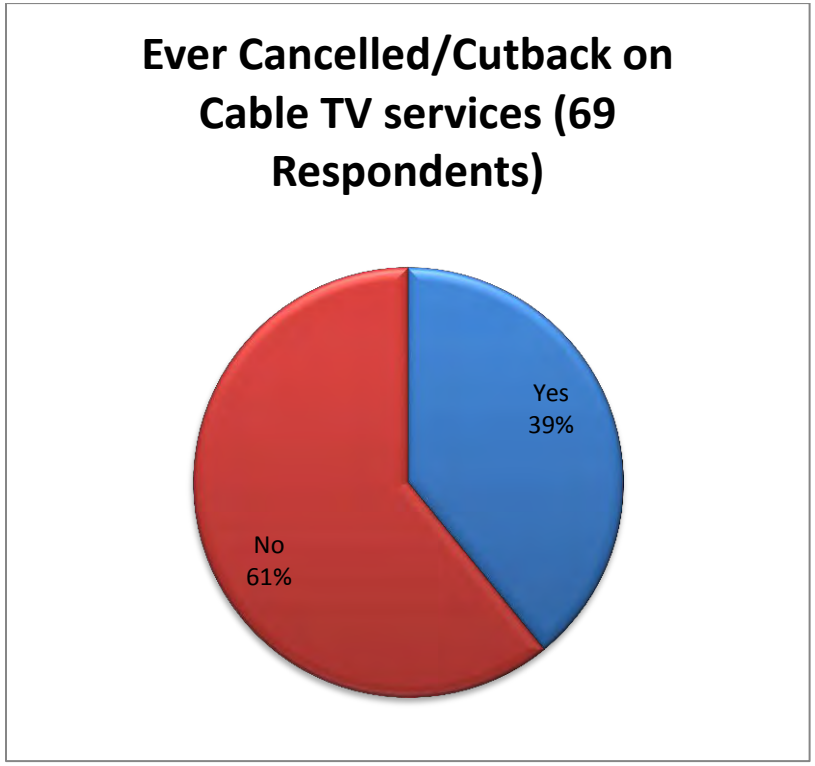


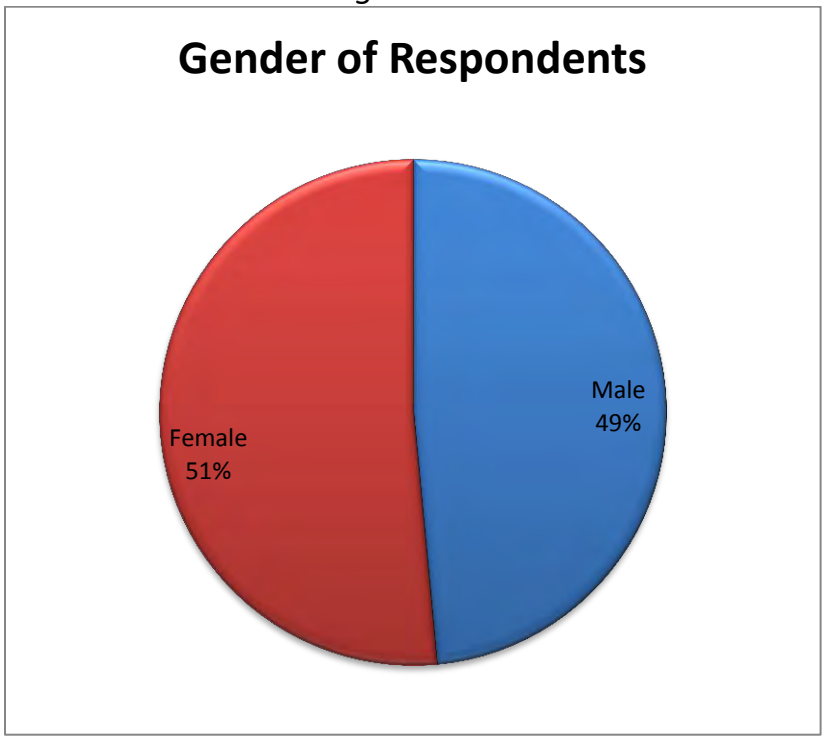
Have you ever cancelled or cutback on cable TV services?



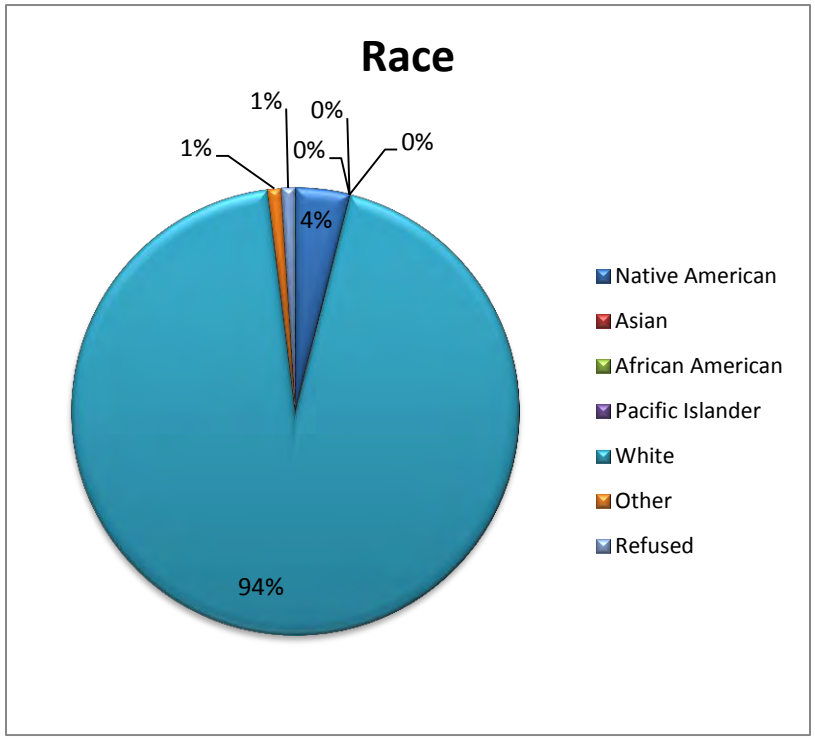
Uintah Basin Region Results

I. Demographics

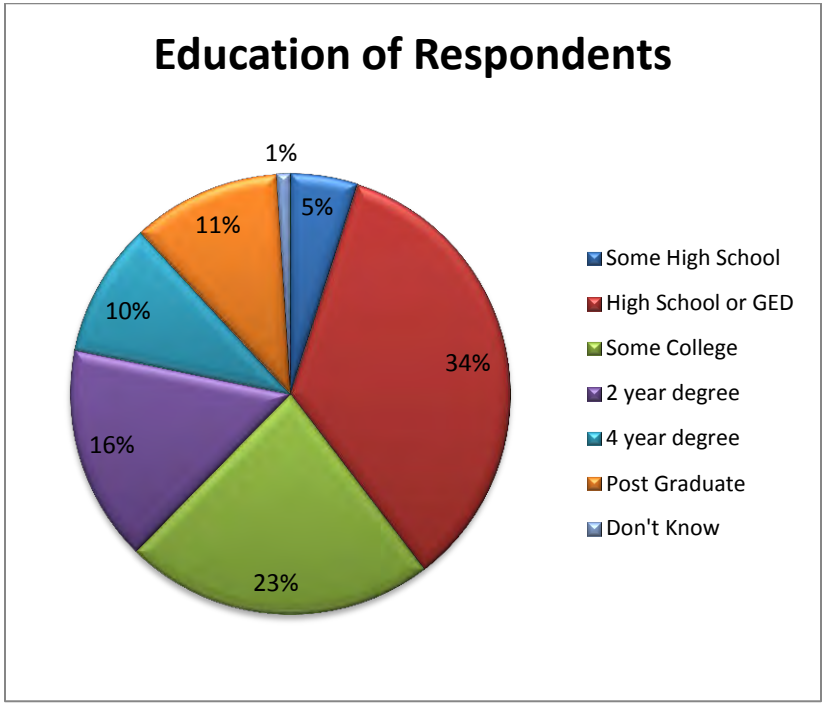
Survey participants were asked to disclose their gender.



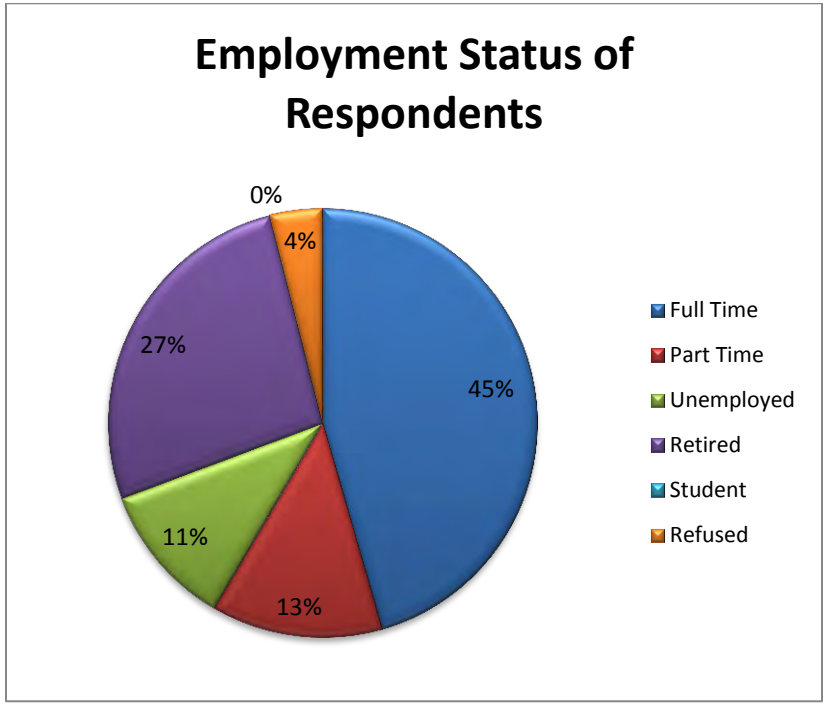
What is your race? You can choose more than one



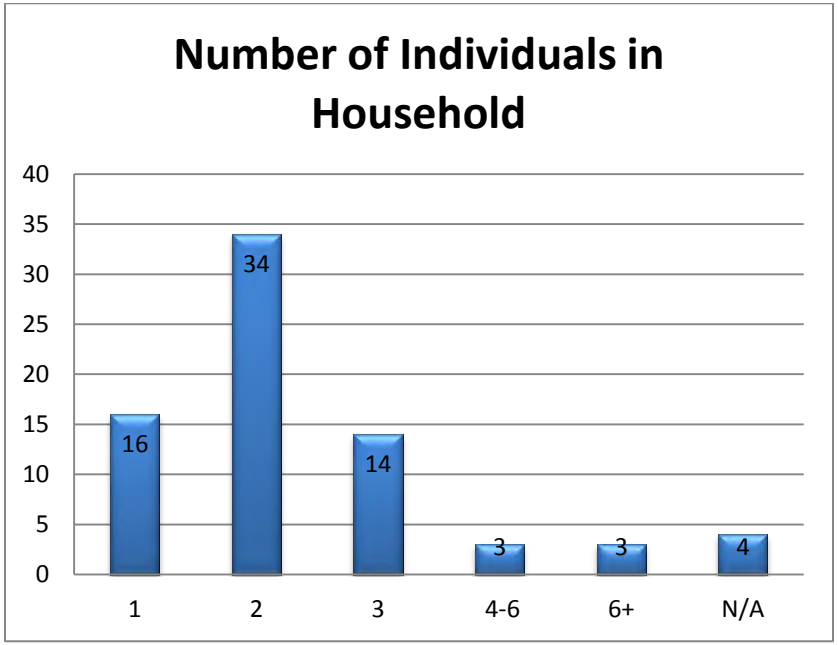
What is the highest level of formal education you have completed?



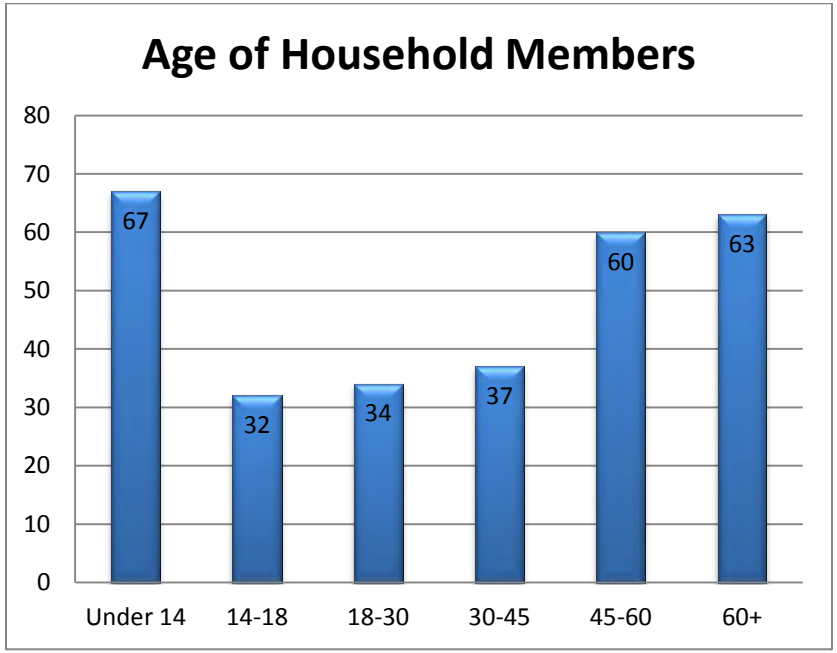
How would you describe your current employment status?



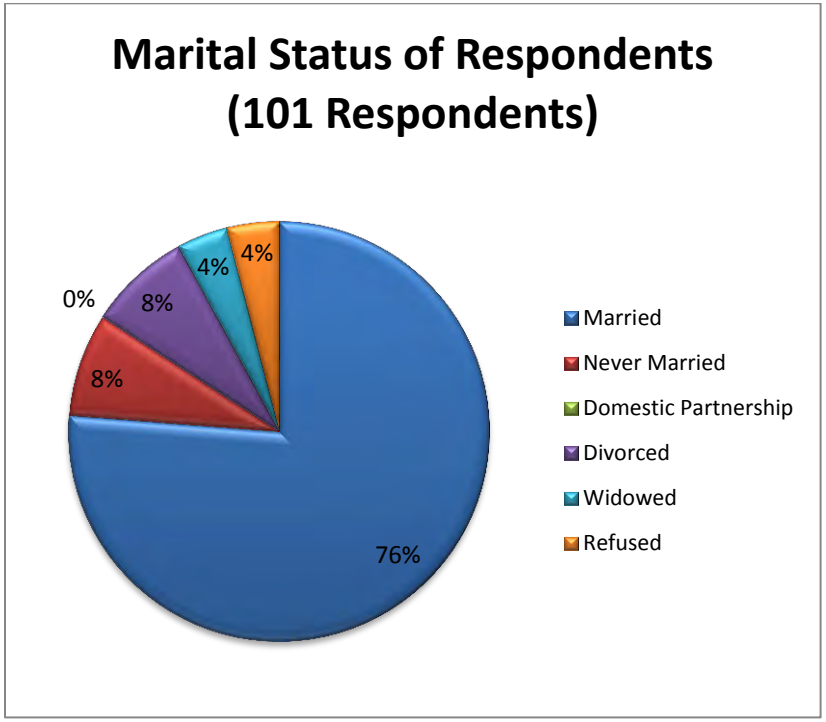
How many individuals are currently living or staying in your household?



Are any members of your household:

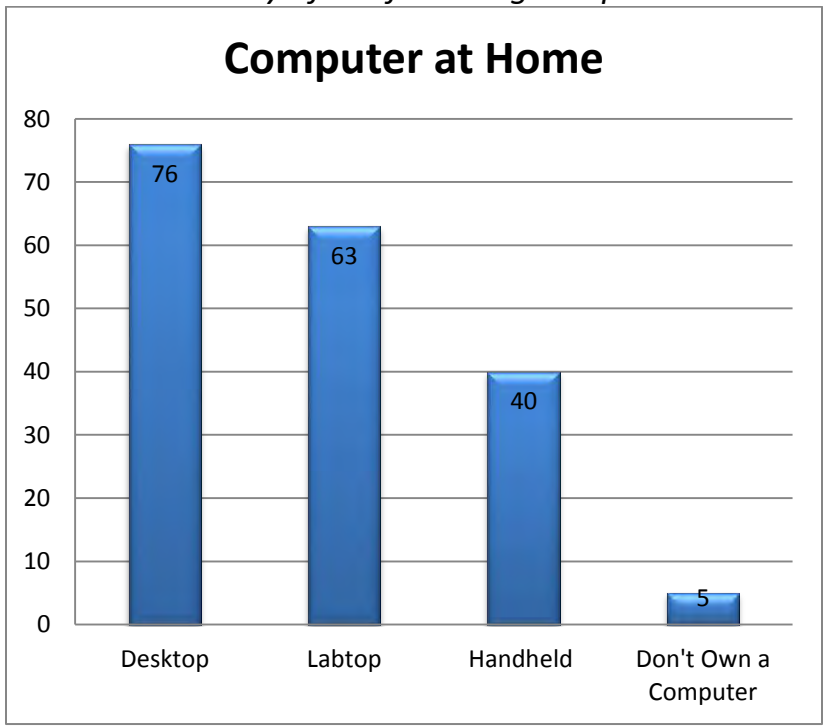


What is your current marital status?

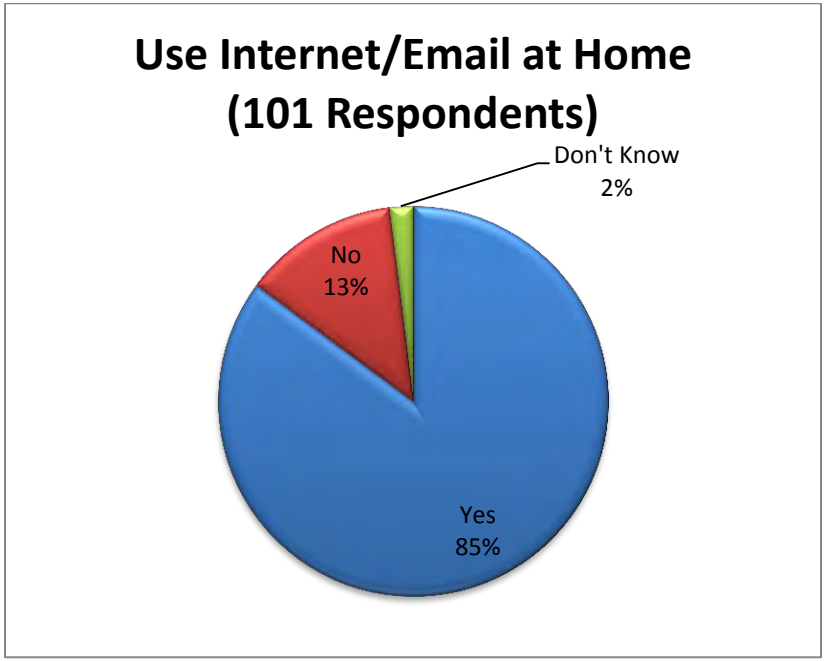


II. Access

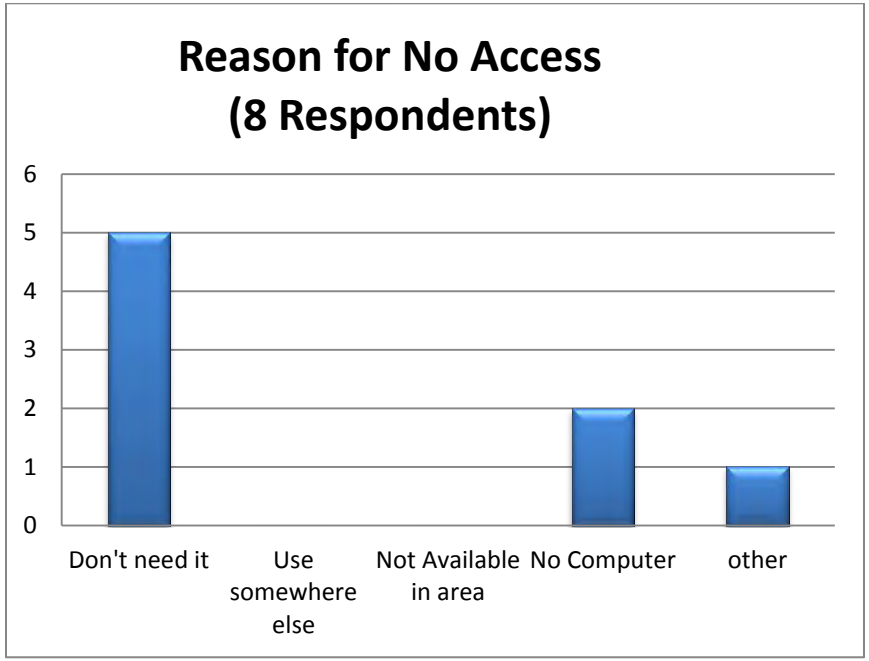
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

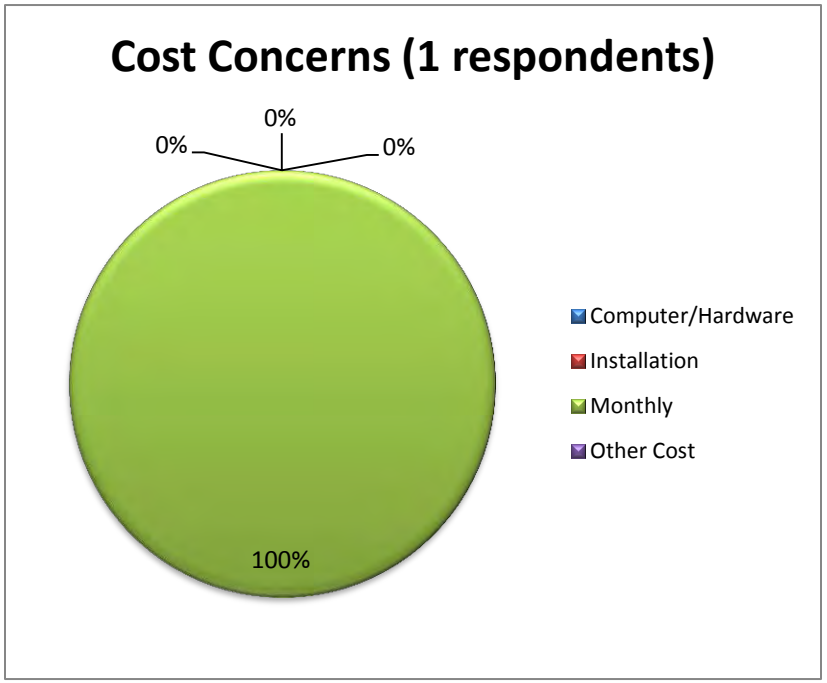


What is the main reason you do not have internet access in your home?

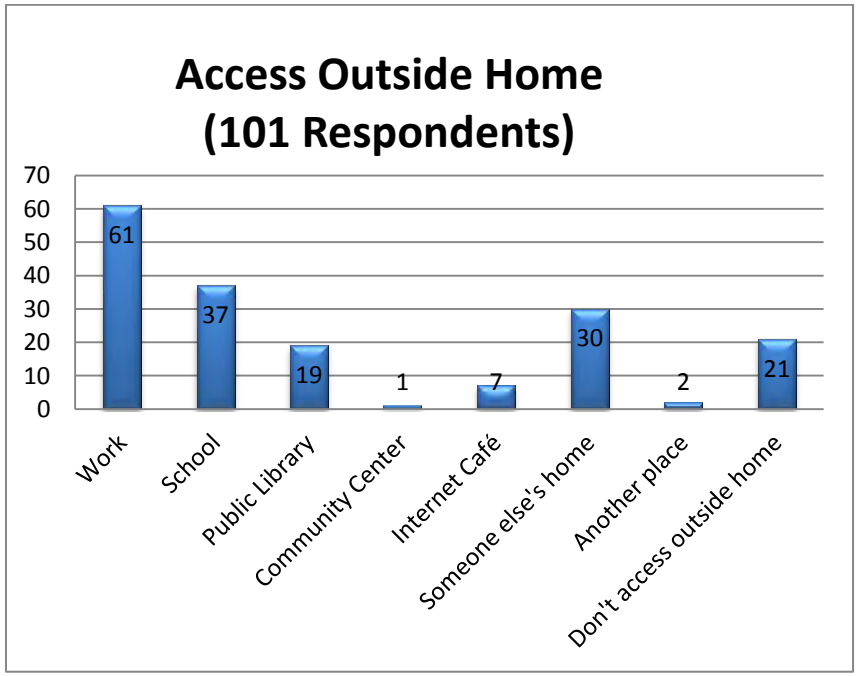


Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?

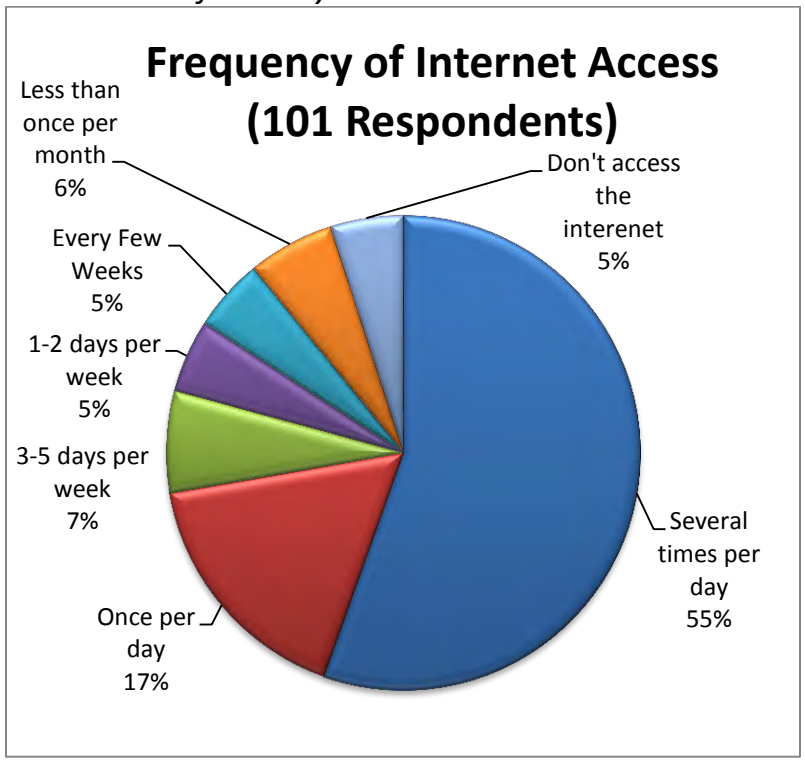


Do you or any member of your household access the internet at any of the following locations outside the home?

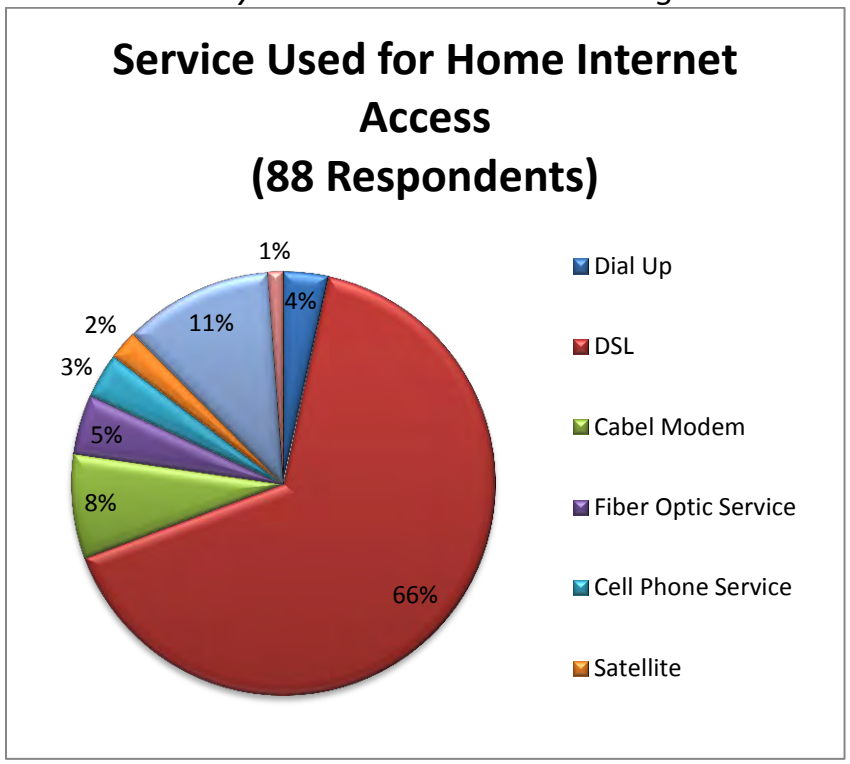


III. Use and Service

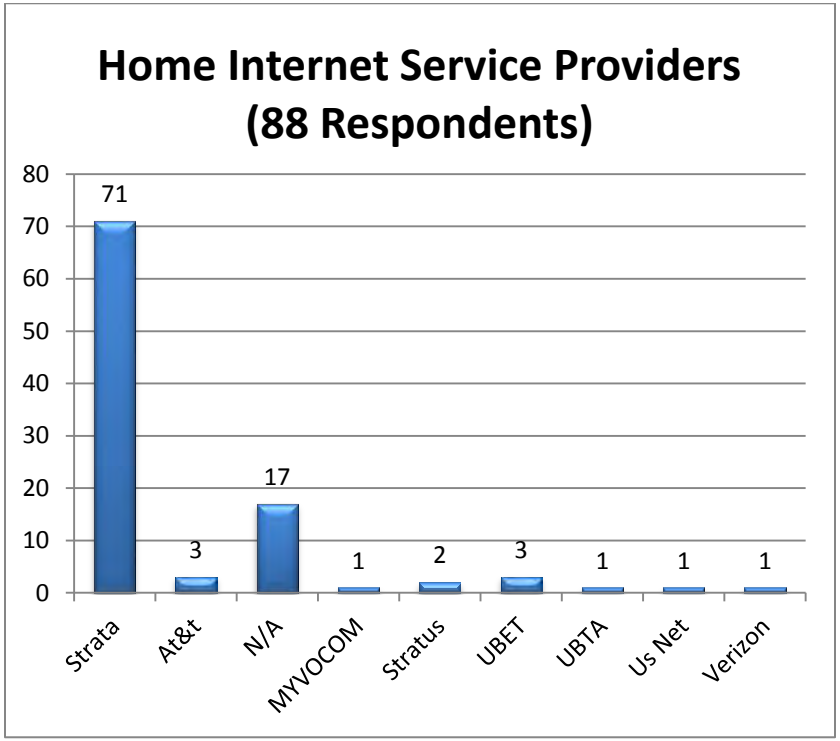
About how often do you access the internet?



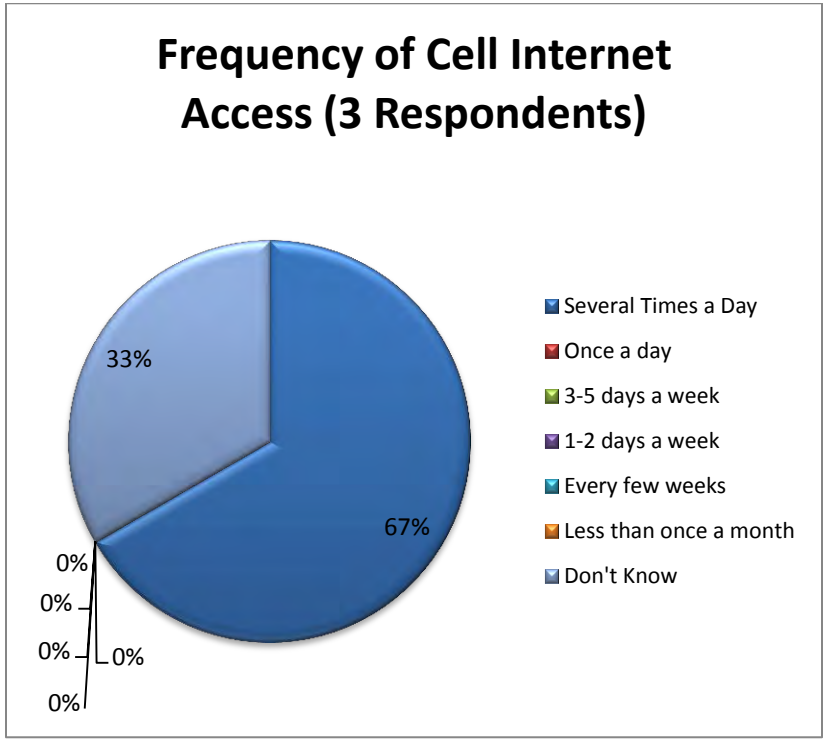
At home do you access the Internet using :



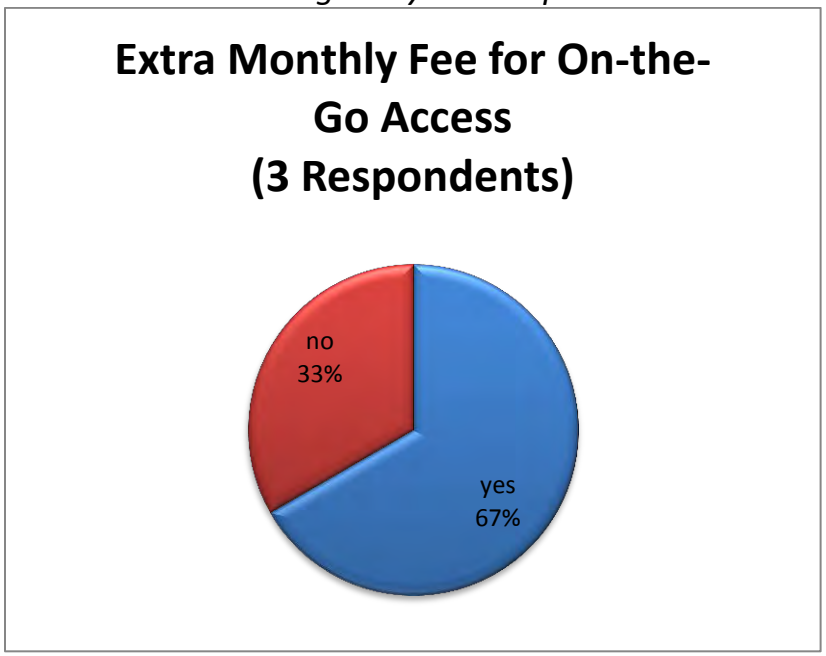
Thinking about your internet service at home, which company provides that service?



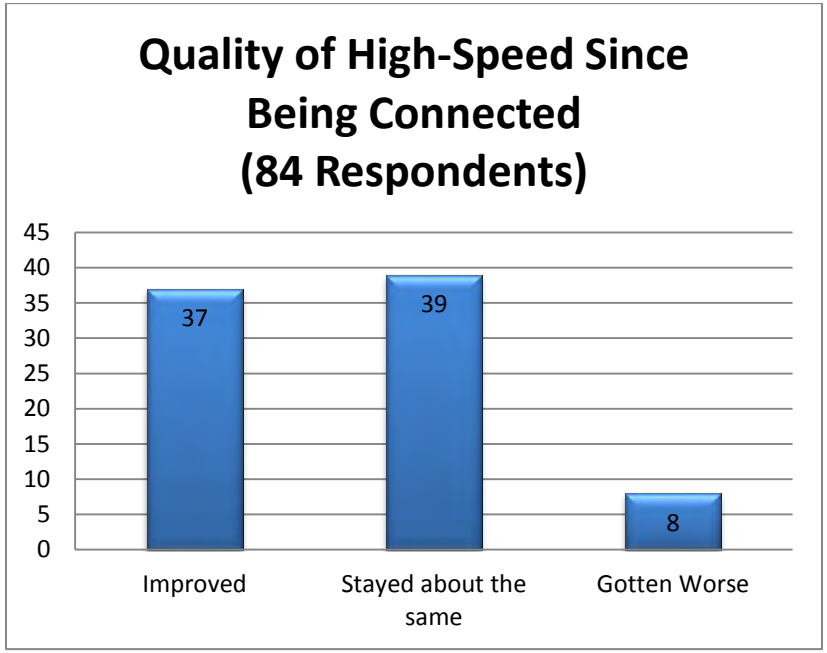
How often do you access the internet from your cell phone?



