Powhatan Broadband Survey Summary

Center for Innovative Technology
2/4/2016

Contents

Executive Summary

In the winter of 2015-2016, the Center for Innovative Technology (CIT) assisted Powhatan County in an assessment of its broadband environment. The goal of this assessment was to get an in-depth look at if, how and where citizens are connecting, their perceived quality of connection, and how they are leveraging broadband.

The purpose of this report is to summarize the findings of the assessment in order to provide support for county officials and their decisions regarding broadband moving forward.

Key Findings

- 9% of respondents reported not having access to broadband at home. 90% of these respondents fall within an age group that is likely to have school-age children at home and 95% fall within an age group that is likely to be in the workforce.
- When asked why they didn't have broadband at home, all of the respondents stated that it was either unavailable or too expensive. No one said that they didn't want broadband which indicates a high level of interest in the county.
- 43% of respondents that reported having broadband access at home said that the technology is DSL. Based on data from Verizon, these connection speeds are most likely between 768 Kbps – 1.5 Mbps which is not considered true broadband.
- 16% of respondents said that they own a business which could mean that a lot of citizens are commuting out of the county for employment which causes more traffic and means that daytime expenditures are going somewhere else.
- 44% of respondents reported having a child 18 years old or younger in their home. Only 75% said that their child accesses the internet at home.
- 51% of respondents don't have access to true broadband or have insufficient access.

Summary of Responses

The survey received 392 responses. Based on the number of responses and Powhatan County's population size this assessment has a confidence level of 95% with a margin of error of plus-or-minus 5. The following chart shows that the vast majority of responses came from the 23139 zip code which is as expected since that zip code makes up the majority of the county. Due to the sample size and the location of the respondents we can garner a relatively high degree of confidences in our assumptions of the information to follow.

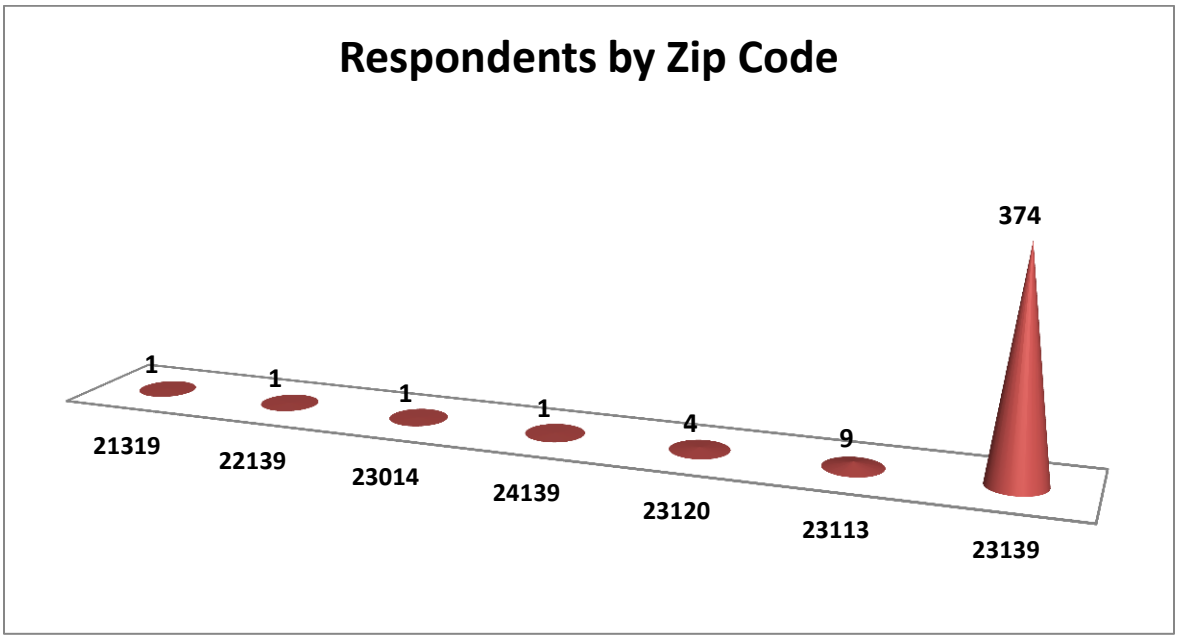


Figure 1 - Respondents by Zip Code

*One respondent did not provide a zip code.

Respondents by Age

The following chart shows the age of the respondents. 44% of responses came from people within an age group (25-54) that are likely to have children in elementary, middle or high school. 76% of responses came from people within an age group (18-64) that are likely to be in the workforce. These two figures are important to note and will be discussed further later in this report.

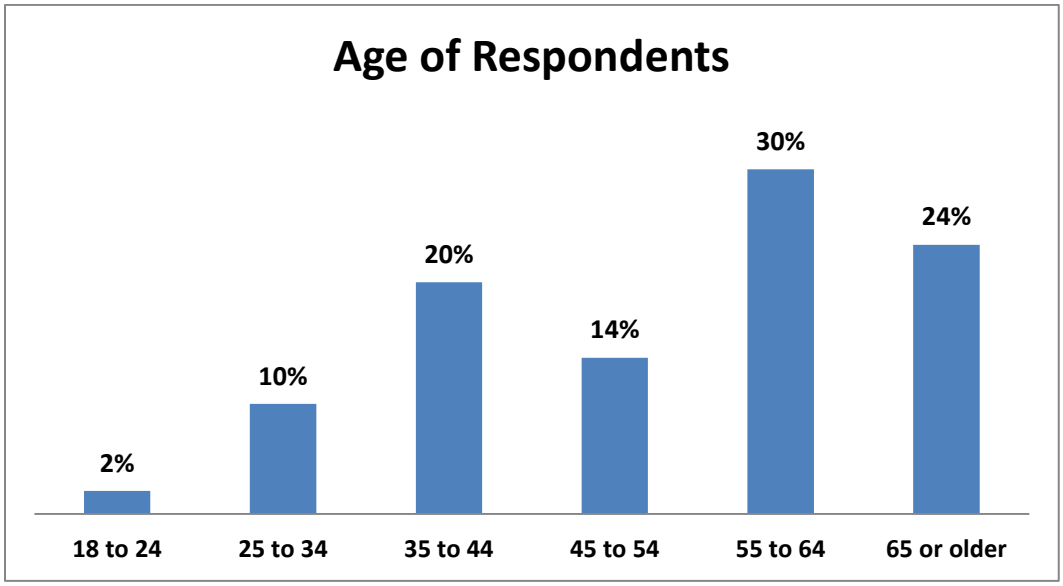


Figure 2 - Respondents by Age

Persons in Household

The following chart provides a summary of the number of persons in each respondent's household. Almost 50% of respondents reported more than 2 occupants in the home.

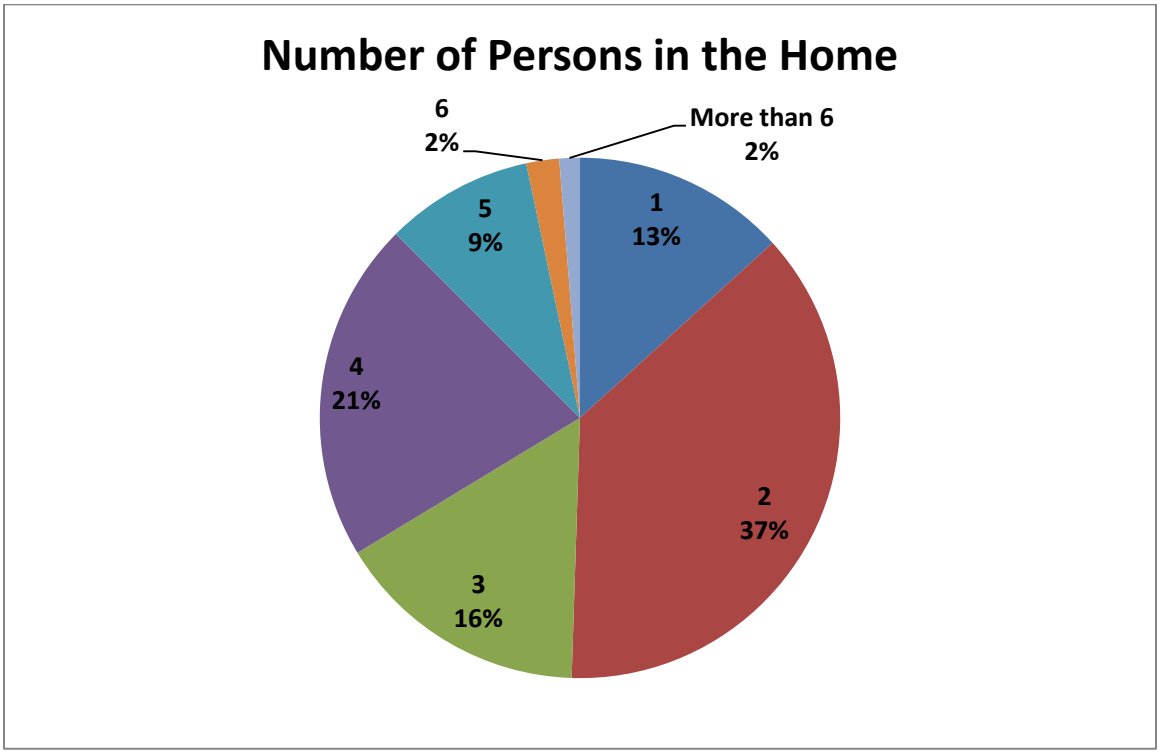


Figure 3 - Number of Persons in the Home

Predominant Language in the Home

English is by far the predominant language spoken in most homes with only 9 homes who speak another language. The other languages spoken are as follows:

- Spanish
- Afrikaans
- French
- Greek
- Hungarian
- Korean
- Portuguese
- Thai

Respondents with Disabilities

6% of the respondents identified some type of disability, handicap, or chronic disease that keeps them from participating fully in work, school, housework, or other activities. Of this group, only 2 people said that their disability or illness makes it difficult to use the Internet.

