FLORIDA RURAL BROADBAND ALLIANCE, LLC (FRBA)
FLORIDA RURAL MIDDLE MILE NETWORKS – NORTHWEST AND SOUTH CENTRAL REGIONS PROJECT: BROADBAND NEEDS ASSESSMENT, DIAGNOSTICS, AND BENCHMARKING OF SELECTED ANCHOR INSTITUTIONS

THIRD INTERIM REPORT OF PROJECT ACTIVITIES

(August 1, 2011 – November 30, 2011)

December 6, 2011

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FRBA FLORIDA RURAL MIDDLE MILE NETWORKS – NORTHWEST AND SOUTH CENTRAL REGIONS PROJECT: BROADBAND NEEDS ASSESSMENT, DIAGNOSTICS, AND BENCHMARKING OF SELECTED ANCHOR INSTITUTIONS: THIRD INTERIM REPORT OF PROJECT ACTIVITIES

The Information Use Management and Policy Institute (Information Institute)[1] at the Florida State University[2] has been conducting a number of activities in fulfillment of its award from the Florida Rural Broadband Alliance (FRBA)[3] to conduct work in support of its $23 million Rural Middle Mile Networks project. These activities are needs assessment, benchmarking, and onsite diagnostics at selected anchor institutions in the FRBA service area: the 8-county Northwest Rural Areas of Critical Economic Concern (RACEC),[4] the 6-county South Central RACEC, and the City of Immokalee (Collier County).

This third interim report provides a summary of project activities during this project period (August 1, 2011 – November 30, 2011) and descriptions of planned activities for the remainder of the project (December 1-31, 2011). This report provides results of Task 3: Data Analysis, which includes findings from the survey, focus groups, and onsite diagnostics. This report does not include triangulation of the findings from all three methods, recommendations, or conclusions; the final report (December 31, 2011) will include these elements. For information on the methodology used for each of the three methods, see the Second Interim Report.[5]

TASK 1: DETAILED PROJECT TASKING

During the first phase of the study, the study team detailed project tasking and performed other organizational activities, all in consultation with the FRBA project liaison. This task included organizational activities in preparation for beginning data collection for the needs assessment phases of the project. See the First Interim Report for Task 1 activities and status.[6]

[1] http://ii.fsu.edu
[2] http://www.fsu.edu
[3] http://www.weconnectflorida.com/
[4] Since the inception of the FRBA project, Wakulla County has been added to the Northwest RACEC; however, Wakulla County is served by the North Florida Broadband Authority middle mile project and therefore, is not included in this study.
[5] McClure, C. R., Mandel, L. H., Alemanne, N. D., Weissenberger, L. K., Saunders, J. D., & McLaughlin, C. A. (2011). *Florida Rural Broadband Alliance (FRBA) Florida Rural Middle Mile Networks – Northwest and South Central Regions Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: Second interim report of project activities*. Tallahassee, FL: Information Use Management and Policy Institute, College of Communication and Information, The Florida State University. Available at: http://ii.fsu.edu/content/view/full/45135
[6] McClure, C. R., Mandel, L. H., & Gibson, A. N. (2010). *Florida Rural Broadband Alliance (FRBA) Florida Rural Middle Mile Networks – Northwest and South Central Regions Project: Broadband needs assessment, diagnostics, and benchmarking of selected anchor institutions: First interim report of project activities*. Tallahassee, FL: Information Use Management and Policy Institute, College of Communication and Information, The Florida State University. Available at: http://ii.fsu.edu/content/view/full/45135

TASK 2: DATA COLLECTION

During the second phase of the study, the study team conducted data collection activities that included a needs assessment and benchmarking survey, onsite diagnostics collection, and interviews and/or focus groups that followed up on the survey and collected data on situational factors and issues that impact anchor institutions' awareness of and potential deployment of broadband networks. See the Second Interim Report for Task 2 activities and status.[7]

TASK 3: DATA ANALYSIS

During this project period, the study team analyzed, tabulated, and verified the various data collected in Task 2 using descriptive statistics, GIS mapping methodologies, and content analysis of primary themes. Table 1 delineates key activities and status update for Task 3. Findings from each of the three methods (survey, focus groups, and onsite diagnostics) follow.

Table 1: Key Activities, Status, and Time Line to Completion for Task 3

ACTIVITY	STATUS UPDATE	TIMELINE
1. Analyze, tabulate, and verify survey data – • Use descriptive statistics to analyze survey responses; • Describe the existing and future broadband uses and applications of the region's anchor institutions; • Describe the existing bandwidth being purchased at the "front door" and its availability at the workstation-level for the anchor institutions; • Determine the current cost for the bandwidth being purchased by anchor institutions; • Identify the vendor(s) currently supplying the existing bandwidth for anchor institutions; • Identify situational factors and issues that impact whether anchor institutions decide to obtain or increase broadband capacity; • Obtain baseline data related to broadband connectivity and use that can be used to justify and support additional broadband funding requests for the region; and • Use GIS methodologies to map metrics such as anchor institution broadband costs and connections speeds.	Task complete	October 1, 2011 – November 30, 2011
2. Analyze diagnostics – • Describe the existing broadband networks currently deployed in selected anchor institutions; • Identify situational factors and issues that impact how selected anchor institutions deploy their broadband networks; and • Determine ways that the region's anchor institutions can improve their network deployments and use of broadband.	Task complete	October 1, 2011 – November 30, 2011

[7] McClure et al. (2011).

Table 1: Key Activities, Status, and Time Line to Completion for Task 3, Continued

ACTIVITY	STATUS UPDATE	TIMELINE
3. Analyze interview and focus group data – • Identify situational factors and issues that impact whether anchor institutions decide to obtain or increase broadband capacity; and • Describe factors that affect anchor institutions' capacity to use broadband effectively.	Task complete	October 1, 2011 – November 30, 2011
4. Deliver interim report that details completed project activities.	Task complete	October 31, 2011

Survey Findings

Introduction

The survey finds that anchor institutions in the FRBA service area are facing a number of situational factors that affect their ability to deploy and use broadband Internet in an effective way. For example, while half of respondents report paying for advertised broadband Internet speeds greater than 5 megabits per second (Mbps),[8] actual tested downstream speeds are vastly lower. And while the majority of respondents say that their Internet speeds meet staff and public needs most of the time or always, 70% of respondents indicate an interest in increasing their Internet speed. However, almost no institutions have plans to increase their speed, and half of respondents reporting that they would like to have higher Internet speeds say that they already have the maximum speed available to them, cannot afford to increase their speed, or do not have the technical knowledge to do so. The age of workstations in reporting institutions compounds this problem as older workstations tend to run at slower speeds, regardless of connection speed.

Staff and public comfort with broadband technology is another issue. Large portions of anchor institutions' staffs are reported to be comfortable with basic Internet and computer skills, but less than two-thirds are comfortable with advanced Internet skills such as searching for information and determining its accuracy. Very low percentages of the public are reported to be comfortable with even basic broadband-related skill sets. The largest percentage of institutions report no plans for staff or public training that would help improve these skills.

Needs assessment and benchmarking project goals related to the description of broadband Internet in anchor institutions are the following:

- Describe the existing and future broadband uses and applications of the region's anchor institutions;
- Describe the existing bandwidth being purchased at the "front door" and at the workstation-level for a sample of anchor institutions in the 14-county region;
- Determine the current cost for the bandwidth being purchased by anchor institutions;

[8] 1 Mbps is equal to about 1000 kilobits per second, or kbps.

- Identify the vendor(s) currently supplying the existing bandwidth for anchor institutions; and
- Identify factors that affect the likelihood that anchor institutions will adopt high-speed broadband.

The following section reports survey findings on the current state of broadband Internet at anchor institutions in the context of those goals, with the addition of an introductory section that overviews survey respondents. Note that, although the FRBA service area includes two different RACECs (Northwest and South Central), data are reported for the entire FRBA service area as one entity and not for each RACEC individually.

Respondents

All types of anchor institutions are included in the population that responded to the survey. The top groups of respondents include schools and school districts (30.5%), city and county government entities (18.3%), law enforcement (15.9%), and libraries (14.6%) (Figure 1). The library category includes both library systems and branch libraries. Rural health clinics (3.7%), higher education institutions (4.9%), hospitals (6.1%), and other (6.1%) represent the anchor institution types with the lowest survey response rates.

In addition to representing all types of anchor institutions, survey respondents represent all of the counties in the FRBA service area (Figure 2). The institutions with the highest response rates (schools, government entities, law enforcement, and libraries) include respondents from the broadest ranges of counties. Jackson and Calhoun counties have the highest response rates (n=17 and n=10, respectively), while six or fewer respondents are located in each of the other counties.

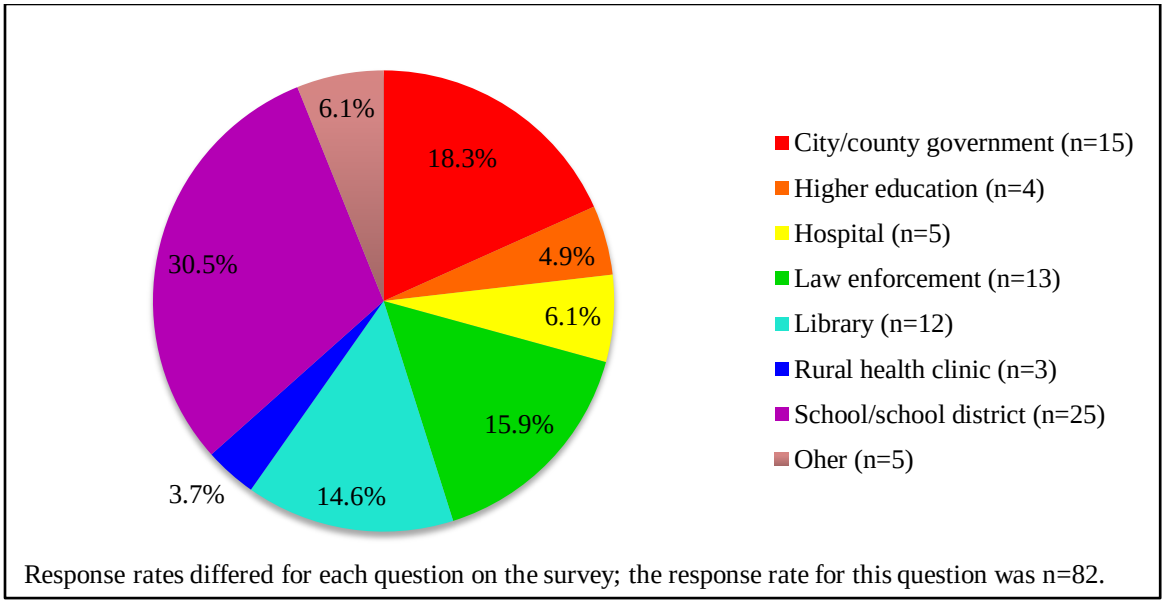


Figure 1. Respondents by Type of Anchor Institution

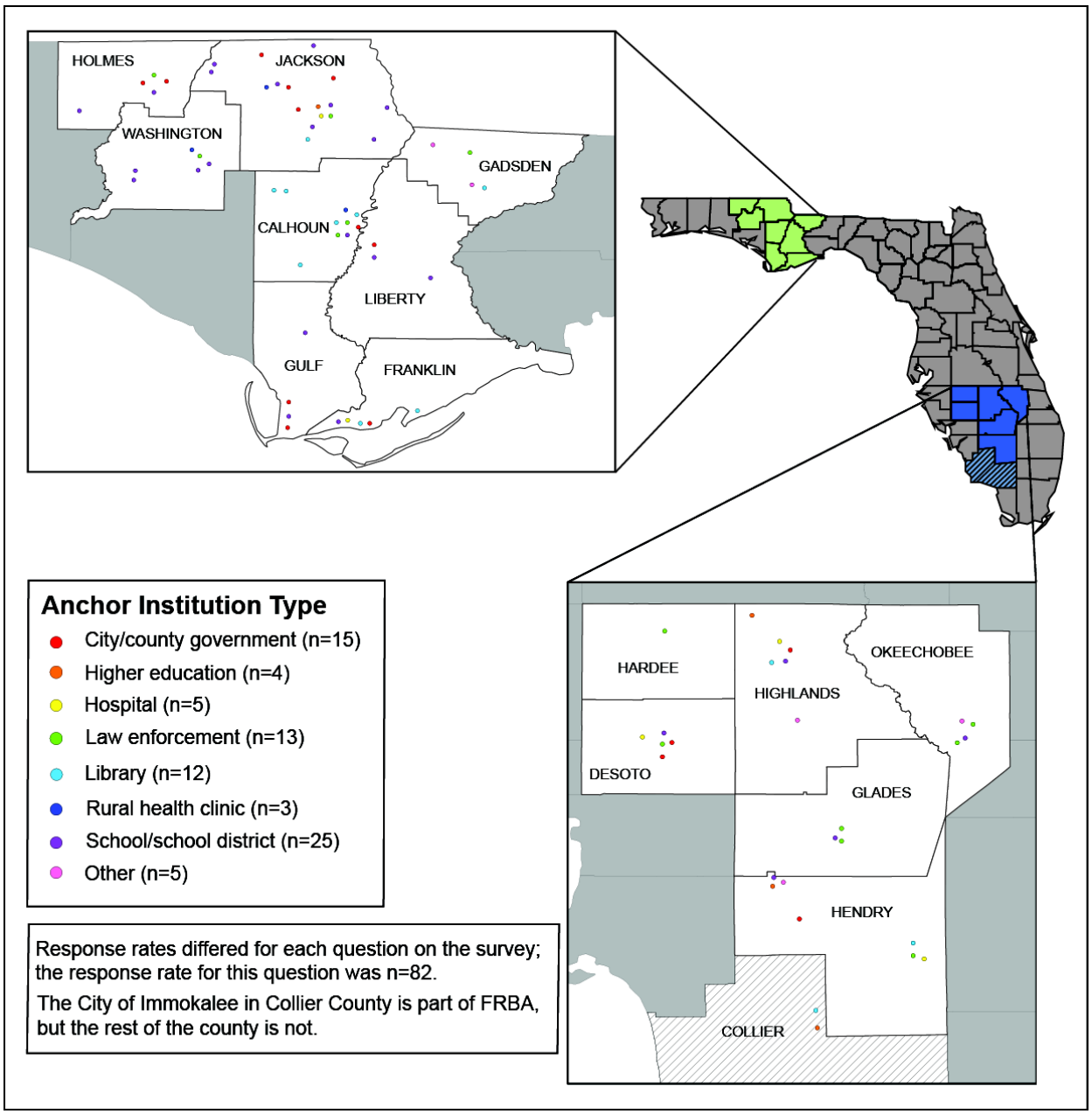


Figure 2. Type of Anchor Institution Respondents by County

Anchor institution representatives who completed the survey have a wide range of job titles (Table 2). Directors and managers constitute the largest group (45.0% including principal/assistant principal, administrator, director/interim director, library director, manager, president, mayor, commissioner, emergency management chief, manager/librarian, police chief, and sheriff). Many information technology (IT) staff also responded to the survey (26.3% including IT director, network manager, chief information officer, computer technician, and network specialist).