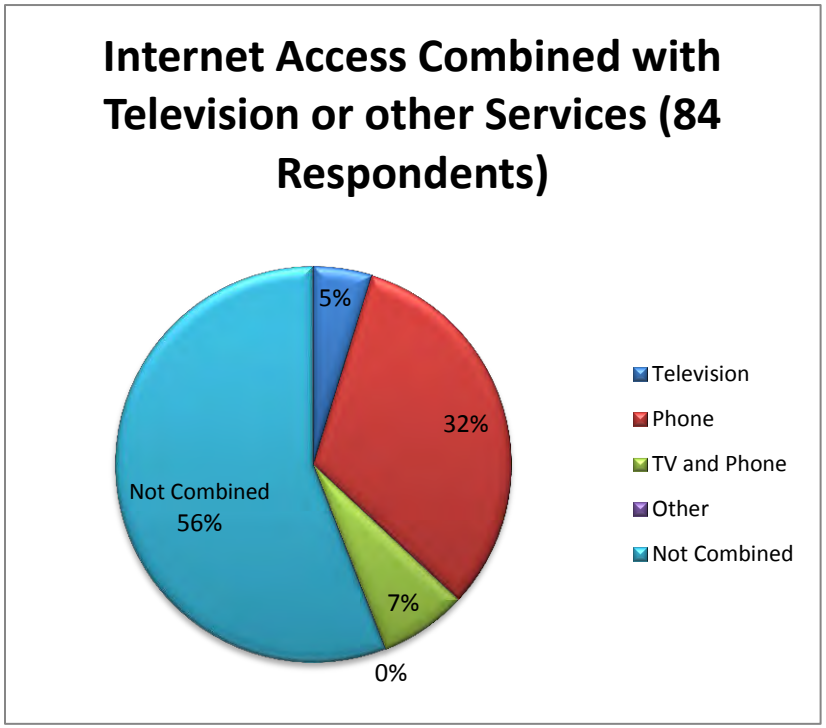
Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



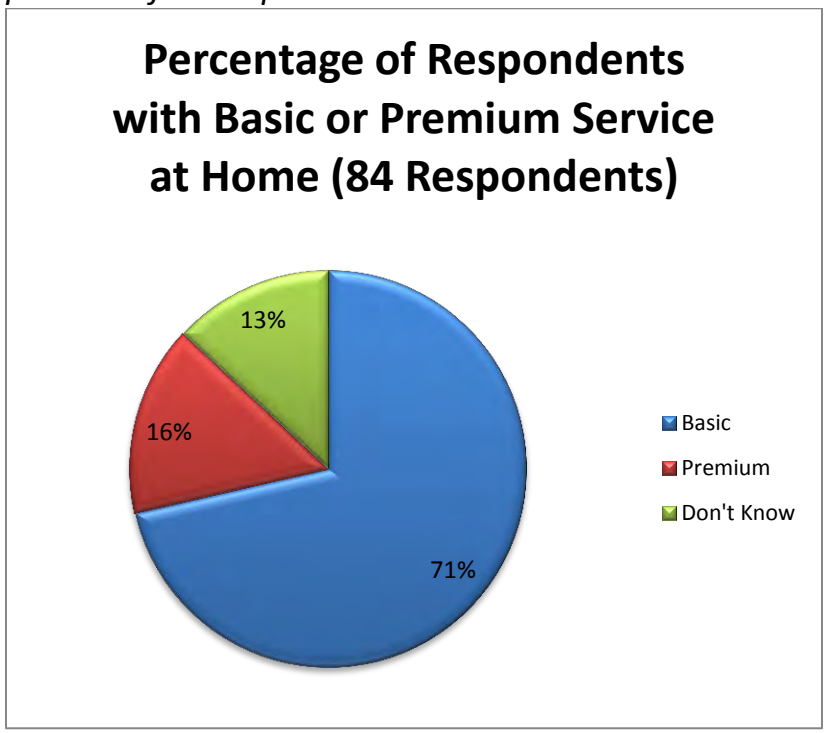
Since you first got high speed internet at home would you say the quality of your high speed connection has:



Is your internet access combined with television or other services?

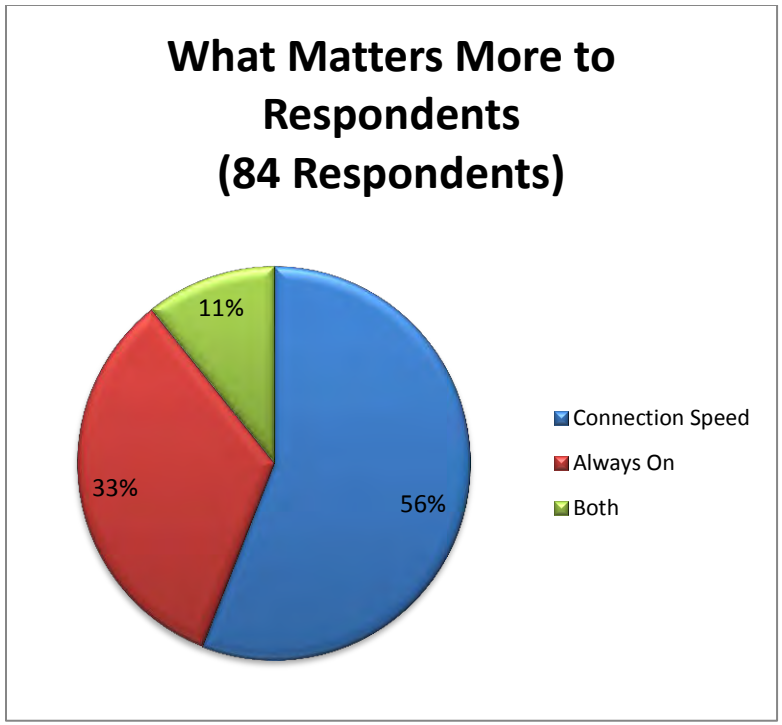


Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?

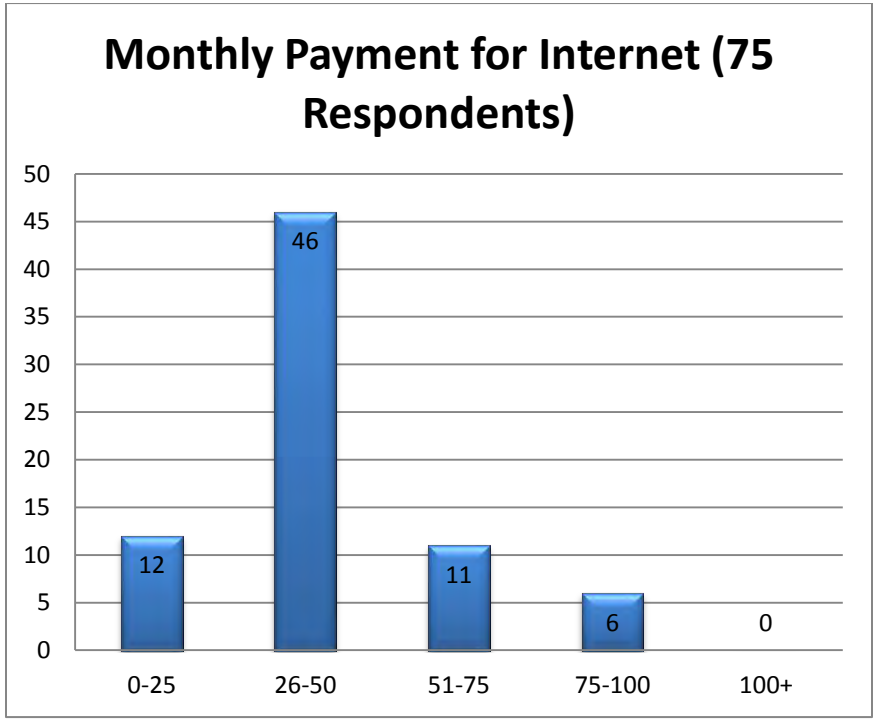


IV. Price and Preference

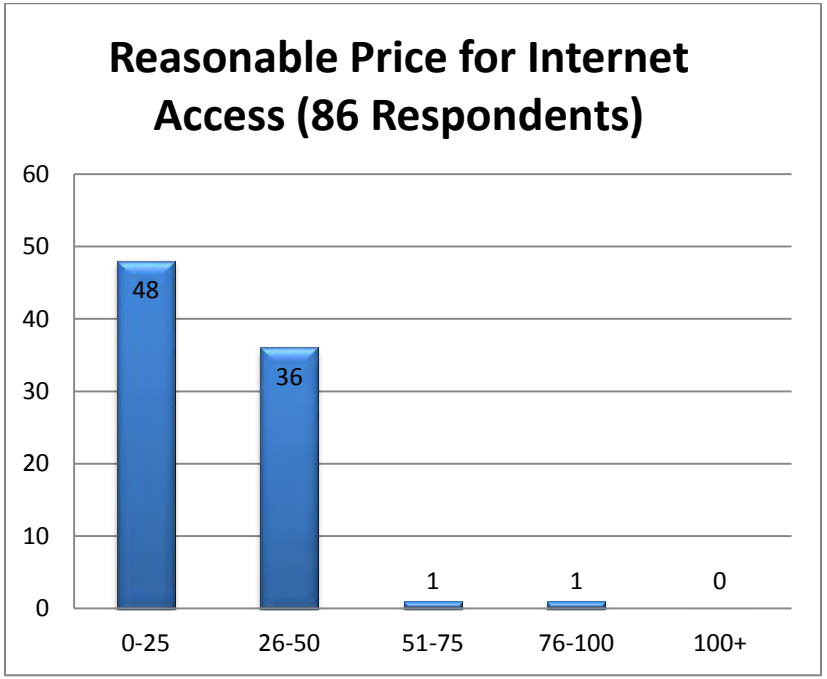
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



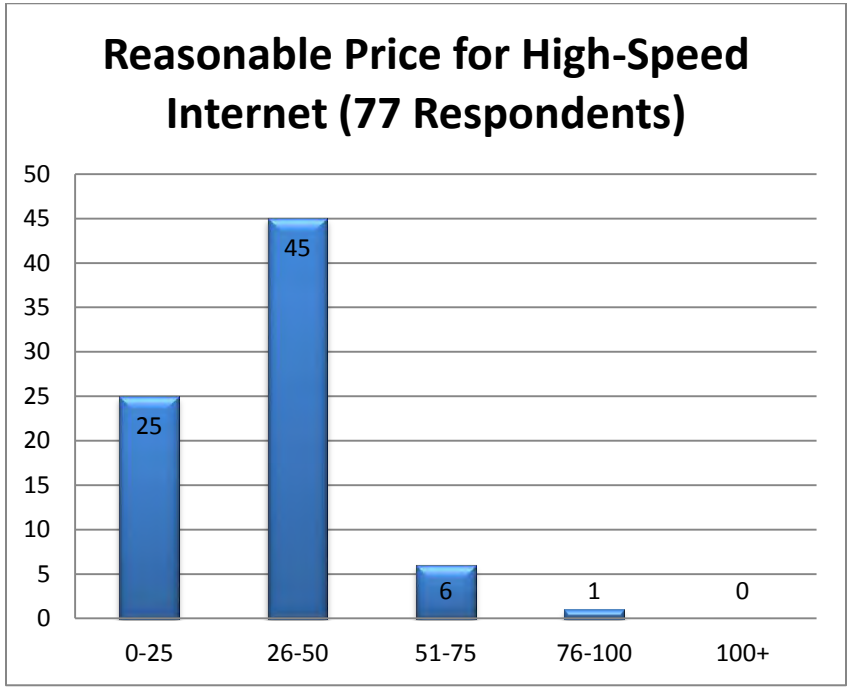
To the nearest dollar, how much per month do you pay for internet service?



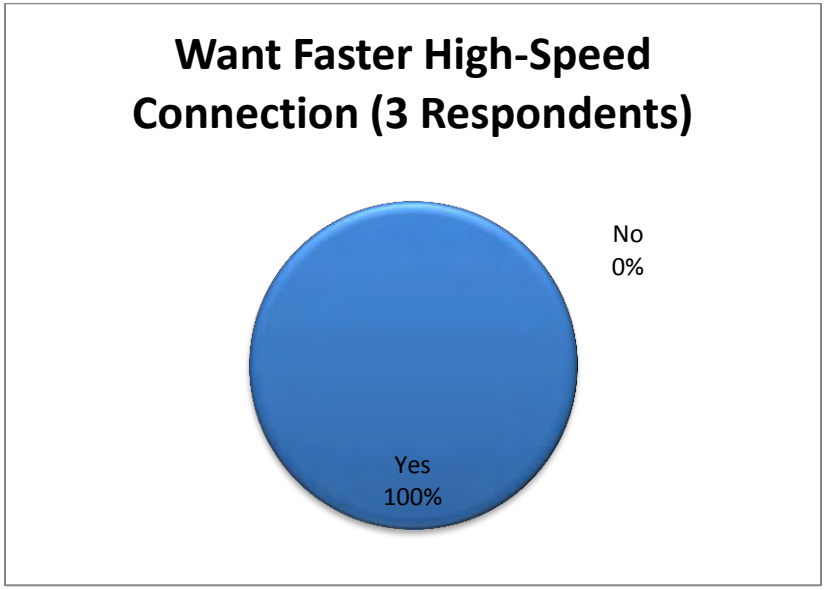
What do you think a reasonable price for internet service would be?



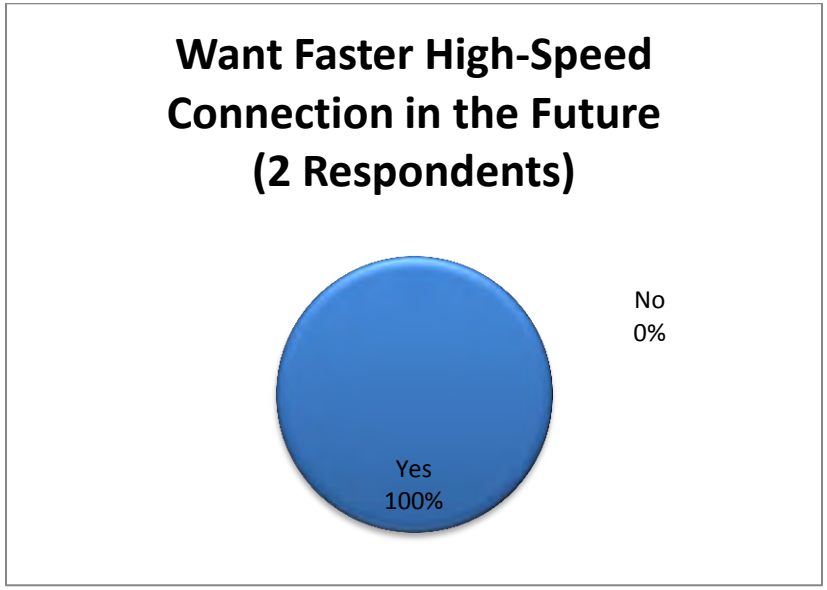
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

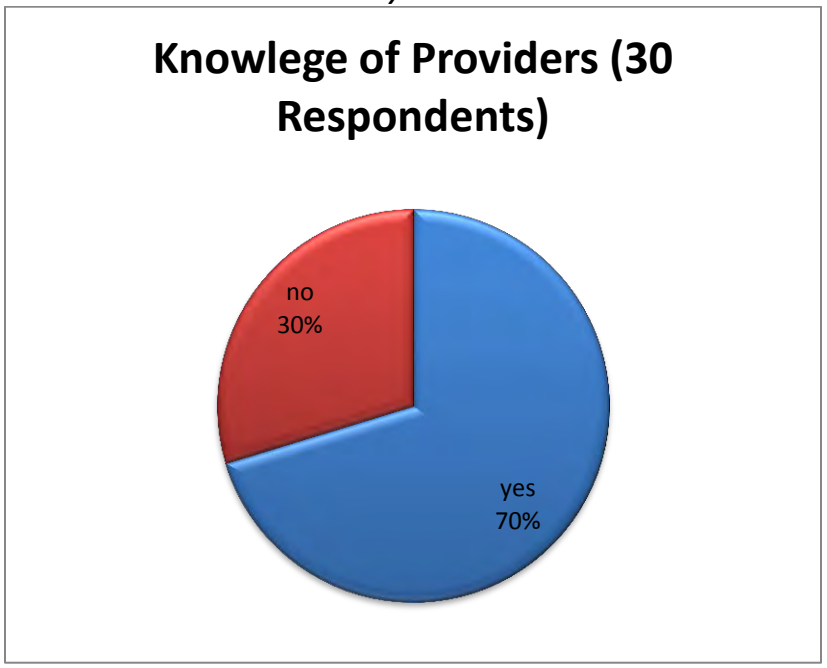


Do you think you would like a faster connection sometime in the future?

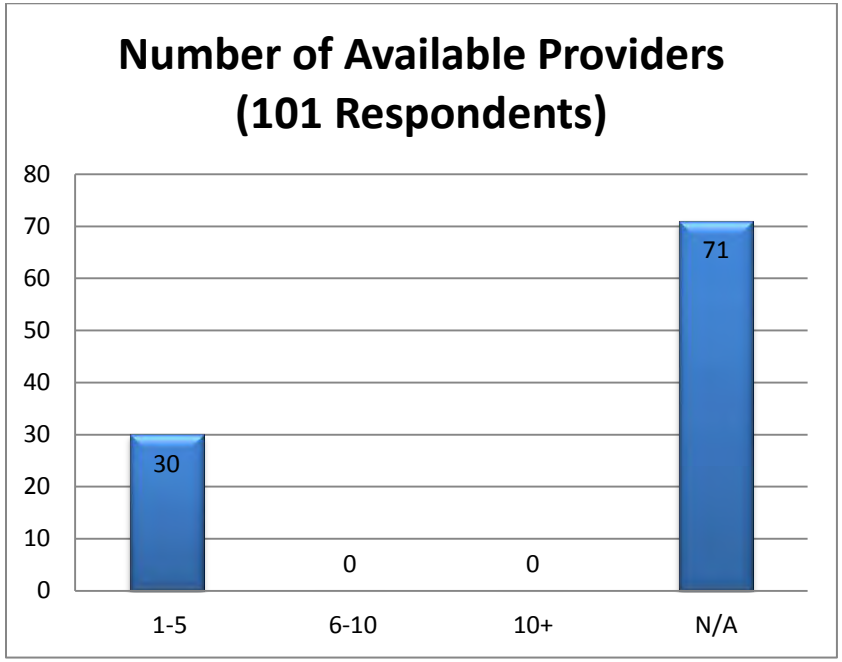


V. Consumer Perceptions

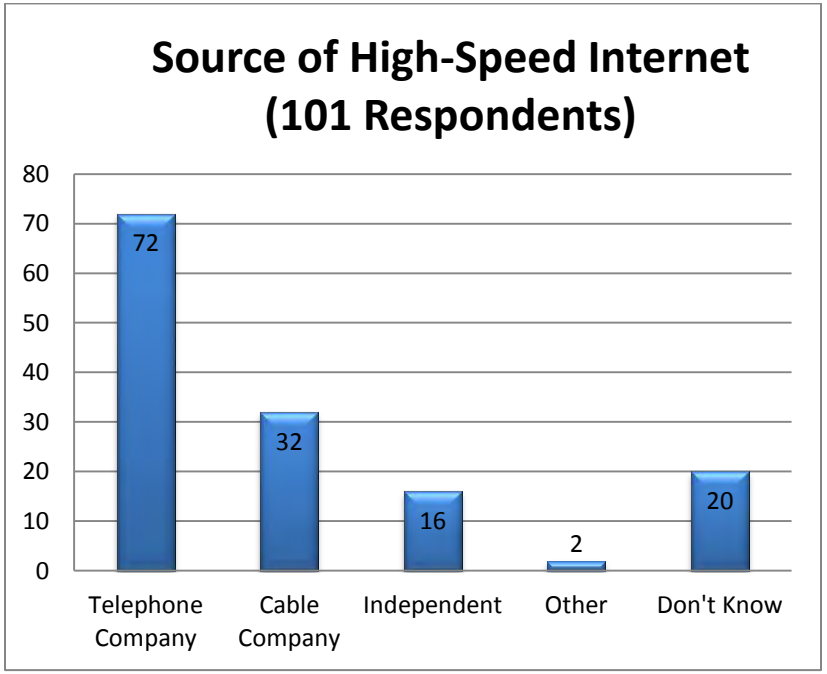
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?



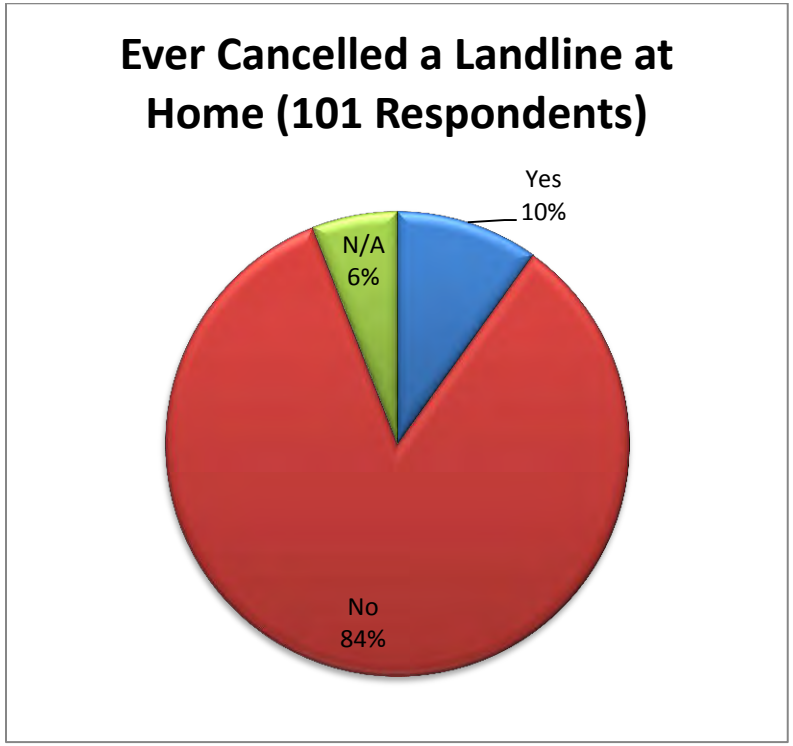
Do you happen to know whether high-speed internet service is available in your neighborhood from:



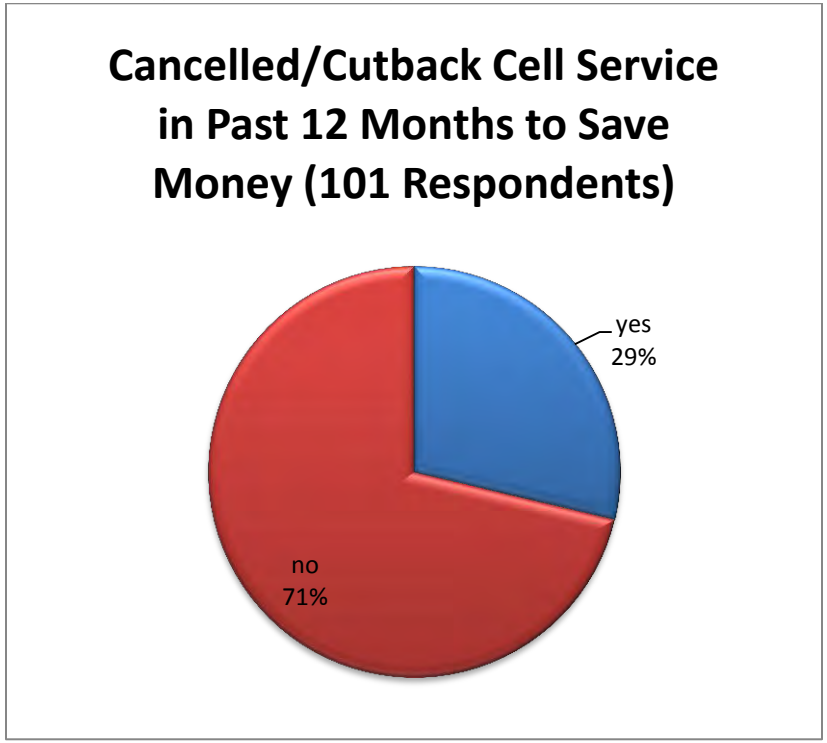
VI. Respondents' Purchasing Behavior

Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?

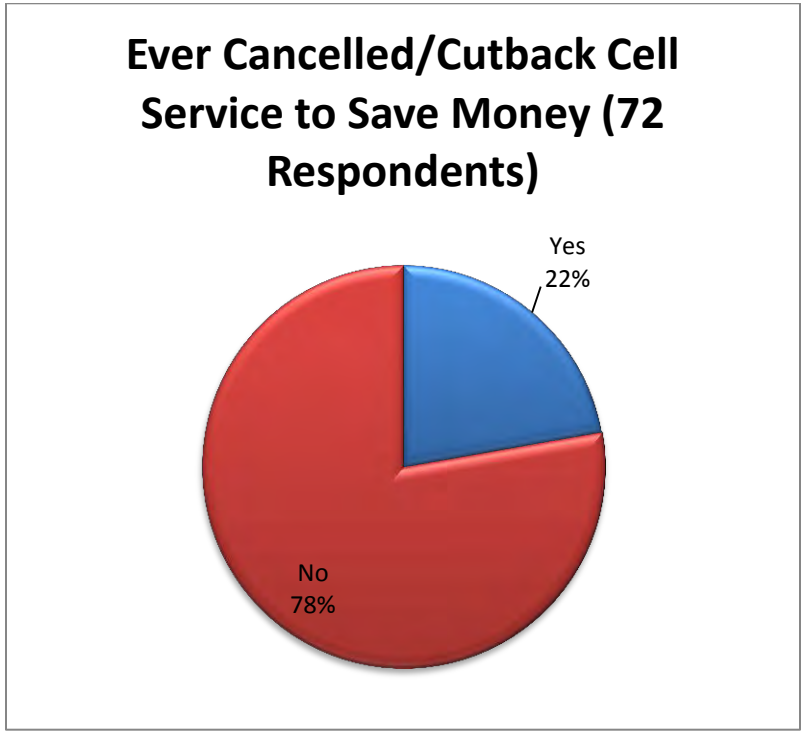
Have you ever cancelled a landline phone at home to save money?



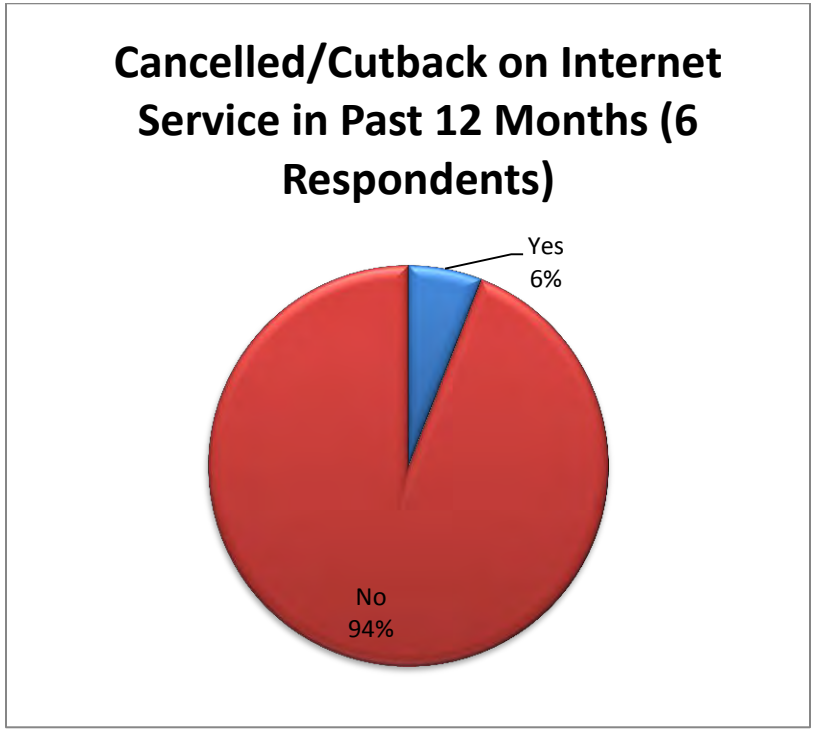
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



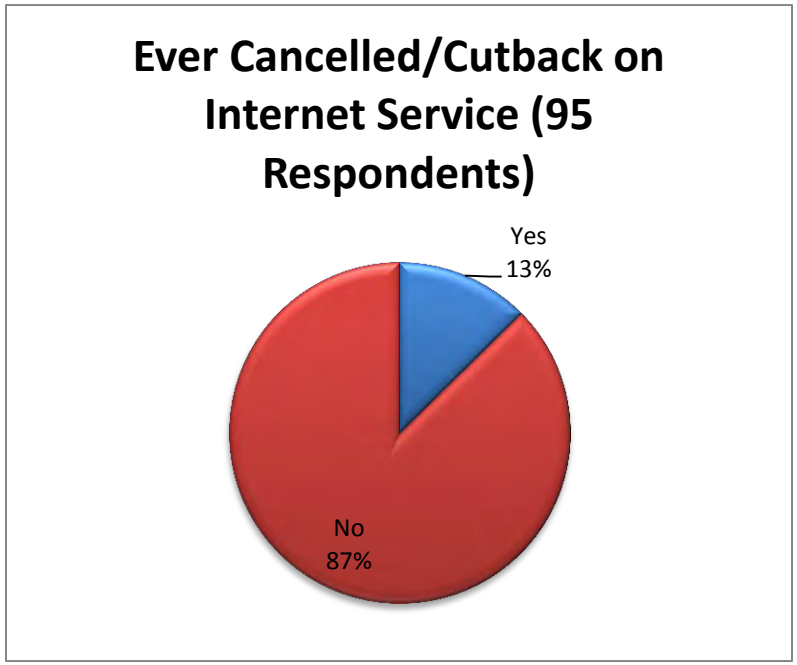
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



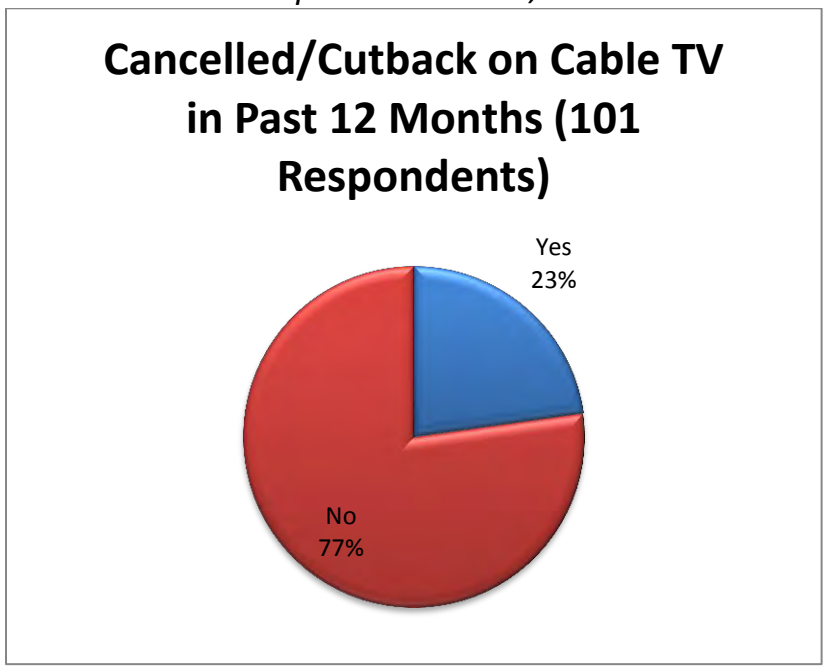
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



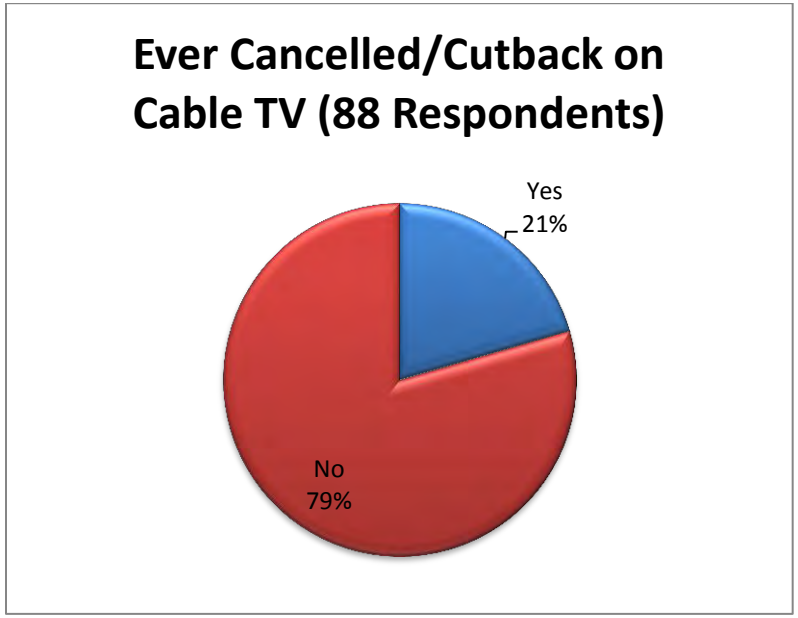
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



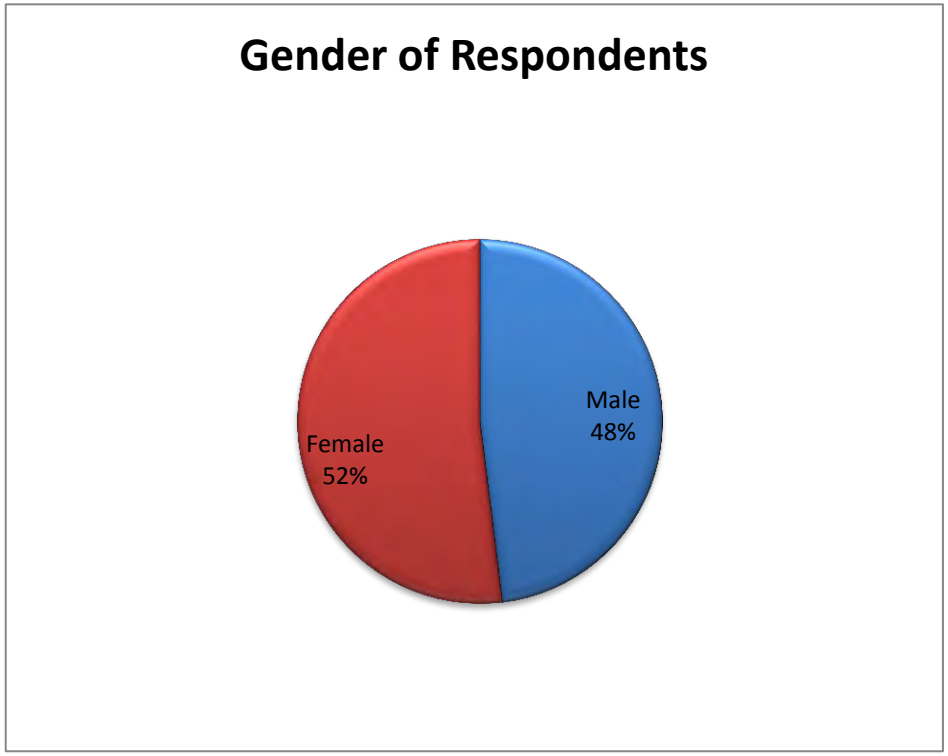
Have you ever cancelled or cutback on cable TV services?



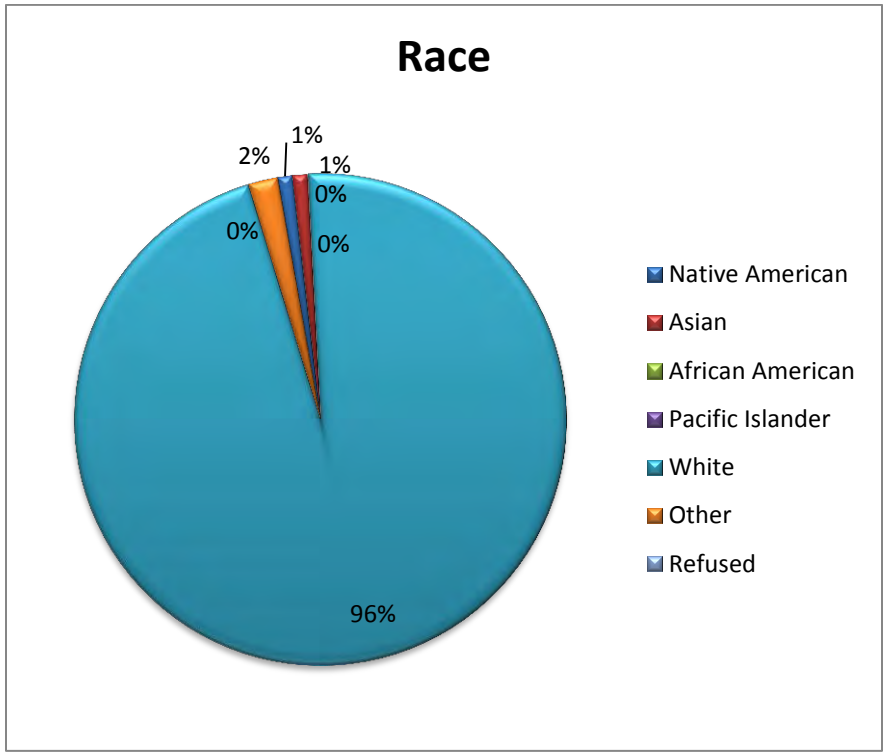
Six County Region Results

I. Demographics

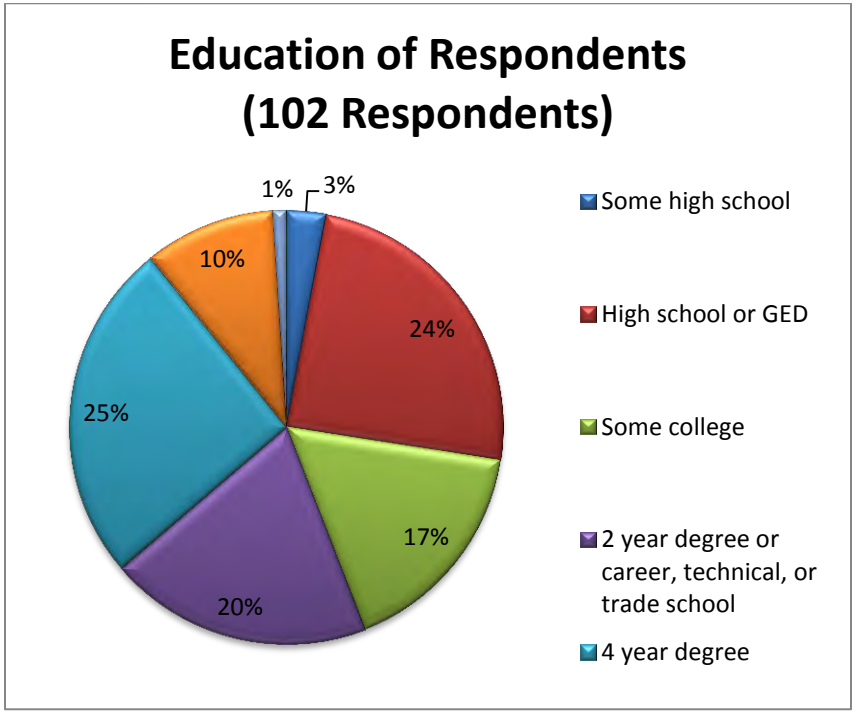
Survey participants were asked to disclose their gender.