Computer Usage in the Home

Greater than 99% of the respondents said they had utilized a computer at home, at work, or at school and that they have a computer in their home. The less than 1% that said they do not have a computer at home stated the following reasons why.

- Cost/too expensive
- Sufficient access elsewhere
- No service available at home

Not one respondent said that they did not see the benefit of a computer or broadband access.

87% of the respondents said that they utilize a cellphone or tablet to access the Internet in their home.

How People Use the Internet

The survey included a series of questions to assess how each respondent utilizes the Internet. The chart below identifies the types of activities reported by survey respondents.

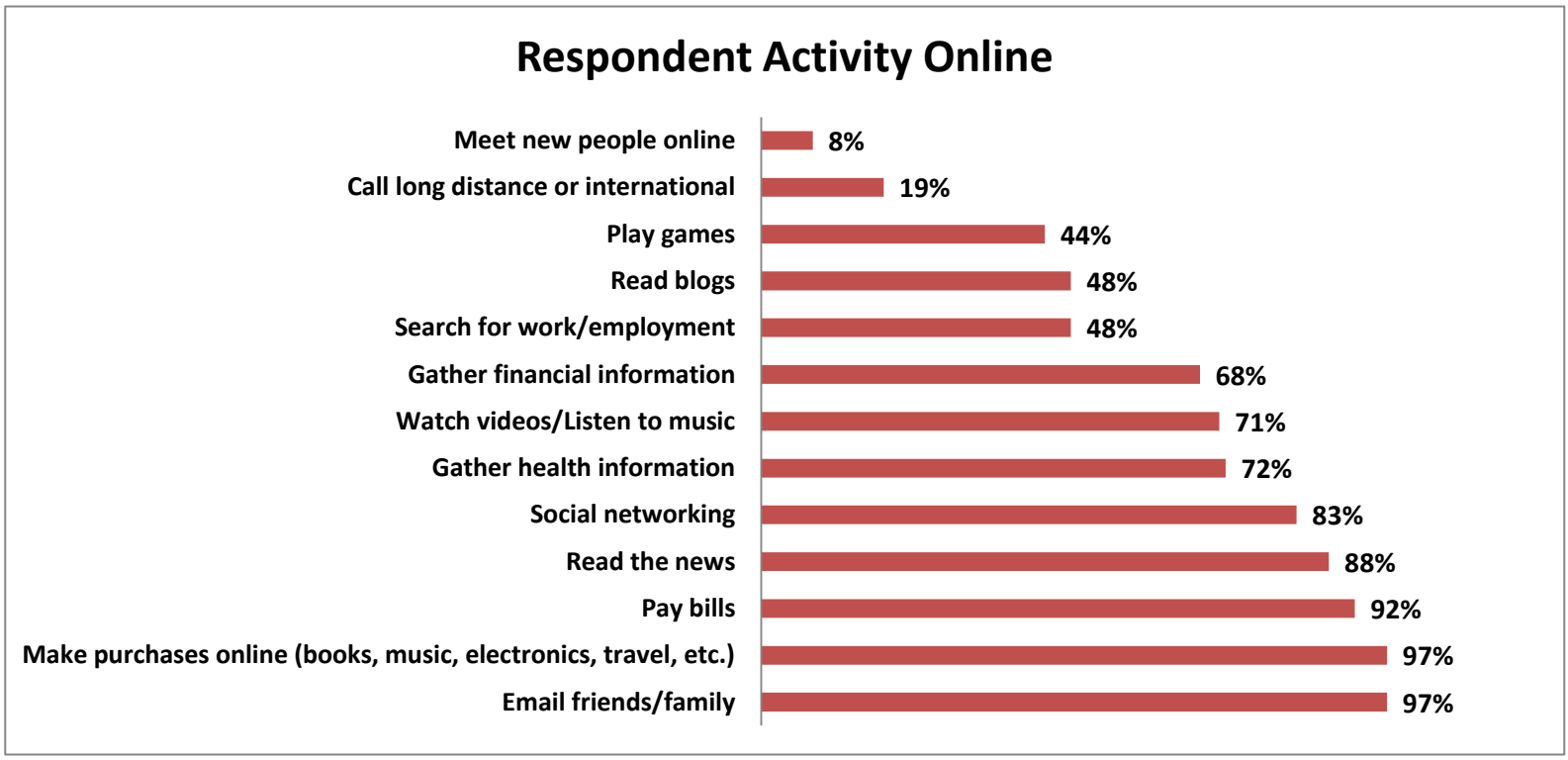


Figure 4 - Respondent Activity Online

Internet Access

This section of the report details information about whether the respondents had Internet access along with additional details about the type of access.

9% of total respondents reported no Internet access at home.

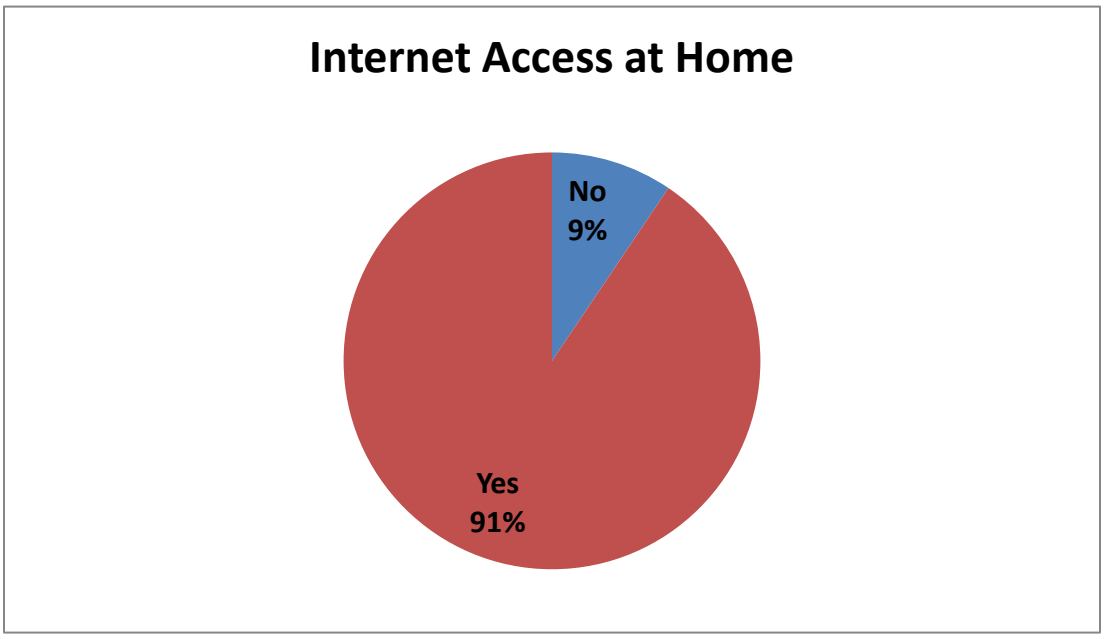


Figure 5 - Internet Access at Home

The following chart shows total respondents without Internet access at home by age group. There were 54 respondents from the 65 or older age group and all of them reported having Internet access at home which is interesting because typically seniors are more likely to fall into the unserved/underserved group; this may be indicative of a high level of interest in broadband in the county.

90% of the total number of respondents that reported no broadband access at home fall within an age group that is likely to have school-age children at home. 95% fall within an age group that is likely to be in the workforce. School-aged children without Internet access at home are often at a disadvantage compared to those children that do have access at home. Similarly those respondents of workforce age may also be at a disadvantage without the ability to engage in occupational opportunities (workforce training, job searches, etc.) at home.