Table 2: Respondent's Job Title

Title	n	%	Title	n	%
Network Manager	11	13.8%	City/Town Clerk	1	1.3%
Principal/Assistant Principal	8	10.0%	Commissioner/BOCC	1	1.3%
Operations Coordinator	8	10.0%	Communications Supervisor	1	1.3%
Director/Interim Director	7	8.8%	Computer Technician	1	1.3%
IT Director	7	8.8%	Emergency Management Chief	1	1.3%
Administrator	5	6.3%	Lead Educator	1	1.3%
Chief Information Officer	5	6.3%	Manager	1	1.3%
Network Specialist	5	6.3%	Mayor	1	1.3%
Police Chief	5	6.3%	President	1	1.3%
Library Director	3	3.8%	School Librarian	1	1.3%
Manager/Librarian	2	2.5%	Sheriff	1	1.3%
Purchasing	2	2.5%	DMS Secretary	1	1.3%

Response rates differed for each question on the survey; the response rate for this question was n=80.

Existing and Future Broadband Uses and Applications

Year Anchors Obtained Service

A beginning point to looking at existing uses of broadband is to investigate when anchor institutions first obtained Internet connections. Survey respondents divide pretty evenly into the three categories of adopters: 31.2% can be considered early adopters, having acquired Internet in 1995 or earlier; 32.5% the early majority, having acquired Internet between 1996 and 1998; and 36.4% later broadband adopters, having acquired Internet connections in 1999 or later (Figure 3). The median year in which respondents obtained service is 1998, with service start dates reported from 1980-2010. Early adopters predominate in the northern FRBA counties and later adopters predominate in the southern FRBA counties (Figure 4).

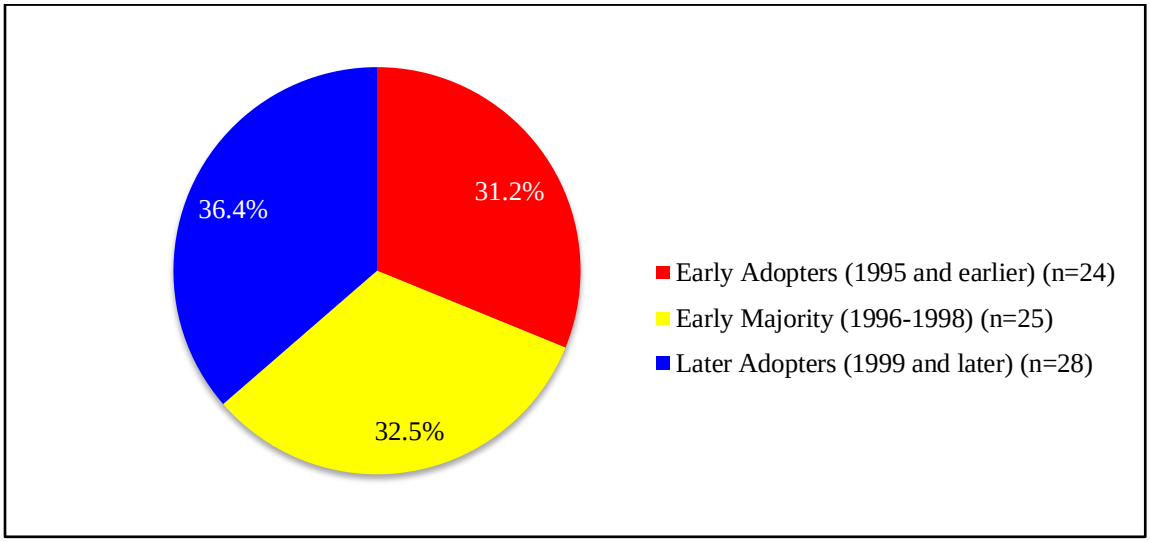


Figure 3. Year Respondents Obtained Internet Service

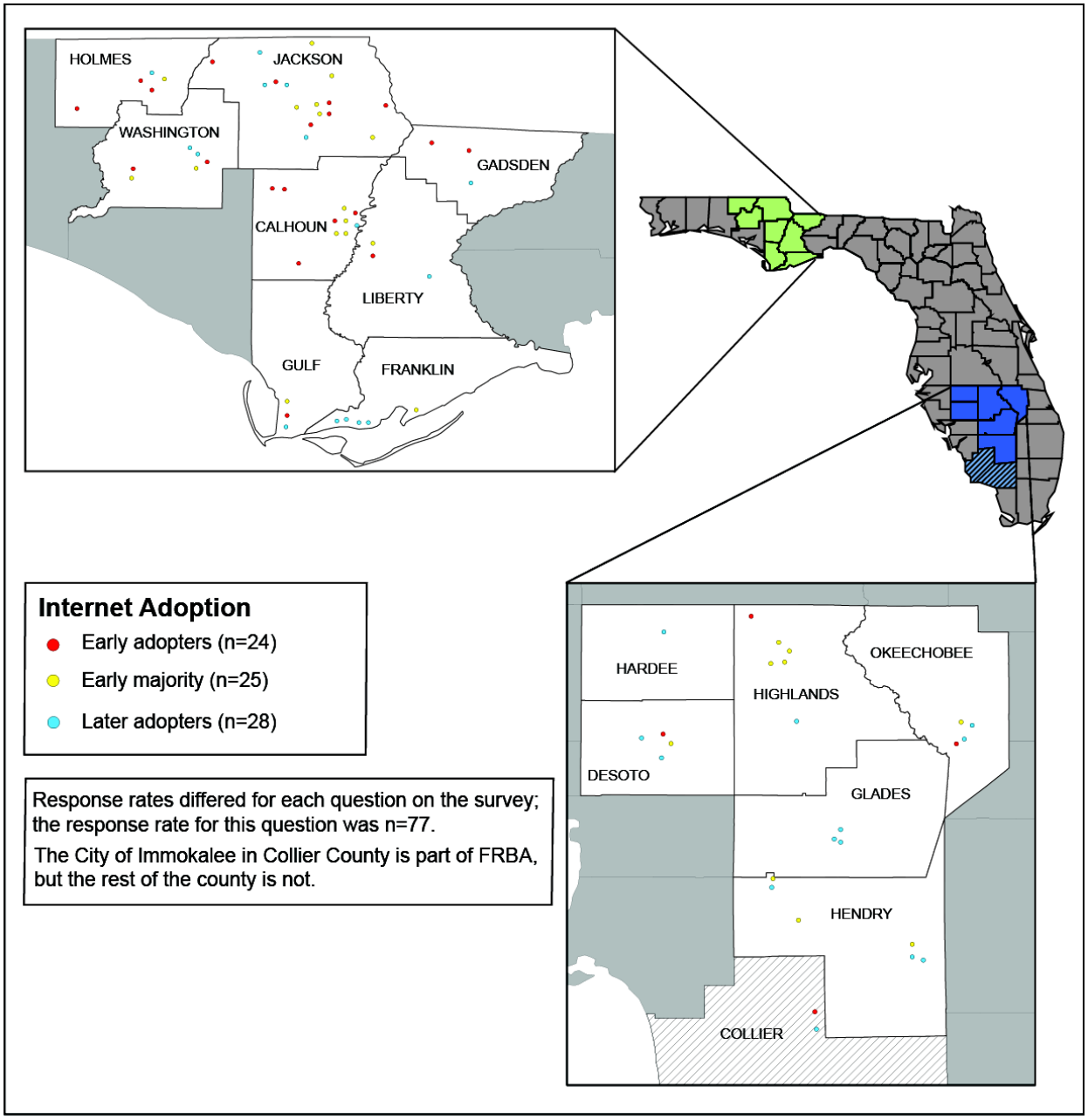


Figure 4. Year Respondents Obtained Internet Service by County

Wi-Fi Availability

In addition to looking at when anchor institutions first obtained the Internet, it is useful to know whether they offer Wi-Fi service on their broadband connections since sharing one connection for both landline and wireless Internet can degrade the speeds on both networks. The majority of institutions (70.8%) report having Wi-Fi networks, and the 29.2% of institutions that do not have Wi-Fi distribute fairly evenly in the northern and southern portions of the FRBA service area (Figure 5). In all counties, the majority or all of reporting institutions have Wi-Fi.

Nearly all of the anchor institutions reporting they have Wi-Fi service make it available to staff inside the building (96.1%), and 52.9% make it available to the public (Figure 6). The Wi-Fi umbrella covers areas outside the building for *staff* use in most cases but not for the *public*, with 52.9% of institutions reporting that staff and 33.3% reporting that the public can access the Wi-Fi network outside the building.

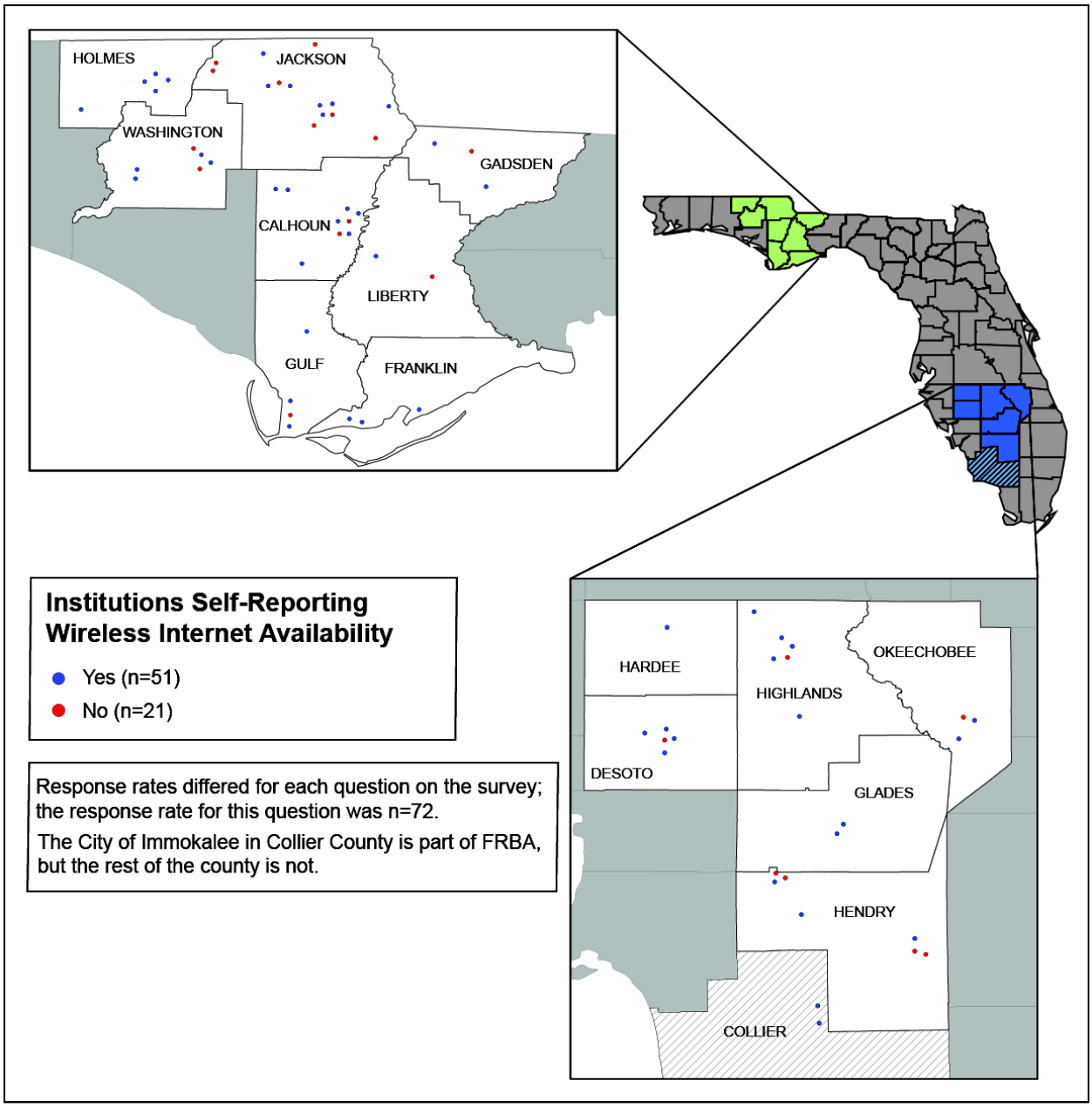


Figure 5. Institutions with and Without Wi-Fi by County

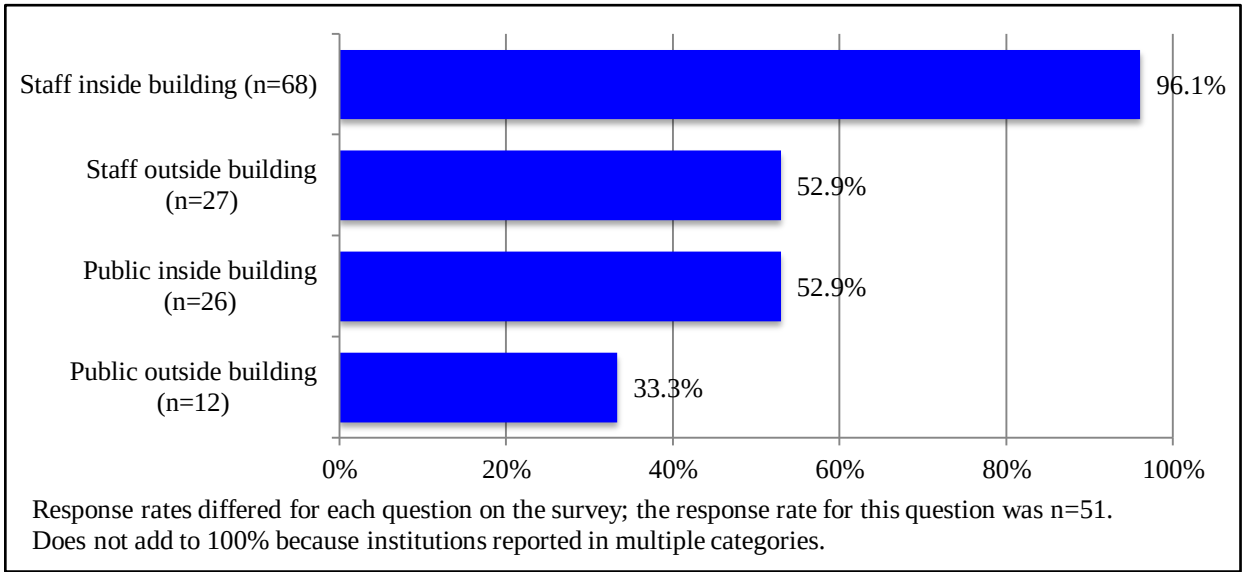


Figure 6. Availability of Wi-Fi to Staff and Public in Institutions with Wi-Fi

Uses of Broadband

Respondents identified the services for which the public uses broadband at their institution from a set list. Educational resources and databases (81.3%), email (71.9%), and e-government services (59.4%) dominate public use of the Internet at anchor institutions offering public Internet (Figure 7). Services for job seekers (56.3%), community information (53.1%), social networking (46.9%), and services to immigrant populations (46.9%) are also popular.