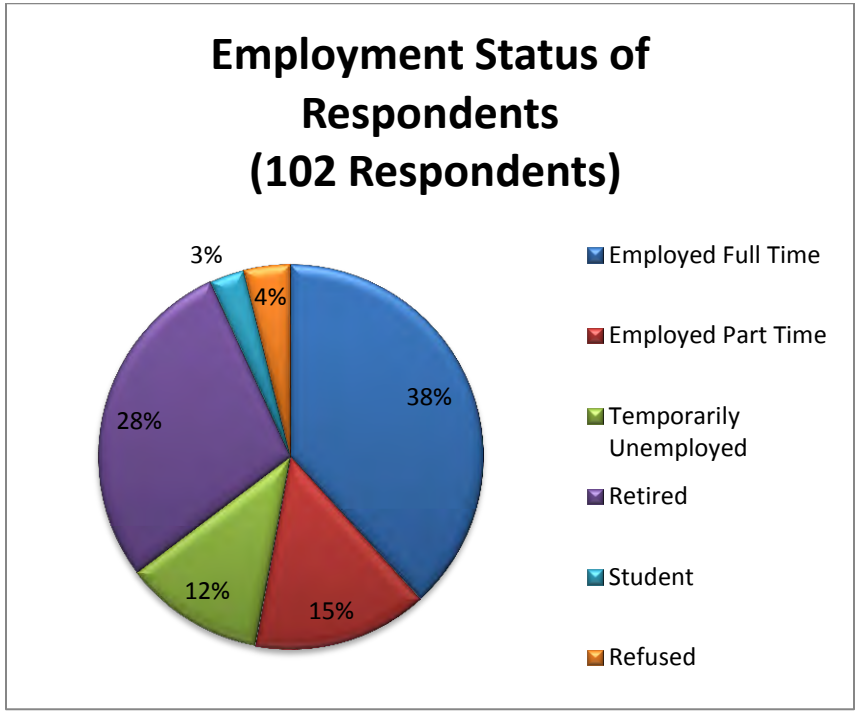
What is your race? You can choose more than one



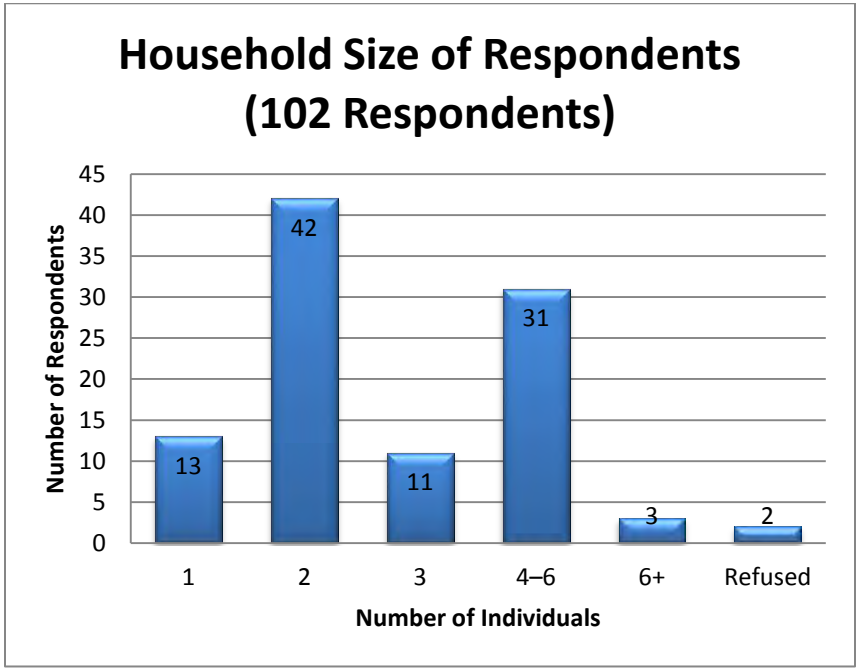
What is the highest level of formal education you have completed?



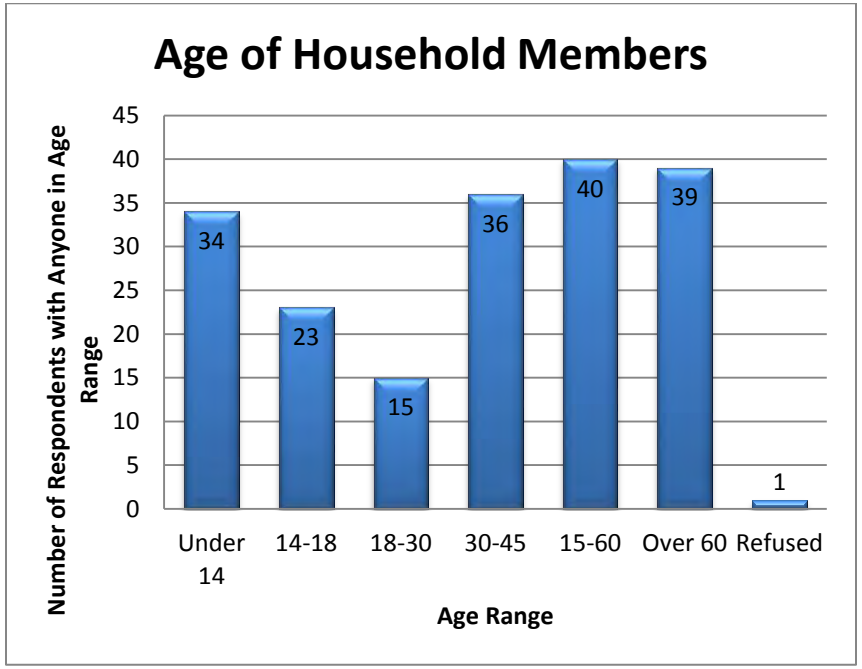
How would you describe your current employment status?



How many individuals are currently living or staying in your household?

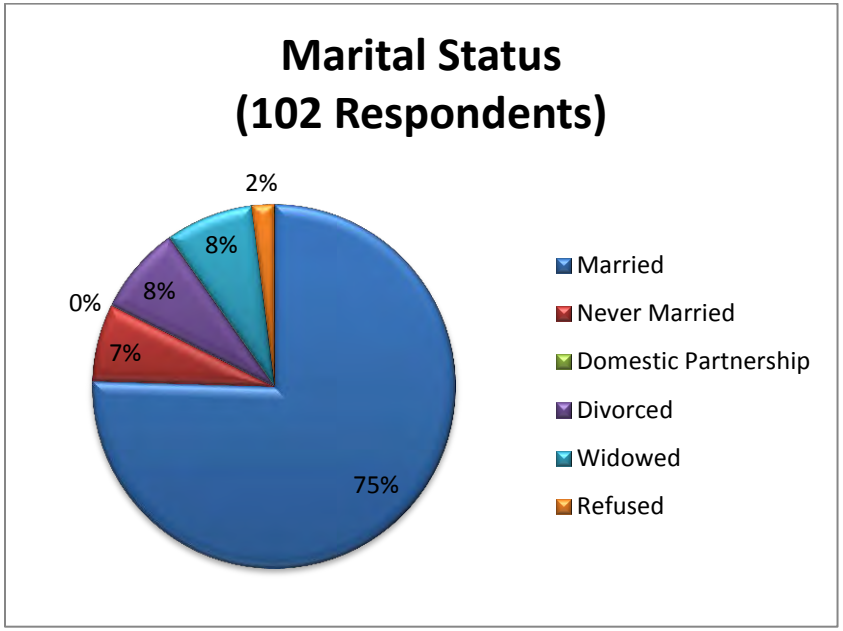


Are any members of your household:

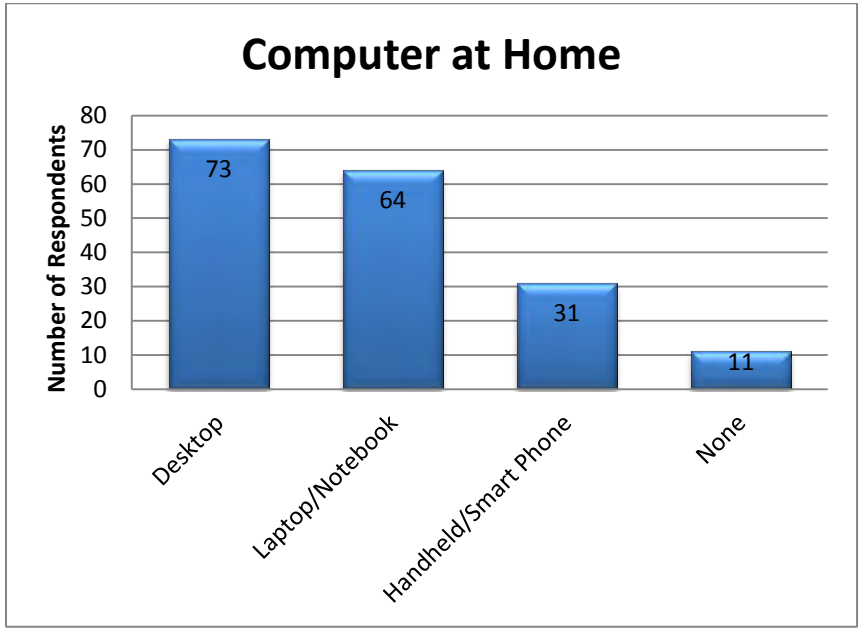


II. Access

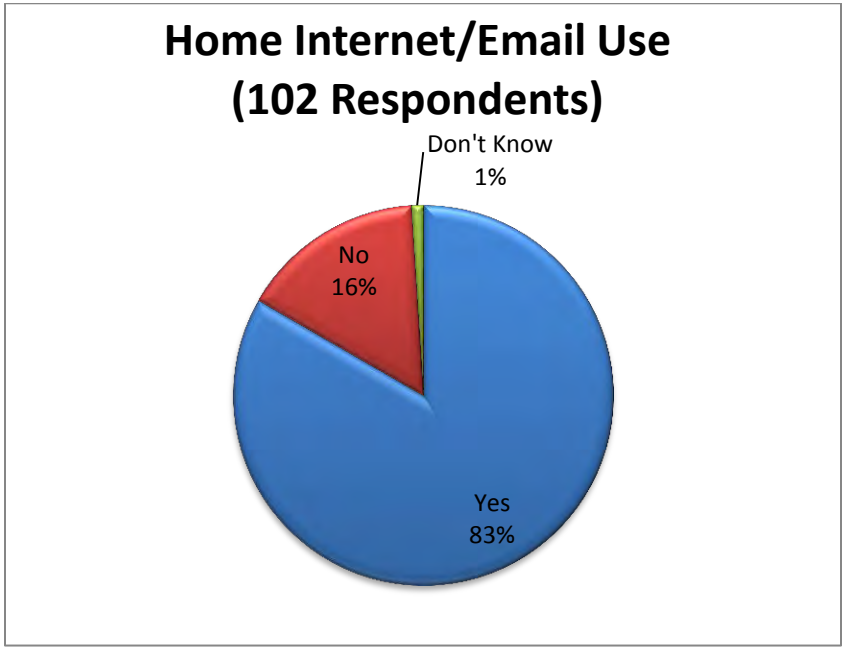
What is your current marital status?



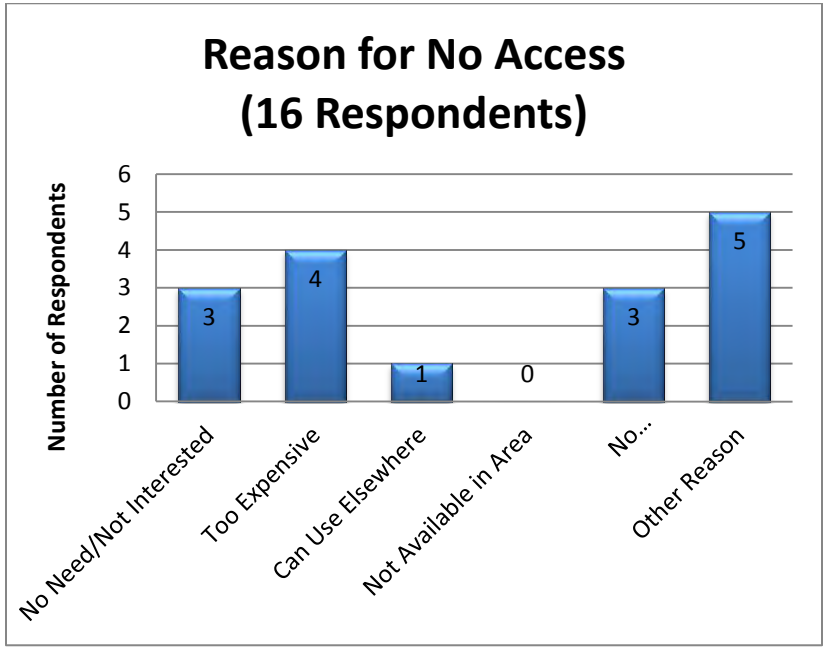
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

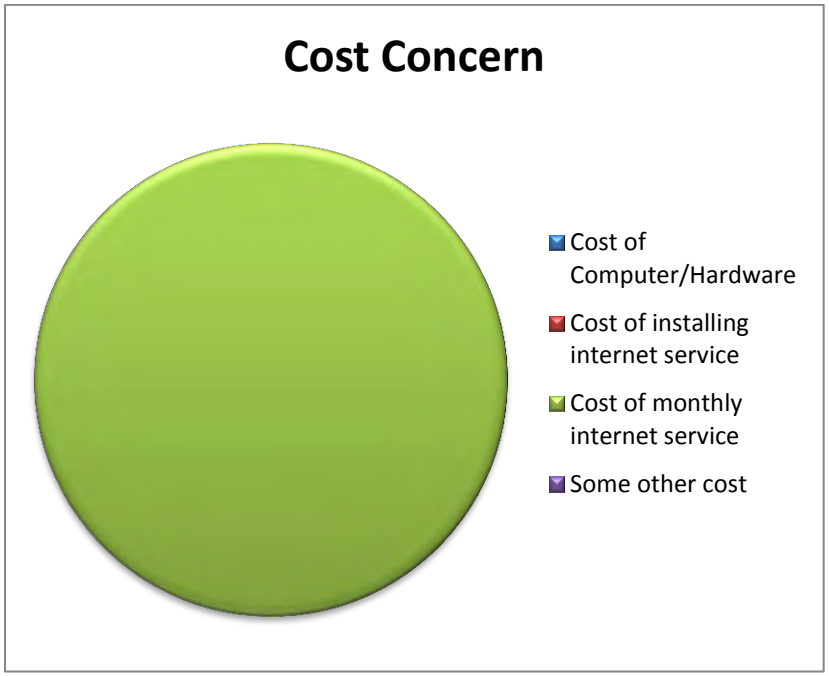


What is the main reason you do not have internet access in your home?



Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?



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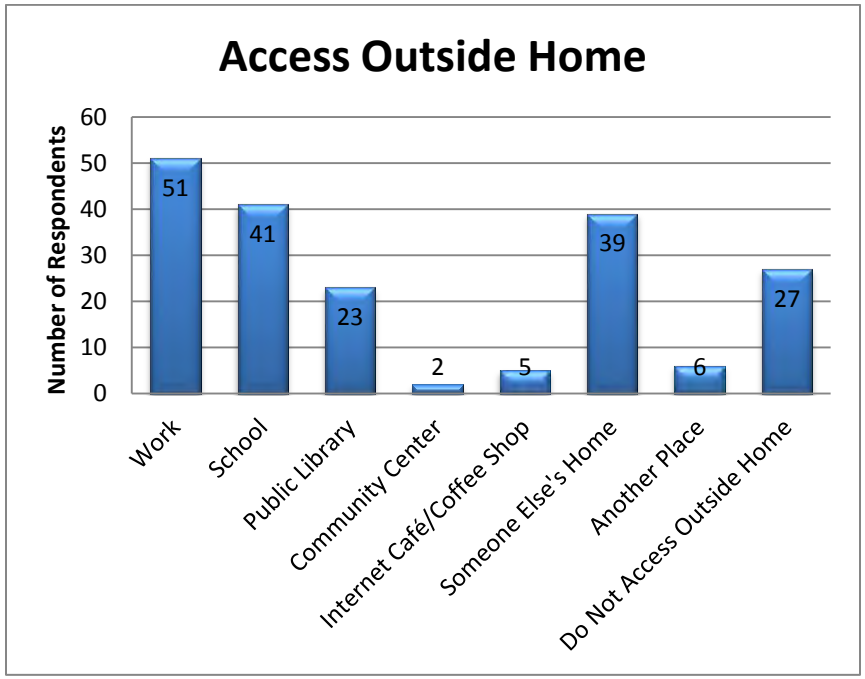
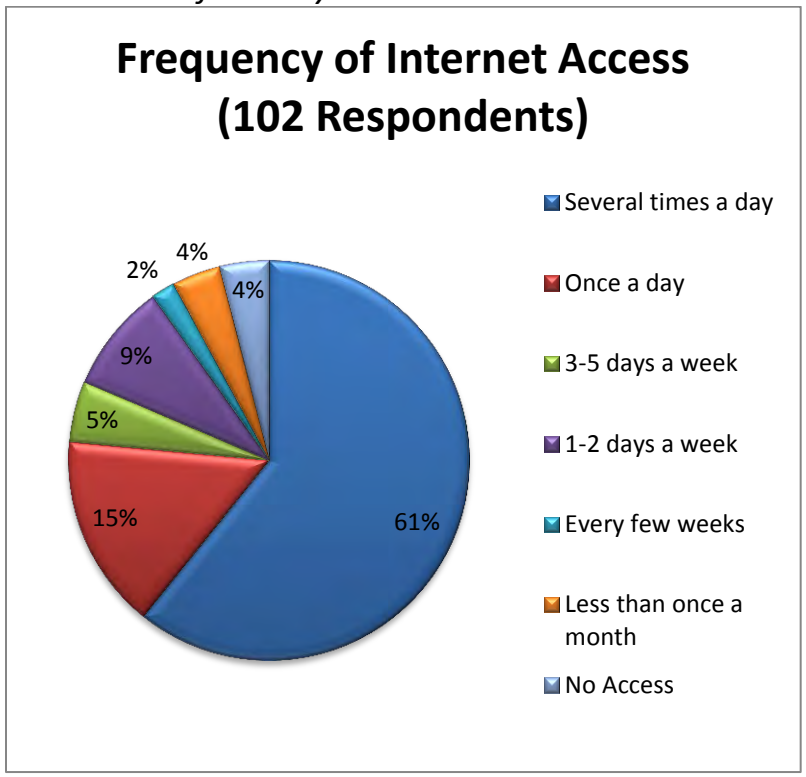
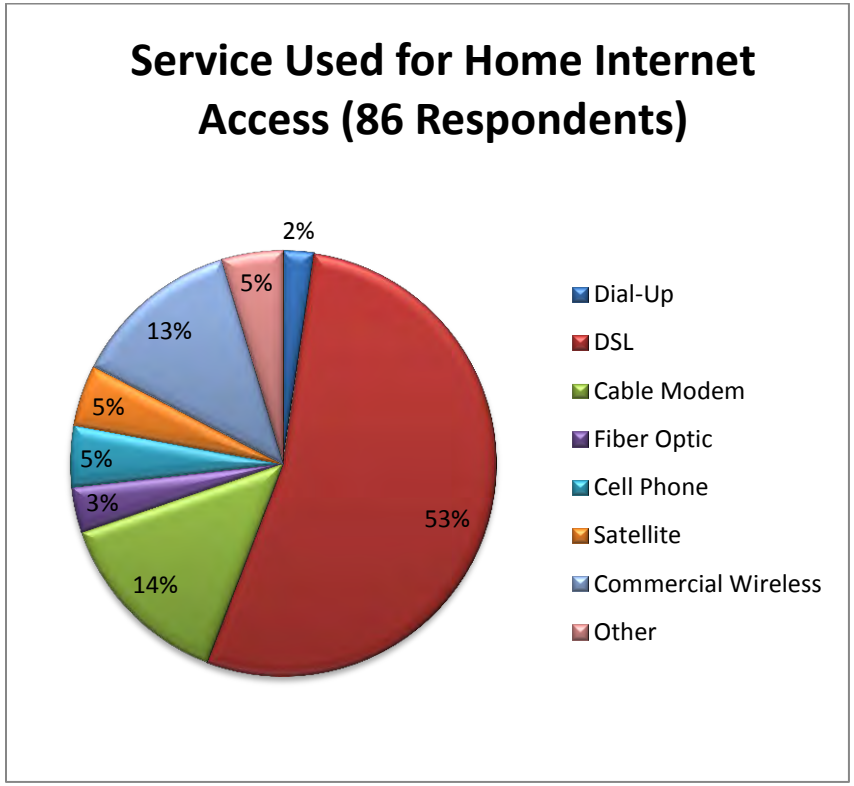


III. Use and Service

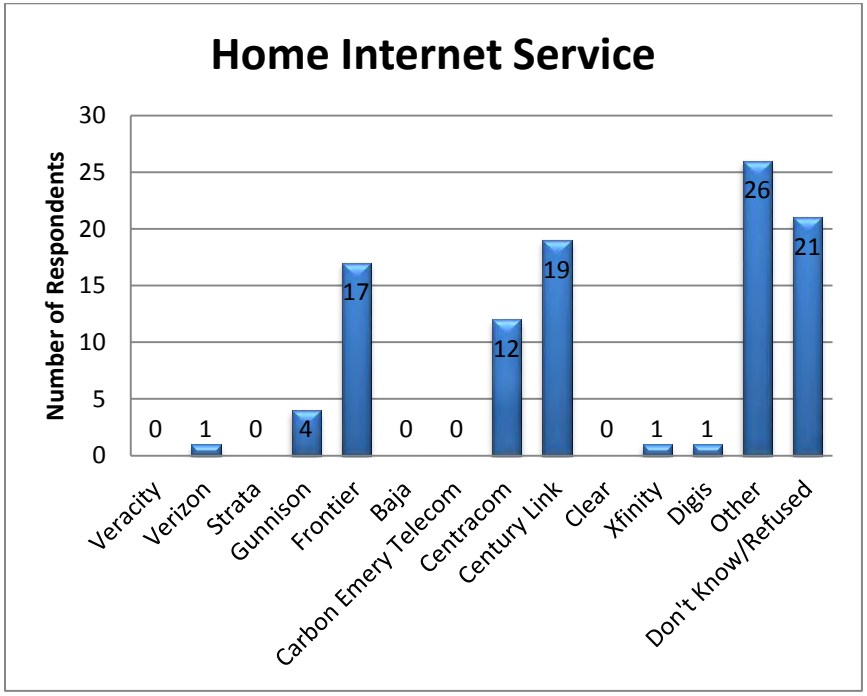
About how often do you access the internet?



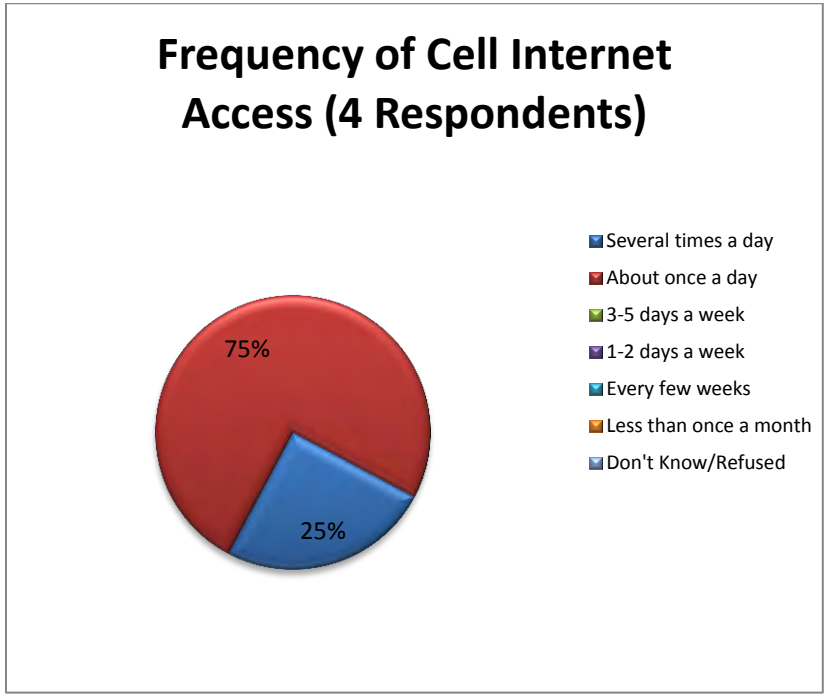
At home do you access the Internet using:



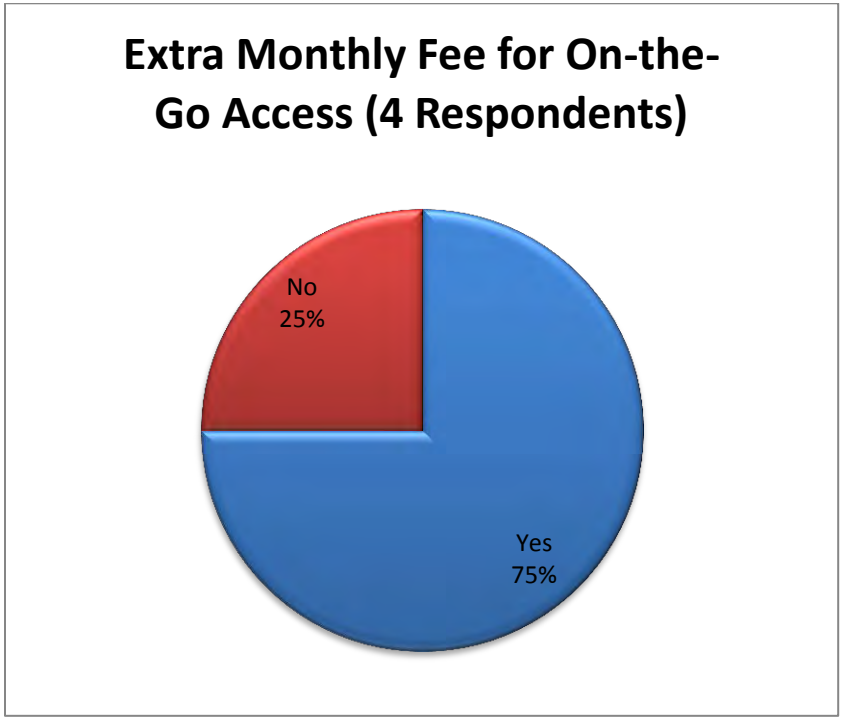
Thinking about your internet service at home, which company provides that service?



How often do you access the internet from your cell phone?



Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



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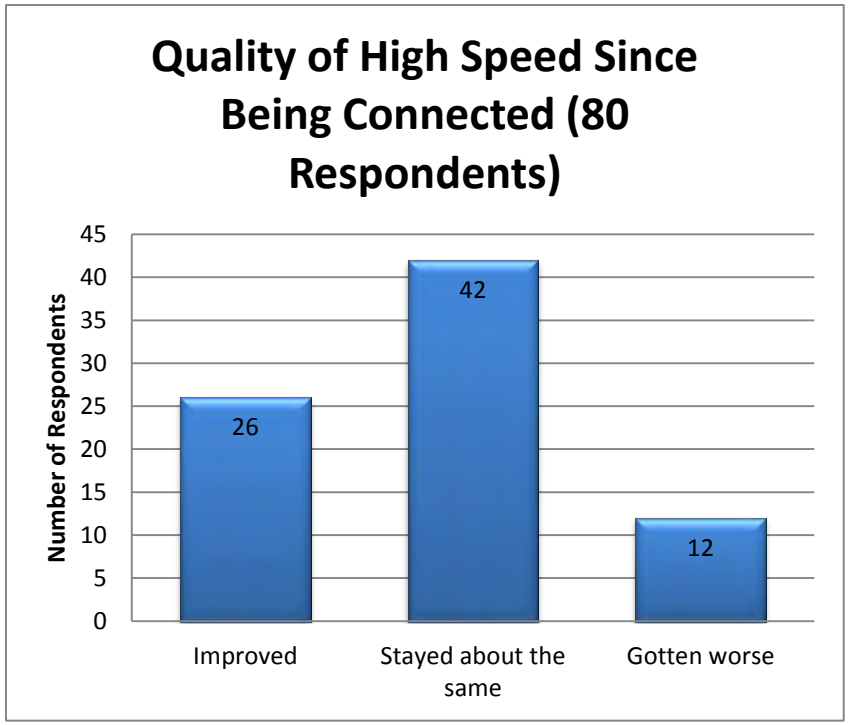
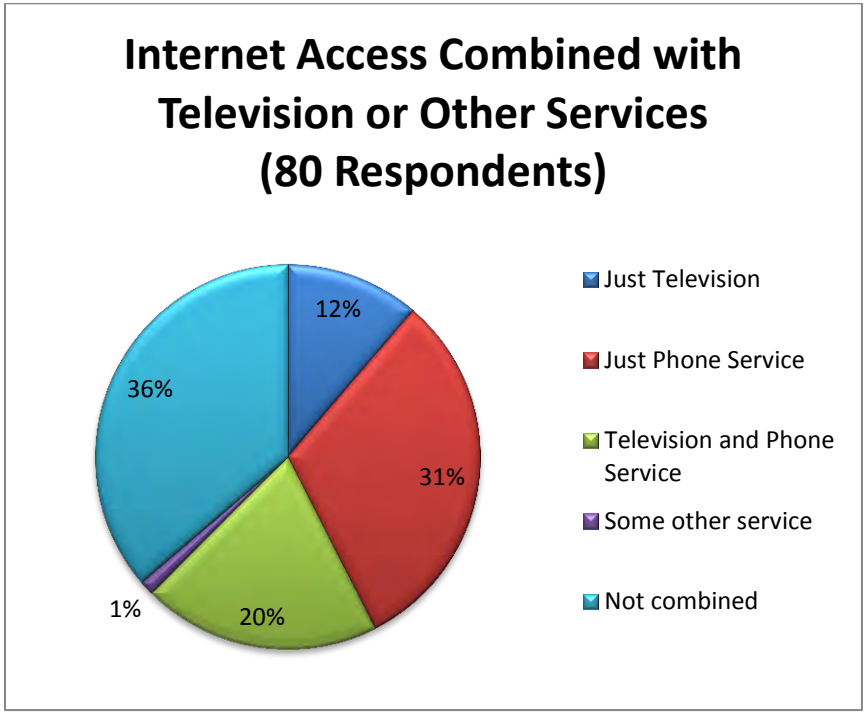
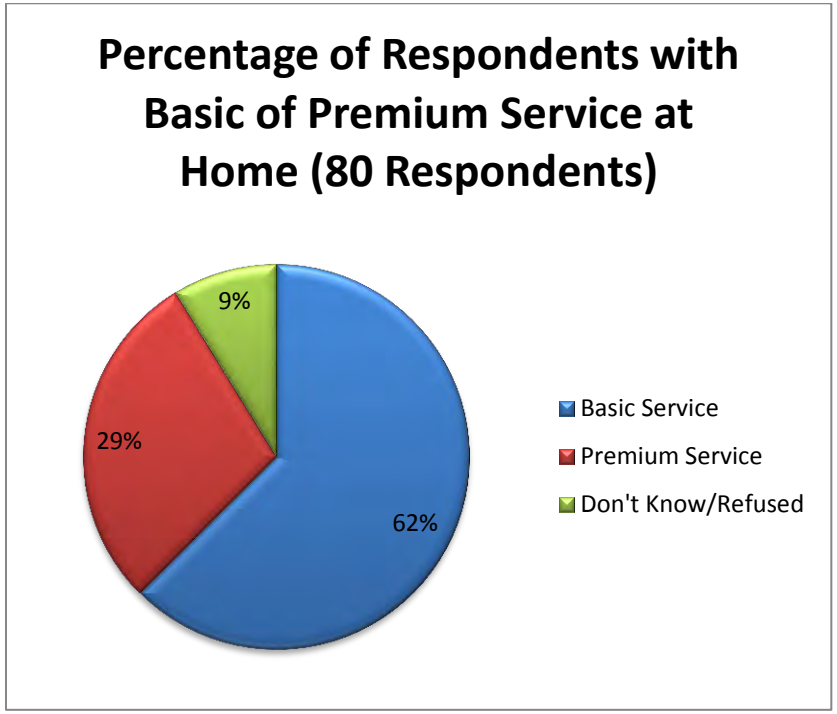


Is your internet access combined with television or other services?

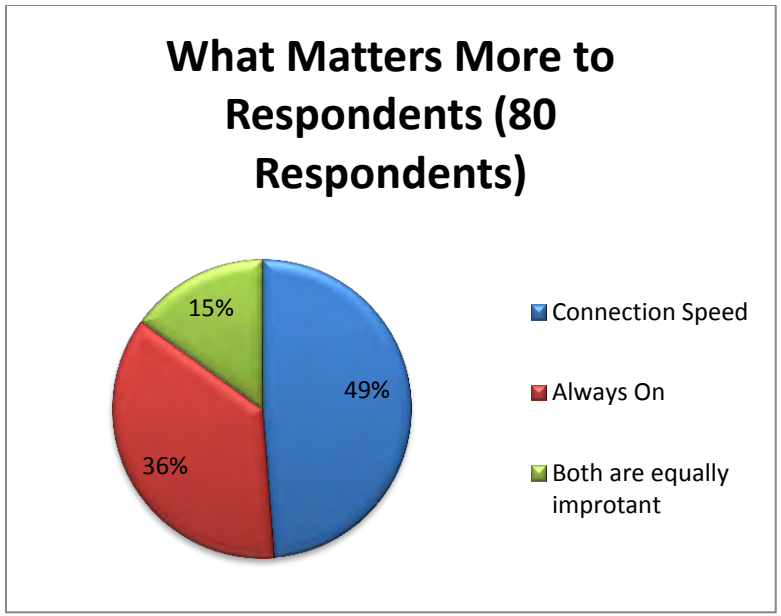


Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?