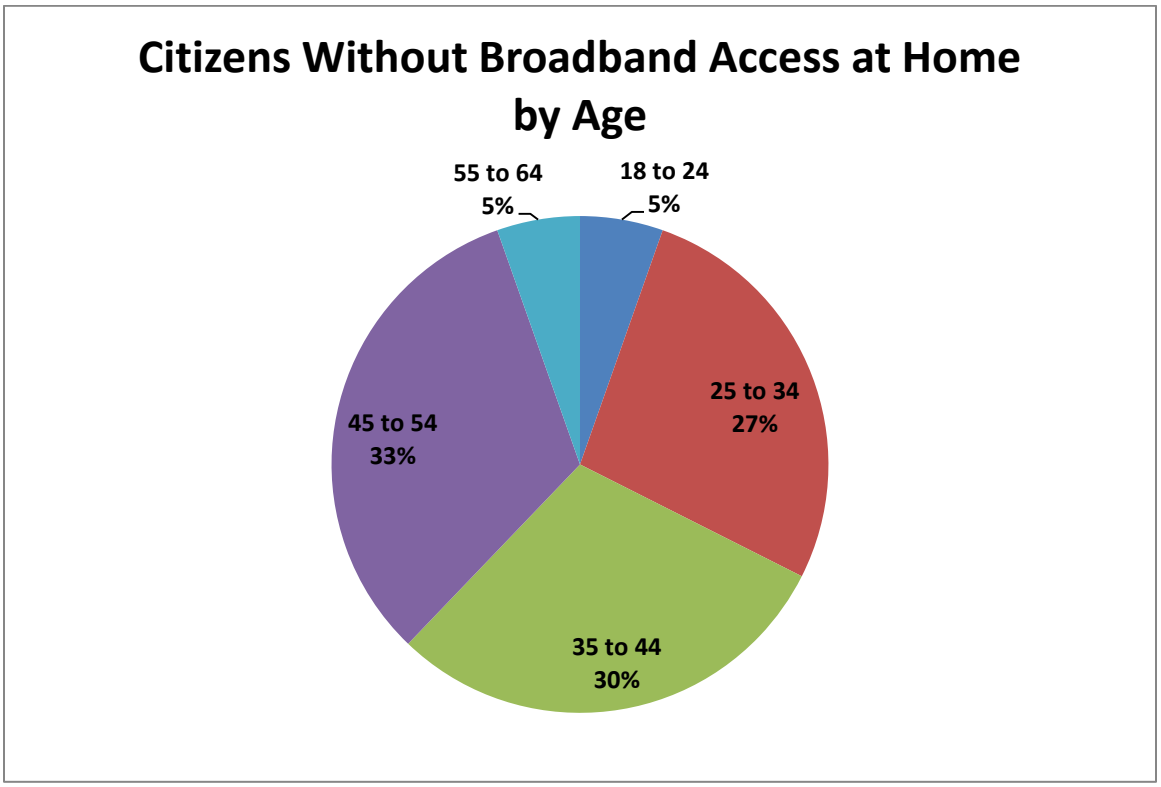


Figure 6 – Total Respondents without Broadband Access at Home by Age

The charts below provides a look at access by age group compared to total number of respondents within each age group as opposed to total number of respondents regardless of age group.

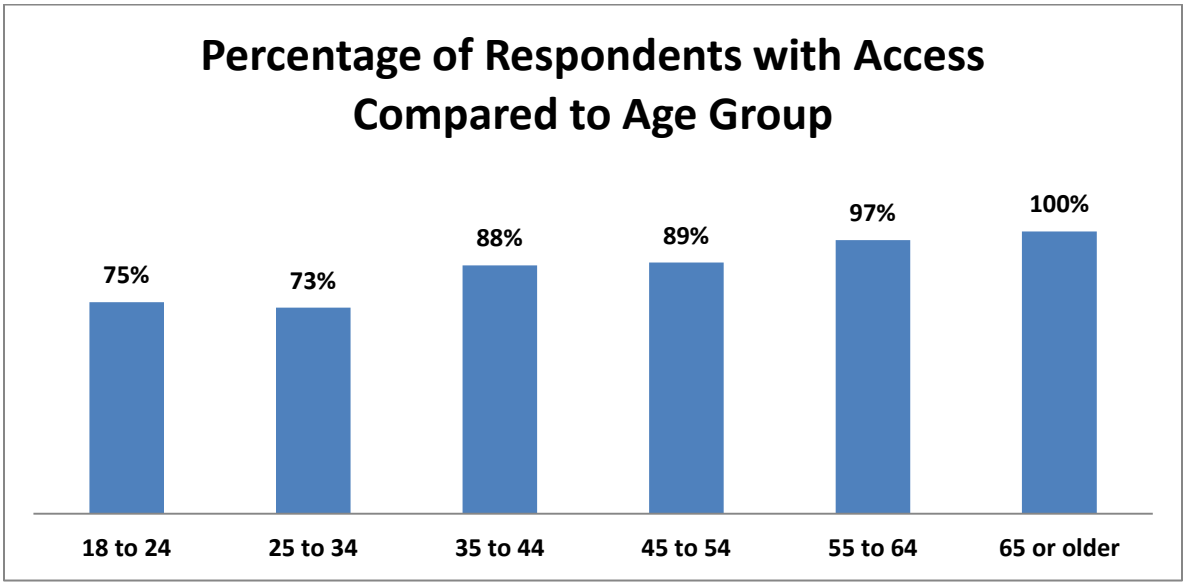


Figure 7 - Percentage of Respondents with Access Compared to Age Group

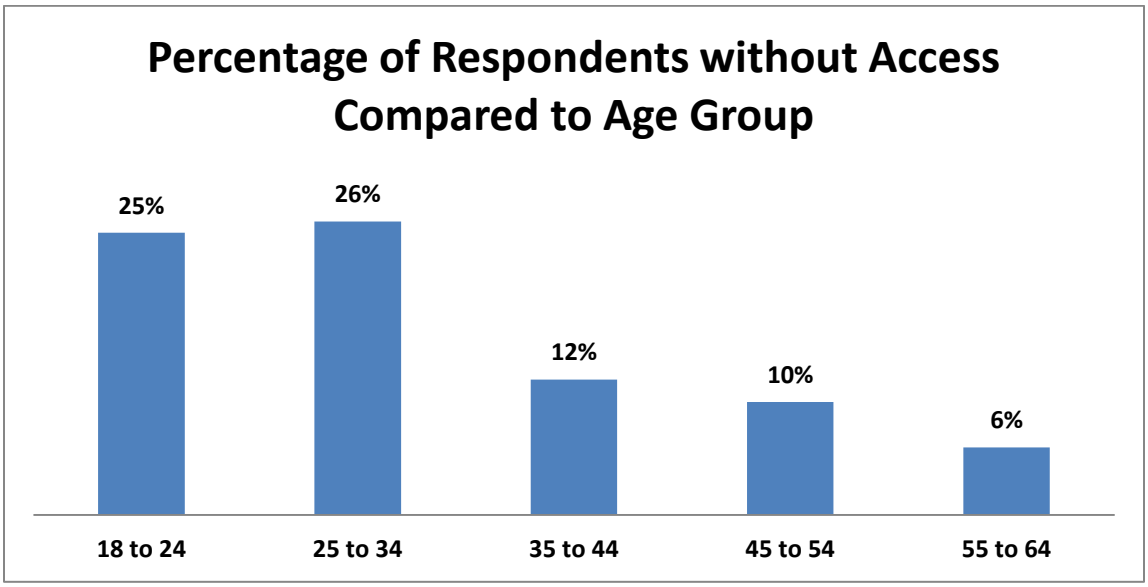


Figure 8 - Percentage of Respondents without Access Compared to Age Group

Type of Access

91% of survey respondents have Internet access. Of these respondents, DSL was the predominant type of access as reflected by the figure below.

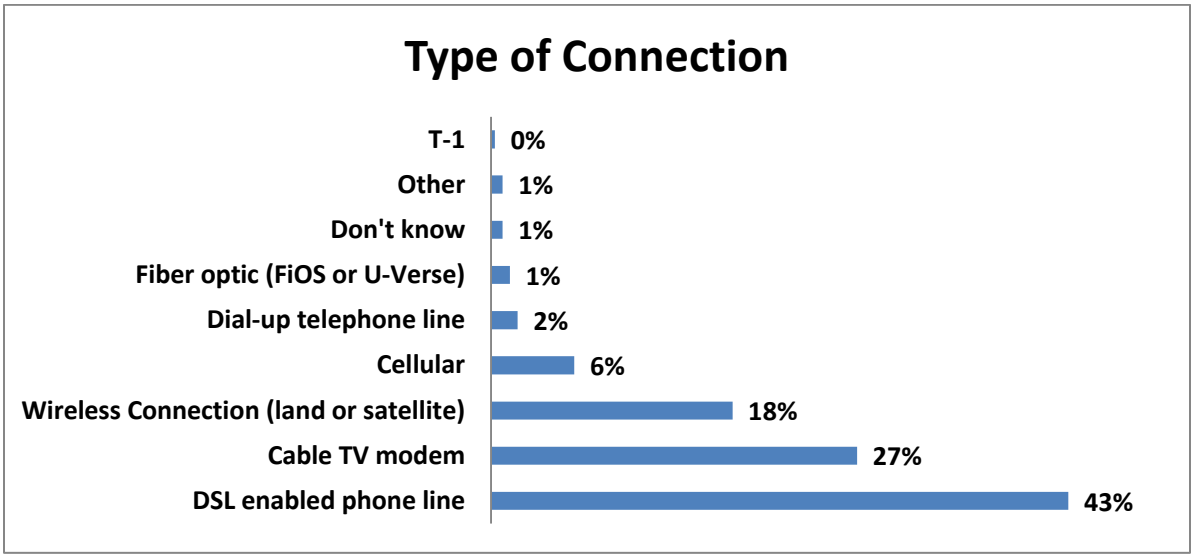


Figure 9 - Type of Connection

The map below shows the DSL coverage in Powhatan County.