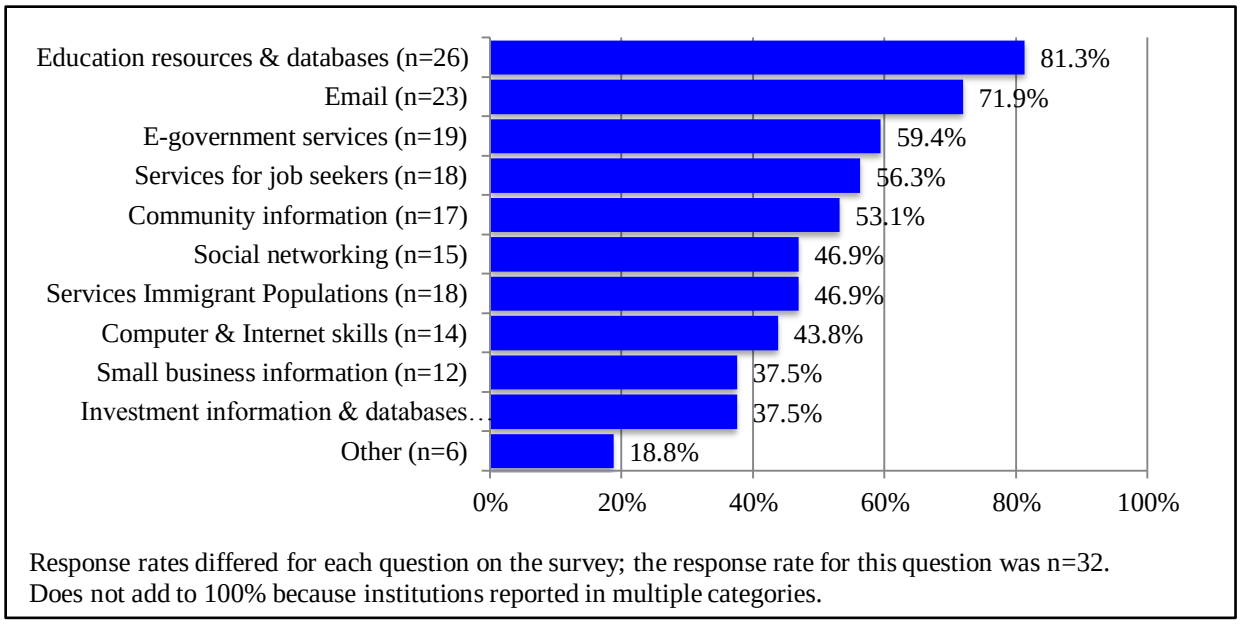


Figure 7. Applications and Tasks for Which the Public Uses the Internet

Examination of existing and future uses of broadband in anchor institutions must consider the degree to which the anchor institutions' staffs and publics are comfortable with broadband and technology, as this may indicate future needs. Survey respondents assessed their staffs' comfort level with a number of broadband-related skills on a 5-point scale ranging from Extremely Comfortable to Not at All Comfortable. Most institutions report that their staffs are extremely or very comfortable with basic computer skills such as using a mouse (83.3%), basic Internet skills such as getting online (81.9%), and basic email skills such as writing and sending email (77.8%) (Figure 8). The story is very different for basic broadband (31.9% of institutions reporting that their staffs are extremely or very comfortable with knowing what broadband is or its uses), advanced Internet skills such as searching for information and determining its accuracy (29.2% report staff are extremely or very comfortable), basic wireless (25.0% report staff are extremely or very comfortable with knowing what wireless is or its uses), advanced wireless (22.2% reporting staffs are extremely or very comfortable with skills such as configuring a network), and advanced broadband (11.1% reporting staffs are extremely or very comfortable with skills such as configuring an internal network). It should be noted that the last two skill sets are those at which the entire staff would not be expected to be proficient since those are likely the domain of IT staff.

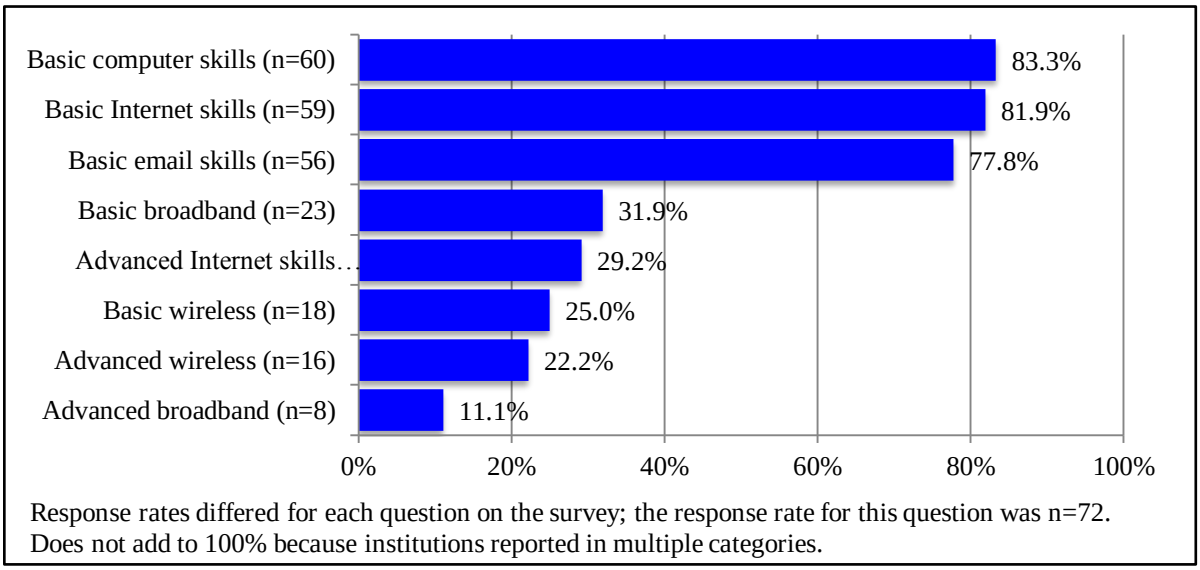


Figure 8. Staff Comfort with Internet-related Topics-Extremely/Very Comfortable (5 Point Scale)

In contrast, anchor institutions report that a fairly low percent of the rural public is comfortable with even basic skill sets such as basic Internet (44.4%), basic computer (42.2%), and even basic email skills (42.2%) (Figure 9). About a third of institutions report their public users are extremely or very comfortable with advanced Internet skills (31.1%). In contrast to these four skillsets, institutions report very low levels of public comfort with basic wireless, basic broadband, advanced wireless, and advanced broadband, with extremely low response numbers (n=5 or fewer) for these skills.

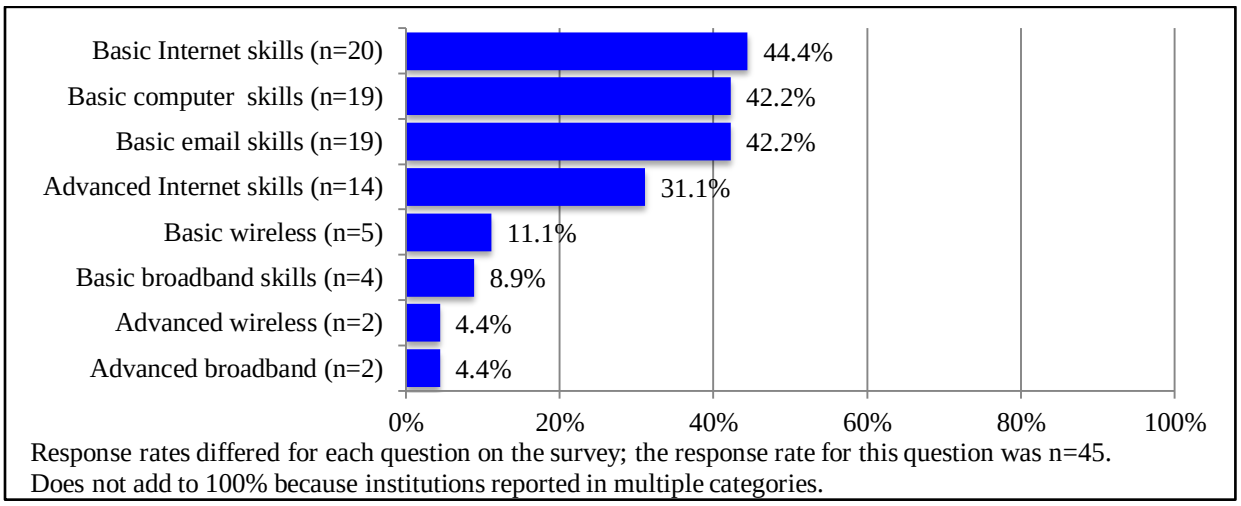


Figure 9. Public Comfort with Internet-related Topics-Extremely/Very Comfortable (5 Point Scale)

Given the broadband-related tasks already occurring at anchor institutions and the discussion about staff and public comfort levels with technology topics, it is important to consider what types of training anchor institutions are offering to their staffs and public users. The largest percentage of institutions reports no plans for staff training in the next year (52.9%), but about a quarter of institutions are planning some advanced Internet training for staff (Figure 10). There are almost no plans for advanced broadband training (5.7%), so staff comfort levels in this area may not rise in the near future. Little formal training is planned for the public on Internet and broadband topics (Figure 11).

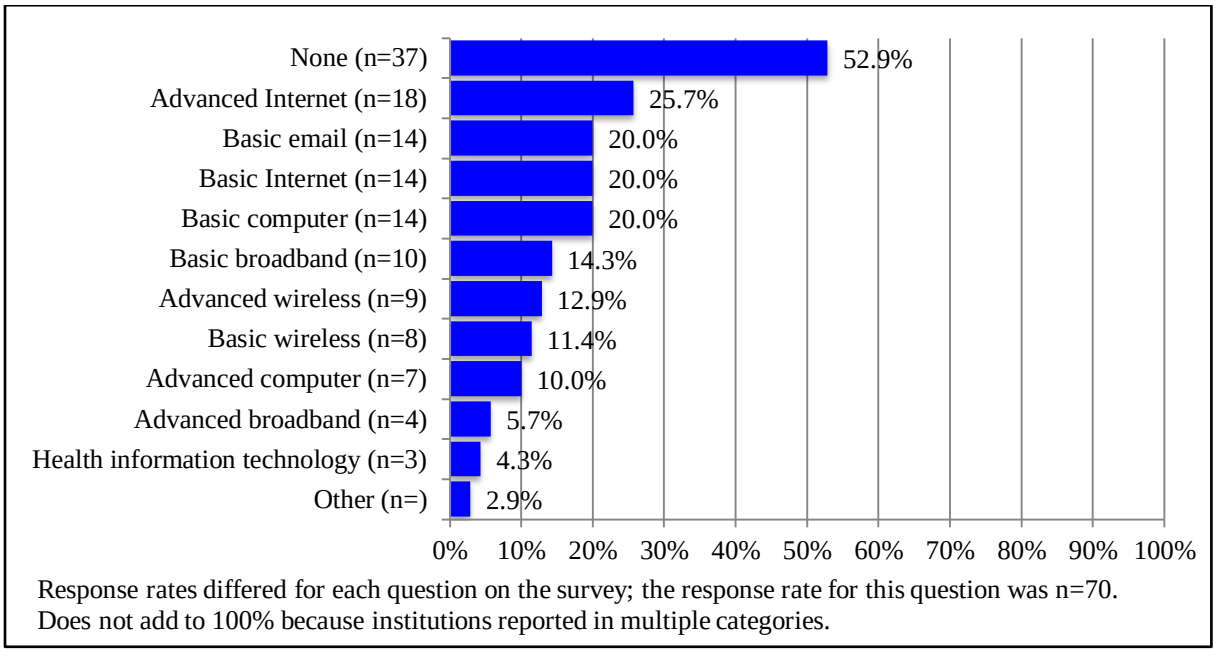


Figure 10. Plans for Staff Training Within the Next Year by Topic

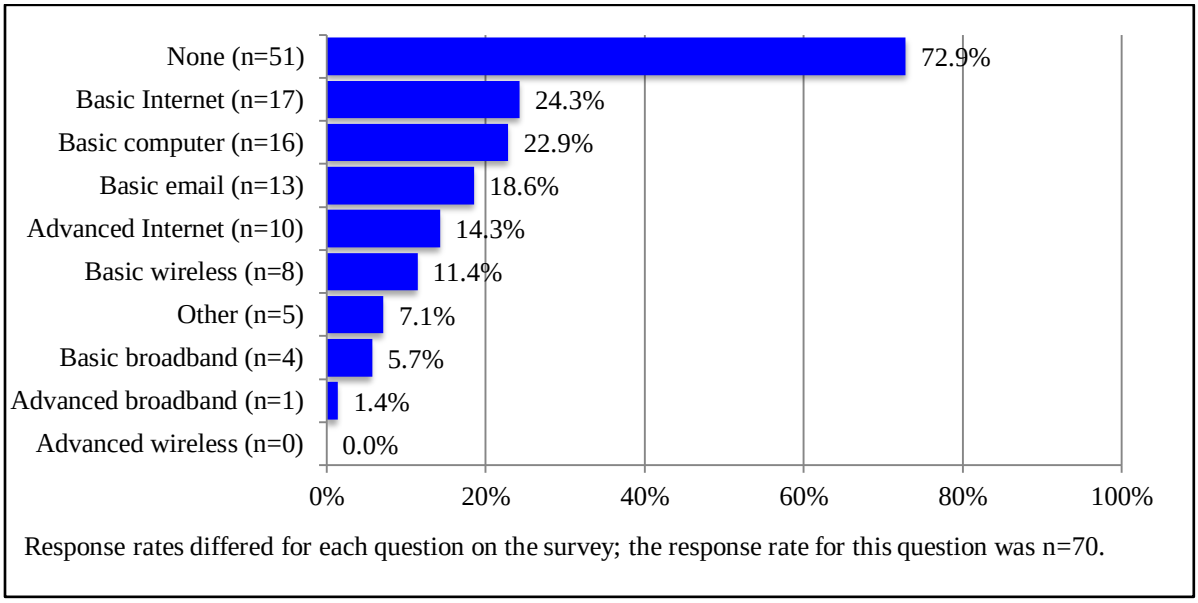


Figure 11. Plans for Public Training Within the Next Year by Topic

Adequacy of Current Broadband to Meet Staff and User Needs

The majority of respondents indicate that Internet speeds meet staff needs with Most of the Time (69.0%) and Sometimes (16.9%) (Figure 12). Relatively few respondents (8.5%) say that their broadband is always sufficient to meet staff needs. Only 4.2% say that their needs are rarely met and 1.4% report that their needs are never met, so anchor institutions' Internet is meeting staff needs at least some of the time. The story for the sufficiency of broadband for meeting public needs is fairly similar, with 66.7% reporting that broadband is sufficient most of the time and 16.7% reporting that it is sufficient sometimes (Figure 13). Also, a small percentage (5.6%) report that their broadband rarely meets the public's needs.