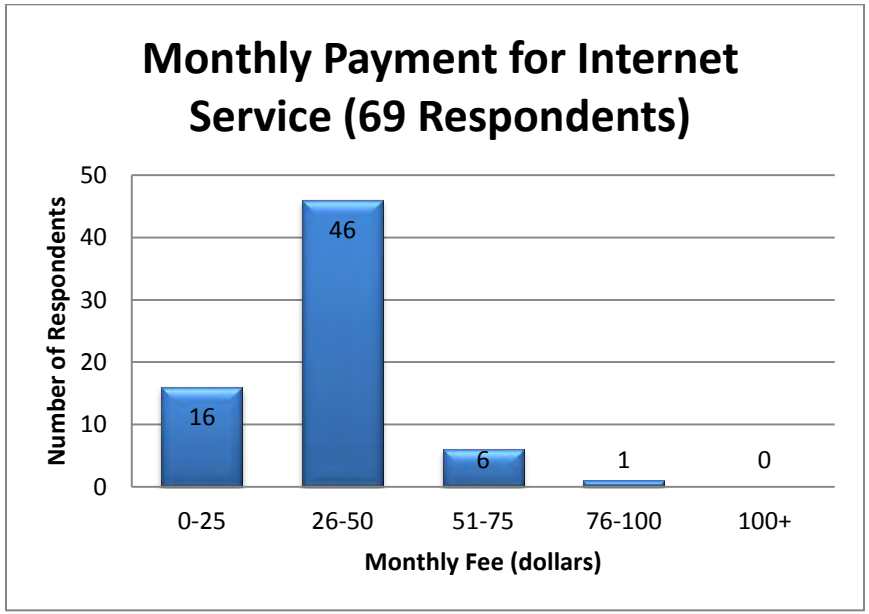


IV. Price and Preference

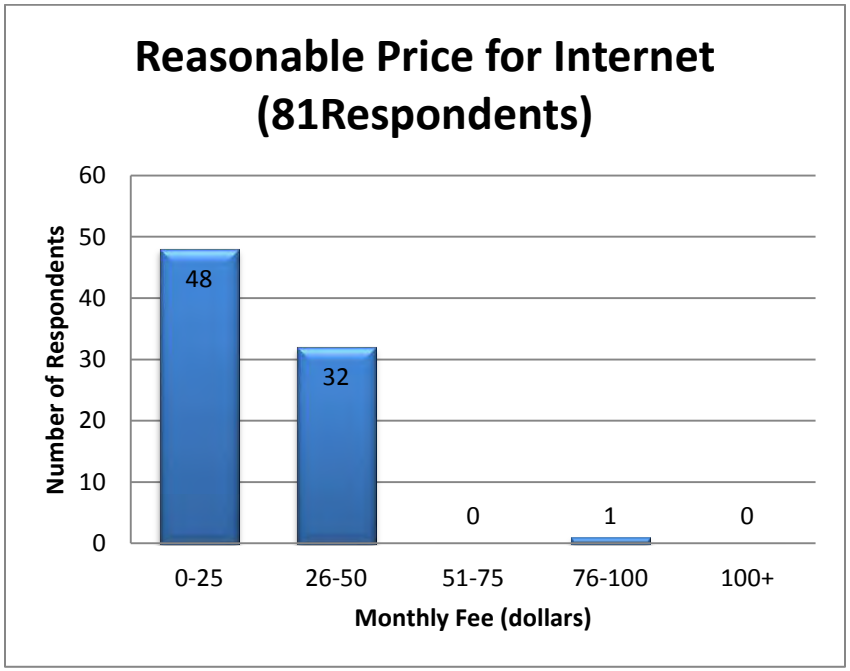
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



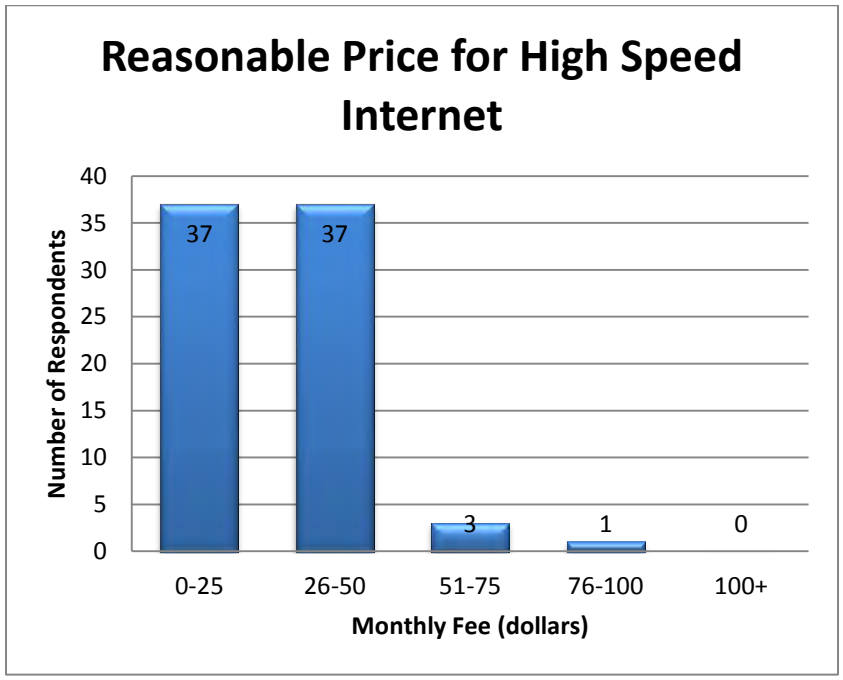
To the nearest dollar, how much per month do you pay for internet service?



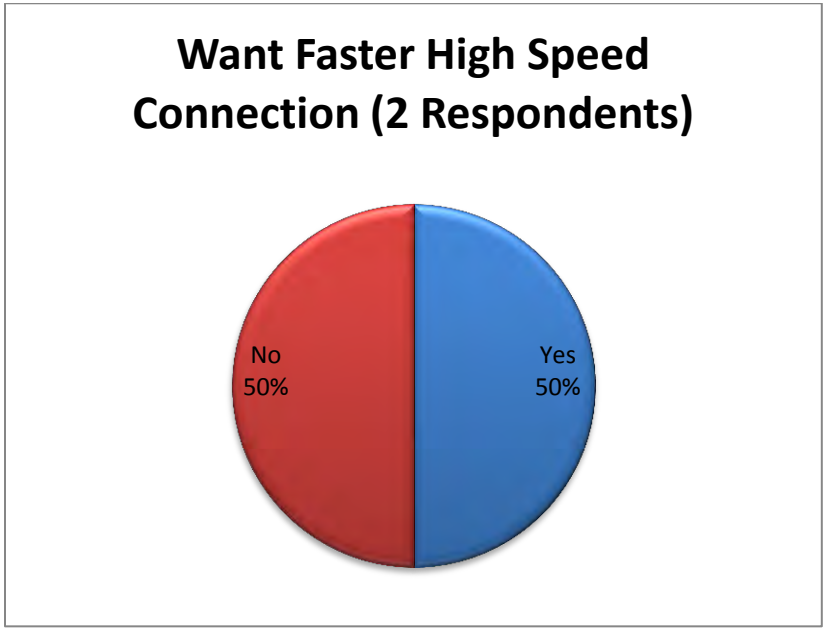
What do you think a reasonable price for internet service would be?



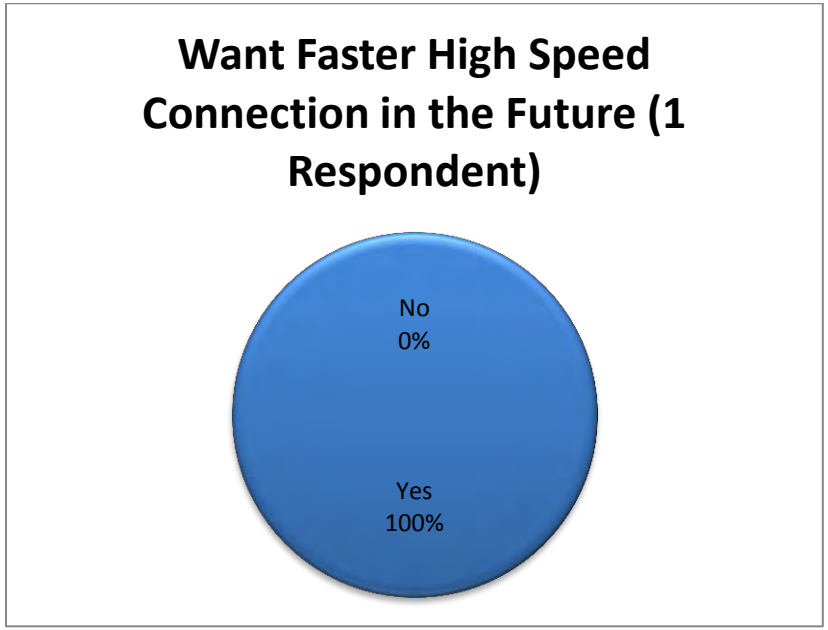
What do you think a reasonable price for High-Speed Internet would be?



Would you like to have a faster high speed connection?

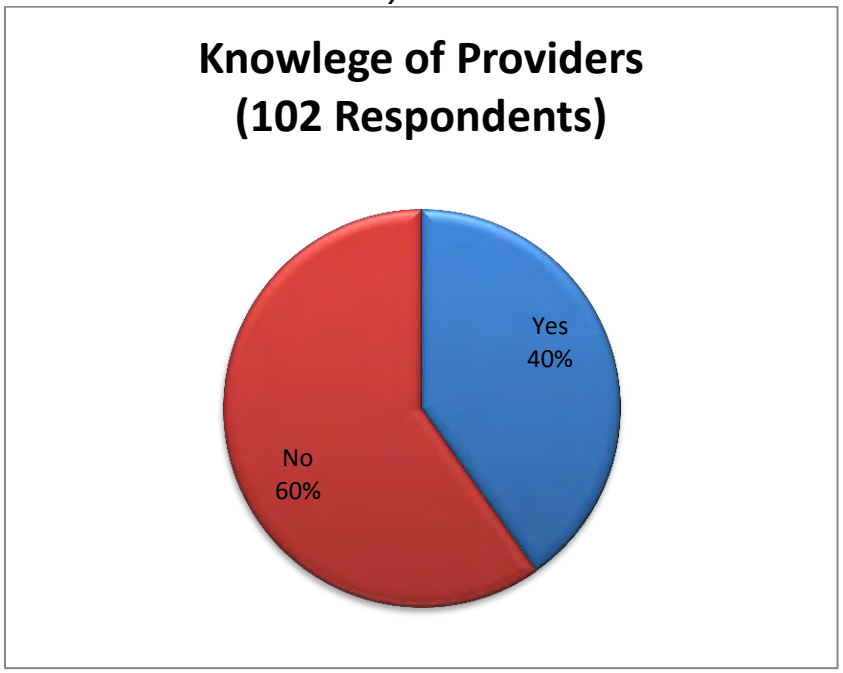


Do you think you would like a faster connection sometime in the future?

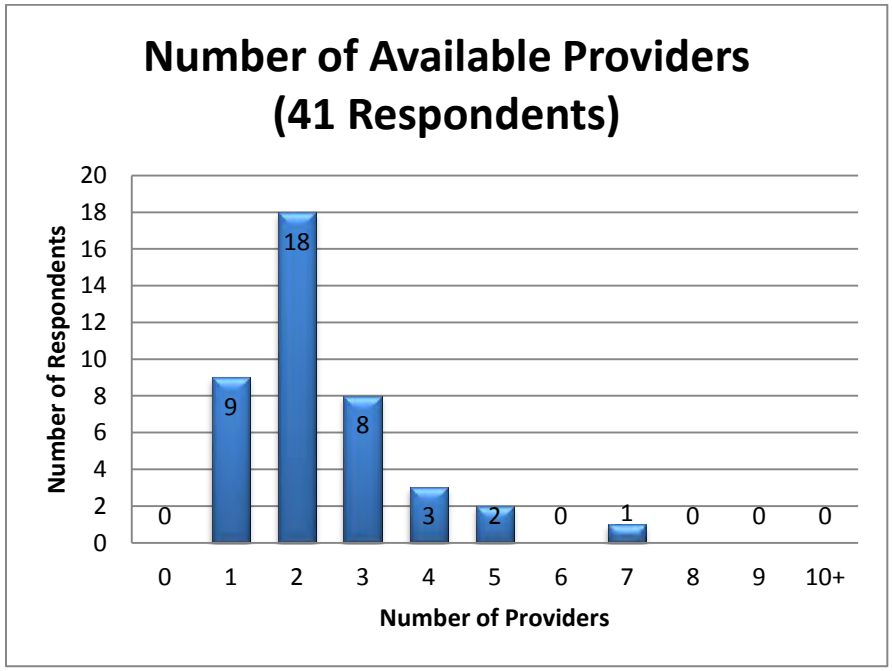


V. Consumer Perceptions

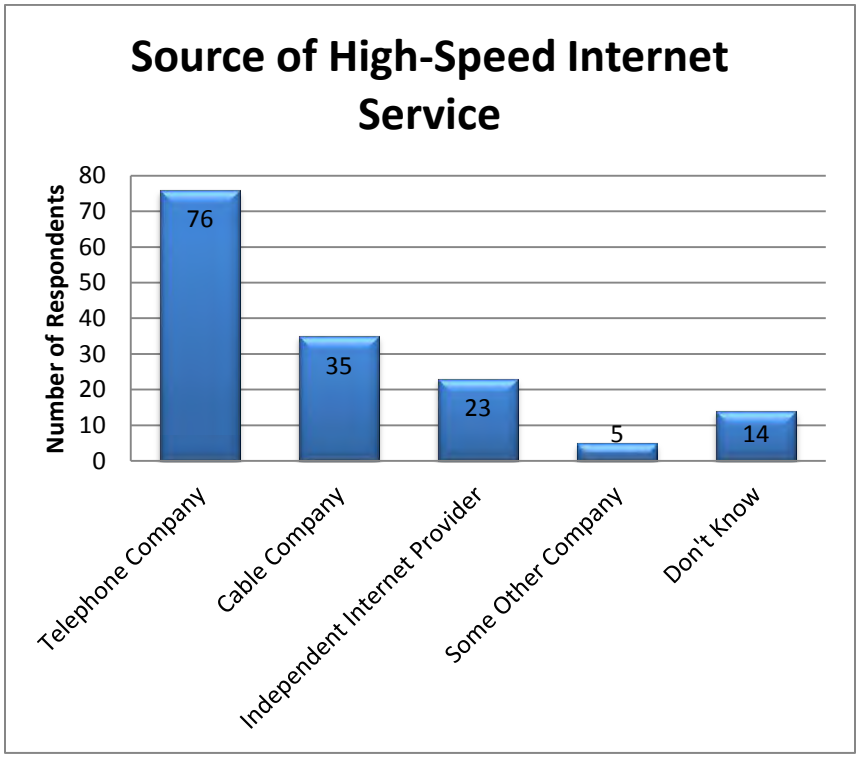
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?



Do you happen to know whether high-speed internet service is available in your neighborhood from:



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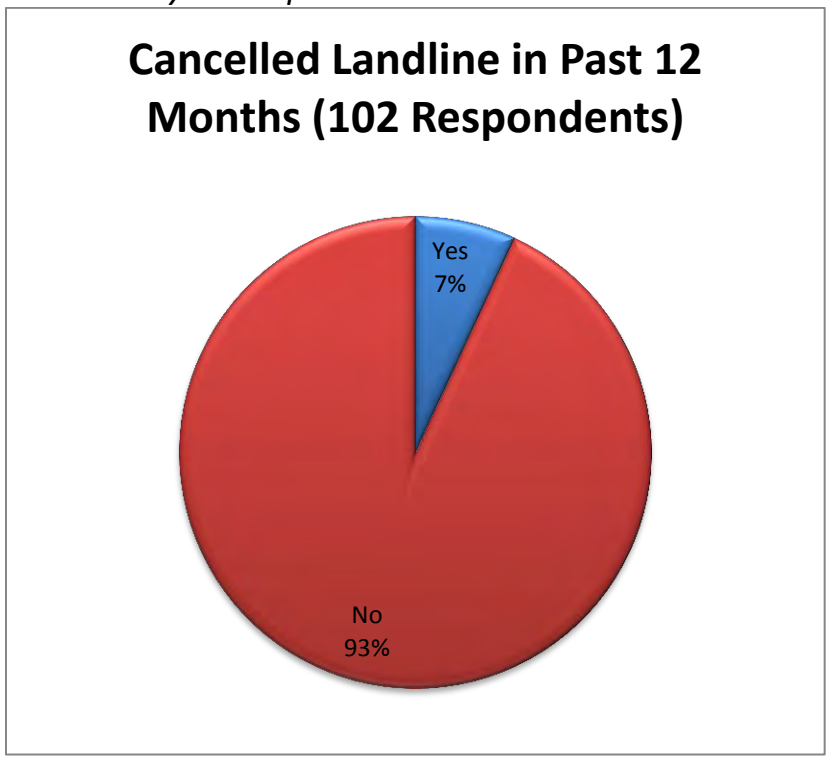
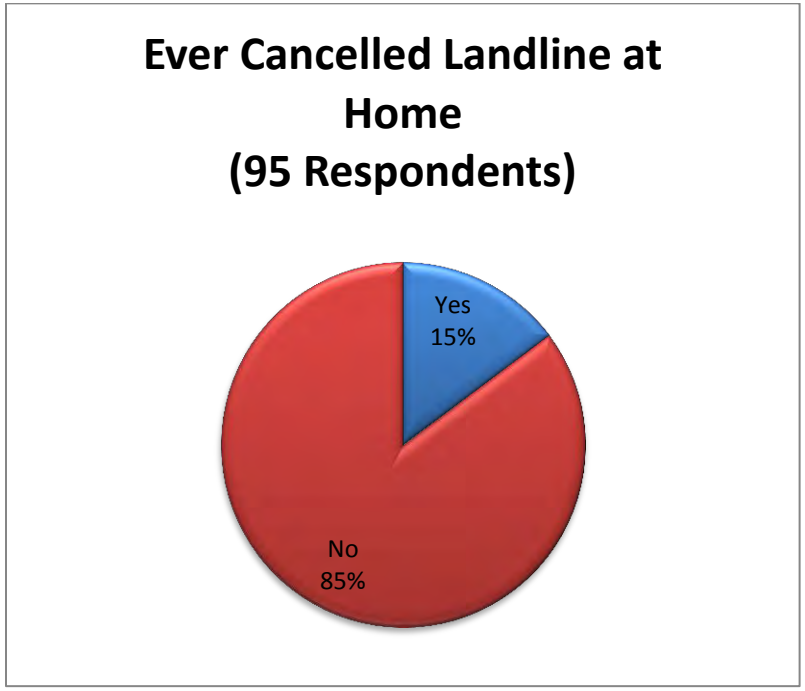
VI. Respondents' Purchasing Behavior

Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



Have you ever cancelled a landline phone at home to save money?



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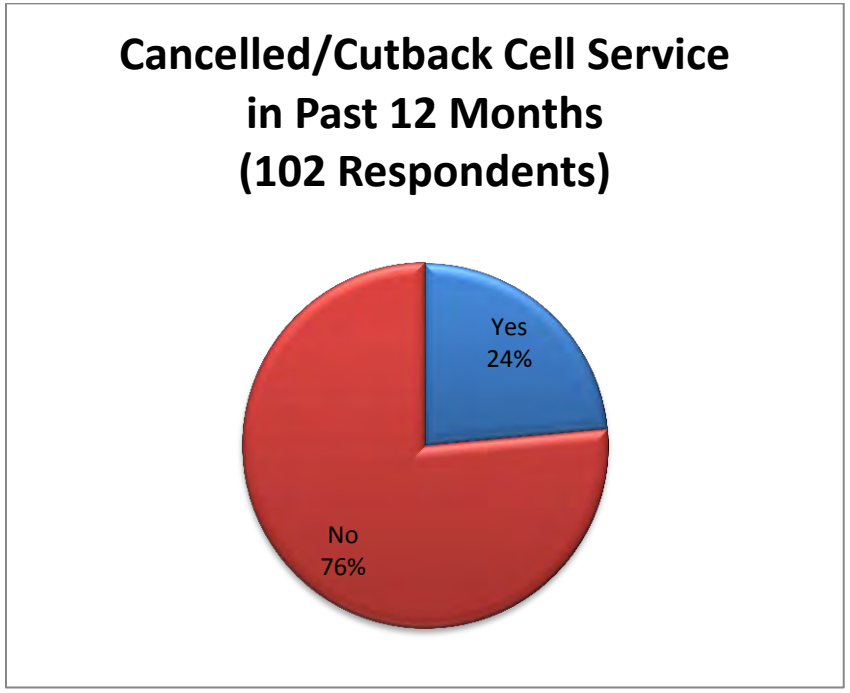
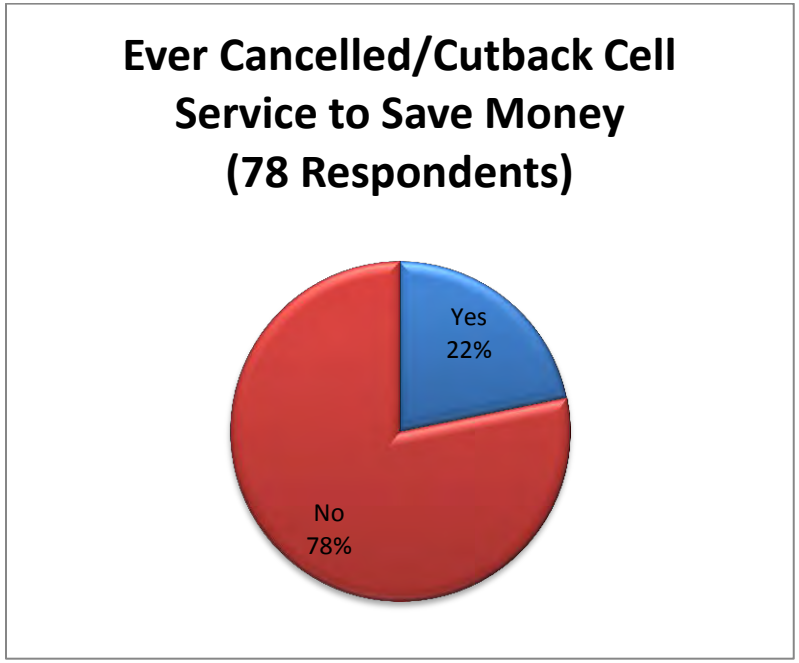
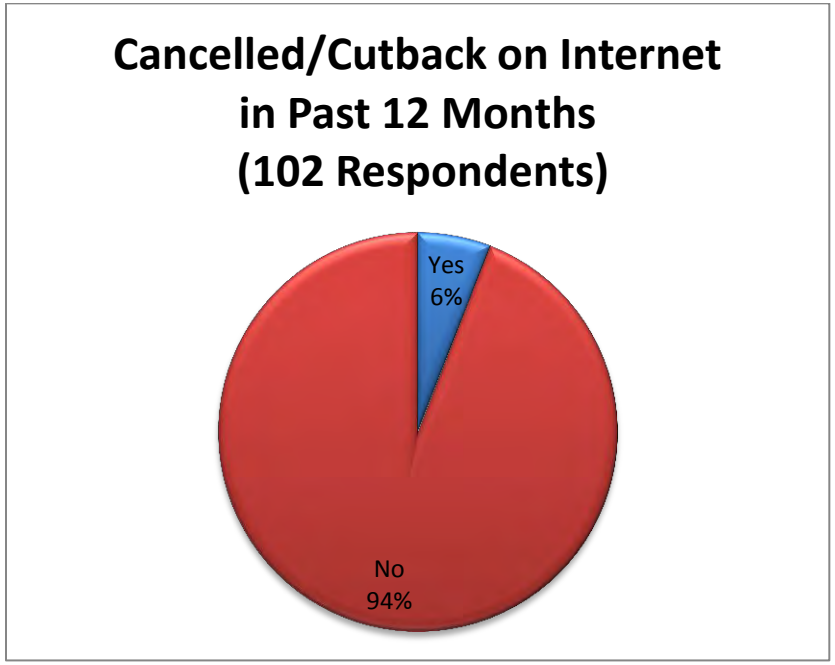


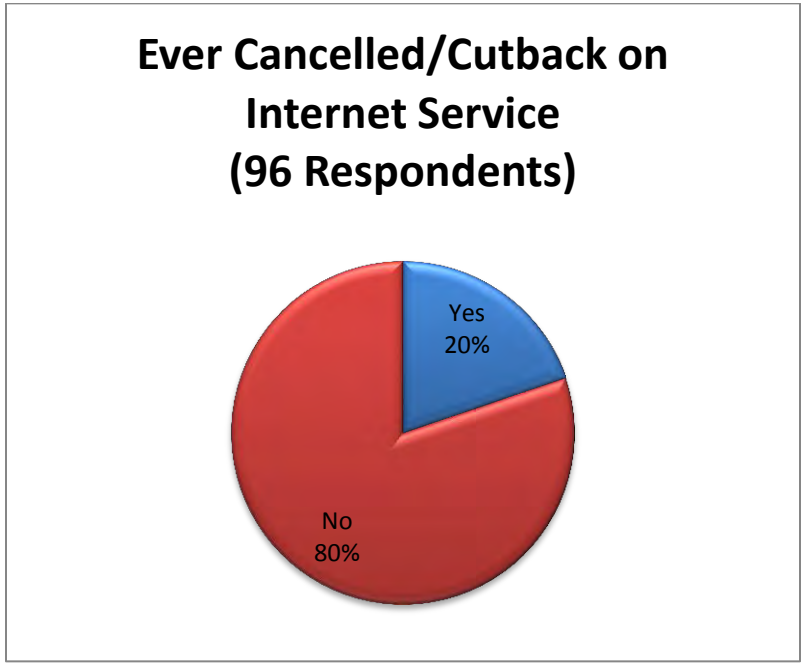
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



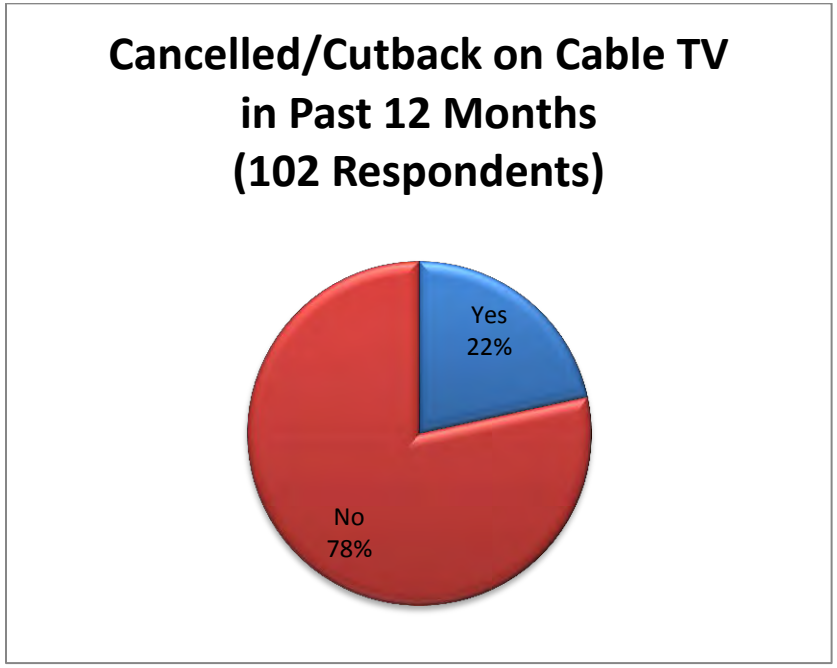
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



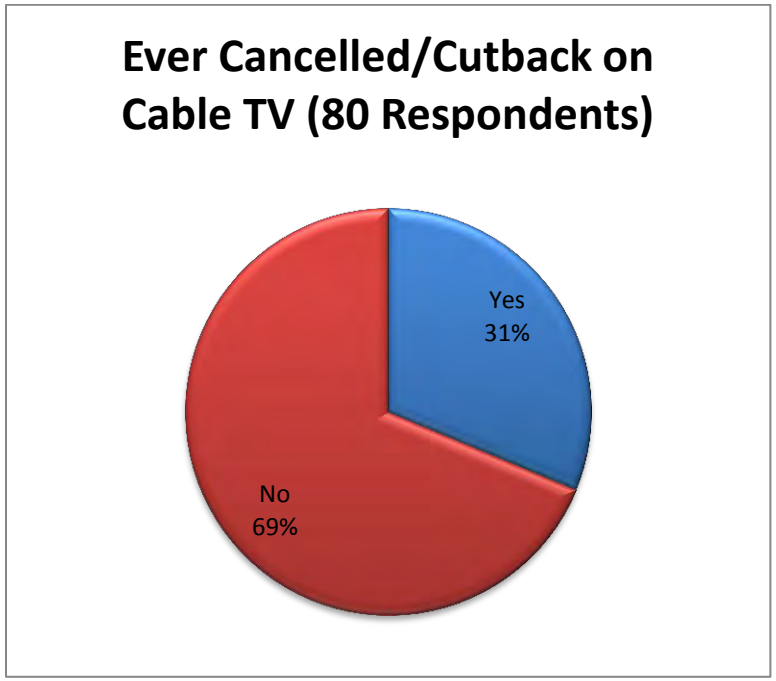
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



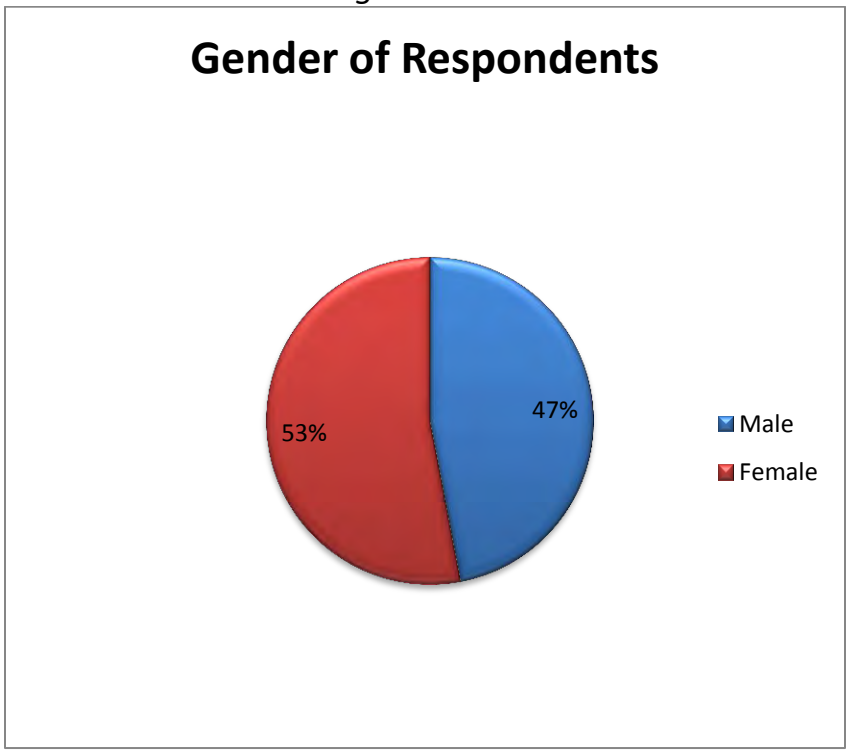
Have you ever cancelled or cutback on cable TV services?



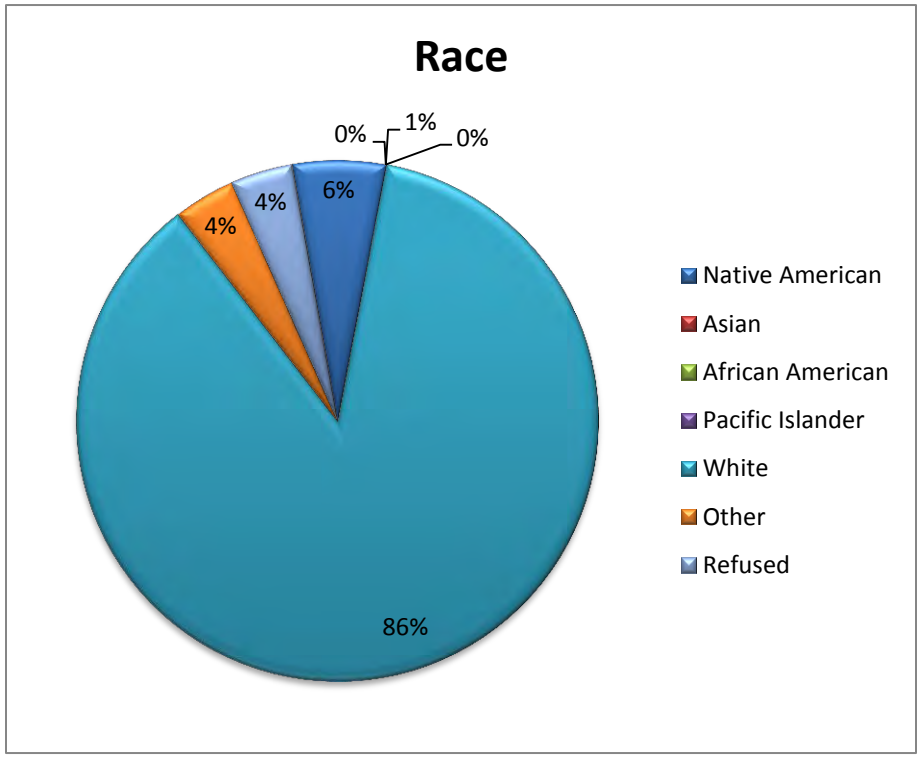
Five County Region Results

I. Demographics

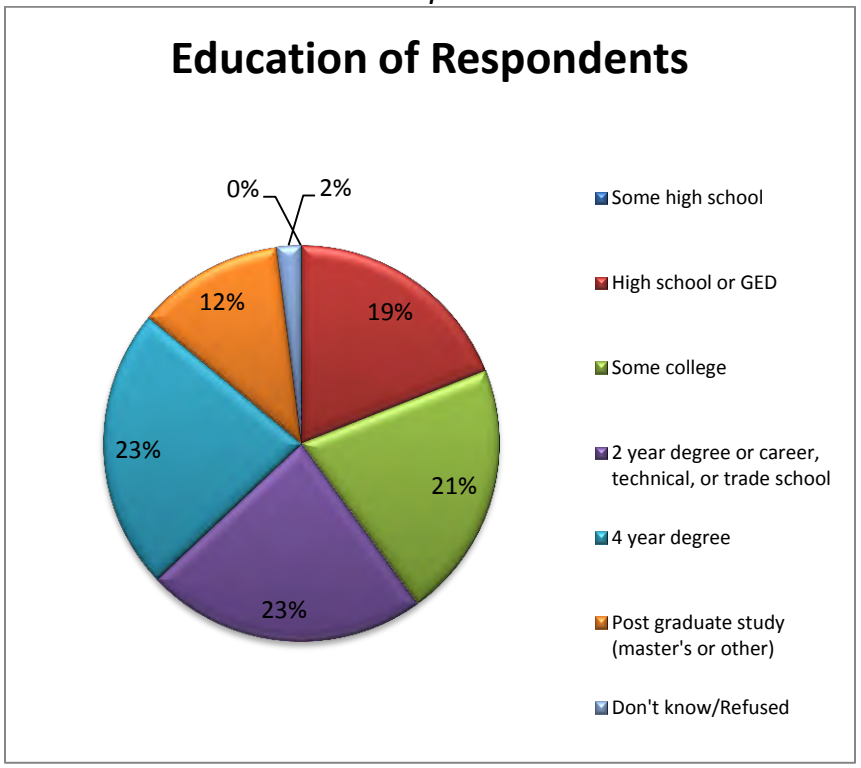
Survey participants were asked to disclose their gender.



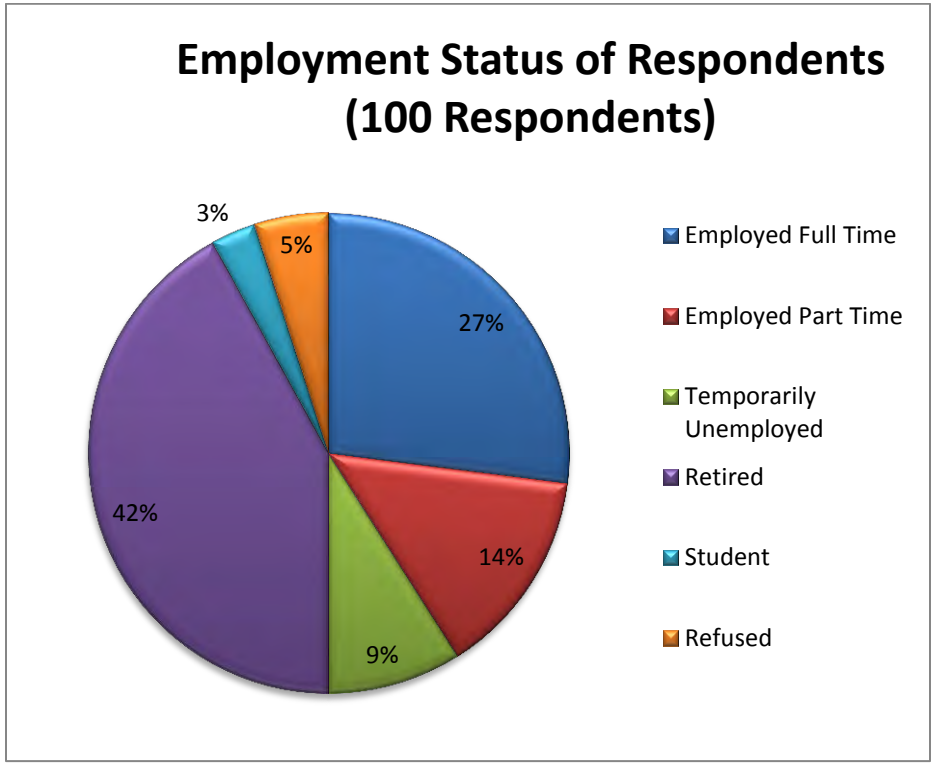
What is your race? You can choose more than one



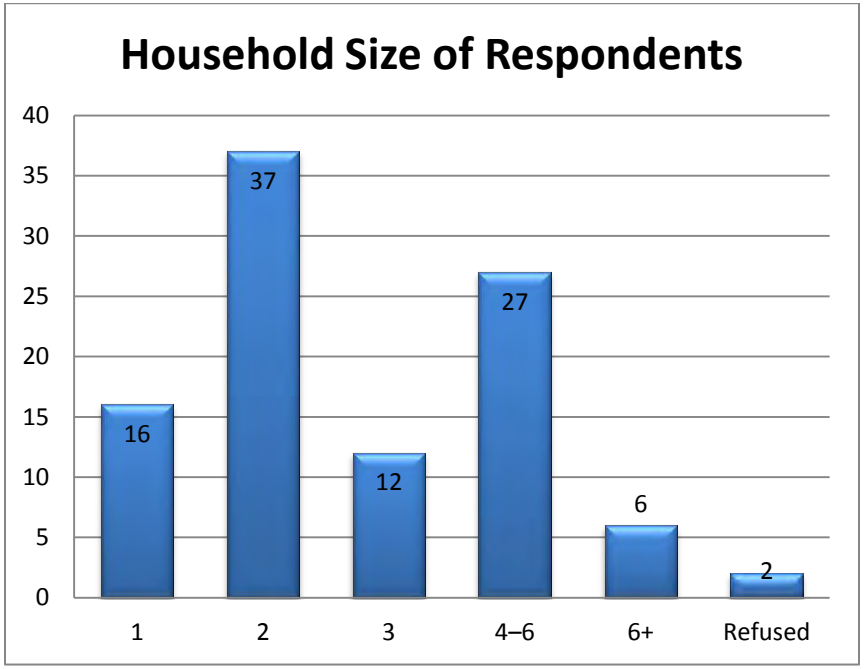
What is the highest level of formal education you have completed?