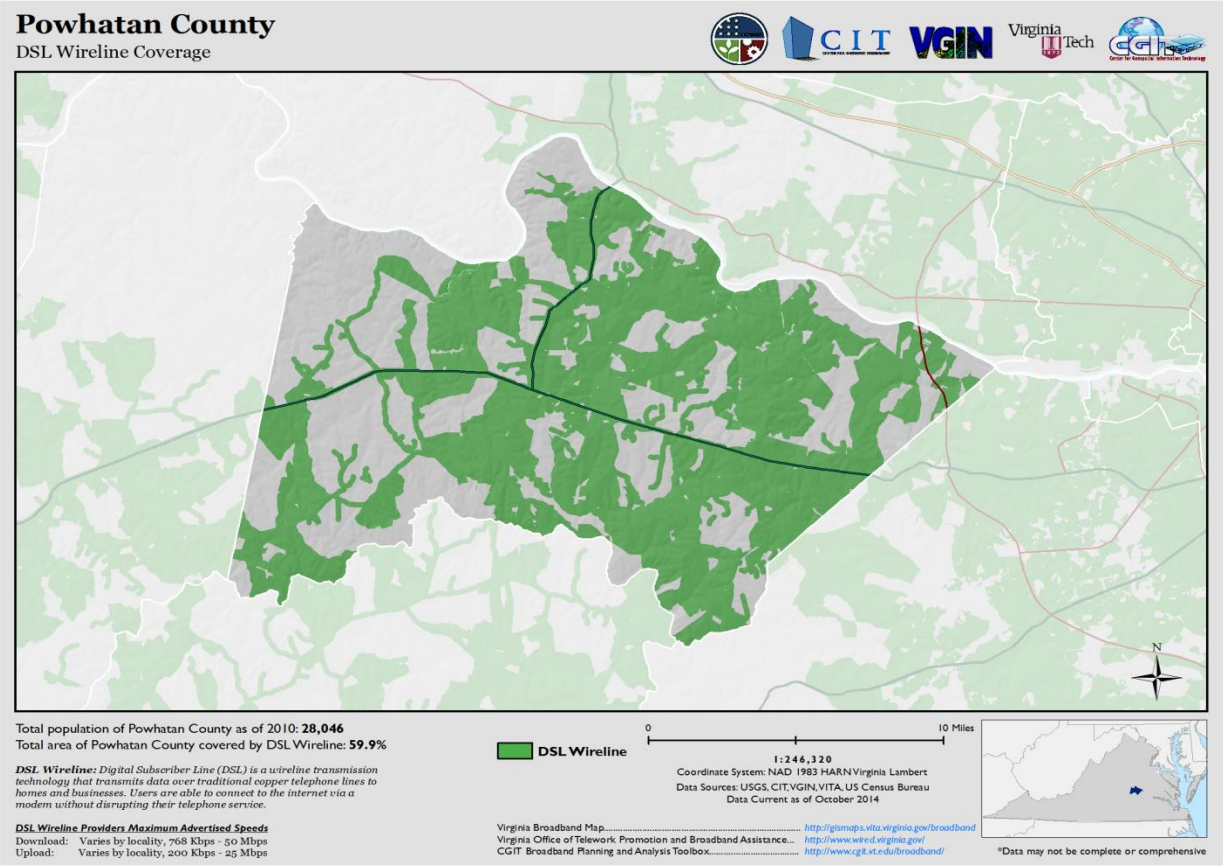


Figure 10 - DSL Coverage in Powhatan

DSL technology leverages copper infrastructure deployed years ago for the delivery of landline telephone service. Unfortunately DSL limits the broadband speed that can be delivered and is constrained by the distance from the telephone company's nearest central office (CO).

The typical speed delivered by DSL is 1.5 Mbps - 10 Mbps. However, according to the Virginia Broadband Map, Verizon is the predominant provider in Powhatan County and they have made it clear that they do not plan to upgrade their DSL technology. Because of the older technology it's no surprise that the typical speeds (based on most common advertised download speed) delivered by Verizon's DSL in Powhatan are **768 Kbps – 1.3 Mbps**. These speeds don't even meet the lowest definition of broadband. For reference the National Telecommunications Industry Association's (NTIA) defines broadband as 3 Mbps down and 768 Kbps up (which is the lowest definition) and the Federal Communications Commission (FCC) defines broadband as 25 Mbps down and 1 Mbps up. Also, the more devices accessing the connection at any point in time slows the speed even more.

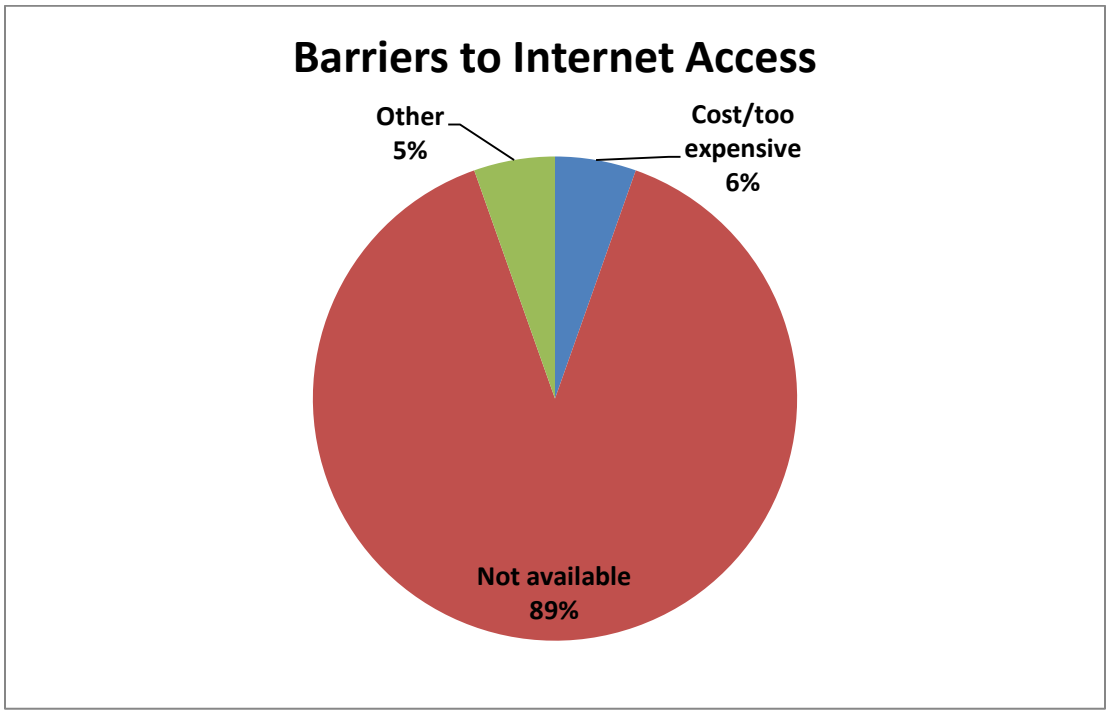
Additionally, 6% of respondents reported only having access to cellular which means they're constrained by data caps and another 2% reported only having access to dial-up. This is where we begin to see the true problem at hand. Although 91% of respondents

reported having broadband access at home, 51% of respondents don't have access to true broadband or have insufficient access.

Barriers to Access

Of the 9% of respondents who said they do not have access at home, 89% said the reason was because broadband wasn't available. 6% said that it was too expensive. 5% (2 responses total) selected 'other' and when asked to explain 'other' they said:

- They are in the process of moving to Powhatan.
- Only satellite is available which is too expensive and too slow.



Use of the Internet by Businesses

Small and home based businesses provide important contributions to local economies. 16% of respondents indicated they own a business. The majority of these are small businesses with about 86% reporting 0-4 employees.

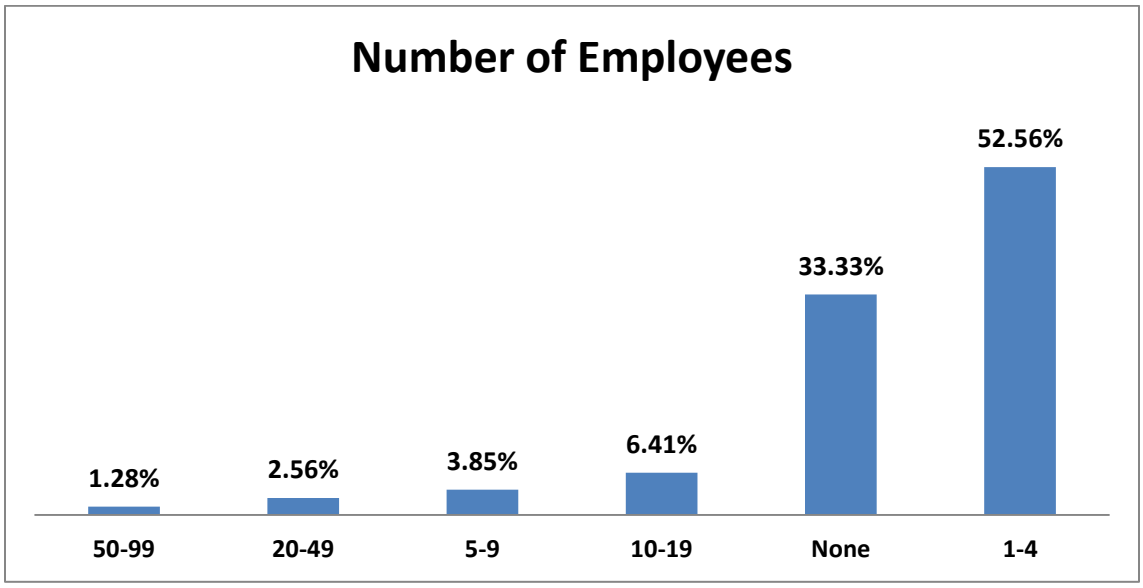


Figure 11 - Number of Employees of Powhatan Businesses

Additionally, 60% of these businesses have an annual revenue of less than $50k.