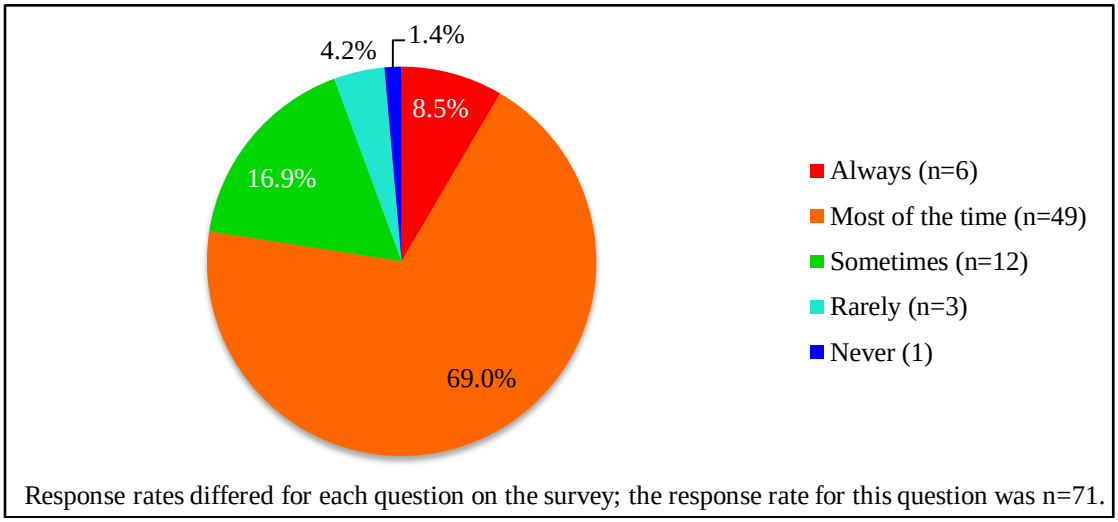


Figure 12. How Often Internet Speed Meets Staff Needs

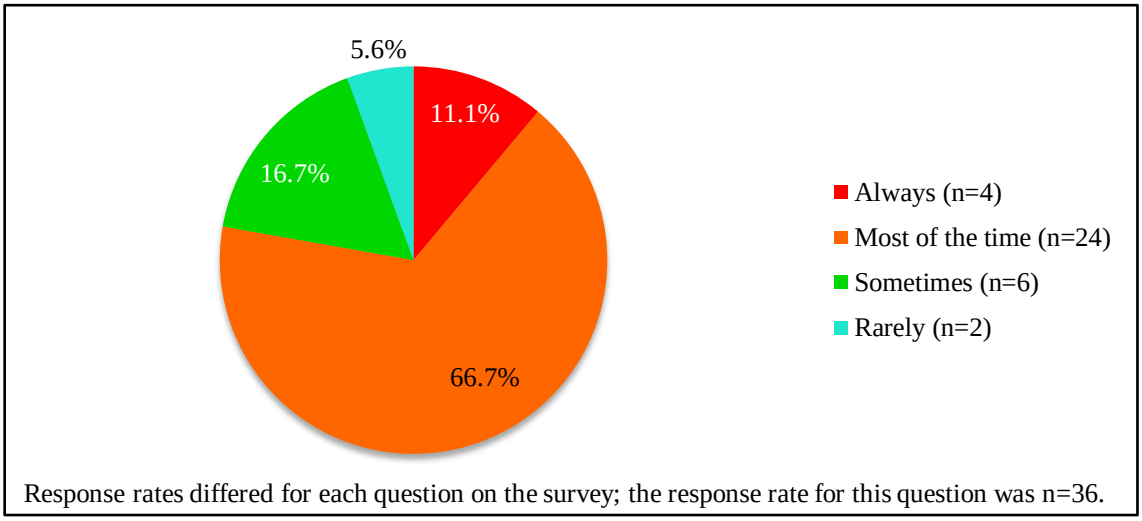


Figure 13. How Often Internet Speed Meets Public Needs

Perceived Economic Benefit of Increased Broadband Connectivity

The FRBA survey asked respondents to indicate the degree to which they perceived broadband connectivity to have economic benefits. The majority (61.2%) report that they perceive broadband connectivity to have a very high or high degree of impact on economic benefits (Figure 14). Relatively few respondents perceive a low degree (6.9%) or no degree (5.6%) of economic benefit from broadband connectivity.

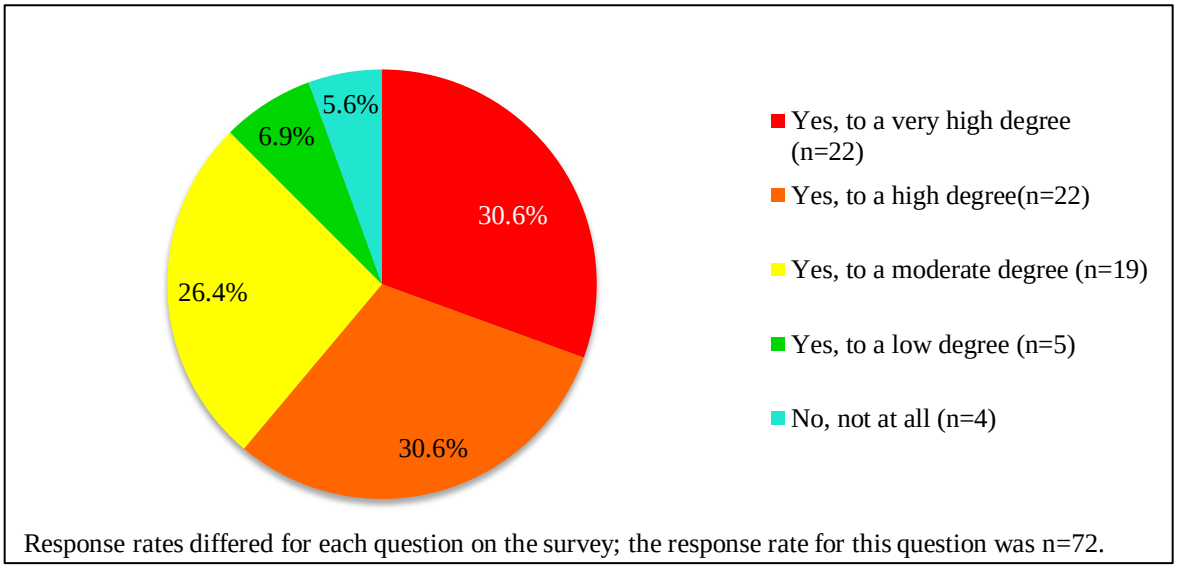


Figure 14. Perceived Economic Benefit of Increased Broadband Connectivity

Existing Bandwidth Purchased at the "Front Door" Compared to Workstation-Level Speeds

Connection Speed

More than half of institutions have advertised connection speeds in the range of 1.6-10 Mbps, with 20.3% reporting speeds of 1.6-5 Mbps and 30.4% reporting speeds of 5.1-10 Mbps (Figure 15). Slightly over 16% of institutions have advertised speeds at or below 1.5 Mpbs; on the other hand, 32.9% have advertised speeds of 10.1 Mbps or greater. Law enforcement and rural health clinics are the only anchor institution types not to report advertised speeds greater than 20 Mbps, and city/county government, law enforcement, and rural health clinics were the only institutions reporting speeds of less than 1.5 Mbps (Figure 16). This indicates there is a wide range of speeds present in city/county governments as this category of anchor includes institutions in both the greater than 20 Mbps and less than 1.5 Mbps ranges, with equal numbers of city/county governments reporting speeds in each range (20.0% for each).

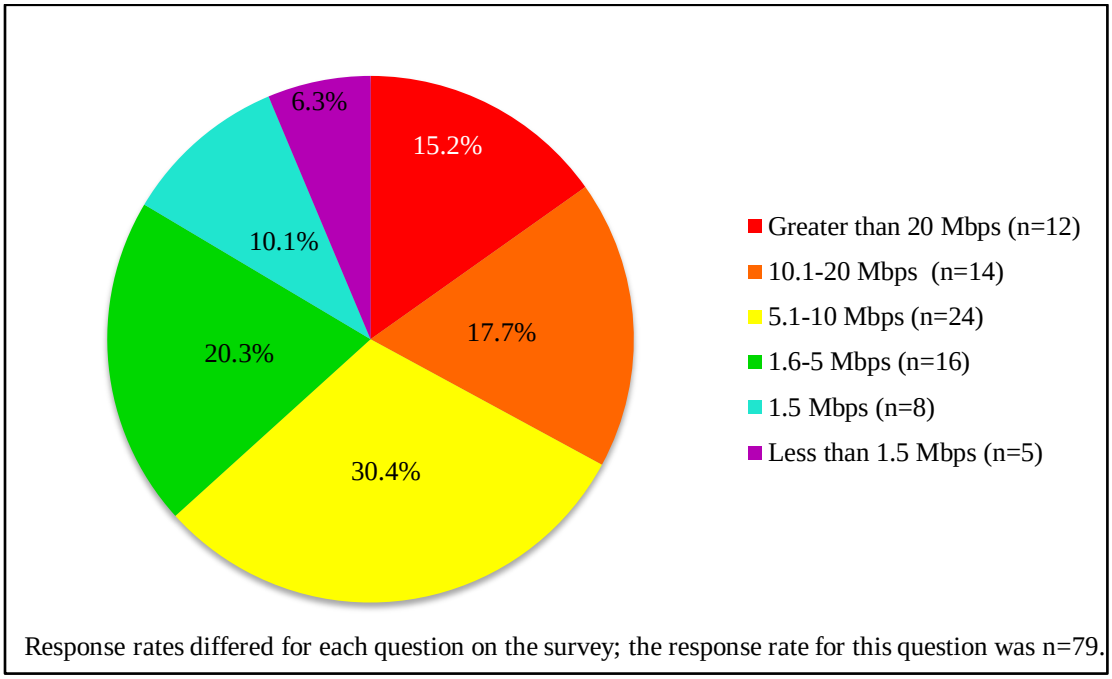
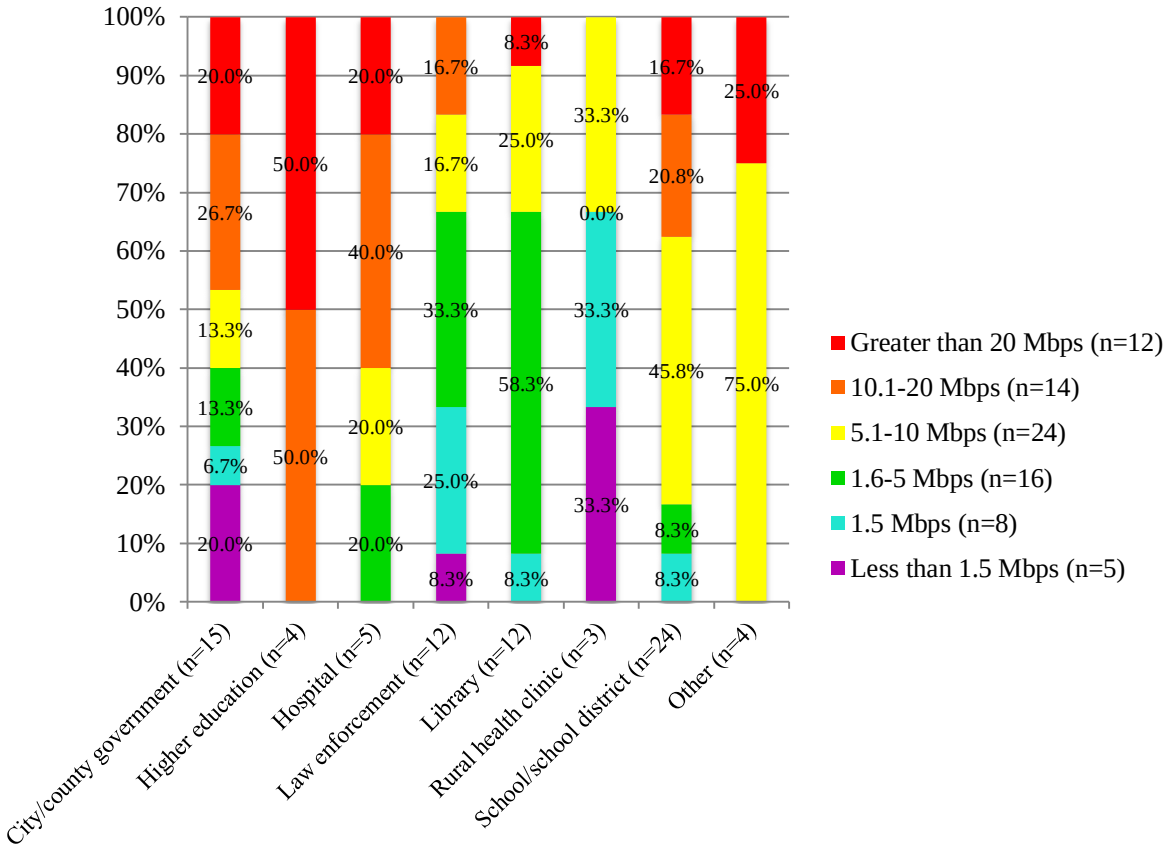


Figure 15. Advertised Speed at the "Front Door"



Response rates differed for each question on the survey; the response rate for those who answered both questions was was n=979.

Figure 16. Advertised Speed at the "Front Door" by Type of Anchor

Respondents completed speed tests (using http://speedtest.net/) on one staff workstation and one public workstation per institution (for institutions that have public access workstations). Almost half (45.5%) of staff workstations have downstream speeds of 1.6-5 Mbps (Table 3). This is substantially higher than the percentage of institutions reporting advertised speeds in this range (20.3%). The comparison of actual speed to advertised speed displays the largest variations in the two highest speed categories: while 17.7% of institutions report an advertised speed of 10.1-20 Mbps, 9.1% report that downstream speed at a staff workstation, and while 15.2% report an advertised speed greater than 20 Mbps, 7.6% report that downstream speed at a staff workstation. These results indicate that many anchor institutions are not getting the advertised speed at the workstation level, particularly in the highest speed ranges. Upstream speed test results at staff workstations show an even larger disparity: 37.3% of respondents report a measured speed of 1.5 Mbps or lower compared to 16.4% who report an advertised speed of 1.5 Mbps or slower. Fewer than 20% of the anchors report their public workstations have downstream speeds greater than 5 Mbps (18.%), 44.4% have downstream speeds at or below 1.5 Mbps, and 62.9% of all public workstations report upstream speeds at or below 1.5 Mbps (Table 4).