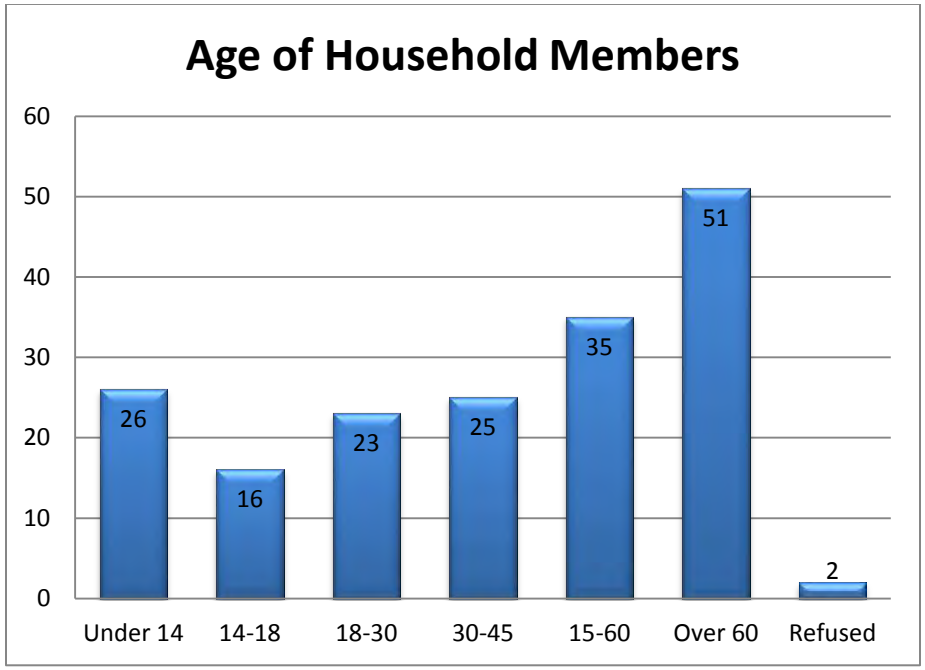
How would you describe your current employment status?



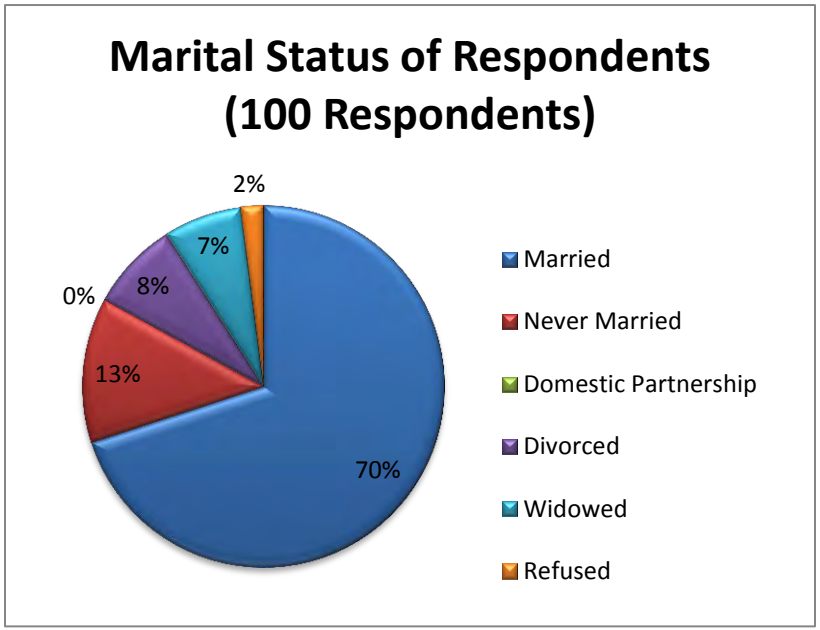
How many individuals are currently living or staying in your household?



Are any members of your household:

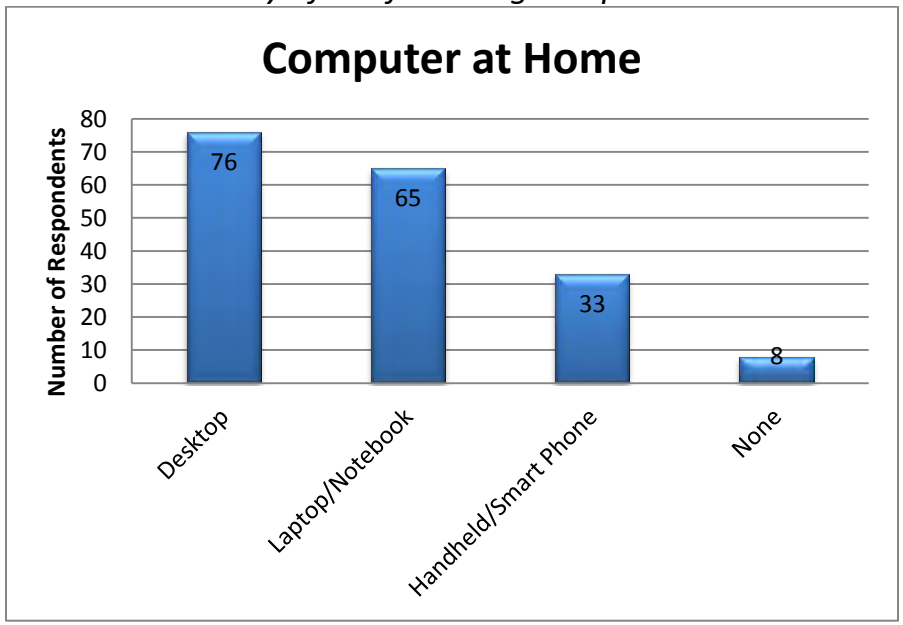


What is your current marital status?

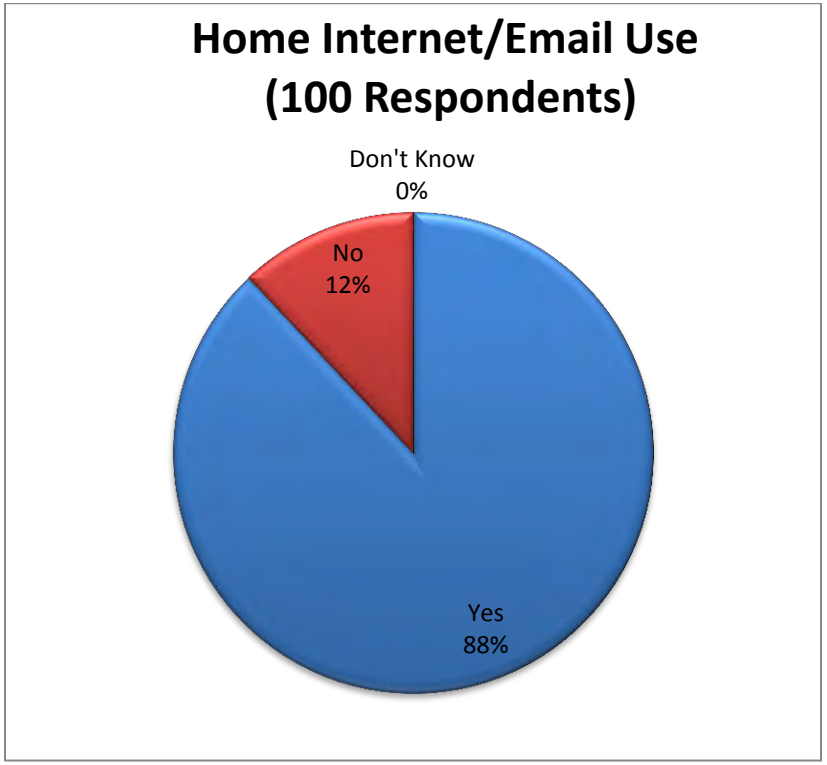


II. Access

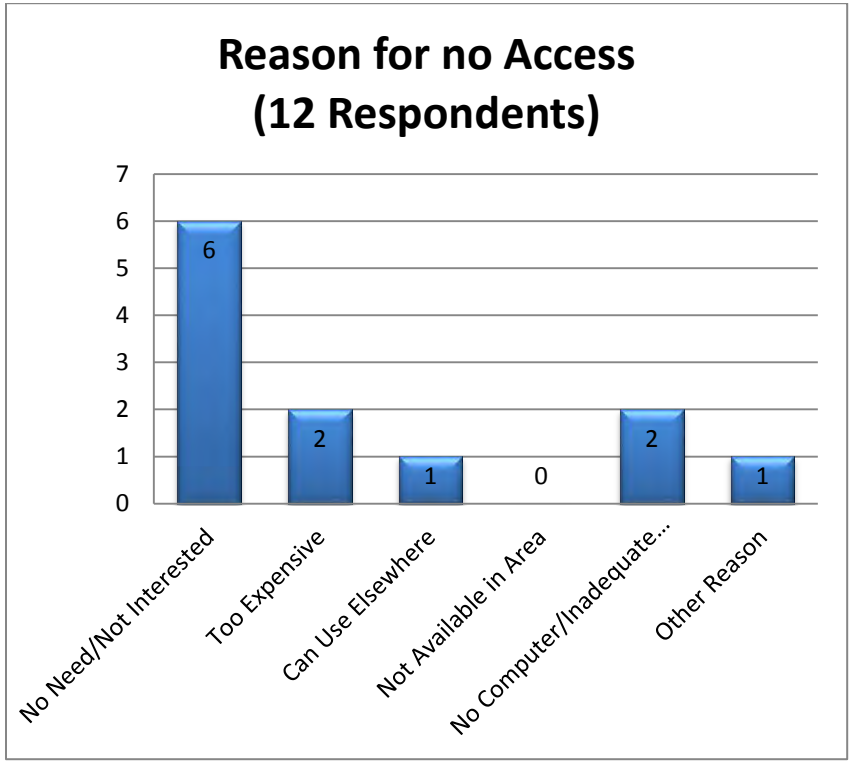
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

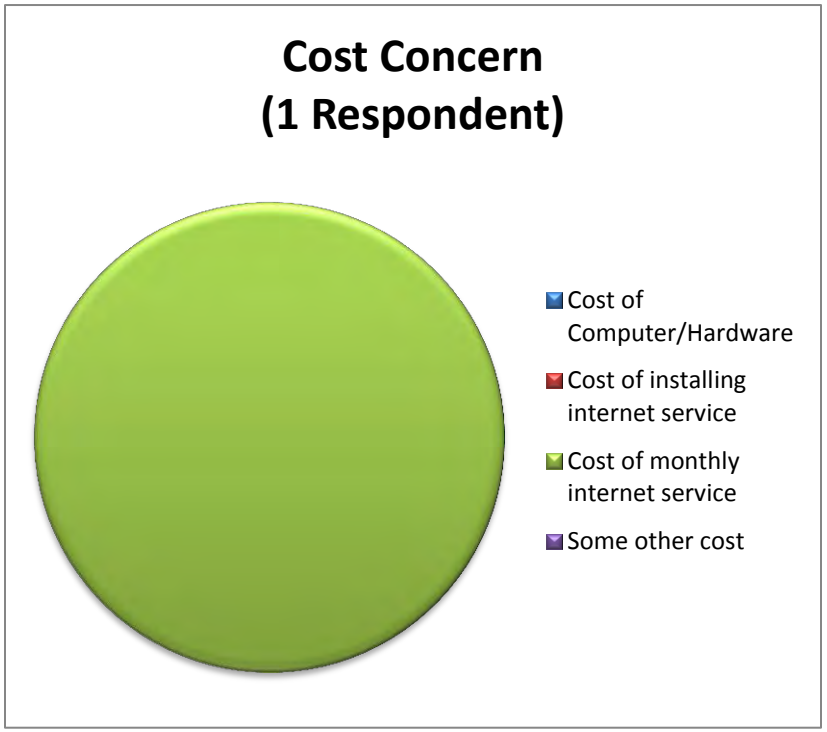


What is the main reason you do not have internet access in your home?

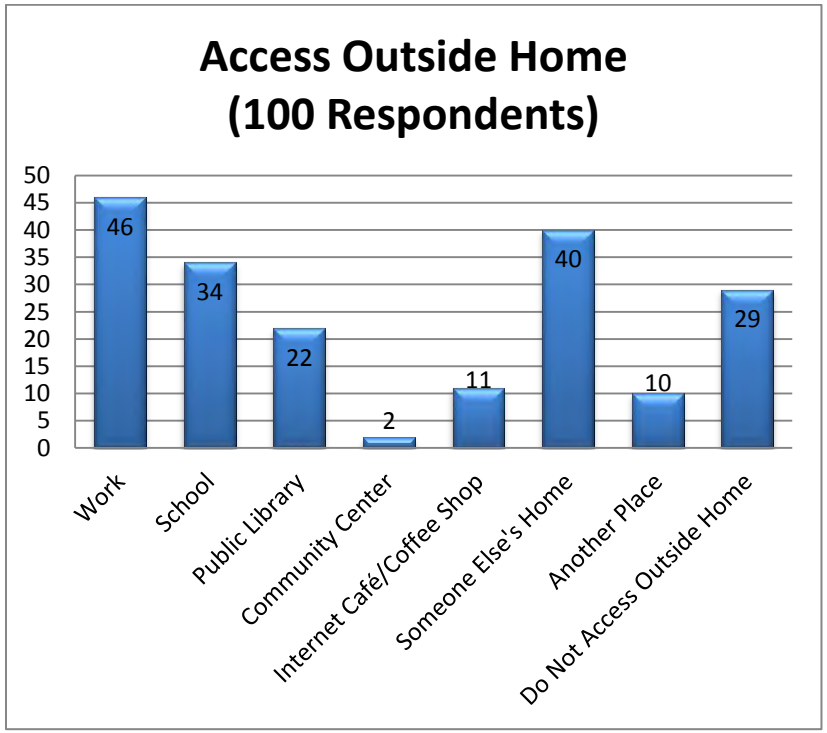


Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?

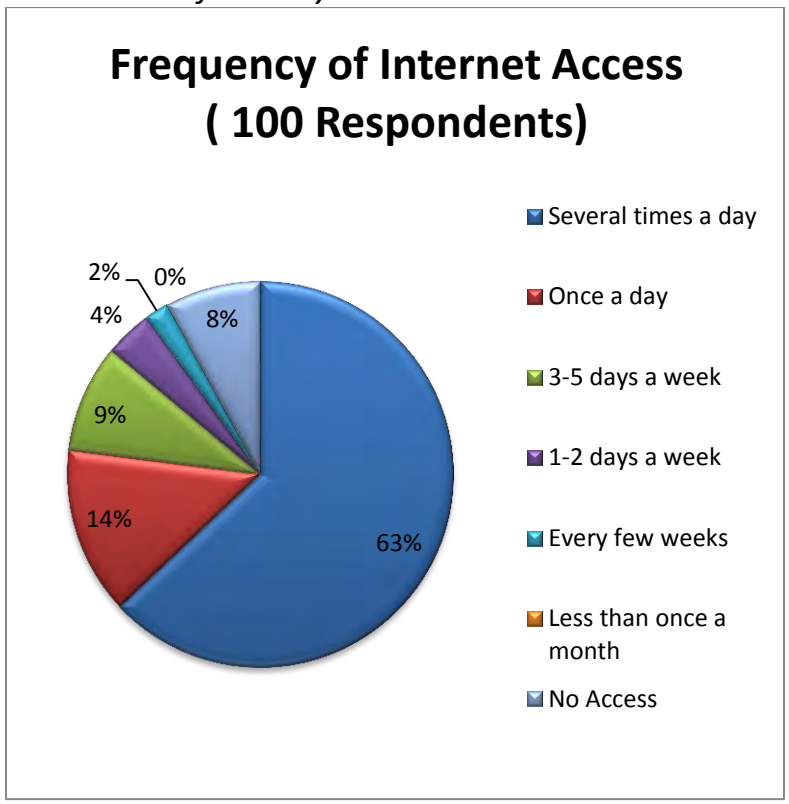


Do you or any member of your household access the internet at any of the following locations outside the home?

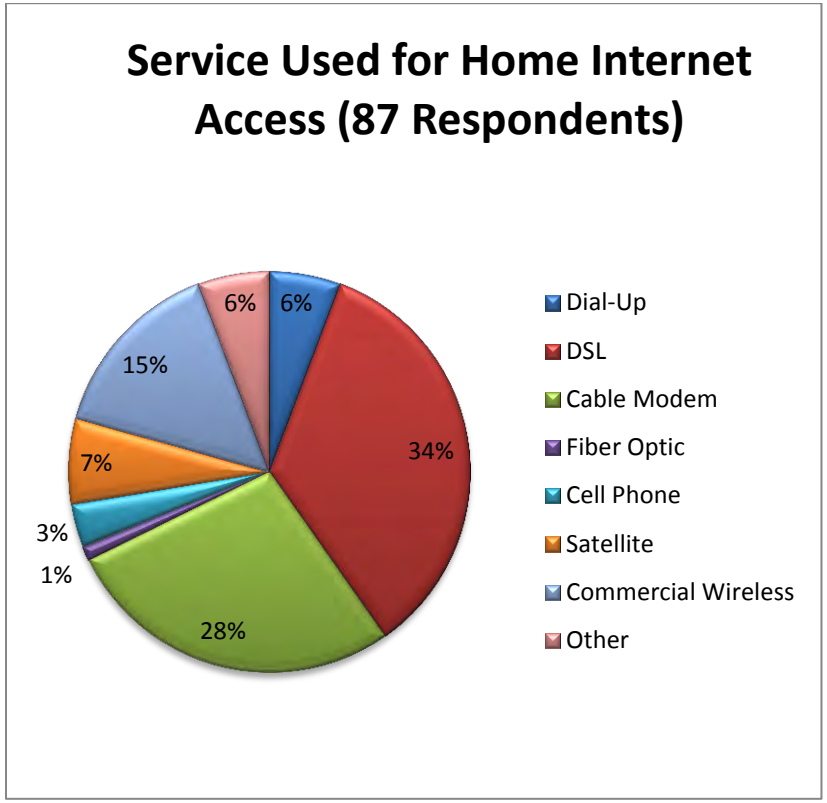


III. Use and Service

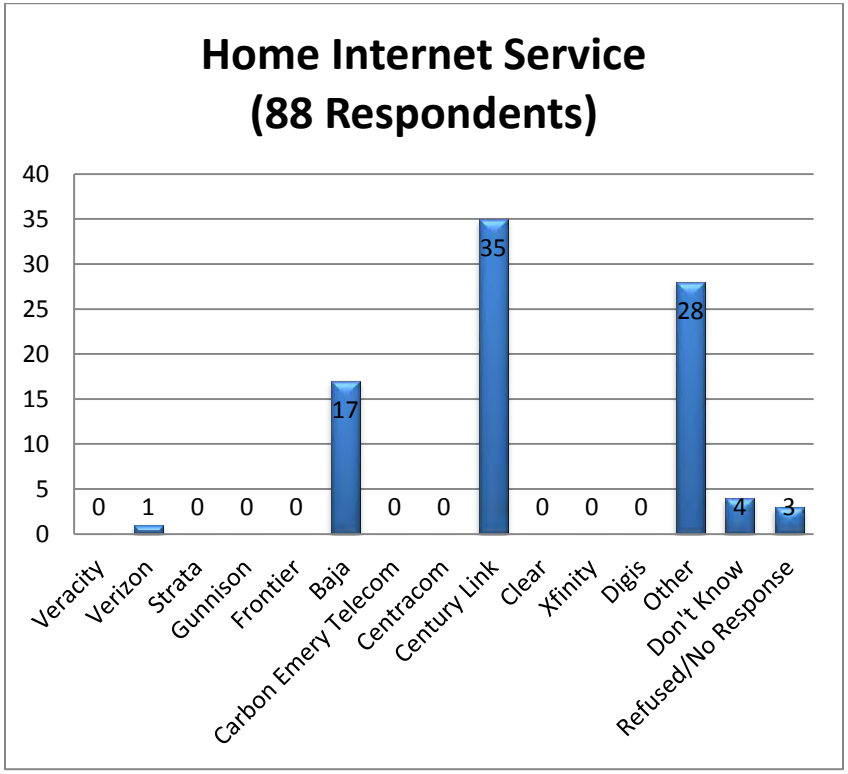
About how often do you access the internet?



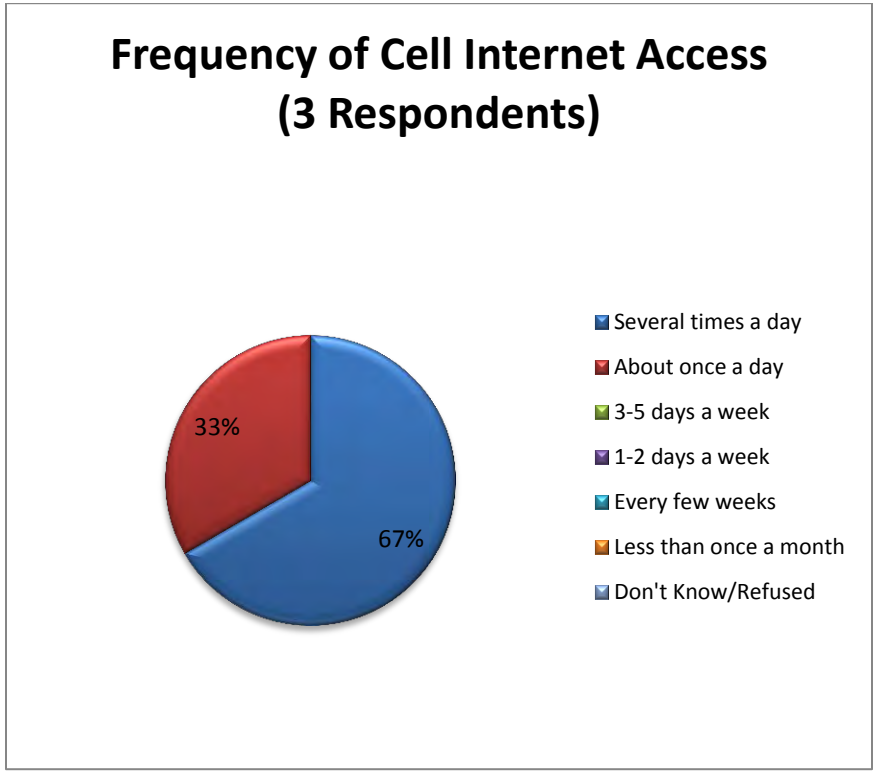
At home do you access the Internet using :



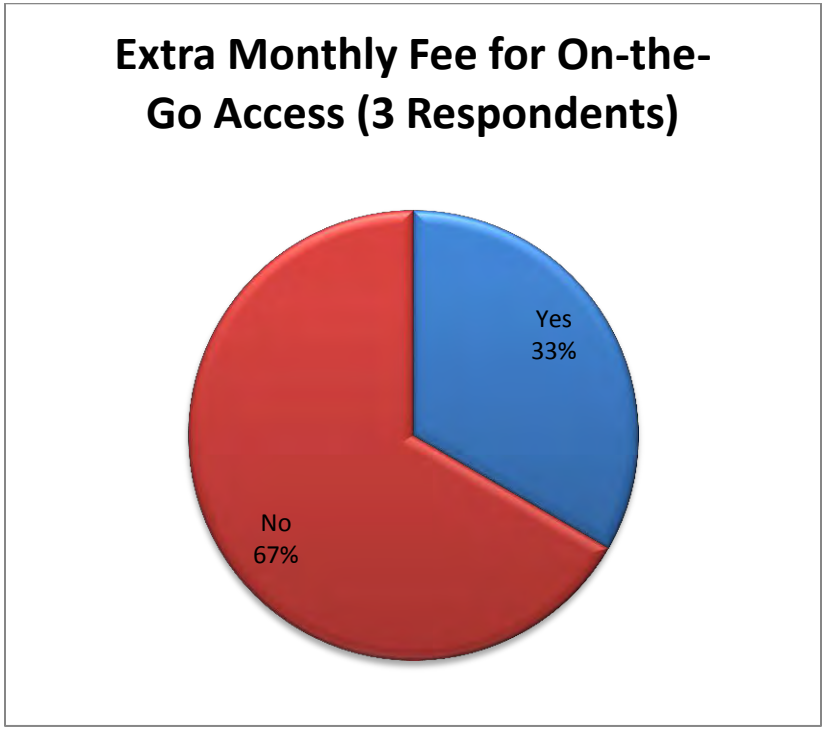
Thinking about your internet service at home, which company provides that service?



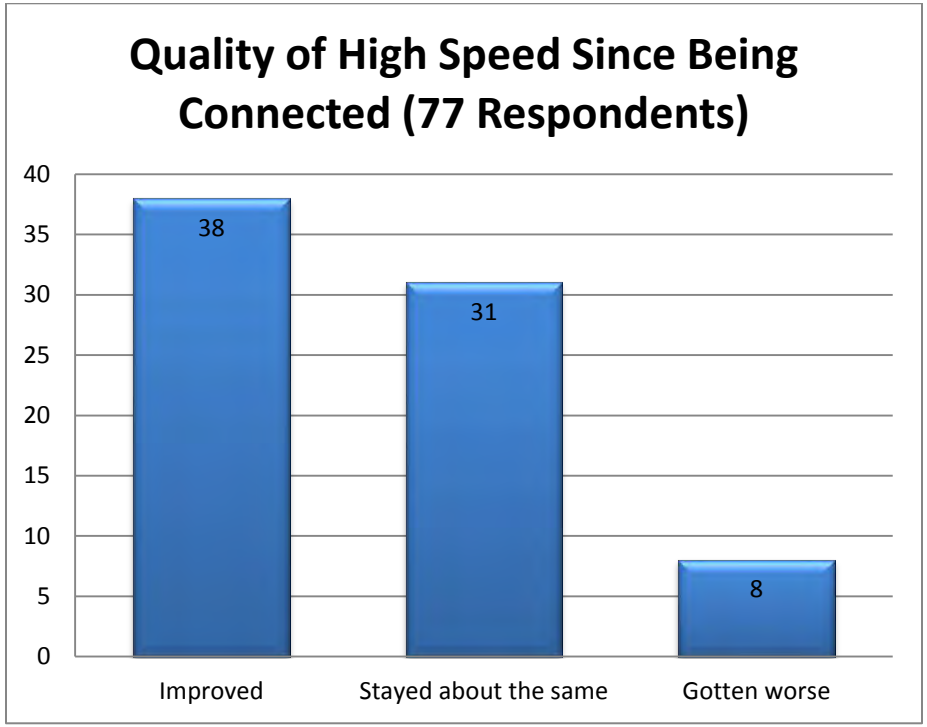
How often do you access the internet from your cell phone?



Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



Since you first got high speed internet at home would you say the quality of your high speed connection has:



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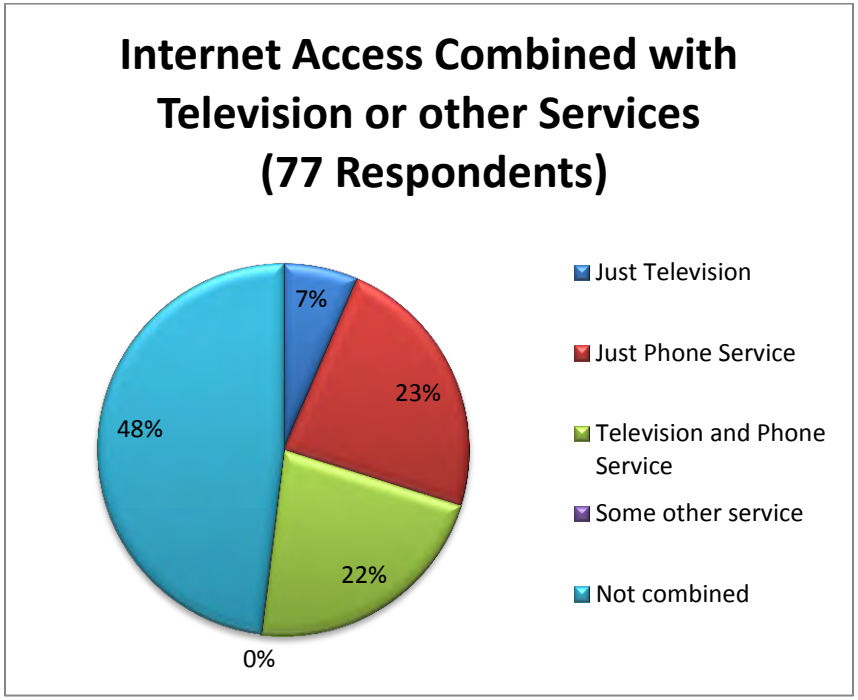

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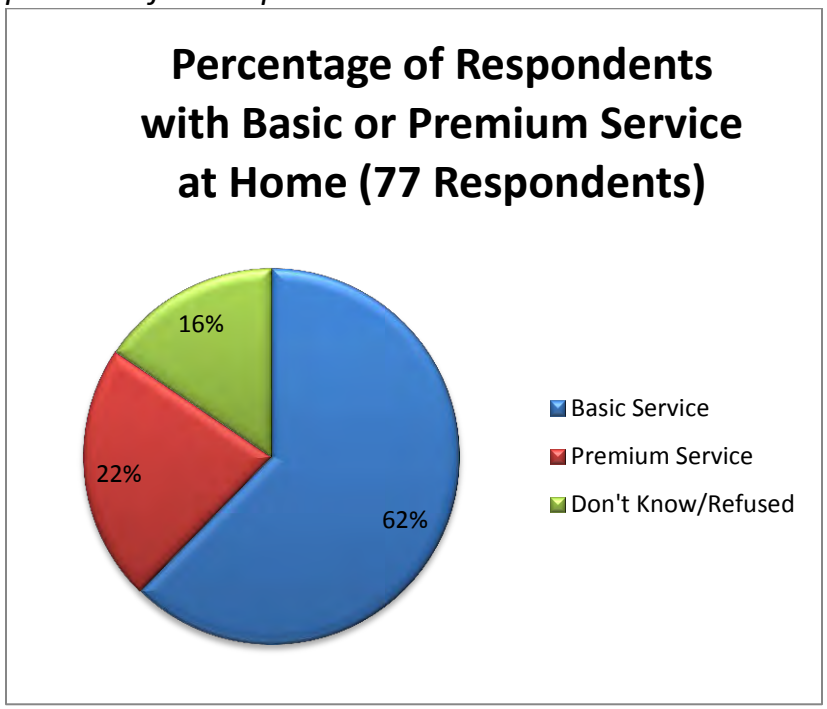

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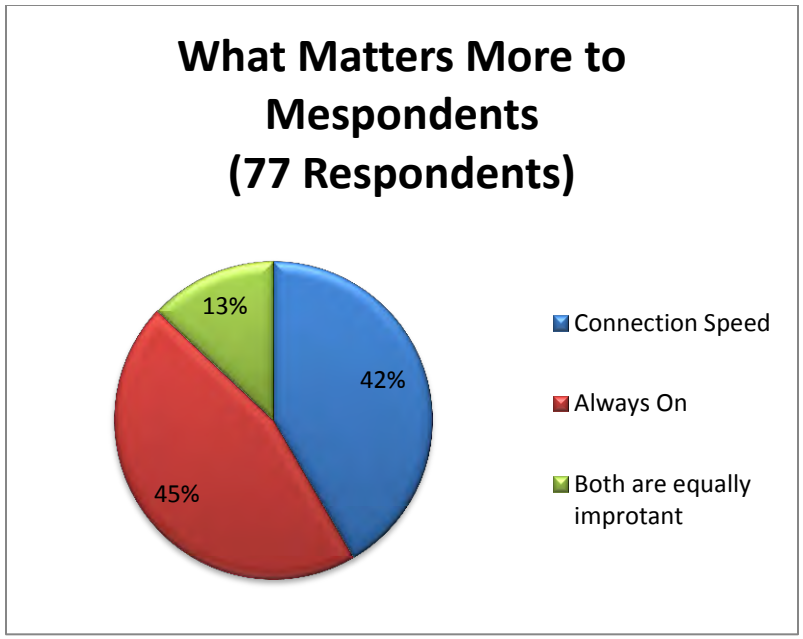
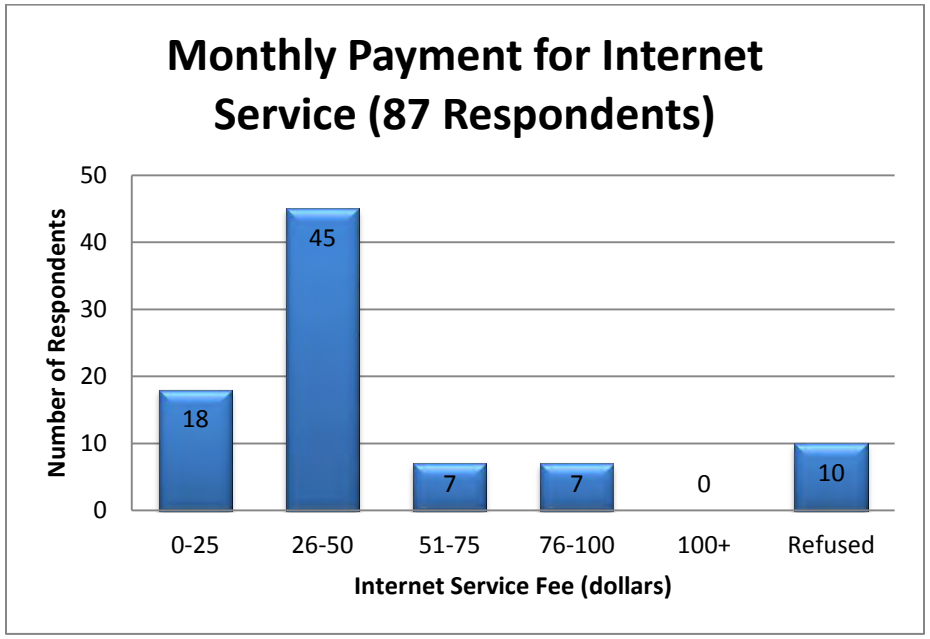


To the nearest dollar, how much per month do you pay for internet service?