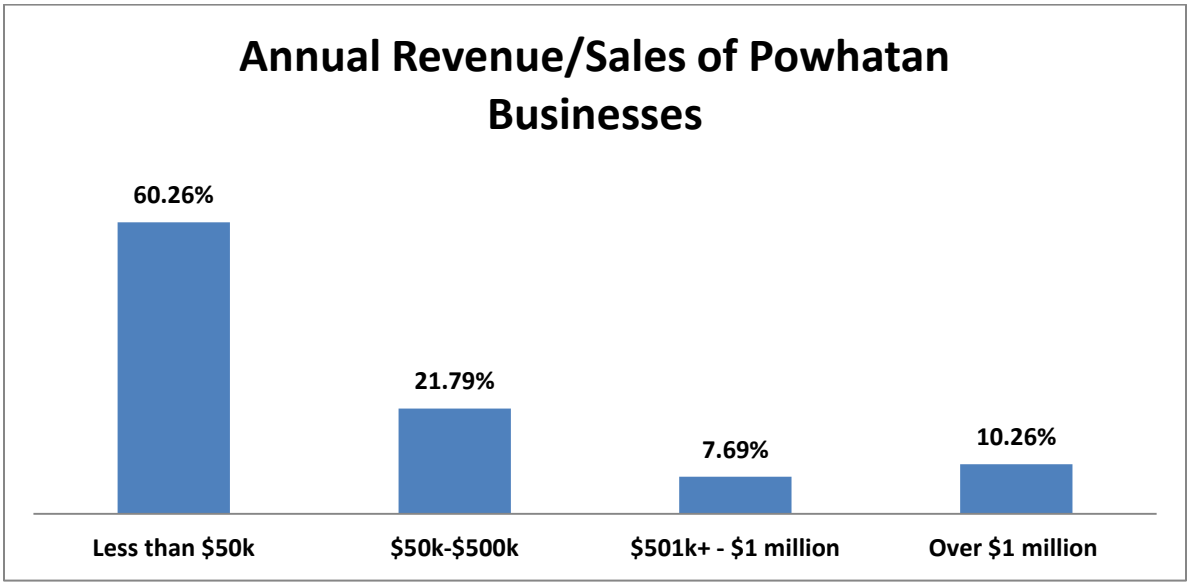


Figure 12 - Annual Revenue/Sales of Powhatan Businesses

95% of the respondents who own a business indicate they utilize the Internet to support their business. The chart below shows how these businesses are connecting to the Internet.

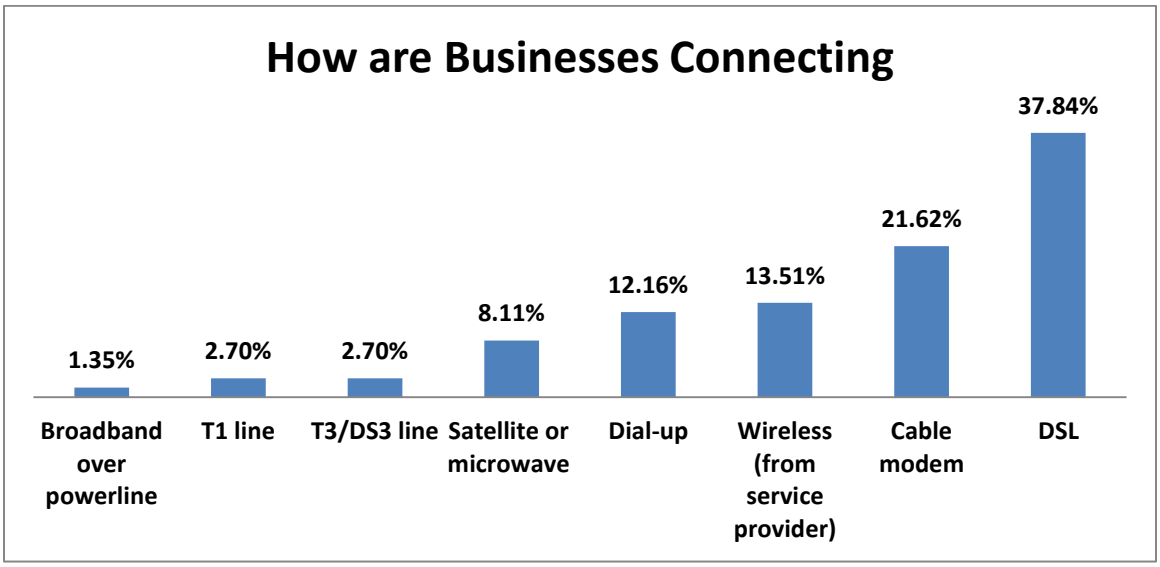


Figure 13 - How Businesses are Connecting

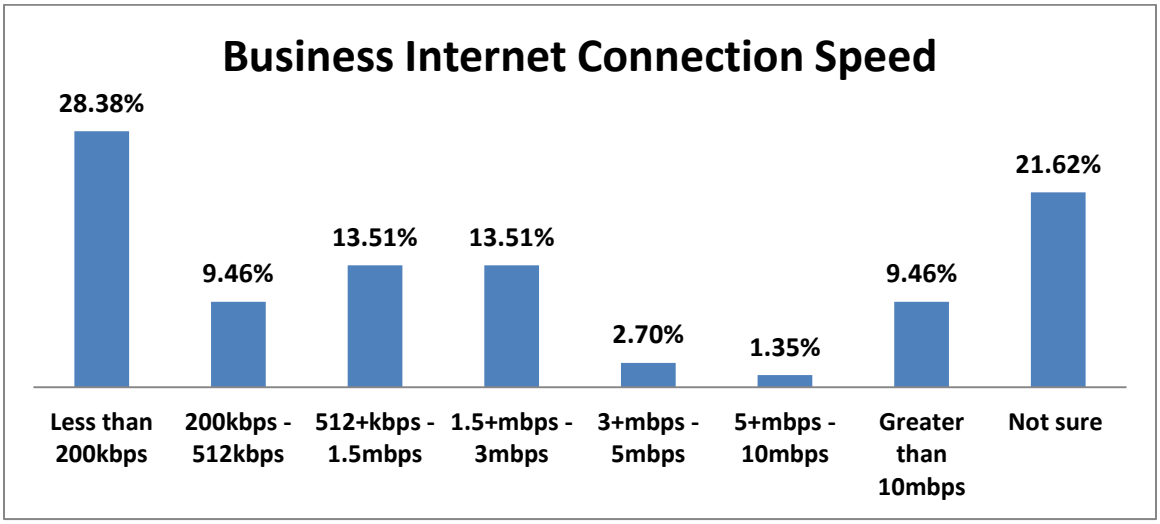


Figure 14 - Business Internet Connection Speed

Again we see that DSL is the most reported technology and the speeds are reflective of that. A large portion of the respondents described their businesses as retail however the vast majority of businesses report 0-10% of their sales being online sales. Because such a high percentage of business owners utilize the Internet to support their business, it's reasonable to conclude that the low percentage of online sales is due to the slow connection speeds.

To further support this conclusion, the chart below shows that all of the business respondents recognize broadband as important to their business.