Table 3: Comparison of Advertised Speed to Measured Speed at a Staff Workstation

	Less than 1.5 Mbps	1.5 Mbps	1.6-5 Mbps	5.1-10 Mbps	10.1-20 Mbps	Greater than 20 Mbps
Advertised Speed	6.3%	10.1%	20.3%	30.4%	17.7%	15.2%
Downstream at Staff Workstation	9.1%	1.5%	45.5%	27.3%	9.1%	7.6%
Upstream at Staff Workstation	34.3%	3.0%	35.8%	17.9%	7.5%	1.5%

Table 4: Comparison of Advertised Speed to Measured Speed at a Public Workstation

	Less than 1.5 Mbps	1.5 Mbps	1.6-5 Mbps	5.1-10 Mbps	10.1-20 Mbps	Greater than 20 Mbps
Advertised Speed	6.3%	10.1%	20.3%	30.4%	17.7%	15.2%
Downstream at Public Workstation	3.7%	40.7%	40.7%	3.7%	11.1%	3.7%
Upstream at Public Workstation	33.3%	29.6%	25.9%	7.4%	3.7%	33.3%

Advertised speeds vary widely across the counties, but institutions in only half of the counties report speeds above 20 Mbps (Figure 17). Hardee County has no institutions reporting advertised speeds above 5 Mbps, but only one institution reported in Hardee County for this question. The speed story detailed above—lower actual speeds than advertised speeds—is true by county as well; Figures 17-19 show the difference in advertised speeds versus downstream speeds at staff and public workstations.

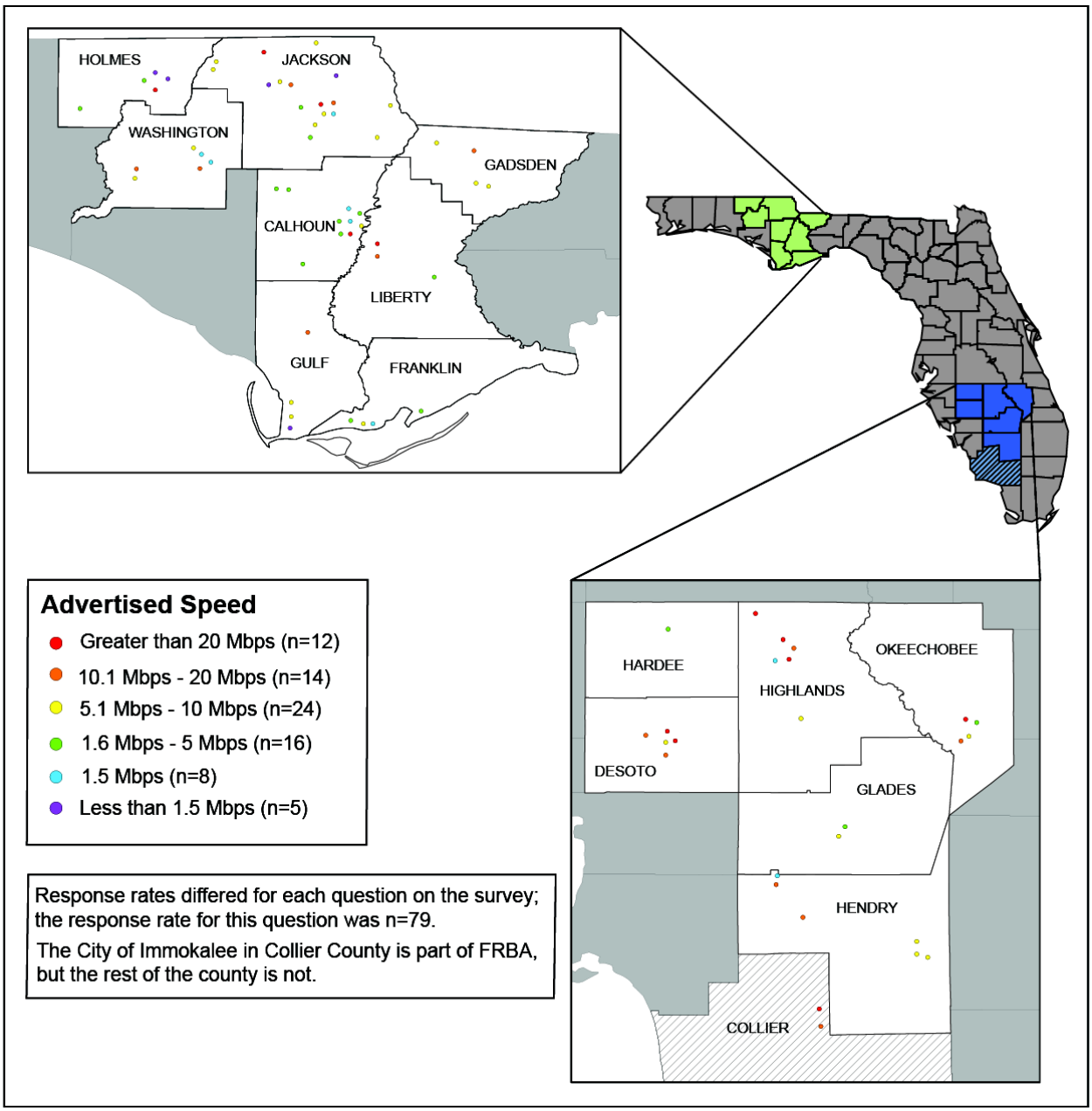


Figure 17. Advertised Speed at the "Front Door" by County

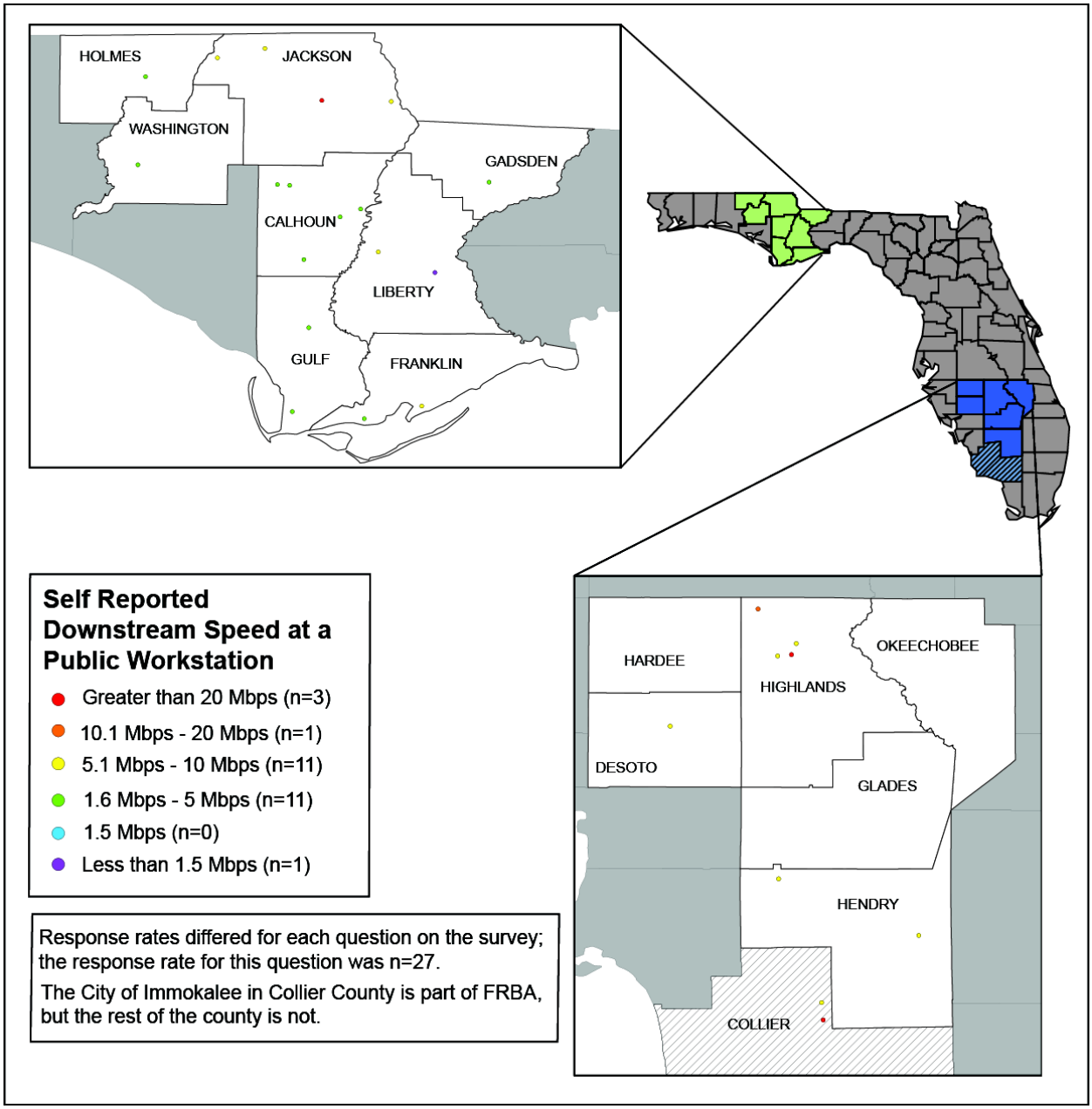


Figure 18. Actual Downstream Speed by County – Staff Workstation

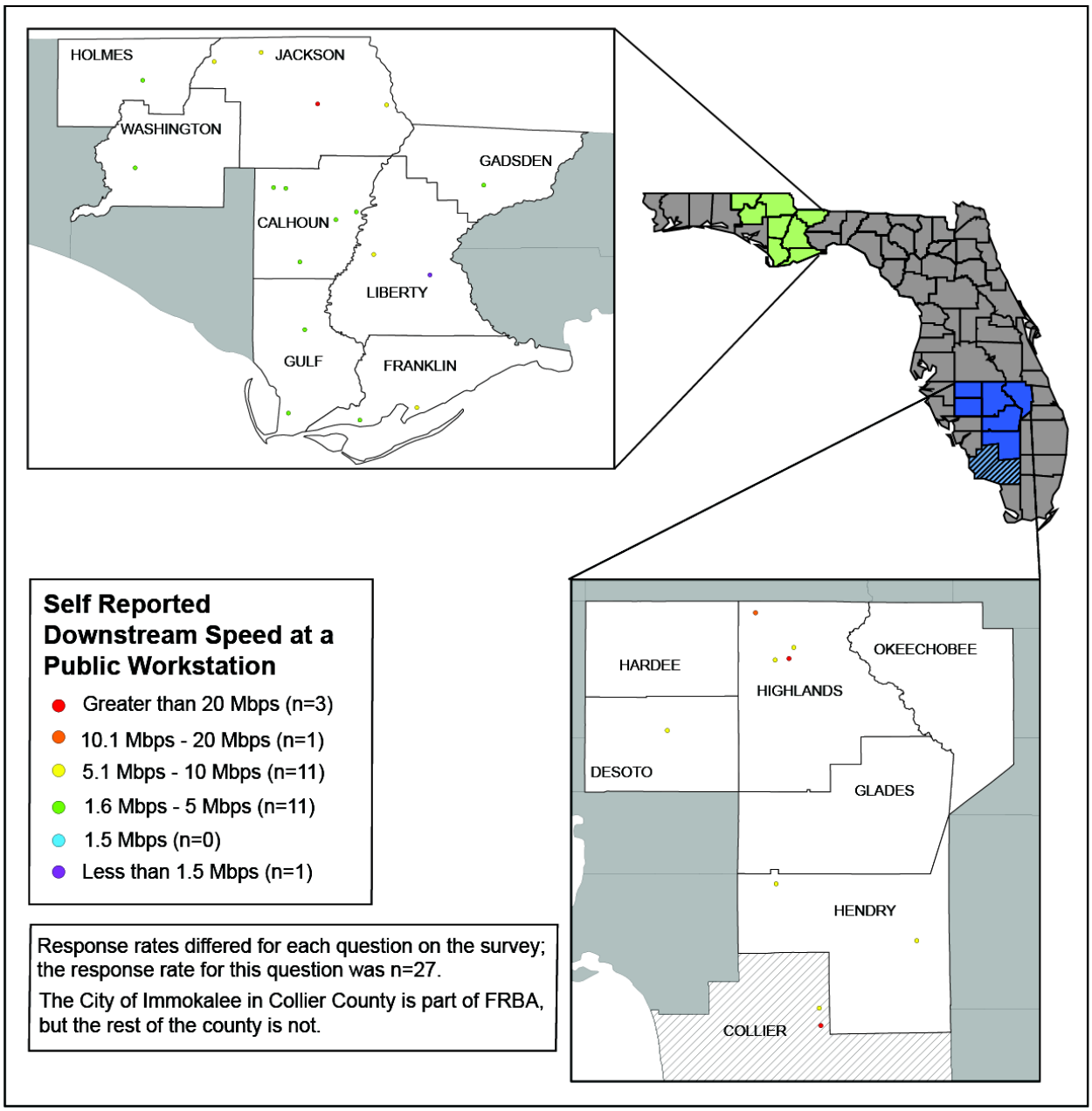


Figure 19. Actual Downstream Speed by County – Public Workstation

Staff and Public Workstations

In addition to having slower downstream and upstream speeds than advertised at both staff and public workstations, anchor institutions use relatively older computers. Over half (28.2%) of all staff workstations at reporting anchor institutions are 3-4 years old or over 4 years old (Figure 20). In contrast, 14.0% of reported staff workstations are less than a year old. Similarly to staff workstation age, public workstations that are 3-4 years old comprise over half (54.2%) of all public workstations in reporting institutions (Figure 21). However, about one-third (33.1%) of all reported public workstations are less than one year old.