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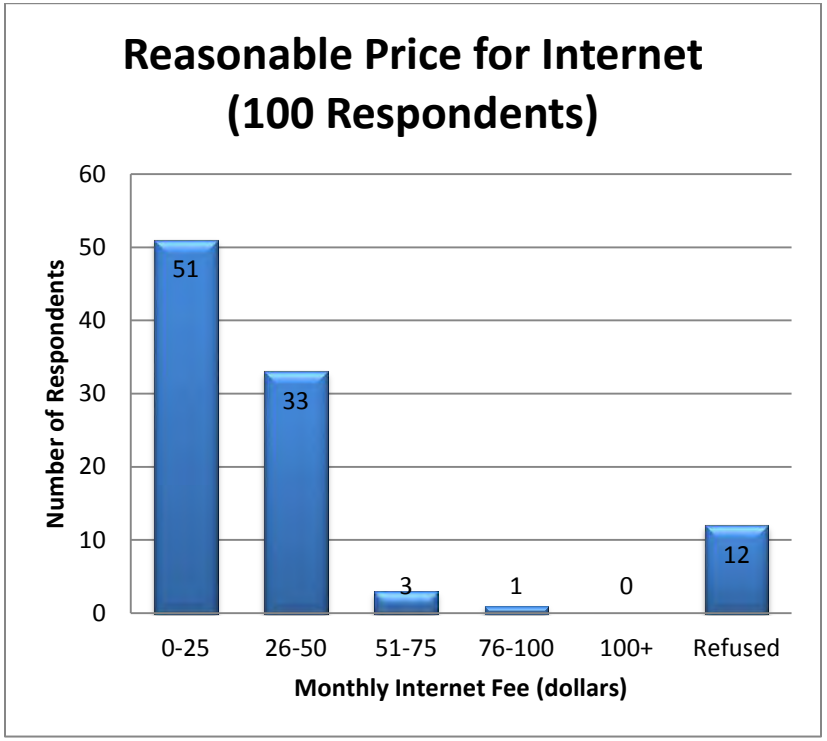
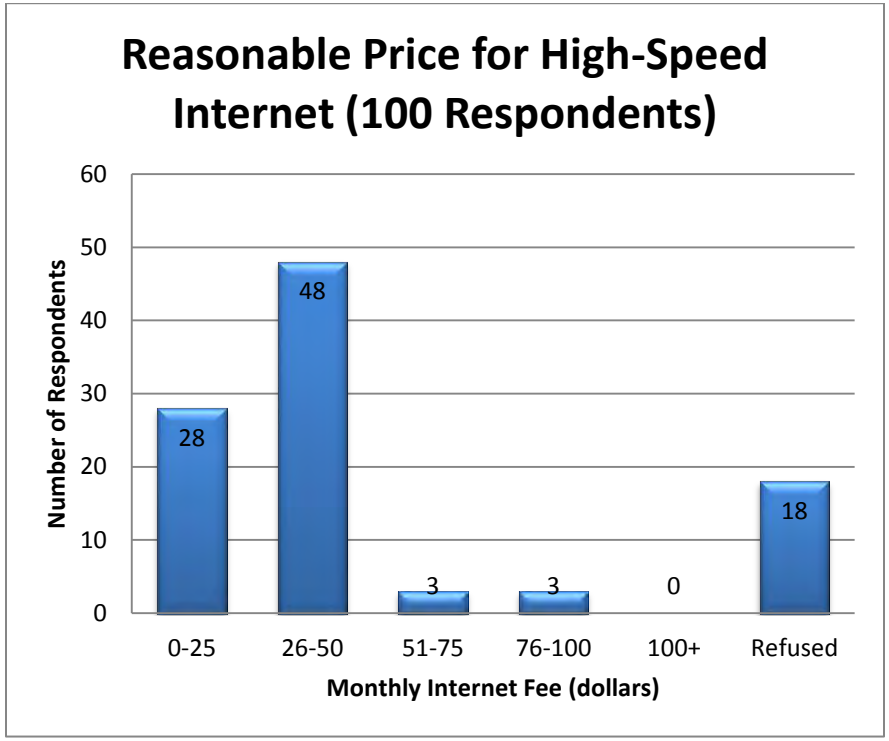


What do you think a reasonable price for High-Speed Internet would be?



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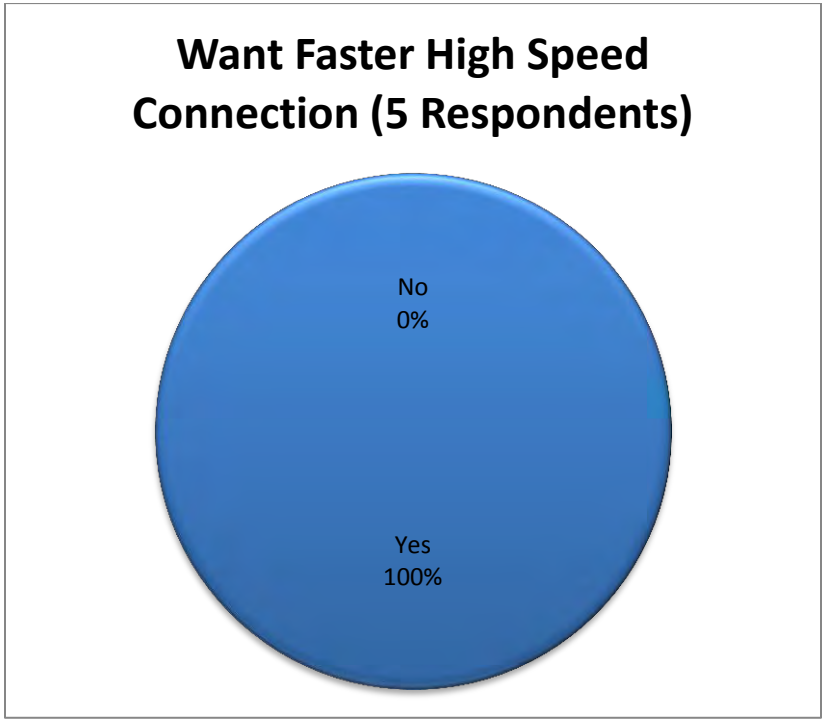
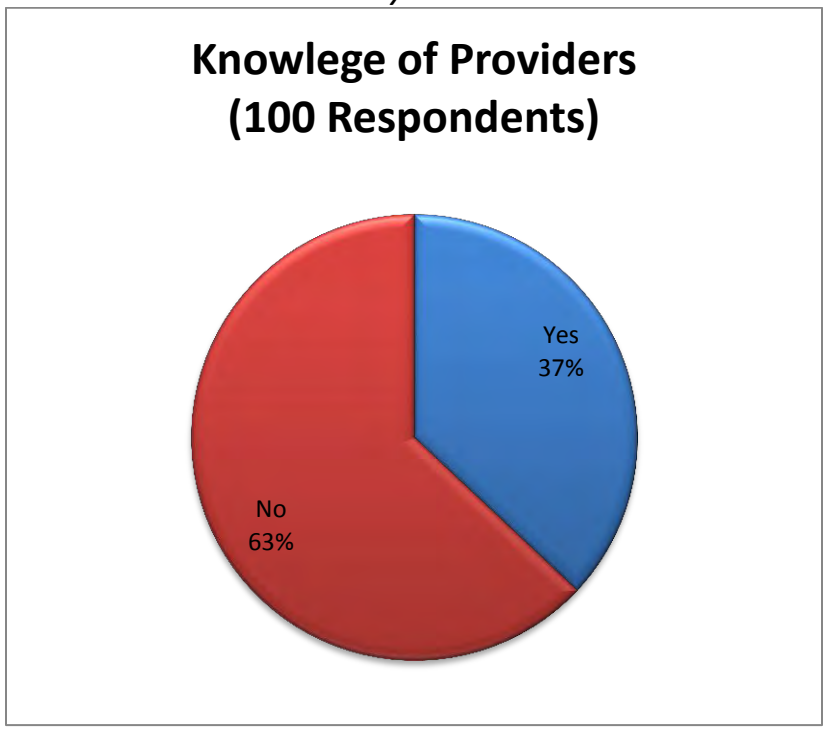
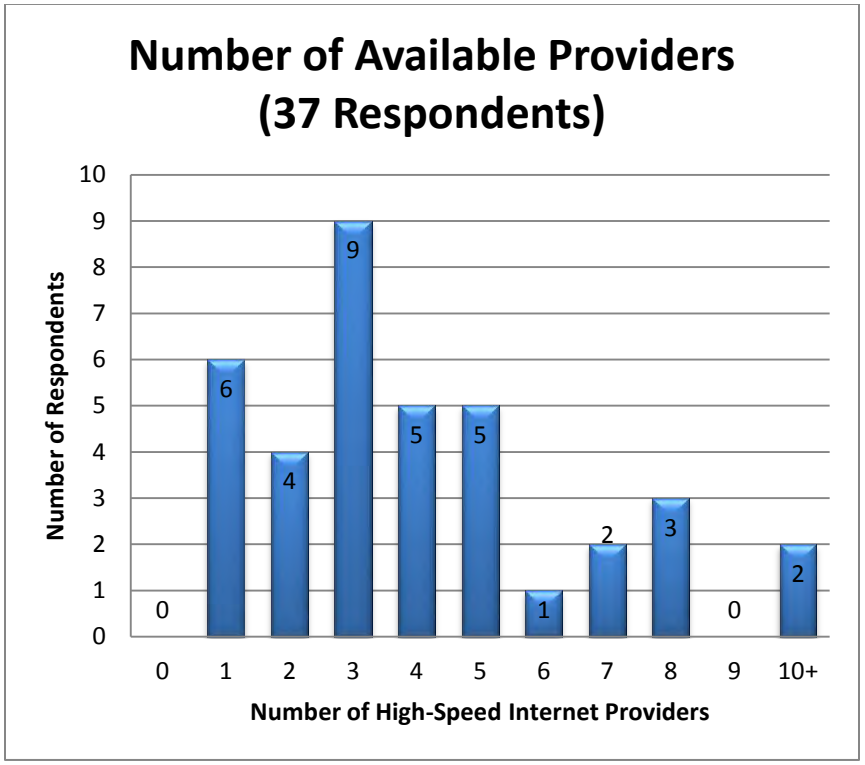


Do you know how many providers of high-speed internet service are in your area?



How many providers are available?



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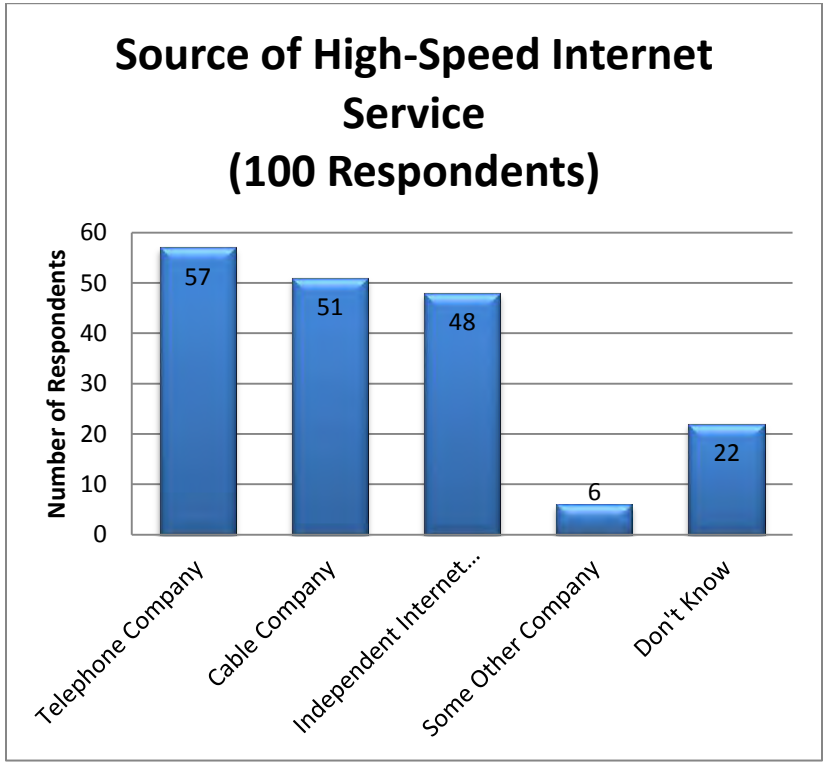

VI. Respondents' Purchasing Behavior

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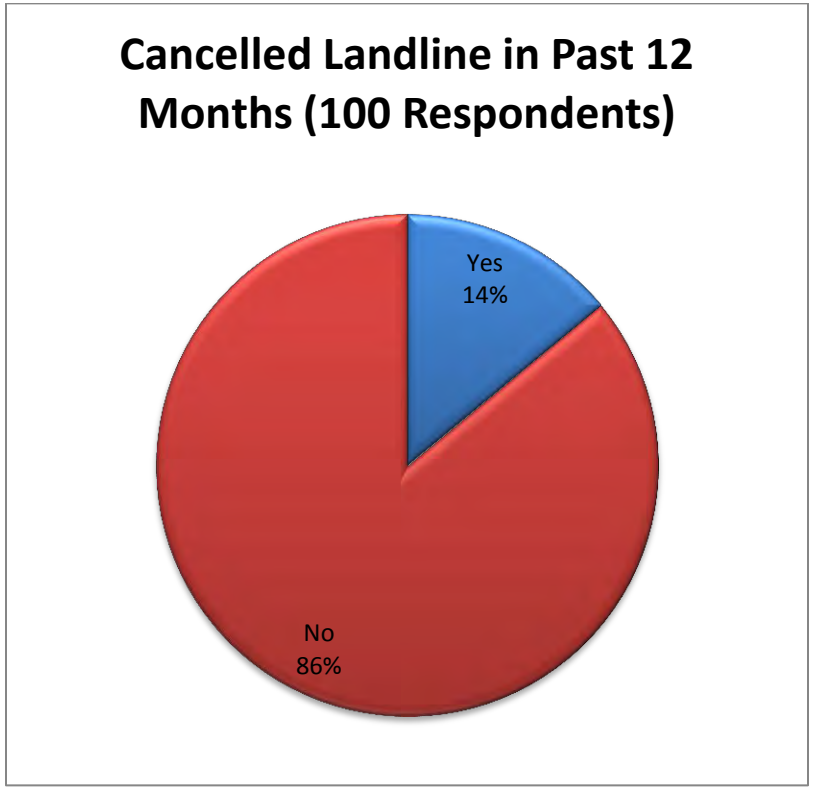
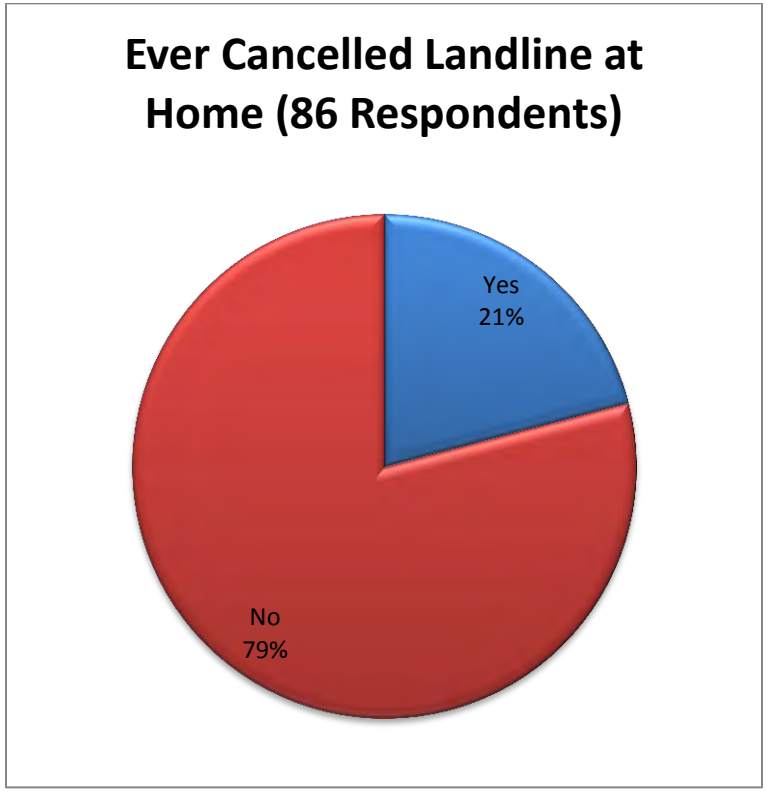


Have you ever cancelled a landline phone at home to save money?



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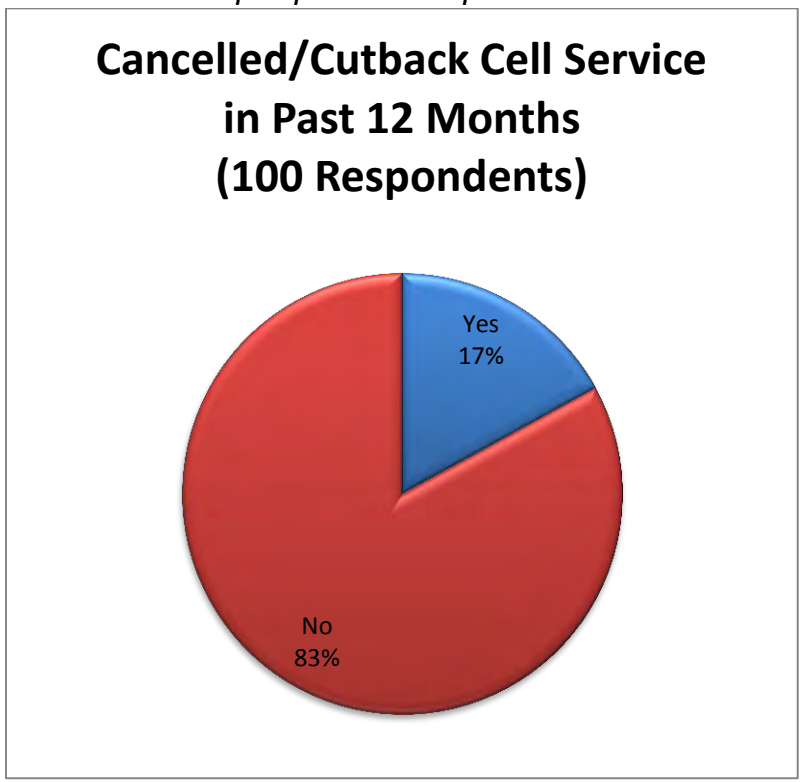
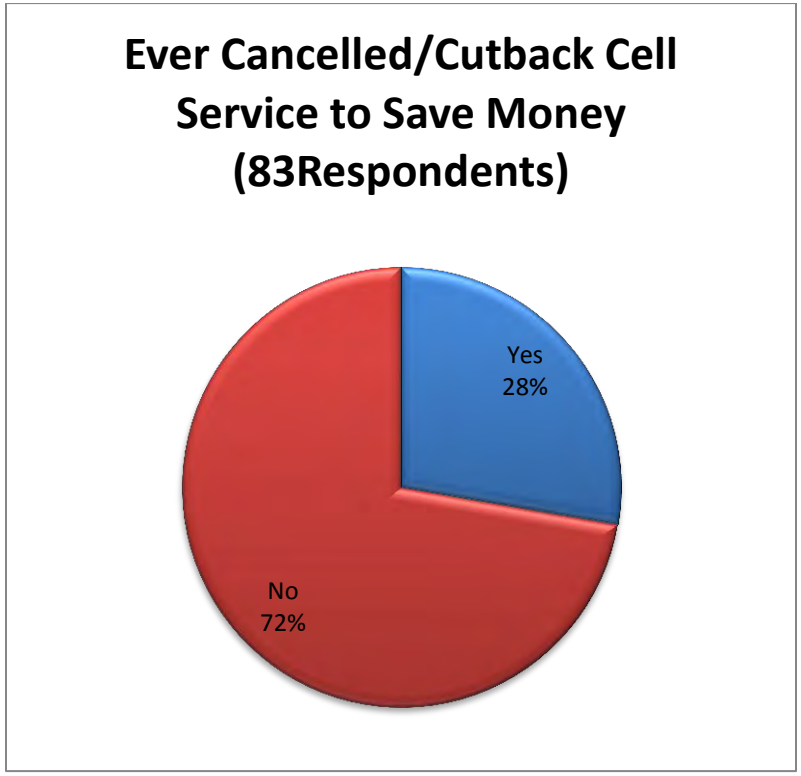
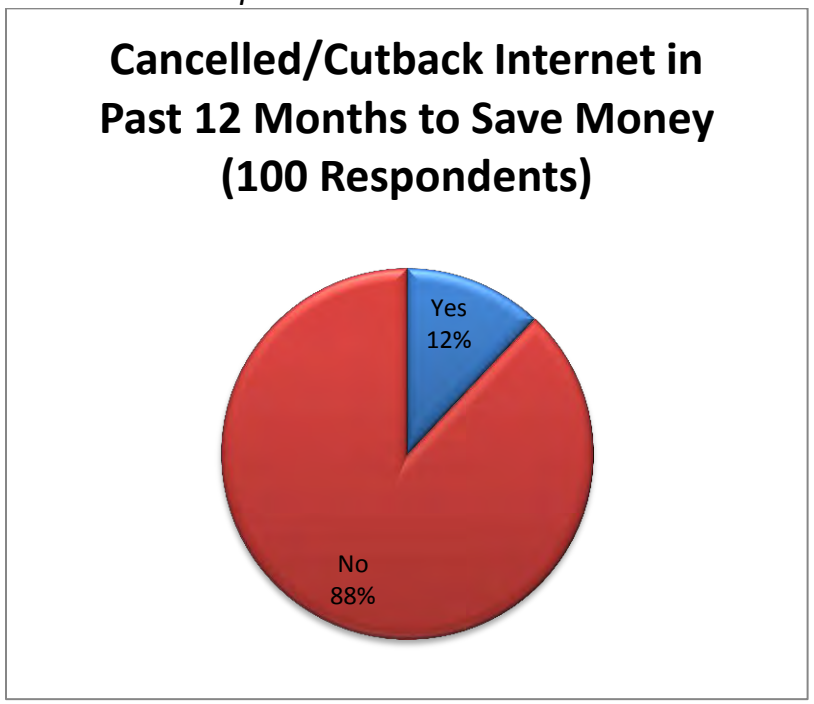


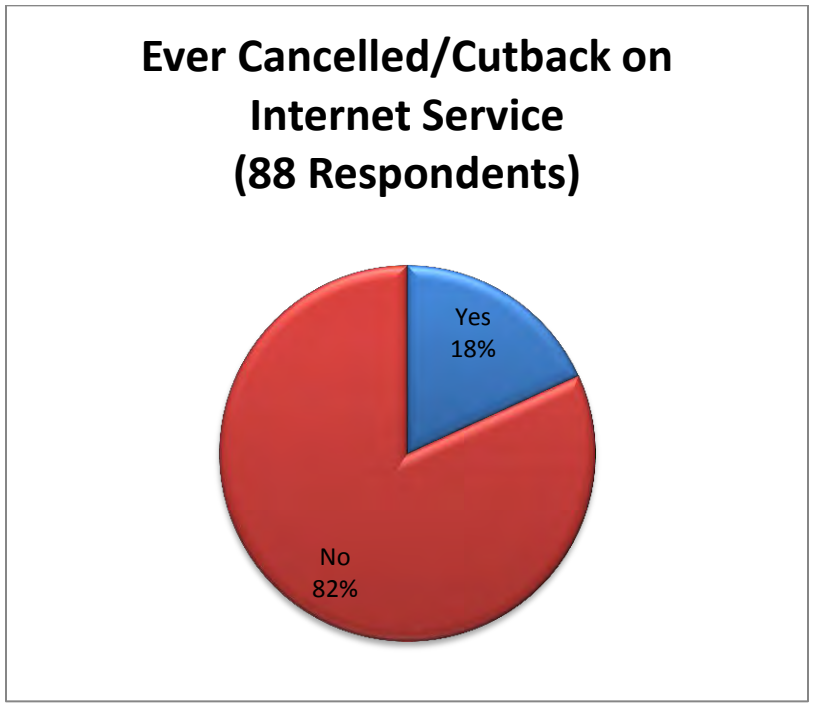
Have you ever cancelled or cutback your cell phone service or cut back to a cheaper plan?



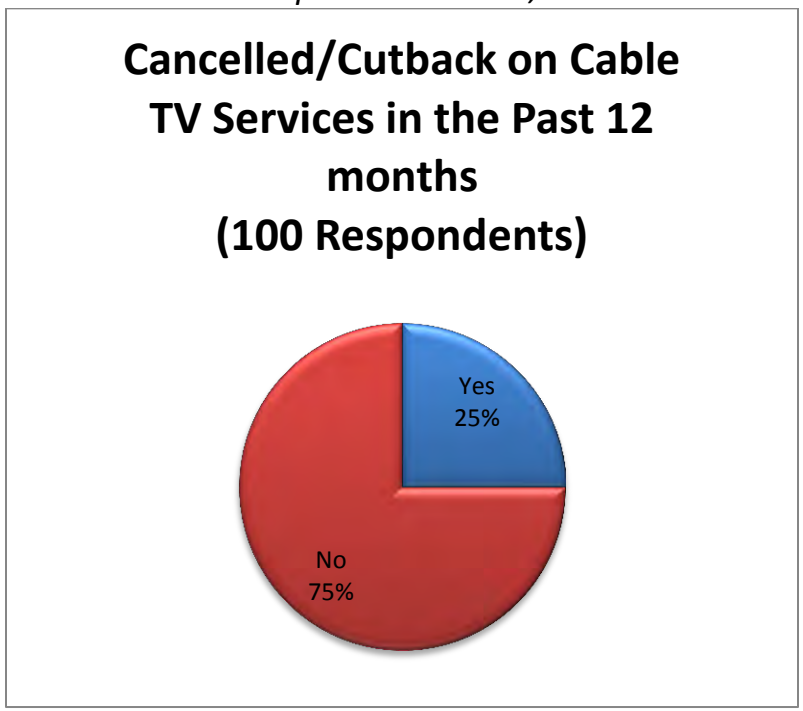
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



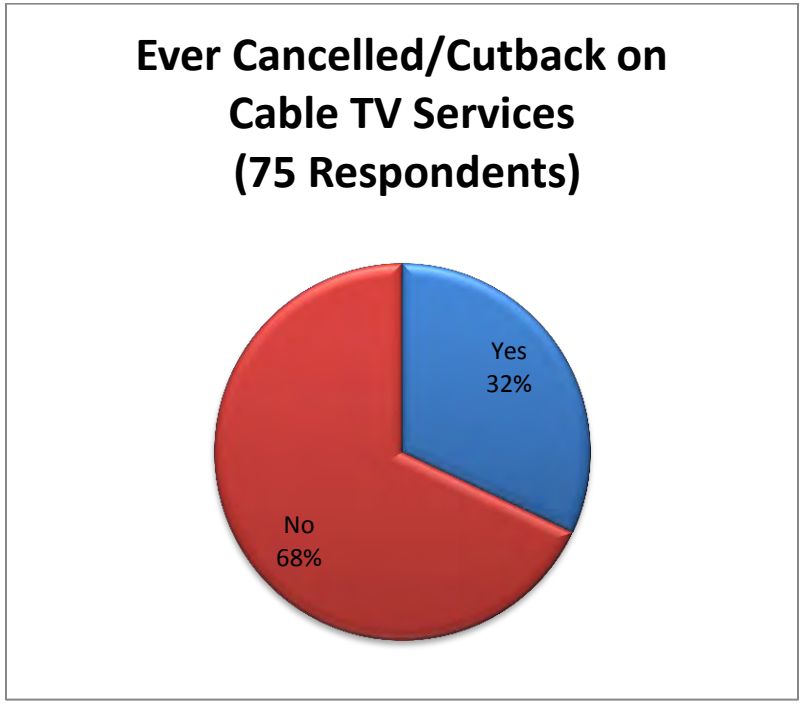
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



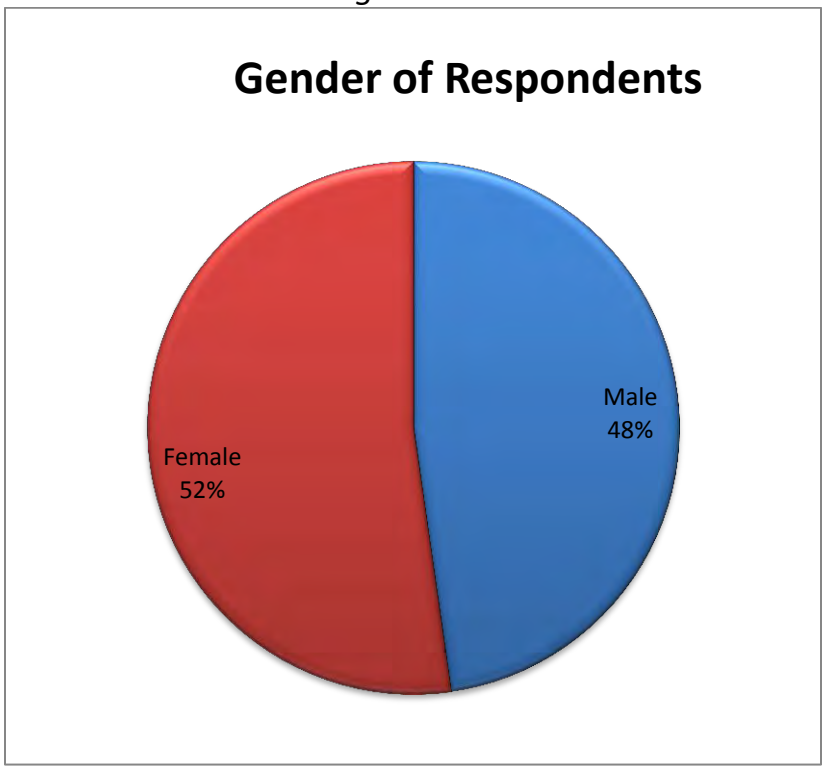
Have you ever cancelled or cutback on cable TV services?



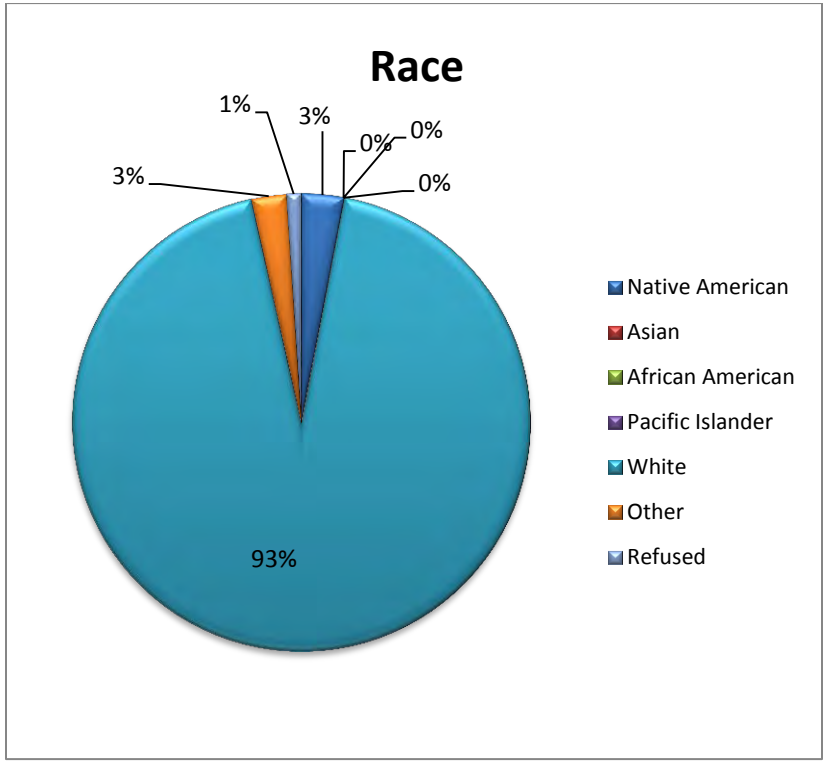
Southeastern Region Results

I. Demographics

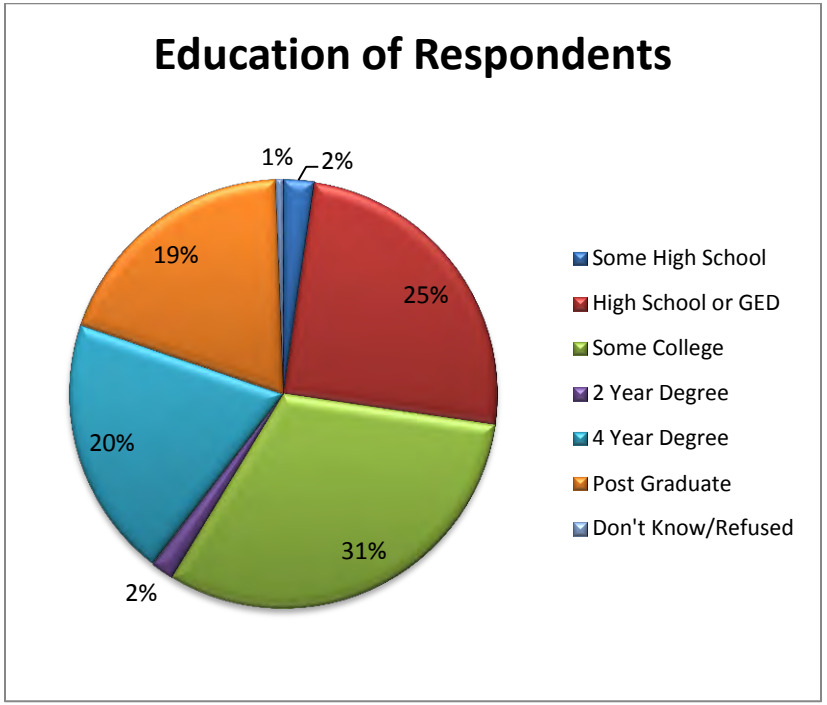
Survey participants were asked to disclose their gender.



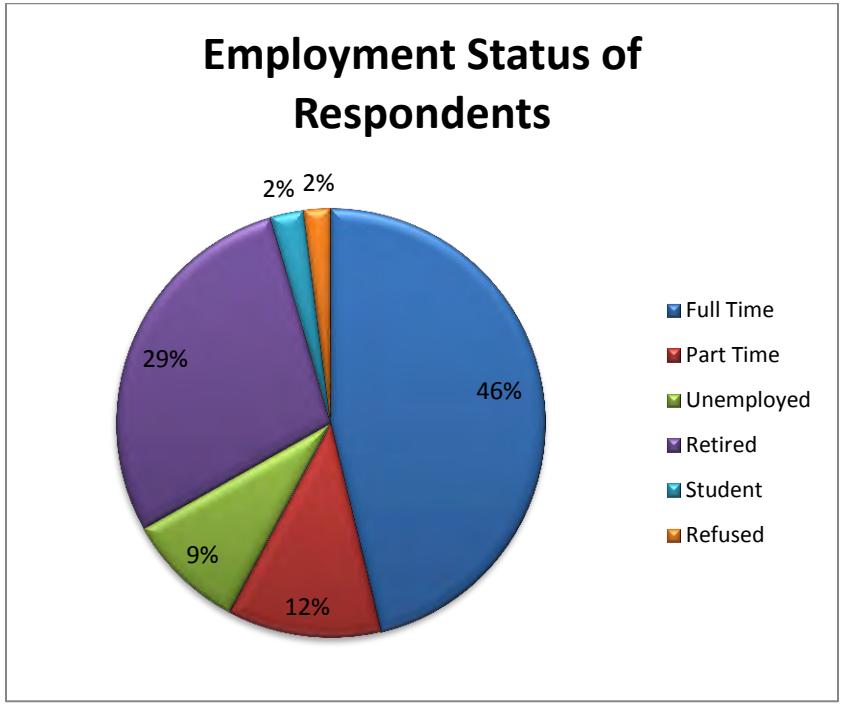
What is your race? You can choose more than one



What is the highest level of formal education you have completed?

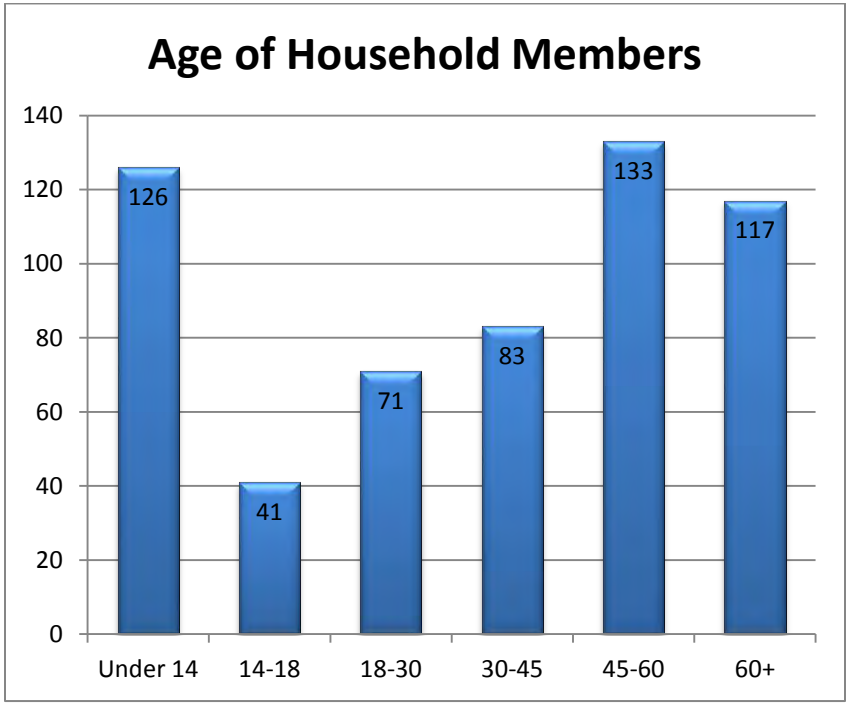


How would you describe your current employment status?

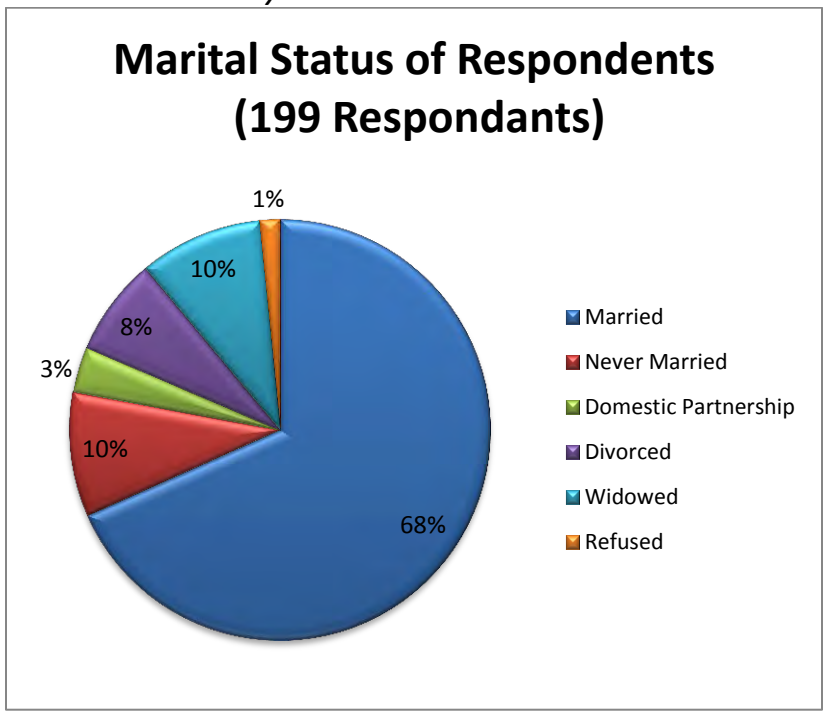


.