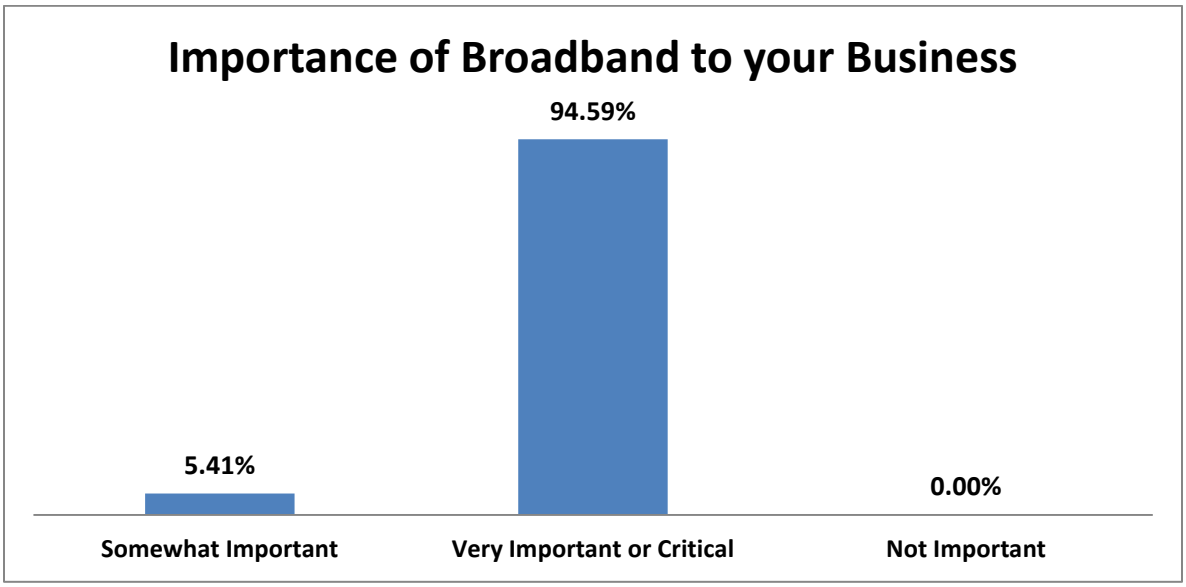


Figure 15 - Important of Broadband to Powhatan Businesses

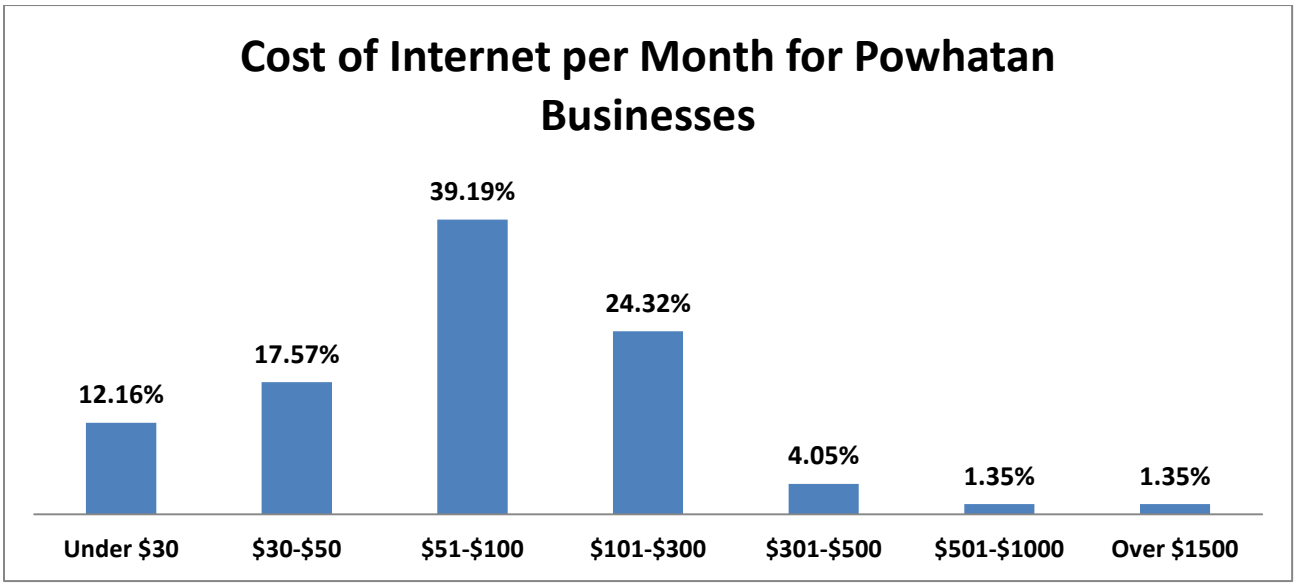


Figure 16 - Cost of Internet per Month

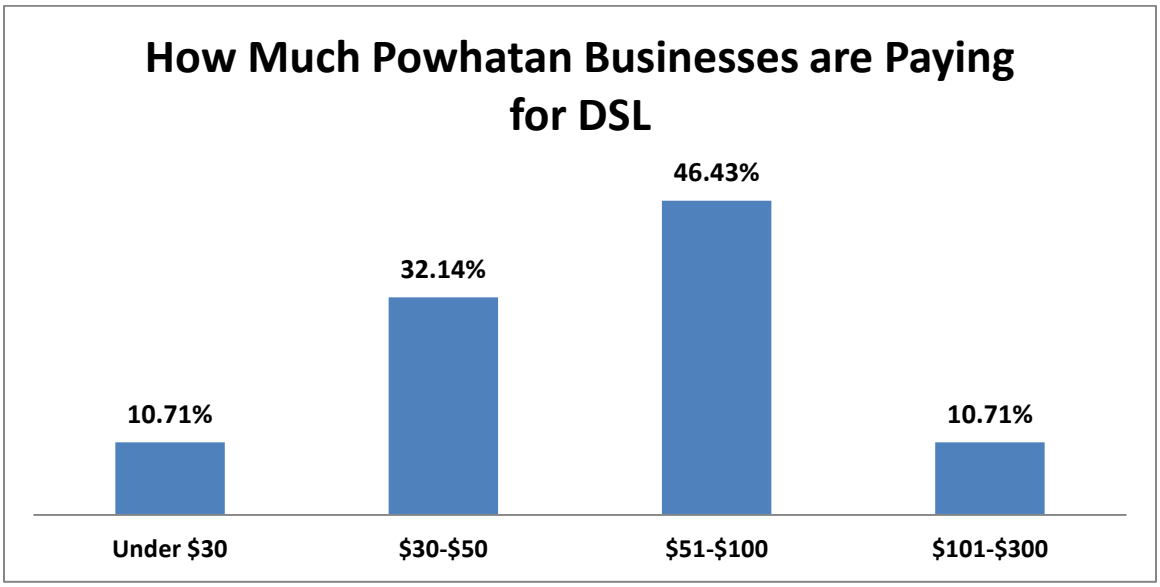


Figure 17 - How Much Powhatan Businesses are Paying for DSL

The chart above shows how much businesses are paying per month for their DSL connection. Point Topic is an organization that gathers, analyzes and publishes data about broadband connectivity around the world on a quarterly basis. Point Topic's report includes average cost per megabit depending on the technology delivering that access and according to their latest report, on average DSL costs $8.89 per megabit.

Looking at the speeds and costs reported it would appear that some businesses are paying too much for their Internet connection. Because of this it's no surprise that the two most commonly reported reasons for dissatisfaction in service were 'connection is too slow' and 'price is too high.'

The slow connection speeds are also reflected in the applications being used by businesses. The chart below shows the type of Internet-related activities businesses are utilizing. The activities that require a large amount of bandwidth (telemedicine, VPN, video-conferencing, etc.) are being utilized by a very small portion of businesses.