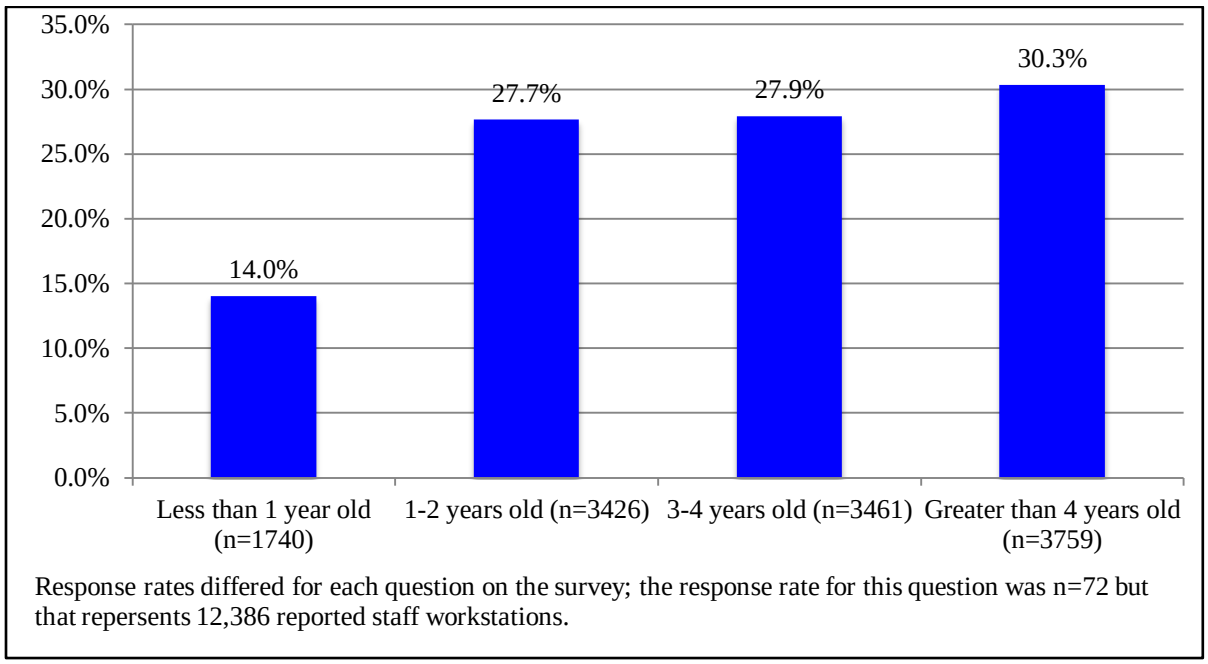


Figure 20. Age of Staff Workstations (Based on Total Number of Reported Workstations)

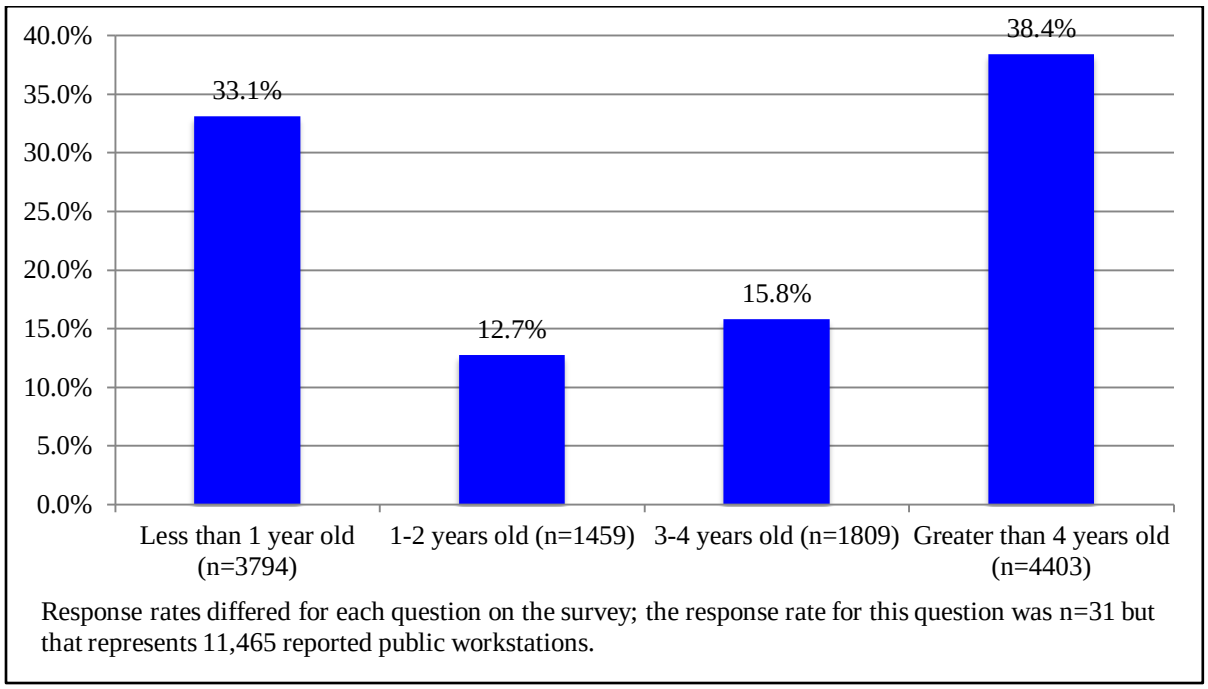


Figure 21. Age of Public Workstations (Based on Total Number of Reported Workstations)

Current Cost for Anchor Institution Bandwidth

Internet Cost and Source of Funds

Institutions are paying a wide range of costs for their Internet service. The majority (59.0%) pay more than $5,000 per year (Figure 22). Two institutions report paying over $50,000 per year, and 55.7% pay $5,000-$49,999 annually. The two institutions paying over $50,000 annually are in DeSoto and Highlands Counties, both of which are in the southern portion of the FRBA service area (Figure 23). The median cost among all respondents is $7,080 per year, with a range of $500 to $192,000 for annual Internet service charges. The majority of funds (56.4%) used to pay for Internet service come from institutions' own budgets, with county/regional (25.6%) and state (15.4%) budgets representing most of the balance (Figure 24).

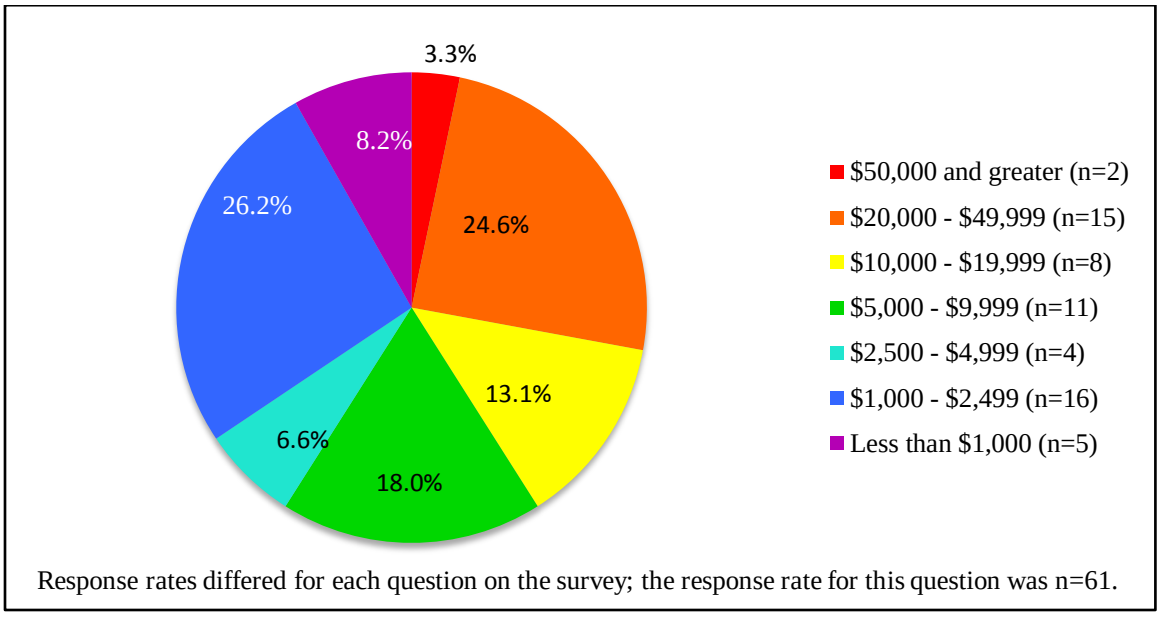


Figure 22. Total Annual Cost of Internet Service (All Institutions)

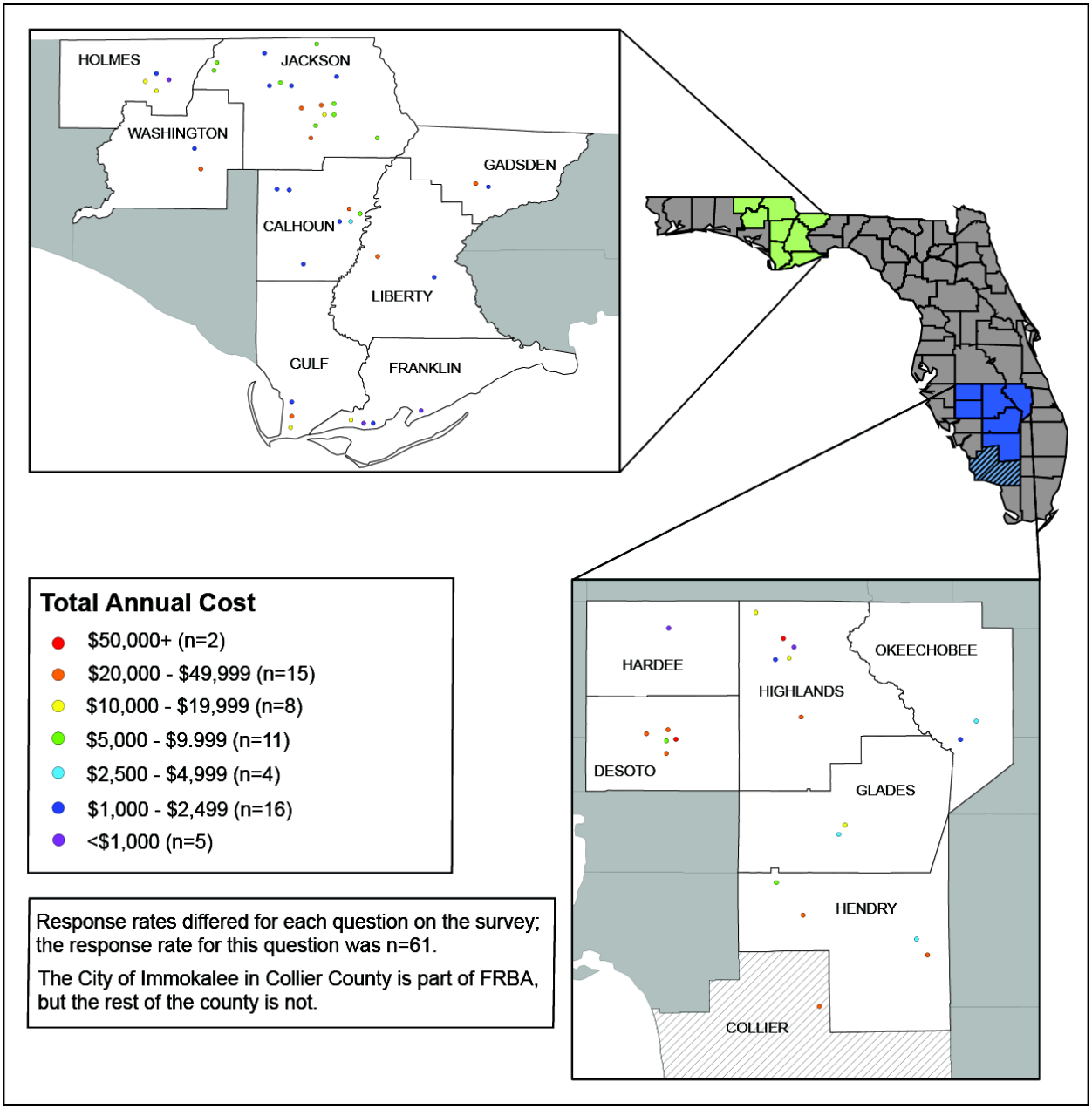


Figure 23. Total Annual Cost of Internet Service by County (All Institutions)

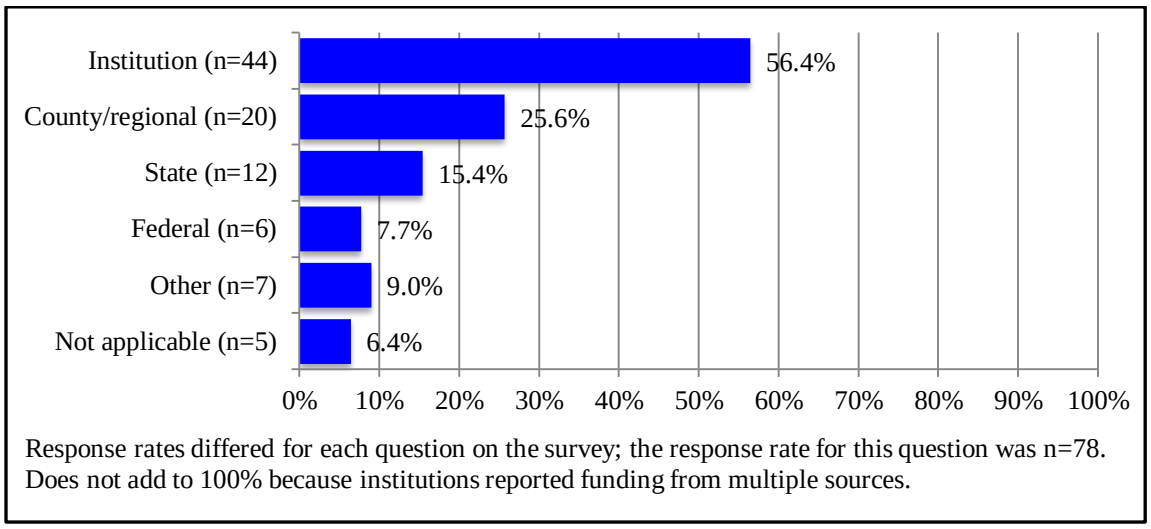


Figure 24. Source of Funds to Pay for Internet Service

Most schools and libraries (69.3) still pay $5,000 or more per year after their E-rate discounts;[9] 23.1% pay less than $1,000 (Figure 25). Even with a federal discount on their Internet costs, schools and libraries in FRBA still pay substantial annual Internet fees to their Internet Service Providers (ISPs)[10], which explains why the majority of all reporting institutions pay more than $5000 per year. In fact, six schools and libraries pay $20,000-$49,999 per year *after* their E-rate discounts. It is not clear why schools and libraries in the FRBA service area pay such high fees after E-rate discounts.

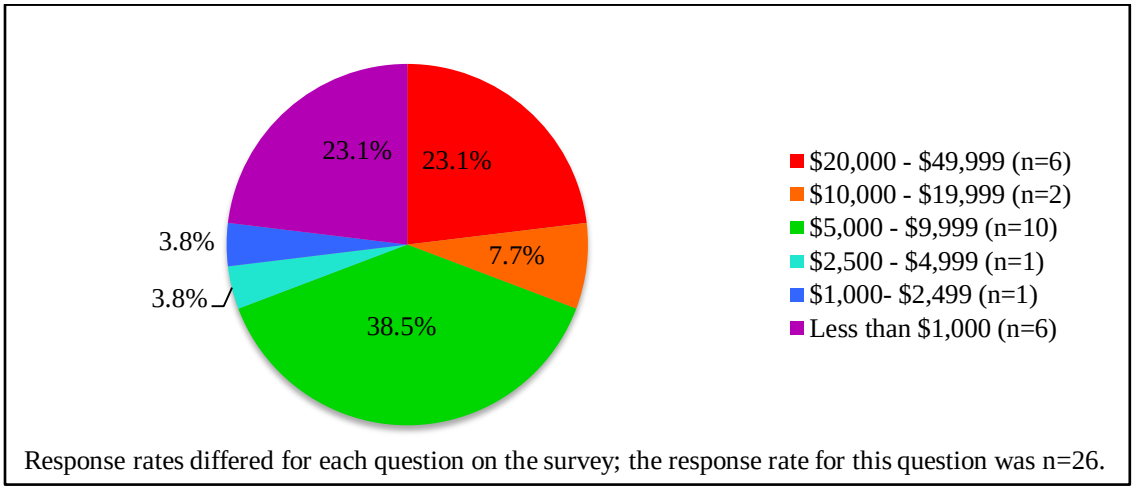


Figure 25. Total Annual Internet Cost for Schools and Libraries After E-rate Discount

[9] E-rate is a federal subsidy program for schools and libraries to obtain discounted telecommunications service, including Internet. Discounts are based on the percentage of the school age population receiving free or reduced lunch within the entire service population. For more information, see: http://www.usac.org/sl/

[10] An Internet Service Provider (ISP) is a company that provides the front-door connection to the Internet, such as AT&T, Comcast, and in Florida, the Department of Management Services. ISPs for the FRBA service area are discussed below.