Are any members of your household:

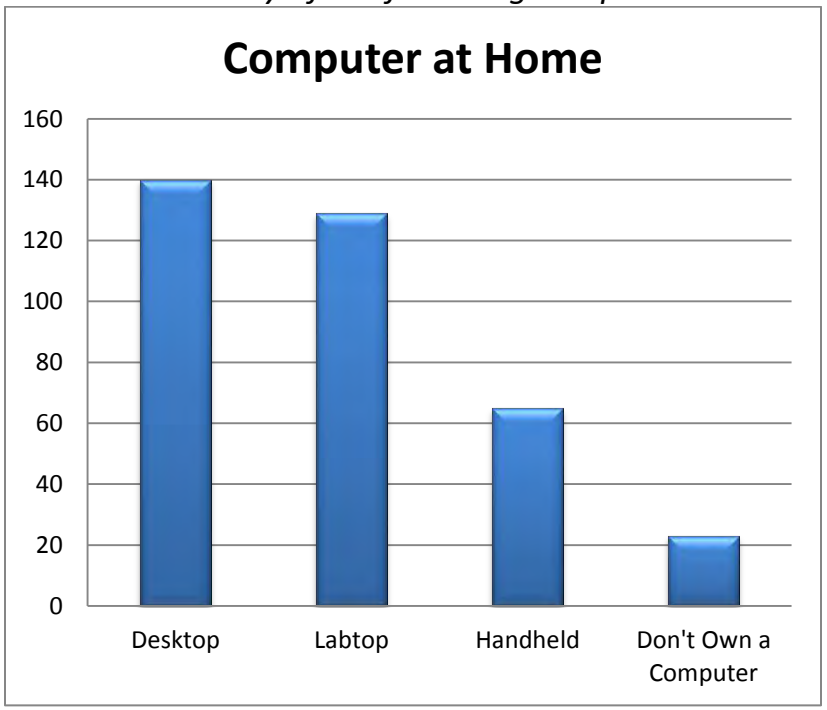


What is your current marital status?

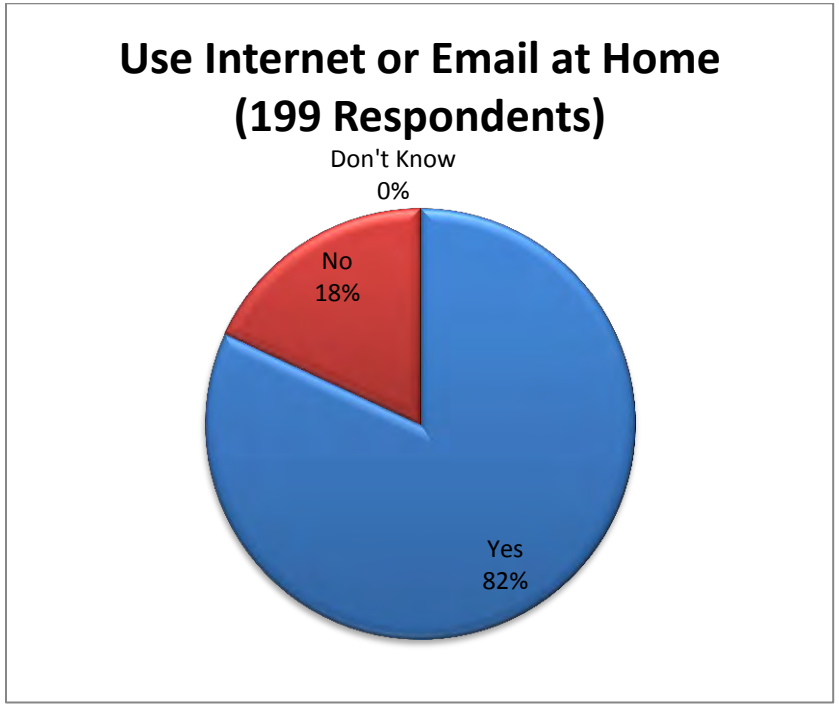


II. Access

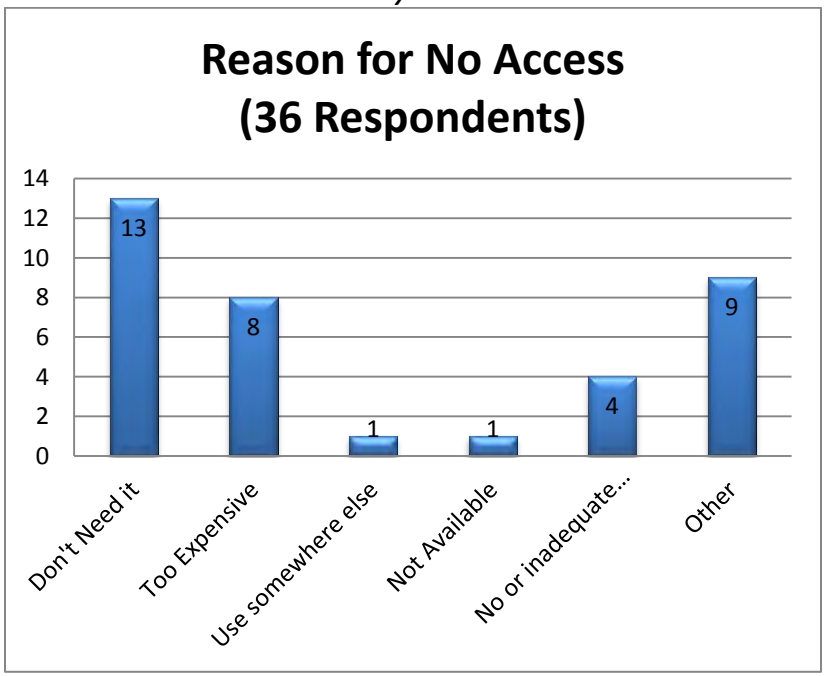
At home, do you or any member of you household own or use any of the following computers?



Does anyone in your household use the Internet from home or send and receive email from home?

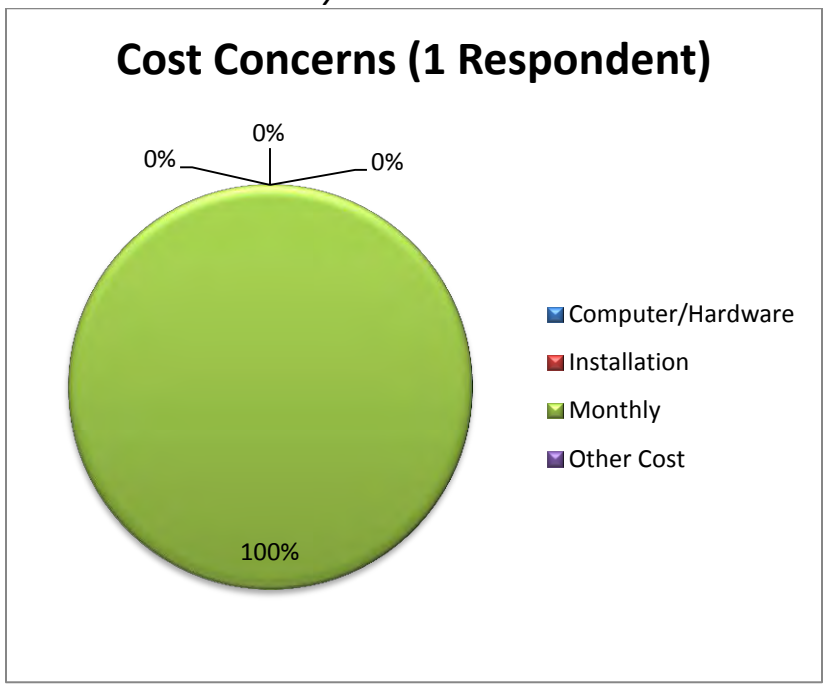


What is the main reason you do not have internet access in your home?

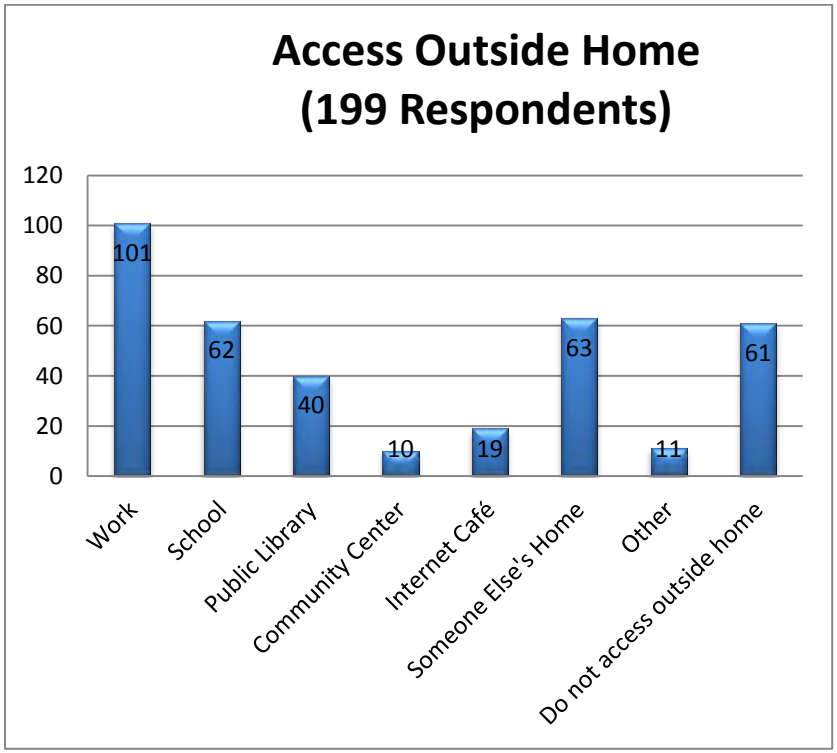


Of those who do not have high speed Internet service, we asked what their primary cost concern was.

What costs are you most concerned about?

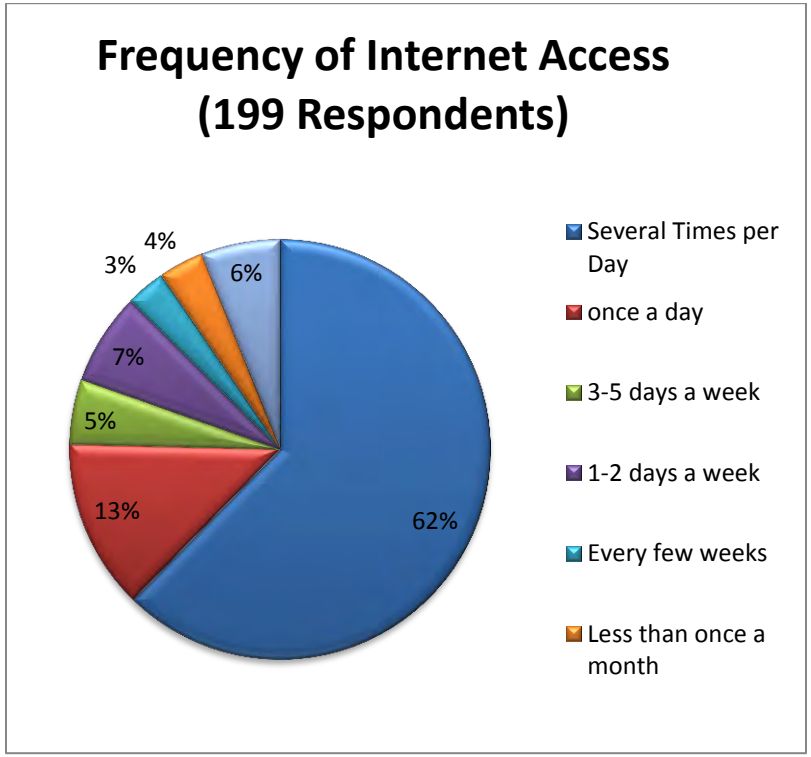


Do you or any member of your household access the internet at any of the following locations outside the home?

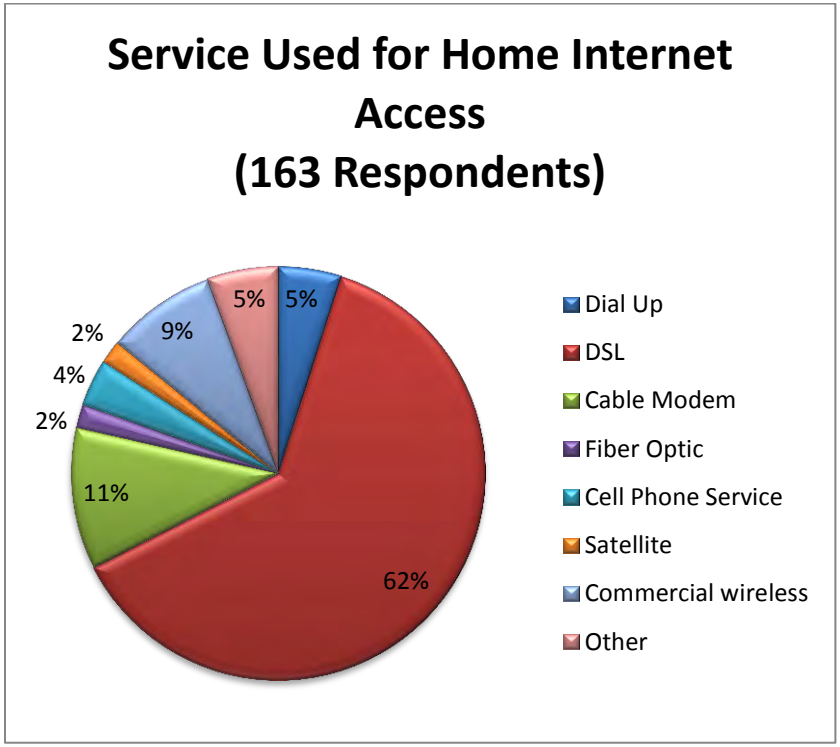


III. Use and Service

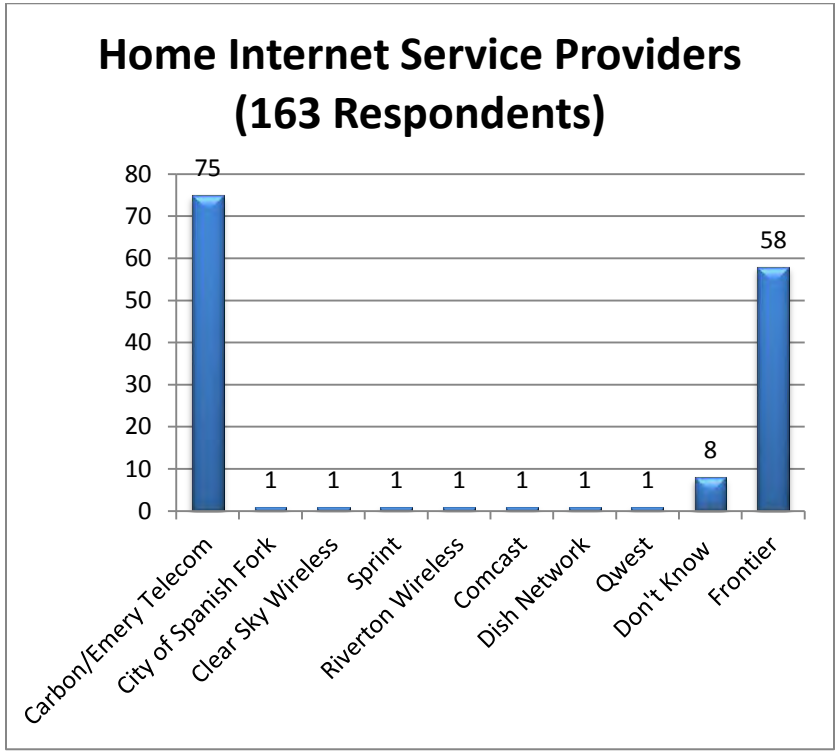
About how often do you access the internet?



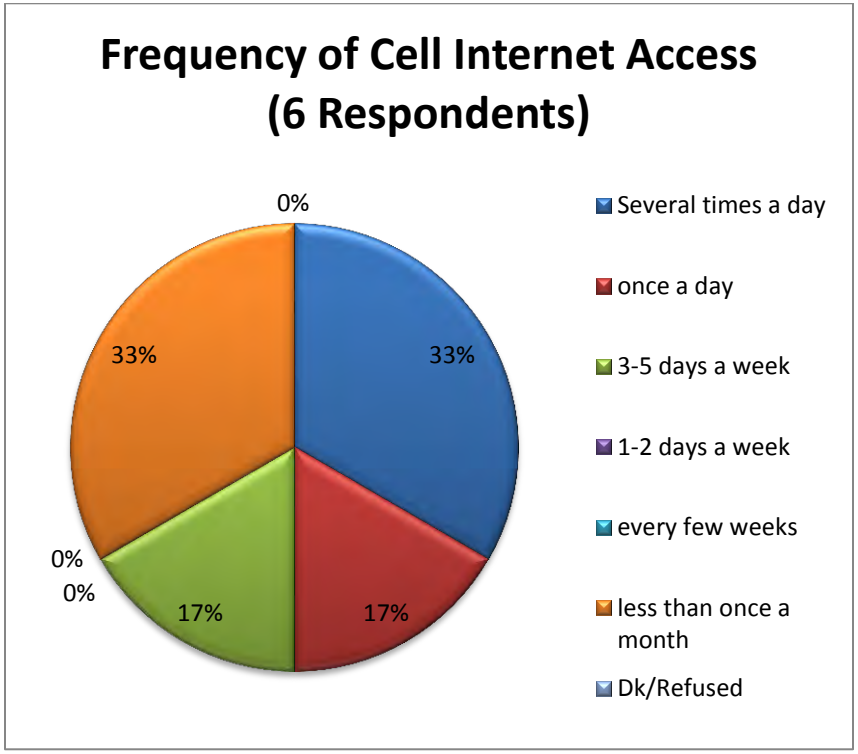
At home do you access the Internet using :



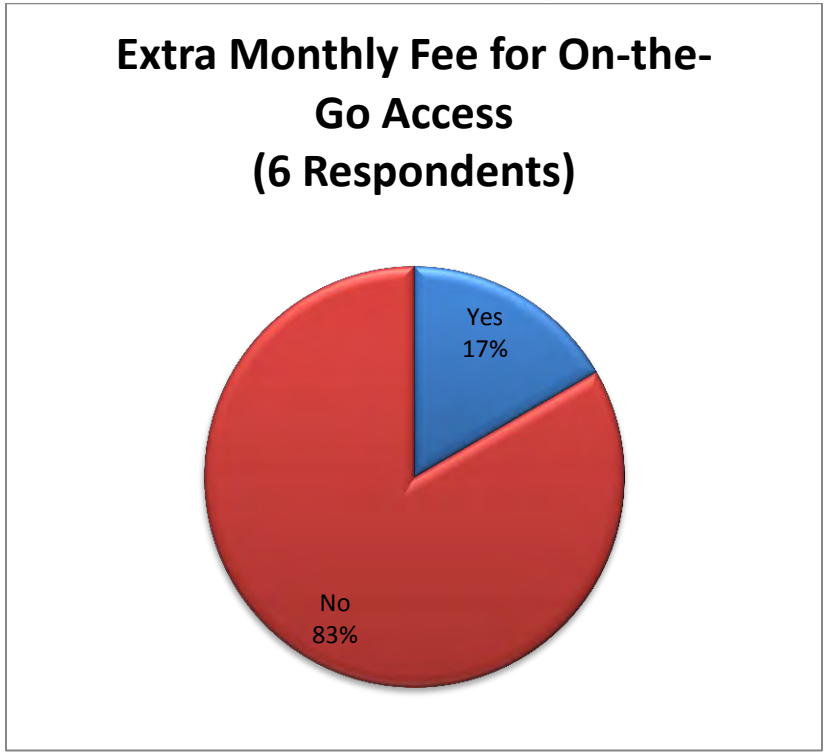
Thinking about your internet service at home, which company provides that service?



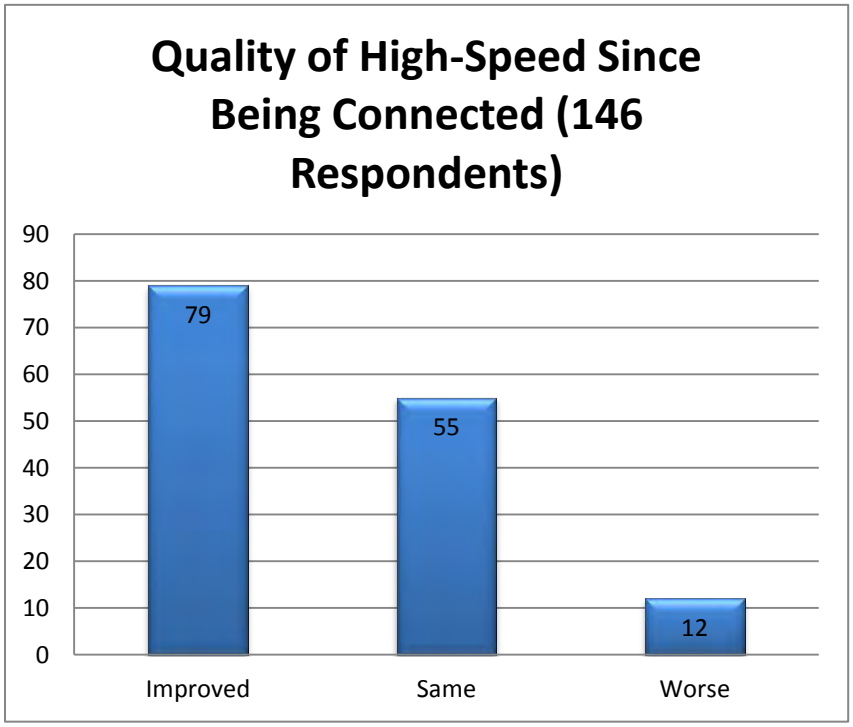
How often do you access the internet from your cell phone?



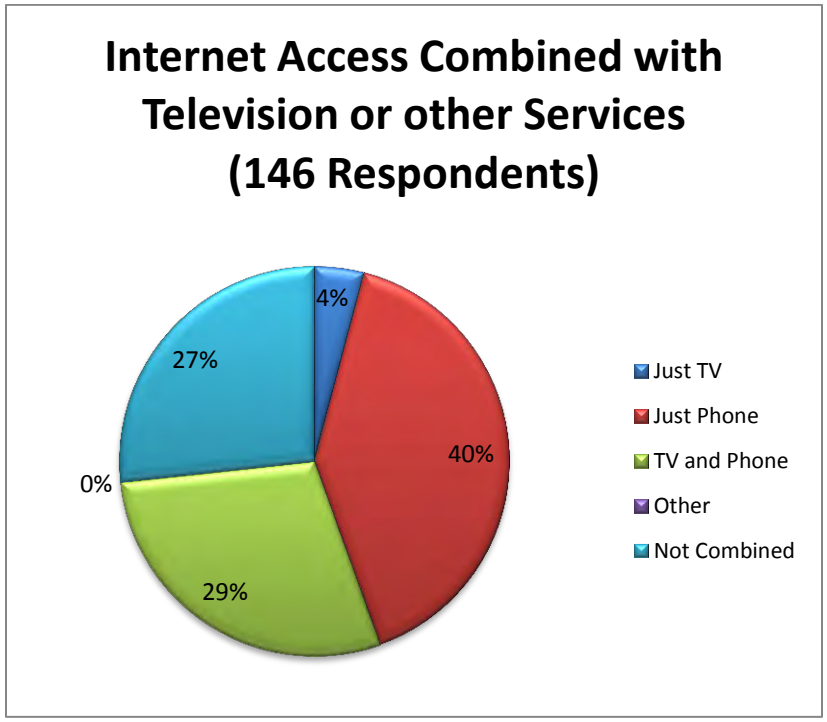
Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?



Since you first got high speed internet at home, would you say the quality of your high speed connection has:

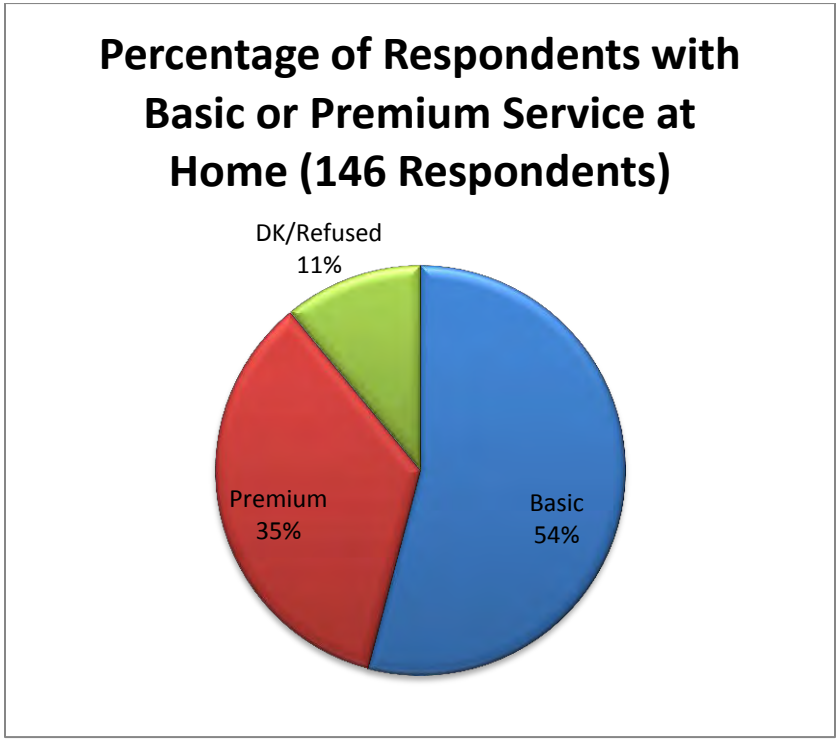


Is your internet access combined with television or other services?

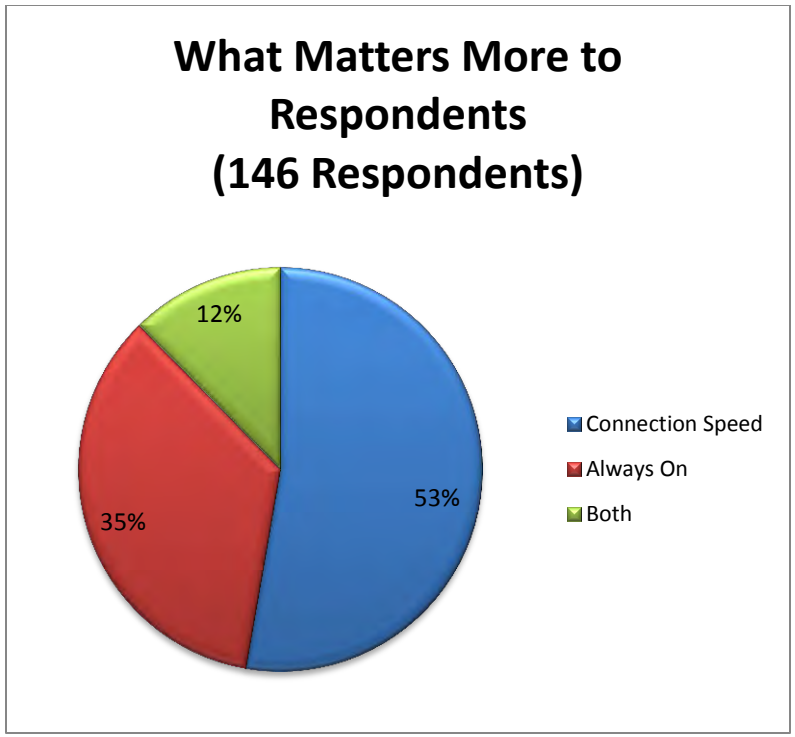


IV. Price and Preference

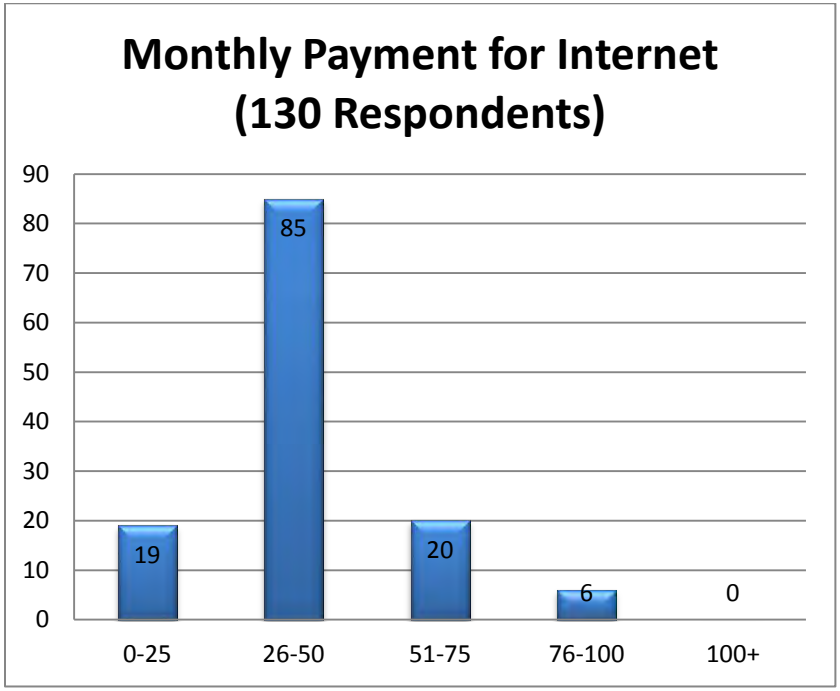
Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?



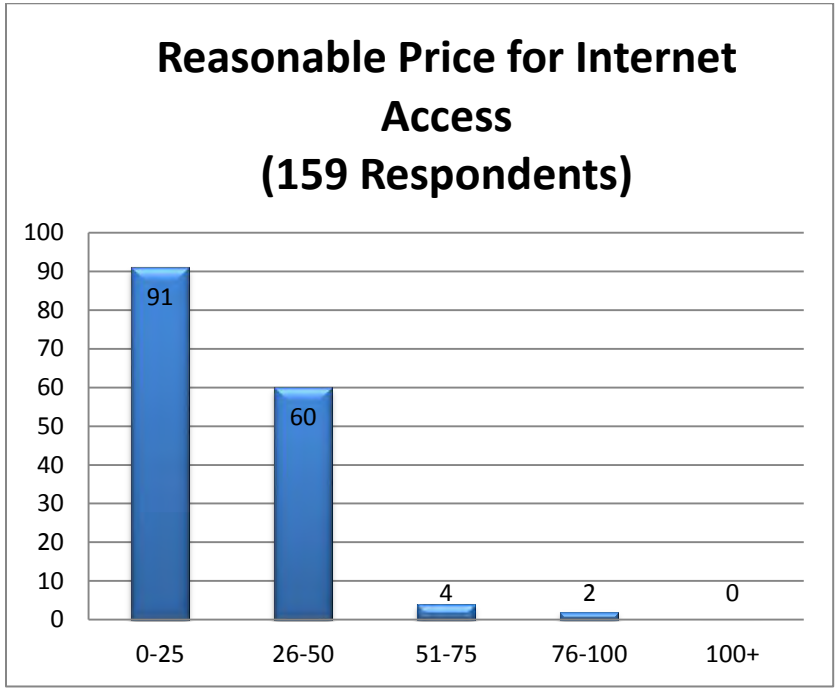
Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?



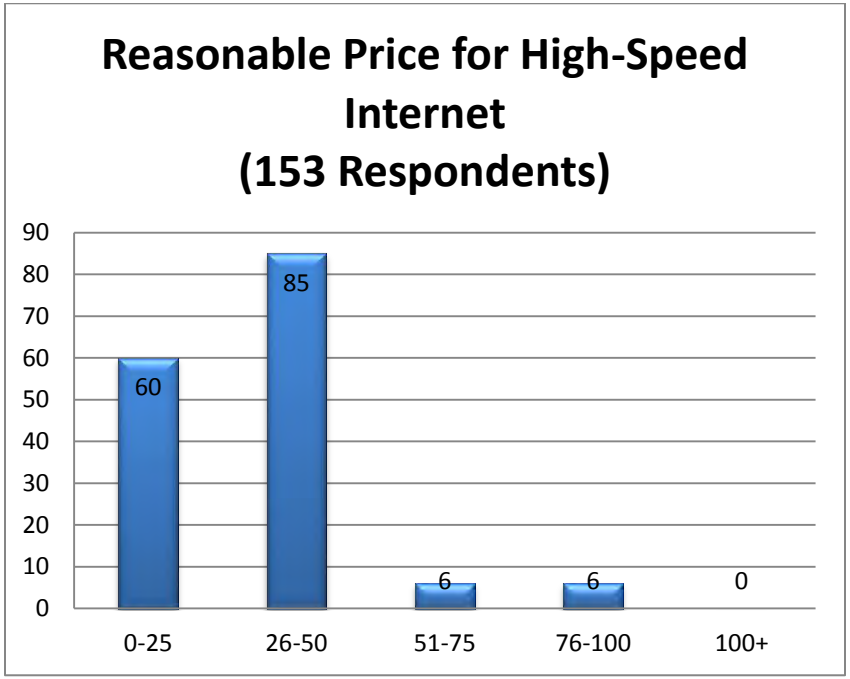
To the nearest dollar, how much per month do you pay for internet service?



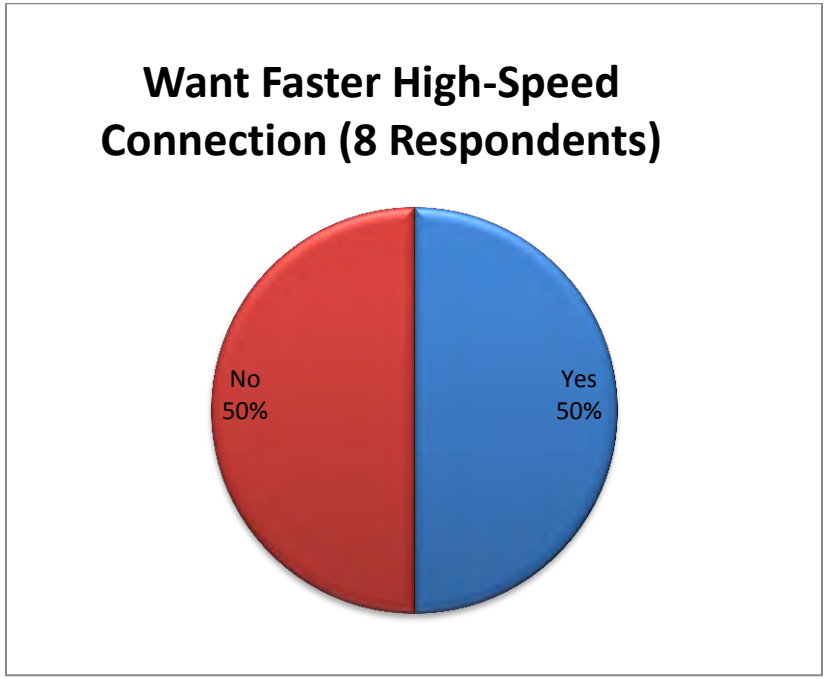
What do you think a reasonable price for internet service would be?



What do you think a reasonable price for High-Speed Internet would be?

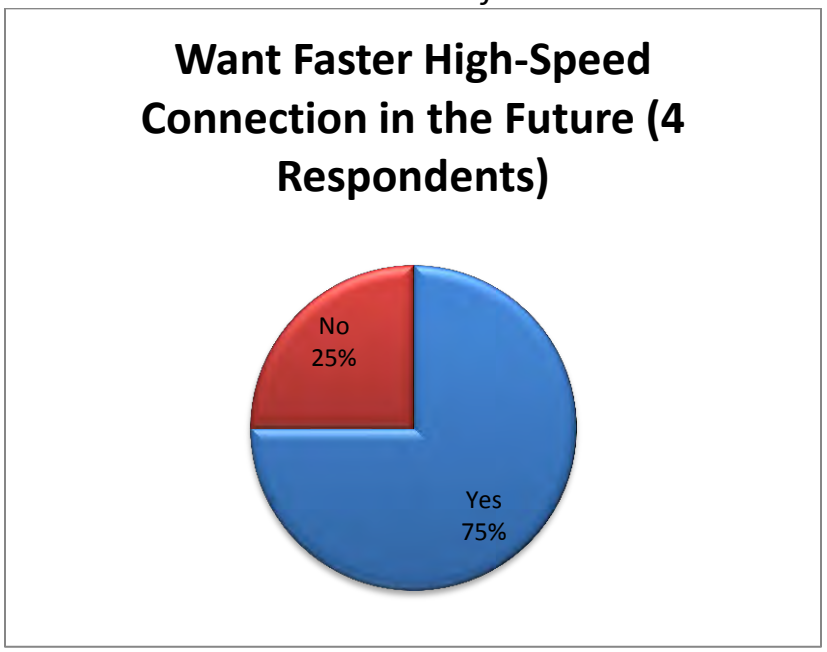


Would you like to have a faster high speed connection?