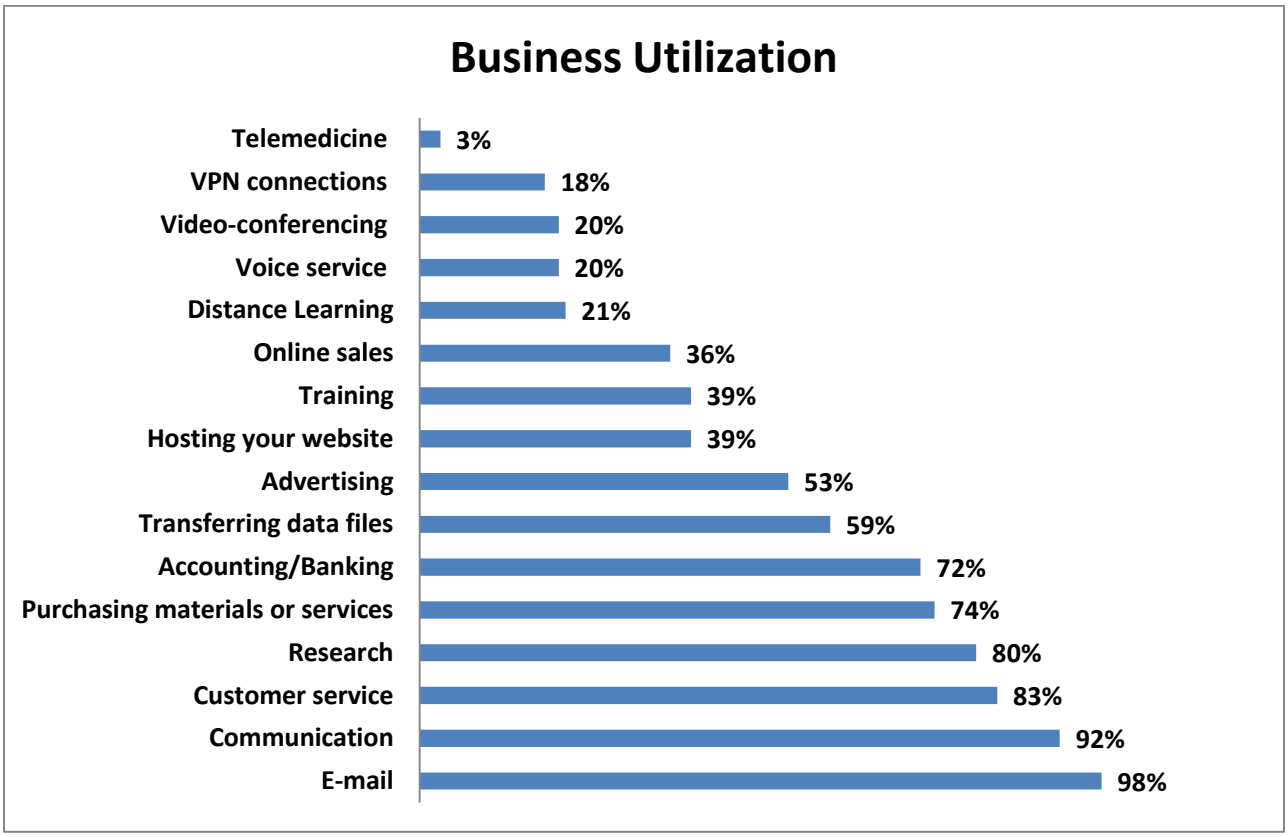


Figure 18 - Business Utilization

Since only 16% of respondents reported owning a business, let's assume the majority of respondents of workforce age are employees. An important consideration for Powhatan is how many people are commuting out of the county for employment? If better broadband were available, the county could attract more businesses and citizens could potentially telework or create home based businesses, all of which can help to reduce traffic and keeping daytime expenditures within the county, boosting the local economy.

Use of the Internet for Education

This section of the report looks at the results of the broadband and education-related questions of the survey with a focus on K-12 students.

44% of respondents reported being a parent, stepparent, or legal guardian of a child 18 years old or younger. Of the 44%, 12% reported having no broadband access at home.

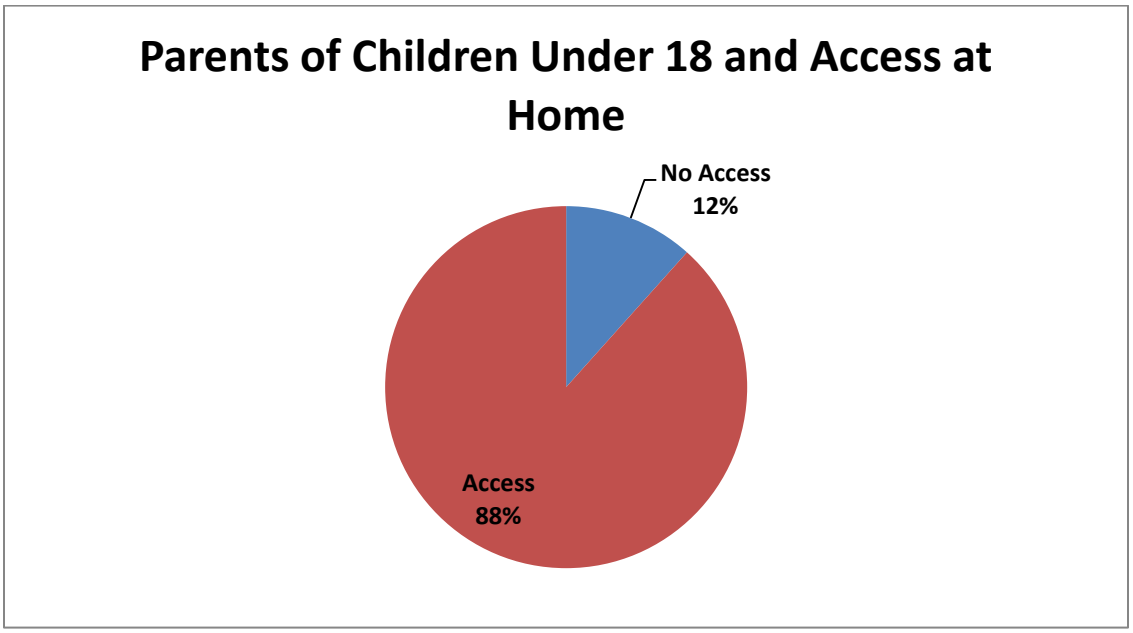


Figure 19 - Parents and Broadband Access

To take it a step further, of the 12% without access at home, 47% said their child doesn't have access outside of the home which means those children don't have access to the Internet anywhere other than school.

Respondents reported that 20% of their child's everyday homework assignments required some access to the Internet. However, even if the child does have access at home, because of the quality of connection that most respondents reported (discussed earlier in this report), completing homework assignments, using school websites or communication with teachers from home is most likely a challenging and unsatisfactory experience.

Given the percentages of online based homework assignments those who have poor or no access to the Internet at home may be missing out on educational opportunities as well as opportunities to advance their online capabilities. Respondents also reported that about 40% of their students use the Internet in the classroom. Those with little or no experience using the internet will be disadvantaged in the classroom as well.

The chart below provides more information about the number of times a week a respondent's child is asked to complete a homework assignment that requires an Internet connection.

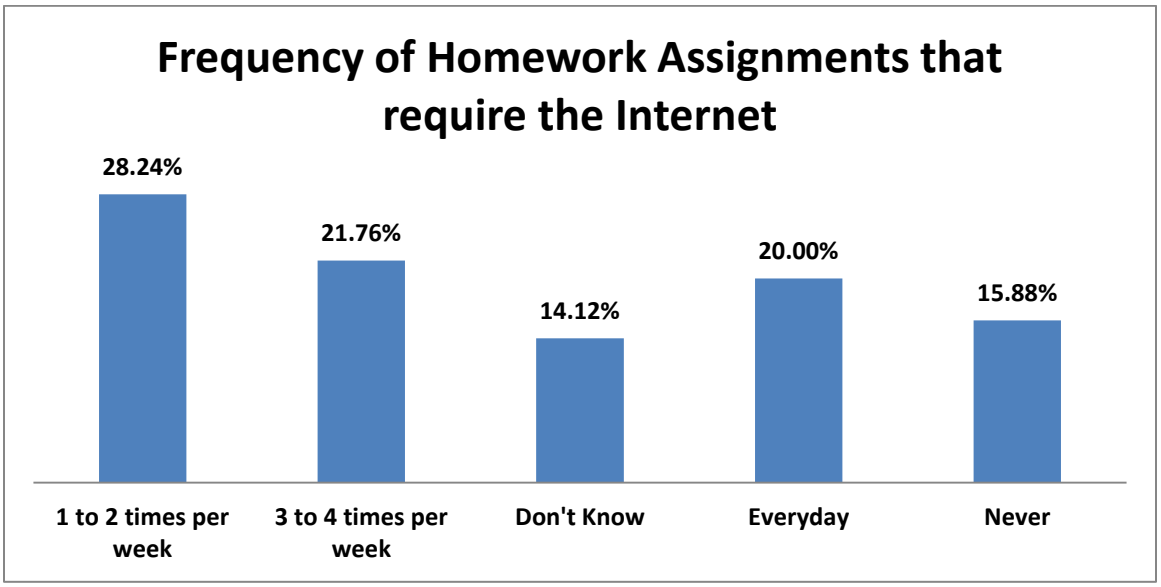


Figure 20 - Frequency of Homework Assignments that require the Internet

A high percentage of respondents use the Internet to access school websites. Those who do not, whether due to lack of Internet access or other reasons, are missing opportunities to be involved with their child's education. The following chart provides information from respondents about whether or not they use the Internet to access their child's school website.

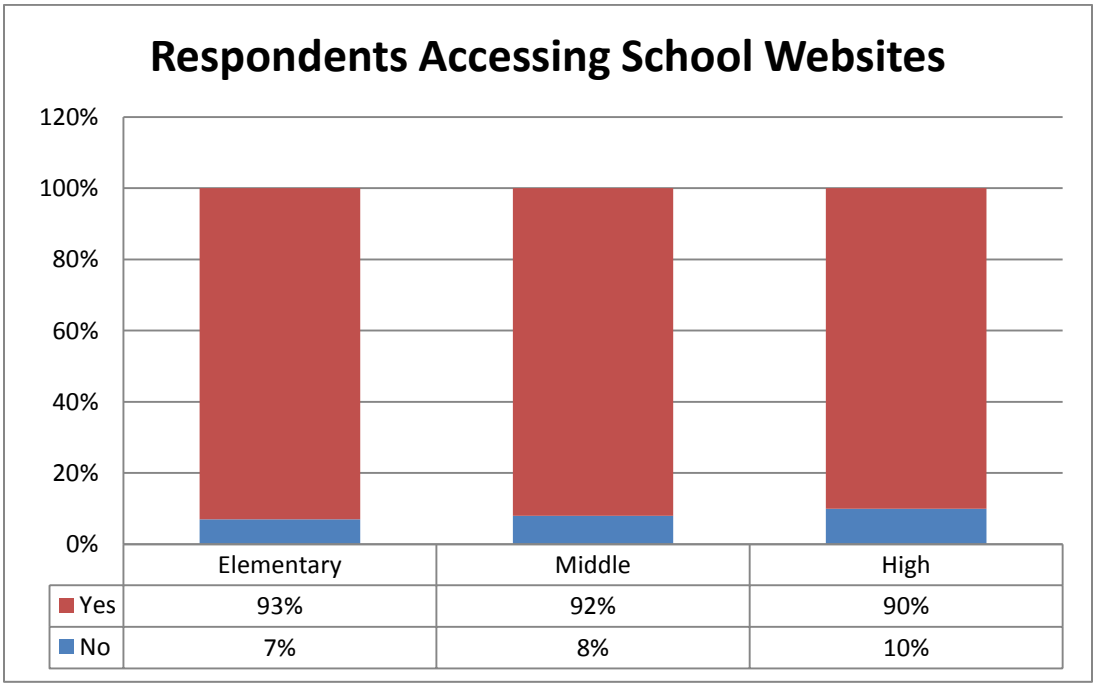


Figure 21 - Respondents Accessing School Websites

78% of respondents of school-aged children report that they could use help with learning how use the Internet in order to help their children with school work. This large percentage of respondents acknowledging the need for help would suggest an opportunity for Powhatan County Schools to consider some form of parent education for assisting students with online activities.