Vendor(s) Currently Supplying Existing Anchor Institution Bandwidth

Type of Connection and Internet Service Provider

Slightly under half of respondents (46.8%) have fiber connections, followed by DSL (31.6%) and Ethernet (11.4%) (Figure 26). Respondents subscribe to a range of ISPs. The most frequently reported ISPs are Century Link (45.6%), followed by Fairpoint Communications (15.2%) (Figure 27). About 20% of respondents report being on the DMS state contract or with AT&T (10.1% each); both of these figures may represent AT&T subscribers given that AT&T is the provider on the state contract, in areas where AT&T offers service. The same percentage (6.3%) report subscribing to Comcast as report having a cable modem (Figure 26). The survey shows a regional distribution of ISPs. Century Link predominates in the southern portion of the FRBA service area, and Fairpoint Communications subscribers concentrate most in the northern portion of the FRBA service area (Figure 28).

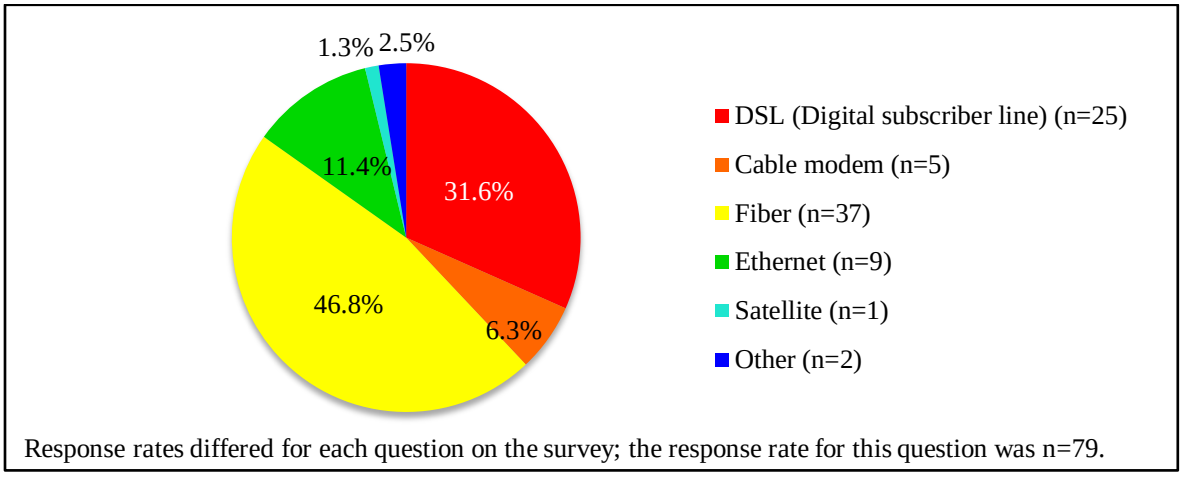


Figure 26. Respondents by Type of Internet Connection

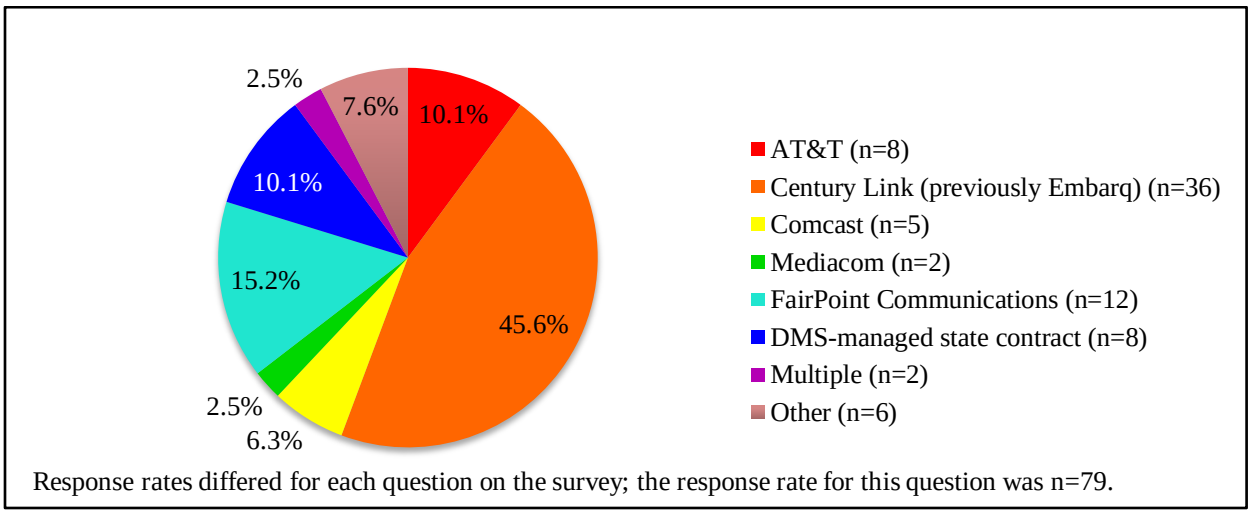


Figure 27. Respondents by Internet Service Provider

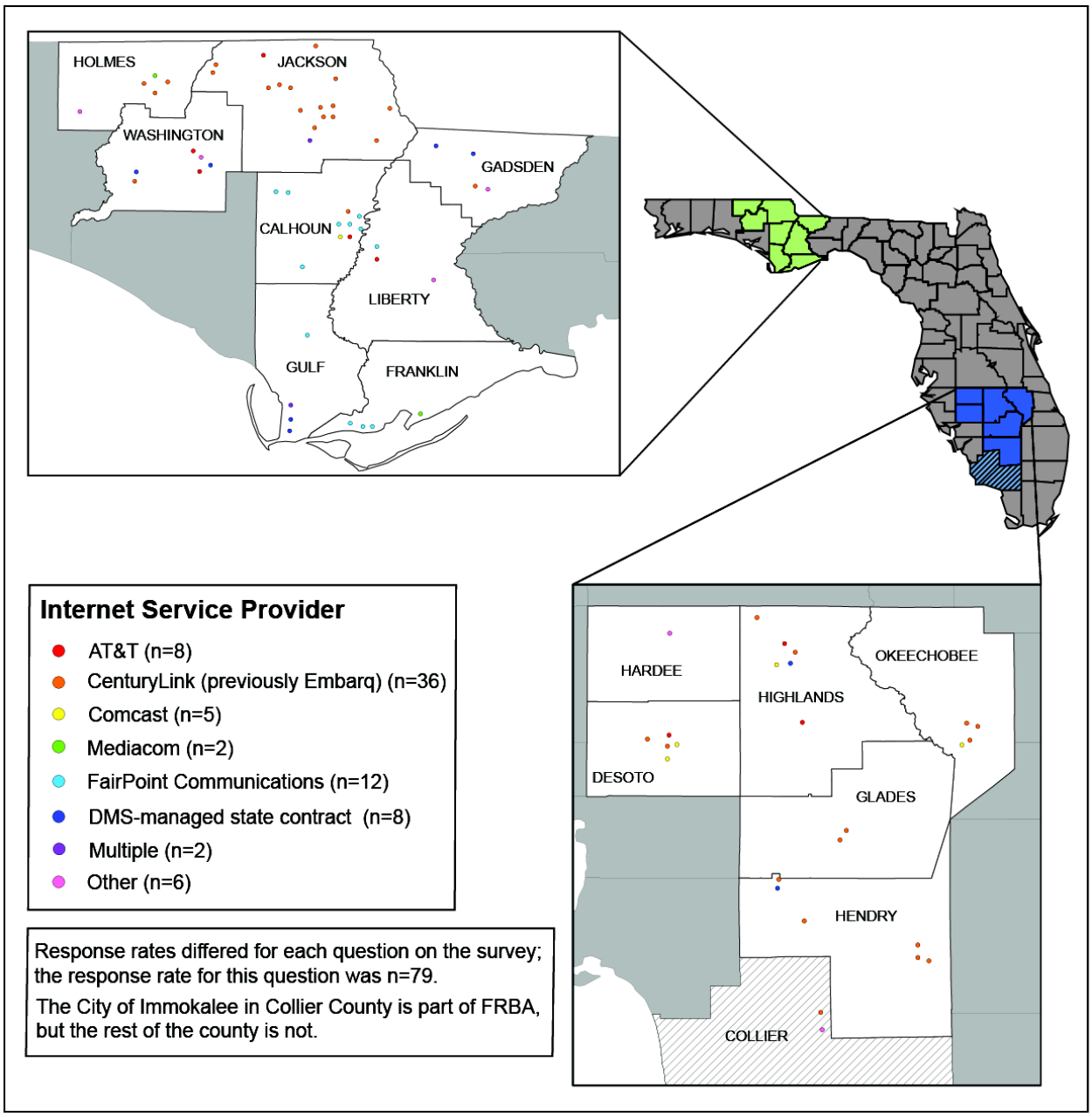


Figure 28. Internet Service Provider by County

Factors Affecting Anchor Institution Adoption of High-Speed Broadband

Increasing Speed and Obtaining Wi-Fi

Seventy percent of respondents indicate an interest in increasing their Internet speed (Figure 29), but only 7.1% have plans to do so. This question uncovers two major barriers to adoption of high-speed broadband Internet—28.3% of respondents cannot afford faster Internet, and 24.2% are currently at the maximum speed available to them. According to survey

respondents, a lack of technical knowledge is not a driver in this decision. When asked what speed they would like to have, 15.0% of respondents indicate their institutions' connection speeds already are sufficient (Figure 30), which is about half the number that lack interest in increasing their connection speed (29.3%) (Figure 29). On the other hand, 68.8% of respondents would like to have speeds above 10.1 Mbps (Figure 30).

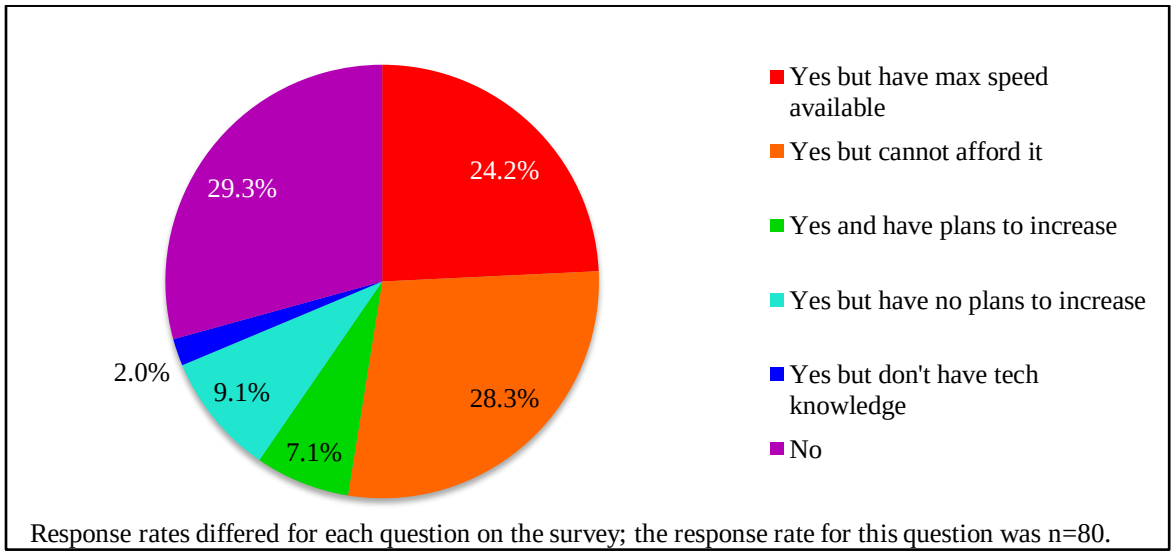


Figure 29. Interest in Increasing Connection Speed

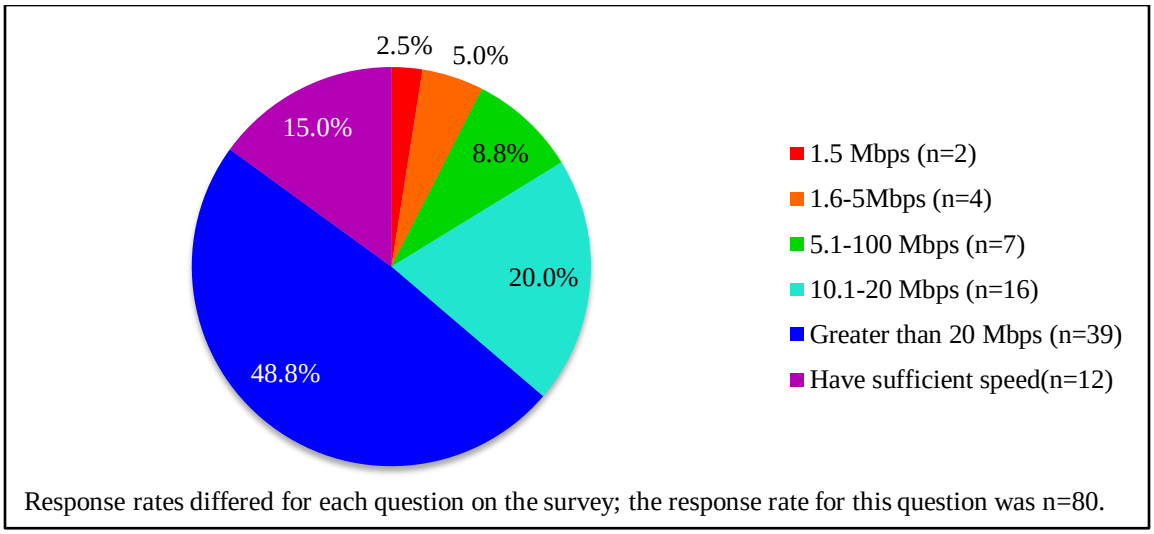
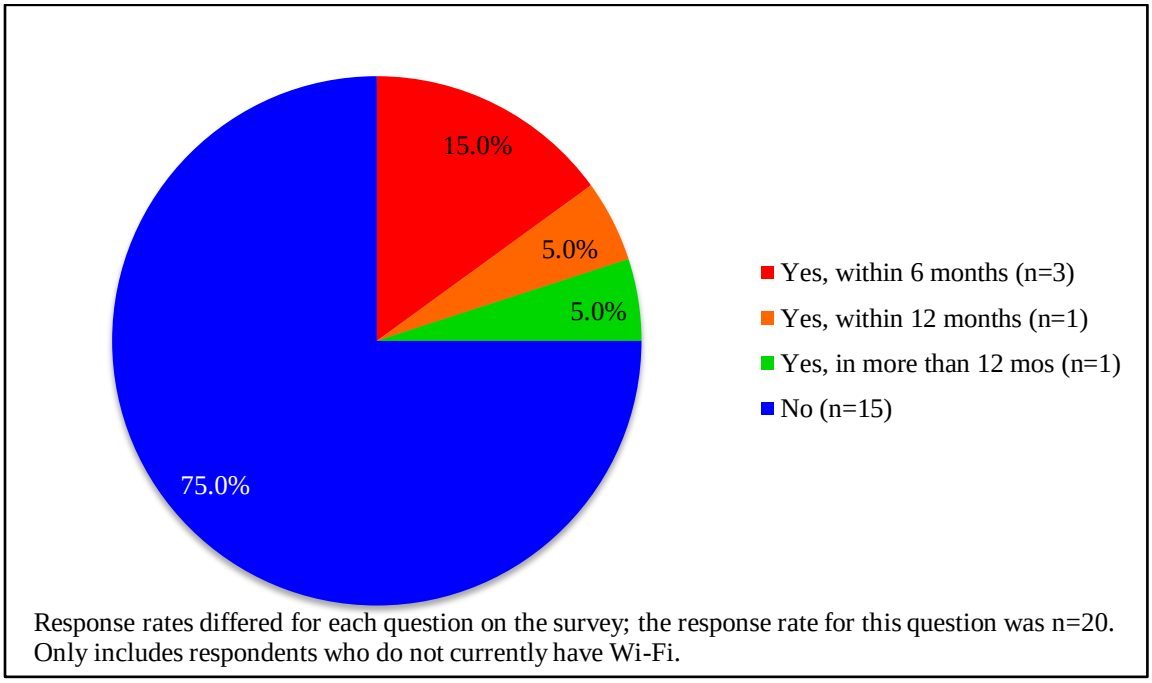