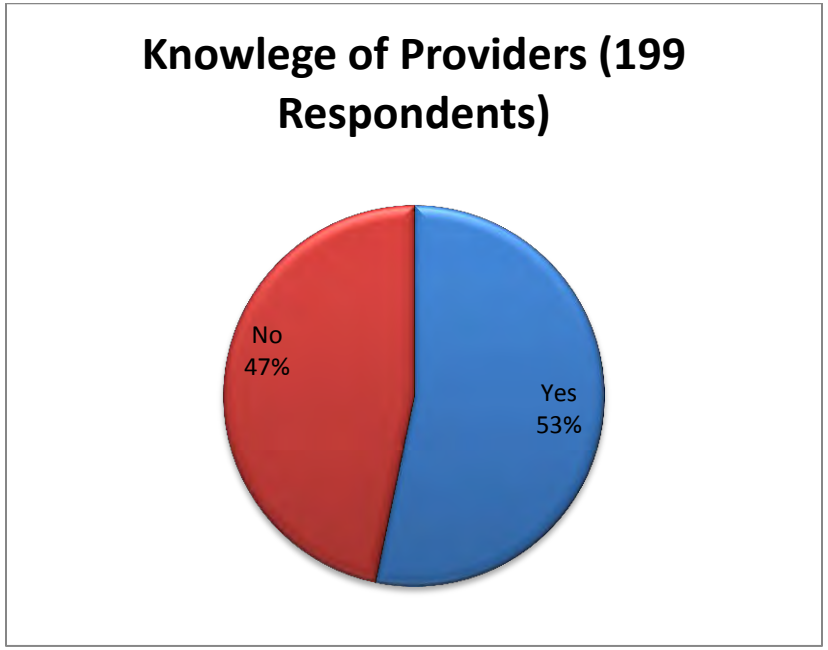


V. Consumer Perceptions

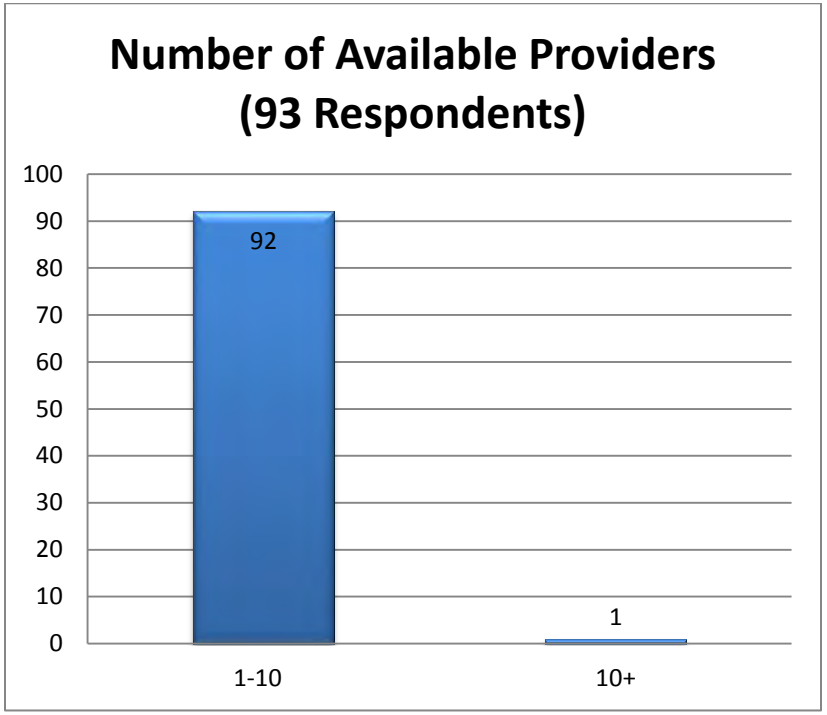
Do you think you would like a faster connection sometime in the future?



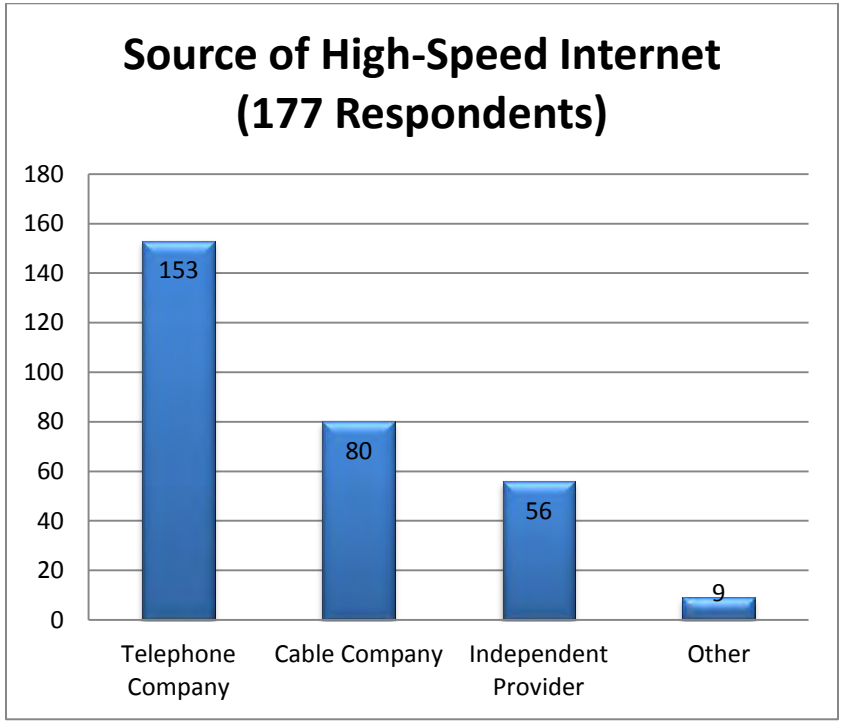
Do you know how many providers of high-speed internet service are in your area?



How many providers are available?

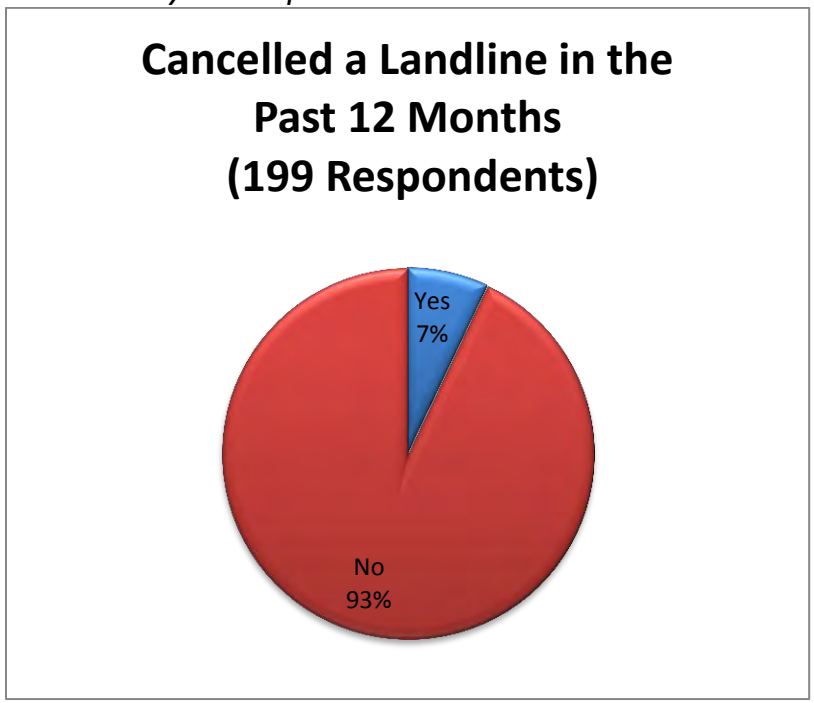


Do you happen to know whether high-speed internet service is available in your neighborhood from:

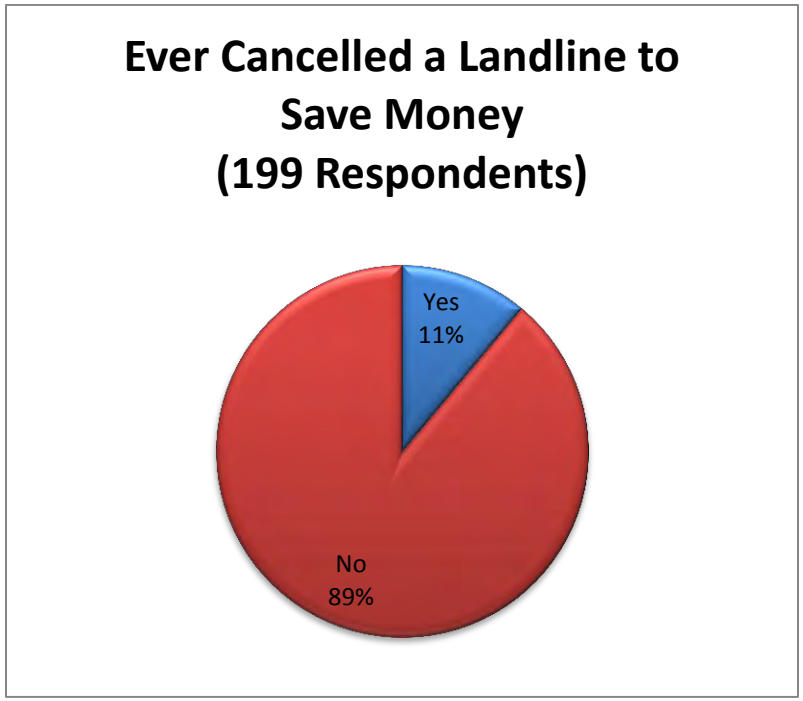


VI. Respondents' Purchasing Behavior

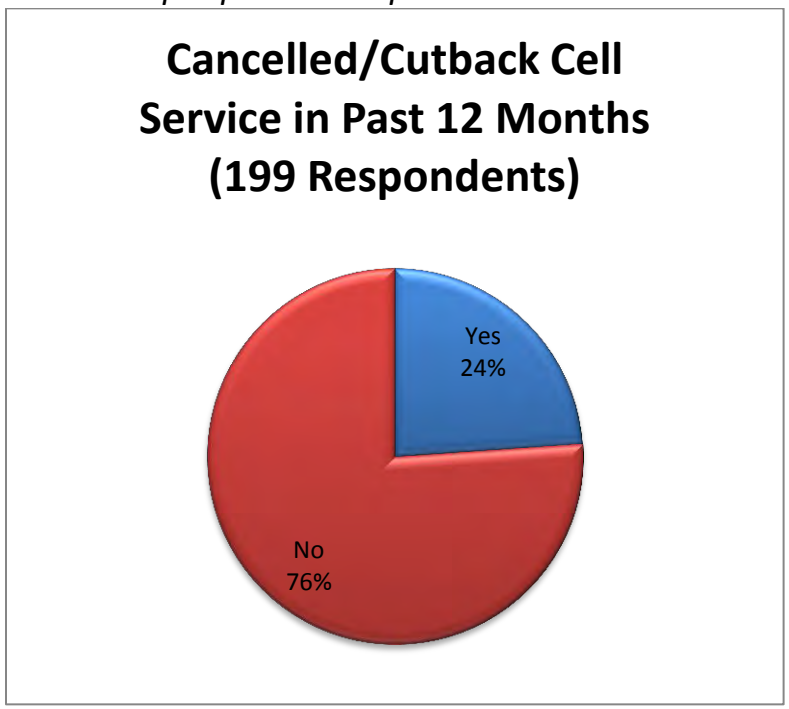
Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months?



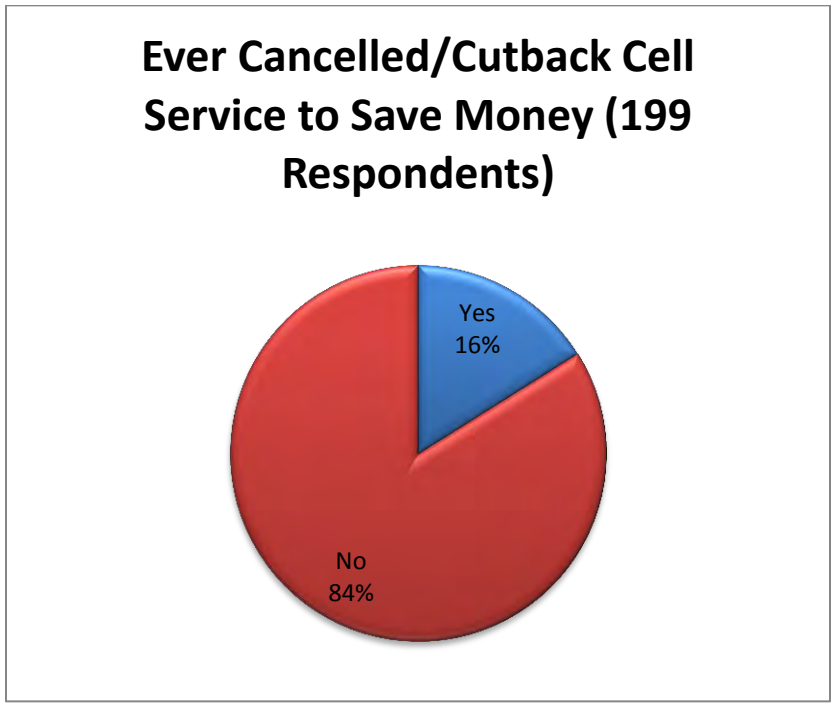
Have you ever cancelled a landline phone at home to save money?



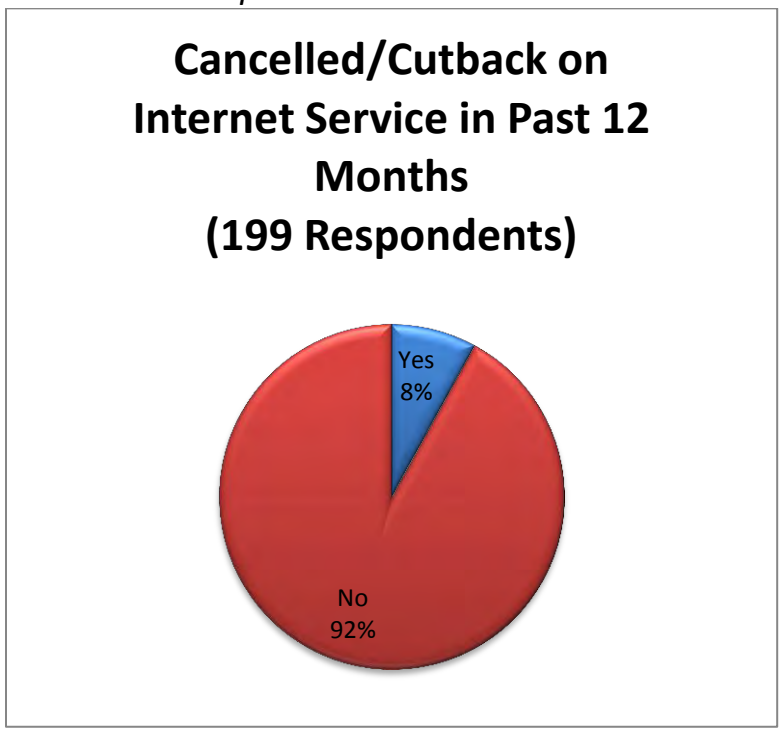
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled your cell phone service or cutback to a cheaper plan in the past 12 months?



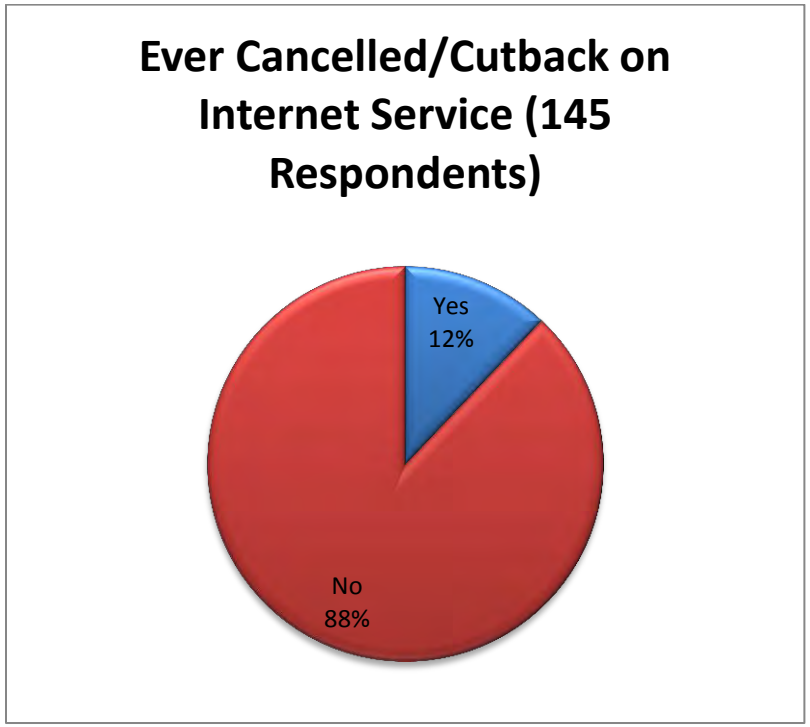
Have you ever cancelled your cell phone service or cutback to a cheaper plan?



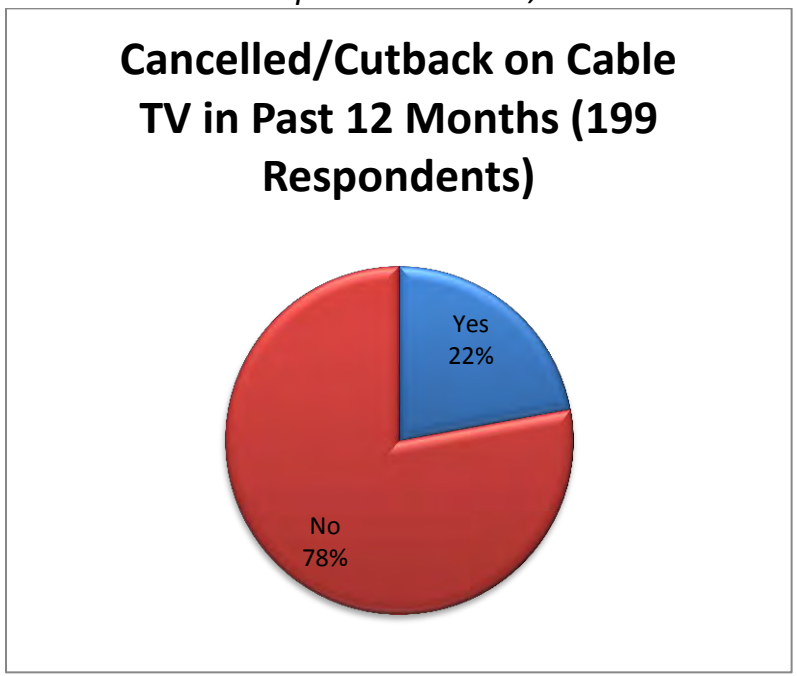
Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you cancelled or cutback on your Internet service in the past 12 months?



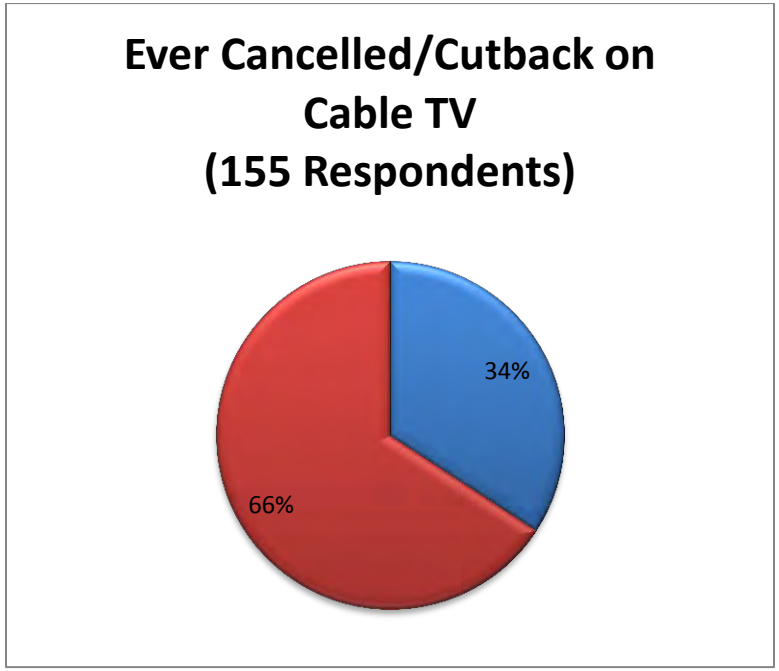
Have you ever cancelled or cutback on your Internet service?



Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled or cutback on cable TV (television) services in the past 12 months, or not?



Have you ever cancelled or cutback on cable TV services?



Appendix One: Survey Instrument

Question: qintro - 1 (Single)

Text:

Hello, my name is and I am calling from Opinionology. We are contacting Utahns to get your opinions about current issues.

You are being asked to participate in a telephone research survey project entitled "Determinants of Broadband Usage," which is being conducted by Randy T. Simmons PhD and Ryan M. Yonk PhD at Utah State University and Southern Utah University. This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. There is minimal risk in participating in this study. Researchers hope to analyze market data concerning use and demand for high speed internet service. You must be at least 18 years of age to participate in this study. Your completion of the survey serves as your voluntary agreement to participate in this research project and your certification that you are 18 or older.

(qintro:1) Continue
(qintro:2) Not Available/Schedule Callback
(qintro:3) Refused

Question: qmon (Multiple)

Text:

{* |QMON| This call may be monitored or recorded for quality assurance purposes.

[Do not wait for an answer, continue with the survey unless the respondent says otherwise.]

(qmon:1) Respondent agrees

Question: qs1 - 2 (Single)

Text:

What county do you live in?

(qs1:01) Beaver
(qs1:02) Box Elder
(qs1:03) Cache
(qs1:04) Carbon
(qs1:05) Daggett
(qs1:06) Davis
(qs1:07) Duchesne
(qs1:08) Emery
(qs1:09) Garfield
(qs1:10) Grand
(qs1:11) Iron
(qs1:12) Juab
(qs1:13) Kane
(qs1:14) Millard
(qs1:15) Morgan
(qs1:16) Piute
(qs1:17) Rich
(qs1:18) Salt Lake
(qs1:19) San Juan
(qs1:20) Sanpete
(qs1:21) Sevier
(qs1:22) Summit
(qs1:23) Tooele
(qs1:24) Uintah
(qs1:25) Utah
(qs1:26) Wasatch
(qs1:27) Washington
(qs1:28) Wayne
(qs1:29) Weber

(qs1:30) Other

Question: qd3 (Single)

Text:

RECORD GENDER

(qd3:1) Male
(qd3:2) Female

Question: q1 - 1 (Multiple)

Text:

At home, do you or any member of you household own or use any of the following computers?

(q1:1) A desktop computer
(q1:2) A Laptop, or netbook computer
(q1:3) A handheld computer, smart phone
(q1:4) Do Not Own a Computer (DNR)

Question: q2 - 1 (Single)

Text:

Does anyone in your household use the Internet from home or send and receive email from home?

(q2:1) Yes
(q2:2) NO

(q2:3) Don't Know

Question: q2a - 1 (Single)

Text:

What is the main reason you do not have internet access in your home?

(q2a:1) Don't need it, not interested
(q2a:2) Too Expensive
(q2a:3) Can Use it somewhere else
(q2a:4) Not available in my area
(q2a:5) No Computer or Inadequate Computer
(q2a:6) Other Reason (specify other reason)
(q2aoth1:) Other Reason (specify other reason)

Question: q3 - 1 (Multiple)

Text:

Do you or any member of your household access the internet at any of the following locations outside the home?

(q3:1) Work
(q3:2) School
(q3:3) Public Library
(q3:4) Community Center
(q3:5) Internet Café/Coffee Shop
(q3:6) someone else's home
(q3:7) Another place outside the home (specify other place)
(q3:8) Do Not Access the internet outside the home (DNR)
(q3oth1:) Another place outside the home (specify other place)

Question: q4 - 1 (Single)

Text:

About how often do you access the internet?

(q4:1) several times a day,
(q4:2) about once a day,
(q4:3) 3-5 days a week,
(q4:4) 1-2 days a week,
(q4:5) Every few weeks,
(q4:6) Less than Once a month
(q4:7) Do not access the internet (DNR)

Question: q5 - 1 (Single)

Text:

At Home do you access the Internet using?

IF MORE THAN ONE RESPONSE GIVEN, ASK: Which do you use most often?

(q5:1) Dial-Up Service
(q5:2) DSL Service
(q5:3) Cable Modem Service
(q5:4) Fiber Optic Service
(q5:5) Cell Phone Service
(q5:6) Satellite Service
(q5:7) Commercial Wireless Internet Service
(q5:8) Some other service (specify)
(q5oth1:) Some other service (specify)

Question: q5b - 1 (Single)

Text:

How often do you access the internet from your cell phone?

(q5b:1) several times a day,
(q5b:2) about once a day,
(q5b:3) 3-5 days a week,
(q5b:4) 1-2 days a week,
(q5b:5) Every few weeks,
(q5b:6) Less than Once a Month
(q5b:7) DK/Refused

Question: q5c - 1 (Single)

Text:

Do you pay an extra monthly fee for Internet access when you are on the go, such as a monthly fee for wireless internet through an Aircard, or a monthly data charge on your cell phone?

(q5c:1) Yes
(q5c:2) No

Question: q6 - 1 (Single)

Text:

What is the main reason you do not have high speed (faster than dial-up) Internet Access at home?

(q6:1) Don't need it, not interested
(q6:2) Too Expensive
(q6:3) Can use it somewhere else
(q6:4) Not available in my area
(q6:5) Computer is inadequate
(q6:6) Other: specify
(q6oth1:) Other: specify

Question: q6a - 1 (Single)

Text:

What costs are you most concerned about?

(q6a:1) Cost of the computer or other hardware (Modem)
(q6a:2) Cost of installing internet service
(q6a:3) Cost of monthly internet service
(q6a:4) Some other Cost (specify)
(q6aoth1:) Some other Cost (specify)

Question: q7 - 1 (Single)

Text:

Would you like to have a faster high speed connection?

(q7:1) Yes
(q7:2) No

Question: q7aoe

Text:

How Fast?

(q7aoe:)

Question: q7b - 1 (Single)

Text:

Do you think you would like a faster connection sometime in the future?

(q7b:1) Yes
(q7b:2) No

Question: qtoq13

Text:

Go To Question 13

Question: q8y (Numeric)

Text:

About how many years have you had high speed Internet service at home?

If Less than a year, ask: About how many months is that?

(q8y:) year(s)
(q8m:) month(s)

Question: q9 - 1 (Single)

Text:

Since you first got high speed internet at home would you say the quality of your high speed connection has...

(q9:1) Improved
(q9:2) Stayed about the same
(q9:3) Gotten worse

Question: q10 - 1 (Single)

Text:

Is your internet Access combined with television or other services?

(q10:1) Just Television
(q10:2) Just Phone Service
(q10:3) Television and Phone Service
(q10:4) Some other service (specify)
(q10:5) Not combined with any other service
(q10oth1:) Some other service (specify)

Question: q11 - 1 (Single)

Text:

Thinking about your high-speed Internet service at home, do you subscribe to a basic broadband service, or do you pay extra for a premium service that promises faster speed?

(q11:1) Basic Service
(q11:2) Premium Service
(q11:3) DK/Refused

Question: q12 - 1 (Single)

Text:

Many people value high-speed Internet at home because of the convenience of faster connection speeds. Others value it because the Internet connection is 'always on.' Which would you say matters more to you with respect to your home broadband connection?

(q12:1) Connection Speed
(q12:2) Always On
(q12:3) Both are equally important (DO NOT READ)

Question: q13 - 1 (Numeric)

Text:

To the nearest dollar, how much per month do you pay for internet service? (DK/Ref = 999)

(q13 - 3) $

Question: q14 - 1 (Numeric)

Text:

What do you think a reasonable price for internet service would be? (DK/Ref = 999)

(q14 - 3) $

Question: q15 - 1 (Numeric)

Text:

What do you think a reasonable price for High-Speed Internet would be? (DK/Ref = 999)

(q15 - 3) $

Question: q16 - 1

Text:

Thinking about your internet service at home, which company provides that service?

(q16:) Company name:

Question: q17 - 1 (Single)

Text:

Do you know how many providers of high-speed internet service are in your area?

(q17:1) Yes
(q17:2) No

Question: q17a - 1 (Numeric)

Text:

How many providers are available?

(q17a - 2) providers

Question: q18 - 1 (Multiple)

Text:

Do you happen to know whether high-speed internet service is available in your neighborhood from...

(q18:1) A telephone Company
(q18:2) A Cable Company
(q18:3) An independent Internet Provider
(q18:4) Some Other Company (specify other company)
(q18:5) Don't Know (DO NOT READ)
(q18oth1:) Some Other Company (specify other company)

Question: q19 - 1 (Single)

Text:

Thinking about your personal finances, have you done any of the following in the past 12 months? Have you...cancelled a landline phone at home to save money in the past 12 months, or not?

(q19:1) Yes
(q19:2) No

Question: q19a - 1 (Single)

Text:

Have you ever cancelled a landline phone at home to save money?

(q19a:1) Yes
(q19a:2) No

Question: q20 - 1 (Single)

Text:

(Thinking about your personal finances, have you done any of the following in the past 12 months?) Have you...cancelled your cell phone service or cut back to a cheaper plan in the past 12 months, or not?

(q20:1) Yes
(q20:2) No

Question: q20a - 1 (Single)

Text:

Have you ever cancelled your cell phone service or cut back to a cheaper plan?

(q20a:1) Yes
(q20a:2) No

Question: q21 - 1 (Single)

Text:

(Thinking about your personal finances, have you done any of the following in the past 12 months?)
Have you...cancelled or cut back on your Internet service in the past 12 months, or not?

(q21:1) Yes
(q21:2) No

Question: q21a - 1 (Single)

Text:

Have you ever cancelled or cut back on your Internet service?

(q21a:1) Yes
(q21a:2) No

Question: q22 - 1 (Single)

Text:

(Thinking about your personal finances, have you done any of the following in the past 12 months?)
Have you...cancelled or cut back on cable TV (television) services in the past 12 months, or not?

(q22:1) Yes

(q22:2) No

Question: q22a - 1 (Single)

Text:

Have you ever cancelled or cut back on cable TV services?

(q22a:1) Yes
(q22a:2) No

Question: q23 - 2 (Single List)

Text:

((Now I am going to ask you several questions about your quality of life))

Using a scale from 0 to 10 with 0 being very low quality and 10 being very high quality how would you describe [READ LIST]?

Punches:

(00) very low quality
(01)
(02) 02
(03) 03
(04) 04
(05) 05
(06) 06
(07) 07
(08) 08
(09)

(10) very high quality
(11) DK/Ref

List Items:

(q23 - 2) your own individual overall quality of life
(q24 - 2) public safety, police and fire protection, in your community
(q25 - 2) the quality of education in your community
(q26 - 2) the quality of health services in your community
(q27 - 2) the overall quality of the economic situation in your community
(q28 - 2) overall quality of infrastructure, in your community
(q29 - 2) overall quality of life in your community

Question: q30oe

Text:

If you were to consider moving to a new community, what would be the most important factor in your decision?

(q30oe:)

Question: q31oe

Text:

What do you consider the most attractive feature of the community where you currently live?

(q31oe:)

Question: qd1 - 1 (Numeric)

Text:

What year were you born? [USE '9999' for Refusals]

(qd1 - 4) year

Question: qd2 - 1 (Multiple)

Text:

What is your race? You can choose more than one.

(qd2:1) Native American
(qd2:2) Asian
(qd2:3) African American
(qd2:4) Pacific Islander
(qd2:5) White
(qd2:6) Other
(qd2:7) Refused (DNR)

Question: qd4 - 1 (Single)

Text:

What is the highest level of formal education you have completed?

(qd4:1) Some high school
(qd4:2) High school or GED
(qd4:3) Some college
(qd4:4) 2 year degree or career, technical, or trade school

(qd4:5) 4 year degree
(qd4:6) Post graduate study (master's or other graduate degree)
(qd4:7) Don't know, refused

Question: qd5 - 1 (Numeric)

Text:

What is your zip code? (99999=Refused)

(qd5 - 5) zip code

Question: qd6 - 1 (Single)

Text:

How would you describe your current employment status?

(qd6:1) Employed Full Time
(qd6:2) Employed Part Time
(qd6:3) Temporarily Unemployed
(qd6:4) Retired
(qd6:5) Student
(qd6:6) Refused (DNR)

Question: qd7 - 1 (Numeric)

Text:

How many individuals are currently living or staying in your household? (99=Refused)

(qd7 - 2) individuals

Question: qd8_1 - 1 (Numeric)

Text:

How many members of your household are...

(qd8_1 - 2) Under 14 yrs old
(qd8_2 - 2) 14-18
(qd8_3 - 2) 18-30
(qd8_4 - 2) 30-45
(qd8_5 - 2) 45-60
(qd8_6 - 2) Over 60

Question: qd9 - 1 (Single)

Text:

What is your current marital status?

(qd9:1) Married
(qd9:2) Never Married
(qd9:3) Domestic Partnership
(qd9:4) Divorced
(qd9:5) Widowed
(qd9:6) Refused

Question: qname

Text:

Questions regarding the purpose or procedures of the research should be directed to Ryan M Yonk at 435-586-7961. This study has been approved by USU's Institutional Review Board (IRB) which is a university committee established by Federal law and is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 435-797-0567.

[INTERVIEWER: PLEASE RECORD THE FOLLOWING INFORMATION.]

(qname:) Name:
(qphone:) Phone:

Question: saveterm

Text:

saveterm

Appendix Two: Tables

Hypothesis One—Lower Adoption Rate
2 Sample T-test
P-Val: 0.1364
Degrees Freedom: 898

Group	Observations	Mean	Std. Err.
Non-Rural	400	.7525	.021605
Rural	500	.708	.0203544
Combined	900	.7277778	.014845
Difference		.0445	.0298548

Hypothesis Two—Identify Any Broadband Provider
2 Sample T-test
P-Val: 0.0111
Degrees Freedom: 898

Group	Observations	Mean	Std. Err.
Non-Rural	400	.32	.023353
Rural	500	.402	.0219489
Combined	900	.3655559	.0160618
Difference		-.082	.0322257

Hypothesis Two—How Many Broadband Providers
2 Sample T-test
P-Val: 0.0000
Degrees Freedom: 327

Group	Observations	Mean	Std. Err.
Non-Rural	128	3.695313	.2010549
Rural	201	2.621891	.1460307
Combined	329	3.039514	.1219363
Difference		1.073422	.2433541

Hypothesis Three –Average Internet Price
2 Sample T-test
P-Val: 0.2295
Degrees Freedom: 636

Group	Observations	Mean	Std. Err.
Non-Rural	291	43.21993	1.201058
Rural	347	41.3487	1.007422
Combined	638	42.20219	.7750688
Difference		1.871228	1.555598

Hypothesis Four –Willingness to Pay for Broadband Internet
2 Sample T-test
P-Val: .2206
Degrees Freedom: 717

Group	Observations	Mean	Std. Err.
Non-Rural	325	34.75077	.9901452
Rural	394	33.13452	.8755791
Combined	719	33.86509	.6563696
Difference		1.616251	1.318364

Hypothesis Five – Age
2 Sample T-test
P-Val: 0.0000
Degrees Freedom: 878

Group	Observations	Mean	Std. Err.
Non-Rural	389	46.6581	.8959146
Rural	491	54.10794	.7159575
Combined	880	50.81477	.5758692
Difference		-7.449845	1.132645

Hypothesis Five – Fulltime Employed
2 Sample T-test
P-Val: 0.0002
Degrees Freedom: 898

Group	Observations	Mean	Std. Err.
Non-Rural	400	.53	.0249862
Rural	500	.404	.0219666
Combined	900	.46	.0166225
Difference		.126	.0332056

Hypothesis Five – Education Level
2 Sample T-test
P-Val: 0.0000
Degrees Freedom: 898

Group	Observations	Mean	Std. Err.
Non-Rural	400	4.11	.0739657
Rural	500	3.69	.0652097
Combined	900	3.876667	.0493852
Difference		.42	.0984484

Hypothesis Five – Access to Laptop Computer
2 Sample T-test
P-Val: 0.0002
Degrees Freedom: 898

Group	Observations	Mean	Std. Err.
Non-Rural	400	.755	.0215313
Rural	500	.64	.0214878
Combined	900	.6911111	.0154097
Difference		.115	.0307905