The data presented below provides additional information about parent's and children's Internet usage.

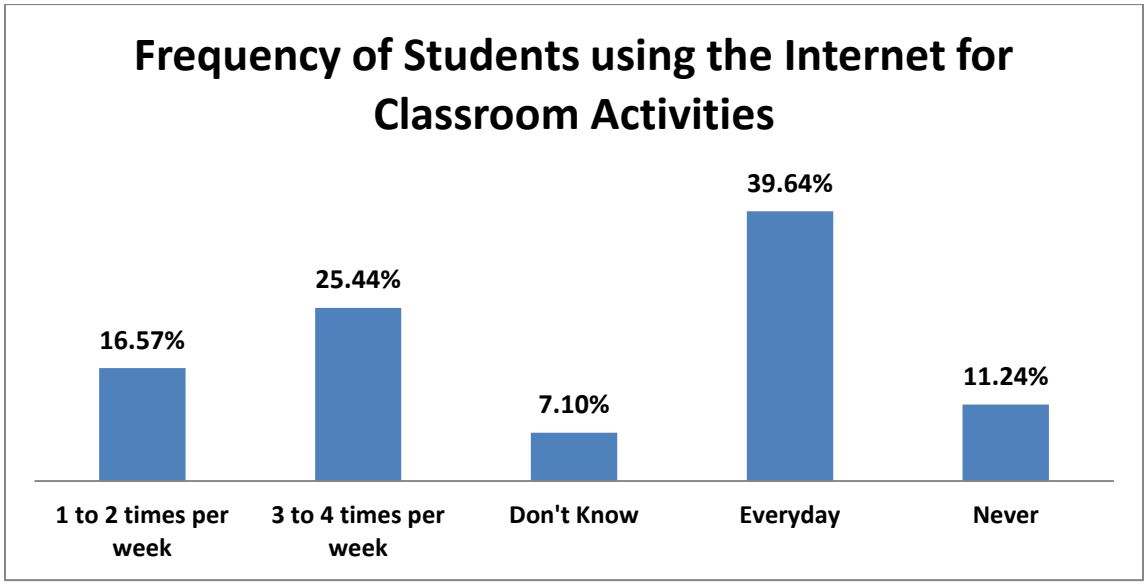


Figure 22 - Frequency of Students using the Internet for Classroom Activites

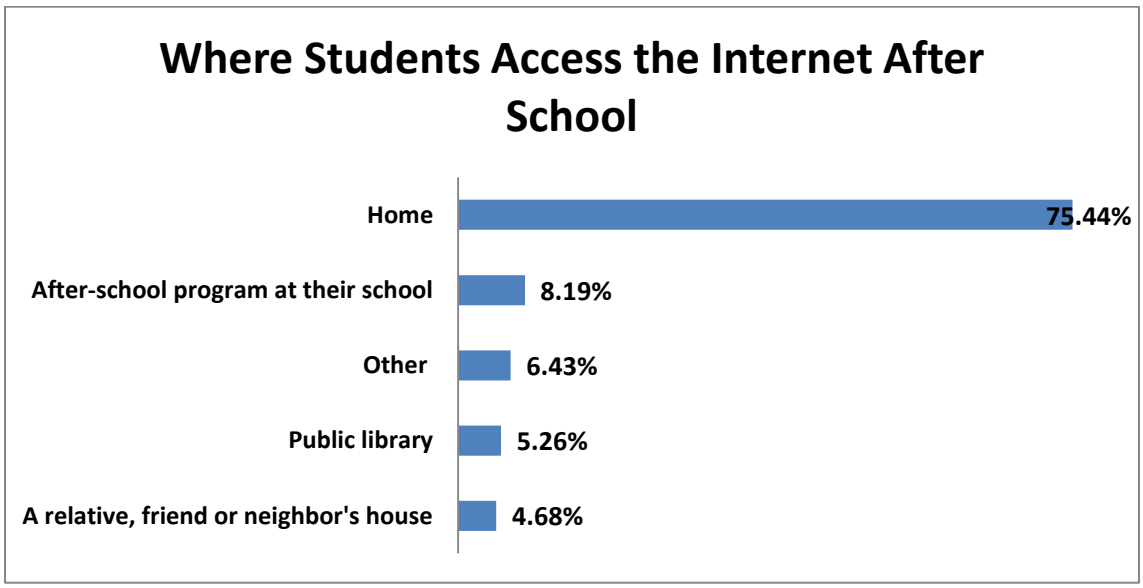


Figure 23 - Where Students Access the Internet After School

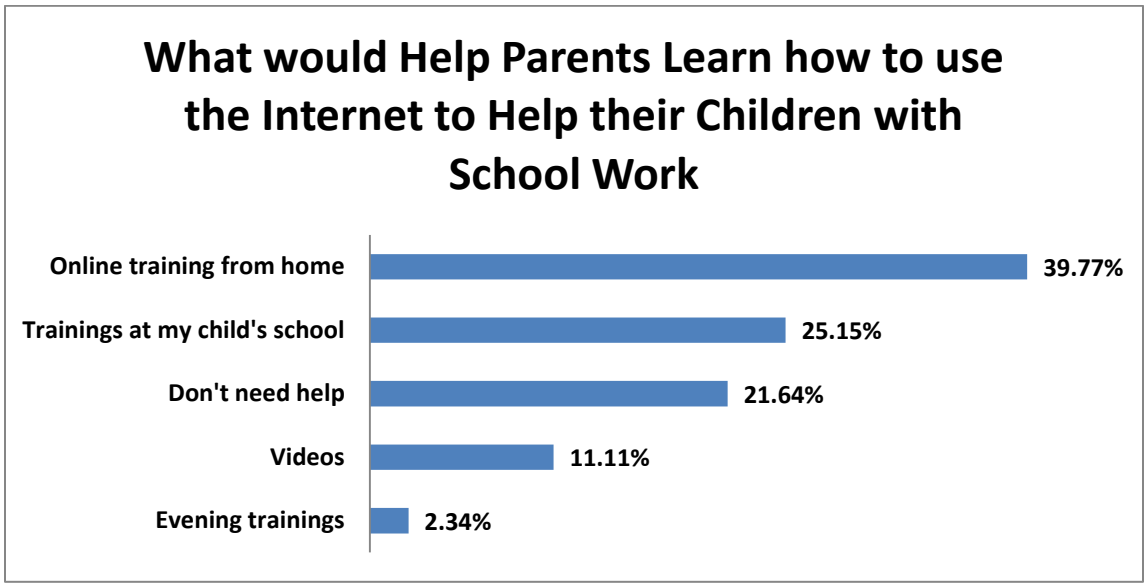


Figure 24 - What would Help Parents Learn how to use the Internet to Help their Children with School Work

Comments

At the end of the assessment respondents were asked 'what changes or improvements to communication technology in your county would best meet your needs?' below is a list of the most commonly requested changes.

- Better speeds (This was the most mentioned change)
- Access to high-speed internet at home, as opposed to satellite or cellular
- Access to Verizon FIOS
- Access to reliable broadband
- Affordability
- Access to broadband better than DSL
- Better cellular service

Conclusion

The Powhatan broadband survey enabled citizens to provide important input to county officials to support their efforts to expand regional broadband. The number of responses and comments reported indicates countywide interest in broadband and expanded quality services.

A majority of respondents reported that they do have access to the Internet at home. Only 9% reported no access to the Internet at their home. 6% reported their only home Internet option was cellular. The major reason given for the lack of access at home was that broadband was either not available or was cost prohibitive.

DSL was identified as the predominate access type available in the county. We know that DSL does not provide true broadband capabilities and may not be adequate for the required uses.

Connection type is particularly important given that most respondents fell into the age groups most likely to have school-aged children and/or be part of the workforce. 16% of respondents reported being business owners who use the Internet to support their business. 44% reported school-aged children who require the use of the Internet for homework on a regular basis. 12% of those with school aged children have no Internet access at home. The lack of adequate connectivity at home is a serious disadvantage for both business owners and school-aged children.

These findings suggest that Powhatan's citizens would embrace and would benefit from expanded and/or alternative Internet access types that support true broadband capabilities.