Figure 30. Desired Internet Connection Speed

Only 25.0% of those who don't have Wi-Fi (29.2% of respondents do not have Wi-Fi currently; see Figure 5) are planning to obtain it within the next year and 5.0% are planning to do so in more than 12 months (Figure 31). However, the majority of anchor institutions that do not have Wi-Fi currently have no intention of adding a Wi-Fi network (75.0%).



Response rates differed for each question on the survey; the response rate for this question was n=20.
Only includes respondents who do not currently have Wi-Fi.

Figure 31. Plans to Obtain Wi-Fi

As noted previously, costs and availability are the largest obstacles to obtaining broadband and increasing speed, with 88.8% reporting Internet service cost as an extremely or very important obstacle, 80.0% of respondents indicating ongoing maintenance costs as an obstacle, and 72.5% of respondents reporting availability of specialized IT personnel (Figure 32). Also, technical issues and availability of ISPs are significant factors; 68.8% of respondents note that technical issues and 62.5% note that availability of ISPs are extremely or very important obstacles. While 72.5% of respondents noted issues with the availability of specialized IT personnel as an obstacle here (Figure 34), when asked about their interest in increasing Internet speed, only 2.0% replied that they would like to increase speed but lack the technical knowledge to do so (Figure 29). These are all significant barriers to the introduction of Wi-Fi as well as obtaining broadband and increasing speed (Figure 33).

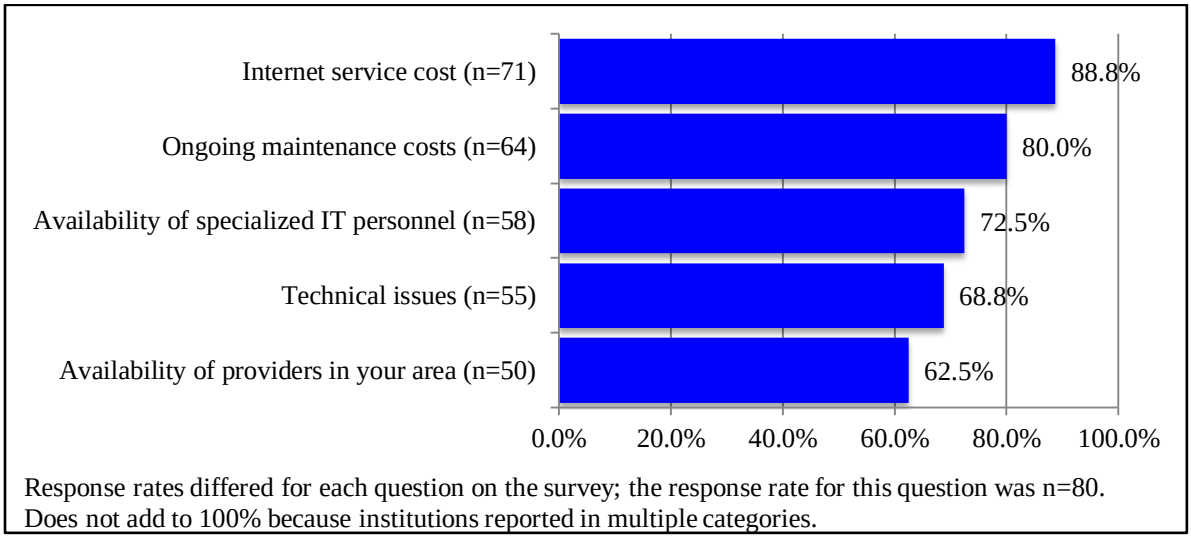


Figure 32. Obstacles to Obtaining Broadband or Increasing Speed-Extremely/Very Important

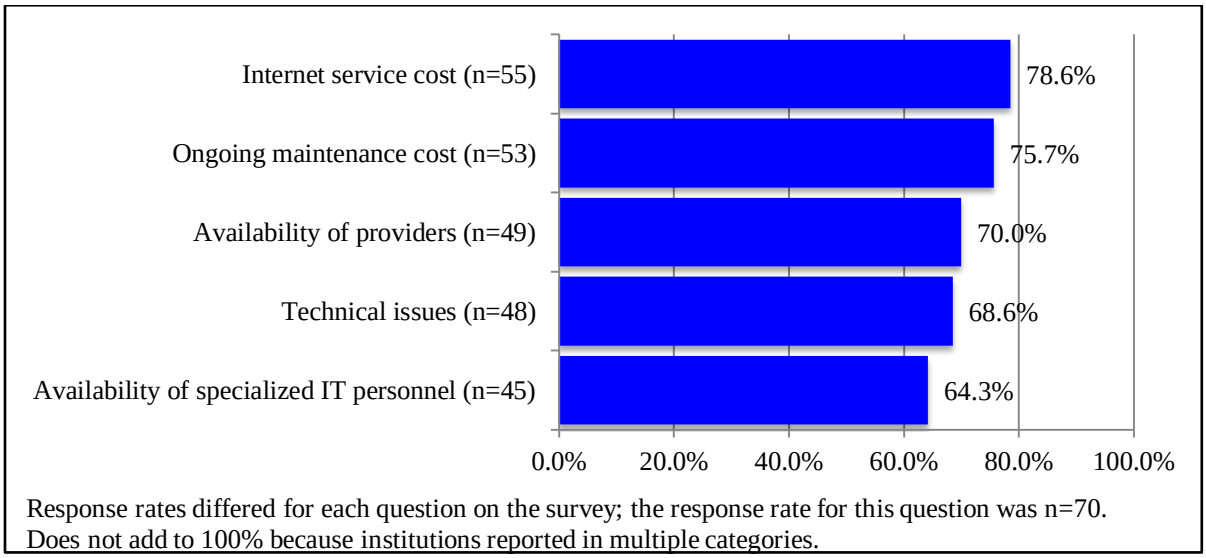


Figure 33. Obstacles to Instituting Wireless Service-Extremely/Very Important

The IT Director has authority to contract for Internet services in 9.3% of institutions (Table 5). Hover, in most cases, the person with such authority is an administrator of some sort. It is therefore unknown how much expertise decision makers have about broadband, its potential, and what kind of networks are needed to meet present and future needs of the staff and public.

Table 5: Title of Person with Authority to Contract for Internet Services

Title	n	%	Title	n	%
Director/Interim Director	8	10.7%	District Level	2	2.7%
Commissioner/Board of County Commissioners	7	9.3%	Library Director	2	2.7%
IT Director	7	9.3%	Network Specialist	2	2.7%
Superintendent of Schools, Assistant/Associate Superintendent	7	9.3%	Sheriff	2	2.7%
Administrator	5	6.7%	Board of Education	2	2.7%
Network Manager	5	6.7%	Manager/Librarian	1	1.3%
Police Chief	5	6.7%	President	1	1.3%
Chief Executive Officer	4	5.3%	DMS Secretary	1	1.3%
City/County/Town Manager, County Administrator	4	5.3%	Purchasing	1	1.3%
Multiple	3	4.0%	Operations Coordinator	1	1.3%
Chief Information Officer	2	2.7%	Board of Directors	1	1.3%
City Clerk/Town Clerk	2	2.7%			

Response rates differed for each question on the survey; the response rate for this question was n=75.

Staff and Public Comfort with Broadband-Enabled Applications

The levels of staff and public comfort with broadband enabled applications and advanced Internet skill areas (Figures 8 and 9 above) are potentially inhibiting factors in the adoption of faster and more robust broadband Internet. As noted above, both staffs and public users of anchor institutions are not extremely or very comfortable with advanced wireless (22.2% of staff and 4.4% of public users) or broadband (11.1% of staff and 4.4% of public users), and few public users are extremely or very comfortable with basic wireless (11.1%), basic broadband (8.9%), or advanced Internet skills (4.4%). If the staff and public are unable to make use of the improved broadband, or are unaware of its potential to improve their work and private lives because of such, it may be less likely that they will express demand for broadband improvement.

In addition, if decision-makers are aware of the lack of skill level, they may be less likely to authorize broadband improvements on the basis that their staff and users will no utilize such improvements fully. Although respondents are aware of the skill level issues, there are few plans for training that would ameliorate the situation (Figures 10 and 11 above). It is unclear whether the lack of training plans is due more to resource issues (such as time and money) or simply an expression of a lack of expressed need for training. In either case, this is a clear barrier to adoption of higher speed broadband.

Other Potential Concerns

The fact that institutions are mostly self-funding for the Internet (Figure 24 above) can be a facilitator of broadband adoption because they may have greater control over their own budgets than over the availability and use of outside funds; however, this may be a barrier if budgets are not high enough to support faster broadband connections and expanded broadband services. The relative age of staff and public workstations—58.2% of staff workstations and 54.2% of public

workstations are 3 or more years old (Figures 20 and 21 above)—is a potential problem. Older computers may not be able to handle high-speed Internet connections efficiently, so improvements in broadband speed and capacity may not add materially to the day-to-day operations of anchor institutions or their public users.

Summary of Survey Findings

The results of this survey show a distinct need for improvement of broadband Internet and broadband support in the FRBA anchor institutions. True high-speed Internet service is a rarity among this group,[11] broadband-related skill sets are not high, and many of the staff and public workstations are relatively old. However, the staffs of these institutions may not be aware of the extent of this problem or its potential ramifications given their lack of knowledge of advanced Internet and broadband topics. Very few respondents indicate that their broadband is insufficient for staff and public needs and there are few plans for improving broadband-related skill sets, despite the low speeds reported at staff and public workstations as compared to advertised speeds. Even where there is an awareness of the need for improvement, there may not be sufficient resources or support for such improvement—many respondents indicated a desire to increase their Internet speed, but almost none have plans to do so, possibly due to lack of funding, knowledgeable staff, or other resources. Additional analysis of survey findings will appear in the final report (December 31, 2011).

Focus Group Findings

Introduction

While focus group participants anticipate eagerly the availability of the high-speed broadband that is to become available via the FRBA middle mile network, they raise a number of concerns and issues regarding their ability to connect to, deploy, manage, and use high-speed broadband. Findings suggest that participants believe someone (although it is unknown who) needs to address and resolve a host of infrastructure and support issues before they can take advantage of high-speed broadband. Some of these infrastructure support issues relate directly to particular concerns regarding out-of-date networks, hardware, and software at their anchor institutions; the need for a better understanding of what broadband is and why it is important; the role of the FRBA in assisting them; and other issues related to efforts such as how improved broadband access will, in fact, support local economic development.

The range of anchor institution support needs include ISP negotiation and management, education and awareness, broadband planning, promoting broadband availability, understanding current and future broadband applications, economic development techniques, and updating physical facilities, among others. Anchor institutions (and others) will need to address these concerns to obtain, deploy, and exploit high-speed broadband fully. The most pressing needs are for anchor institutions, either separately or in collaboration with other county or regional anchor

[11] The FCC now defines broadband as 4 Mbps downstream and 1 Mbps upstream, which is still below the speeds recommended by Microsoft, Google, and others in their comments to the FCC with regard to a proposed definition of broadband.

institutions (or with others), to develop broadband plans. These plans need to succinctly describe and schedule a process for the anchor institution (with others) to take advantage of the high-speed broadband, which likely will cost significantly less than the broadband that is currently available. The plans will need to identify strategies related to awareness; education; network, hardware, and software development; collaboration; implementation of new broadband services; organizational impacts from broadband; economic development; and other topics.

Participants make it very clear to the study team that, while completing the middle mile project to make broadband more accessible and affordable is an important step, equally or more important is assistance to individual anchor institutions in accessing, deploying, and using the broadband to better meet staffs' and users' broadband needs. A number of participants are not aware of how they could, in fact, take advantage of higher speed and less expensive broadband due to restrictions placed on them by the very difficult financial situations in their anchor institutions.

A number of the needs assessment and benchmarking project goals related to the focus groups, such as:

- Describe the existing and future broadband uses and applications of the region's anchor institutions;
- Identify situational factors and issues that impact whether anchor institutions decide to obtain or increase broadband capacity; and
- Assist the middle mile network designers to deploy and configure the network such that it best meets the current and future needs of anchor institutions.

The following section reports focus group findings in the context of those goals, with the addition of an introductory section that overviews focus group respondents.

Respondents

The Information Institute study team conducted five focus groups sessions in the FRBA service area in May 2011 to better understand anchor institution broadband needs and issues. Overall, 28 participants representing multiple types of anchor institutions throughout the Northwest and South Central RACECs plus the city of Immokalee welcome the opportunity to connect to high-speed broadband at significantly reduced costs compared to what they currently pay. Focus group participants represent 12 of the 15 counties and the city of Immokalee (located in Collier County) in the FRBA service area (Figure 34) and a variety of anchor institution types (Figure 35). Also, participants hold myriad titles within their organizations (Figure 36). Study team members who conducted the focus groups obtained a significant amount of information, as each group included 5-7 participants and lasted, typically, an hour and a half. The themes of the discussions at the focus groups were similar, so the following section reports findings as a summary of all five meetings rather than on an individual, session-by-session basis.

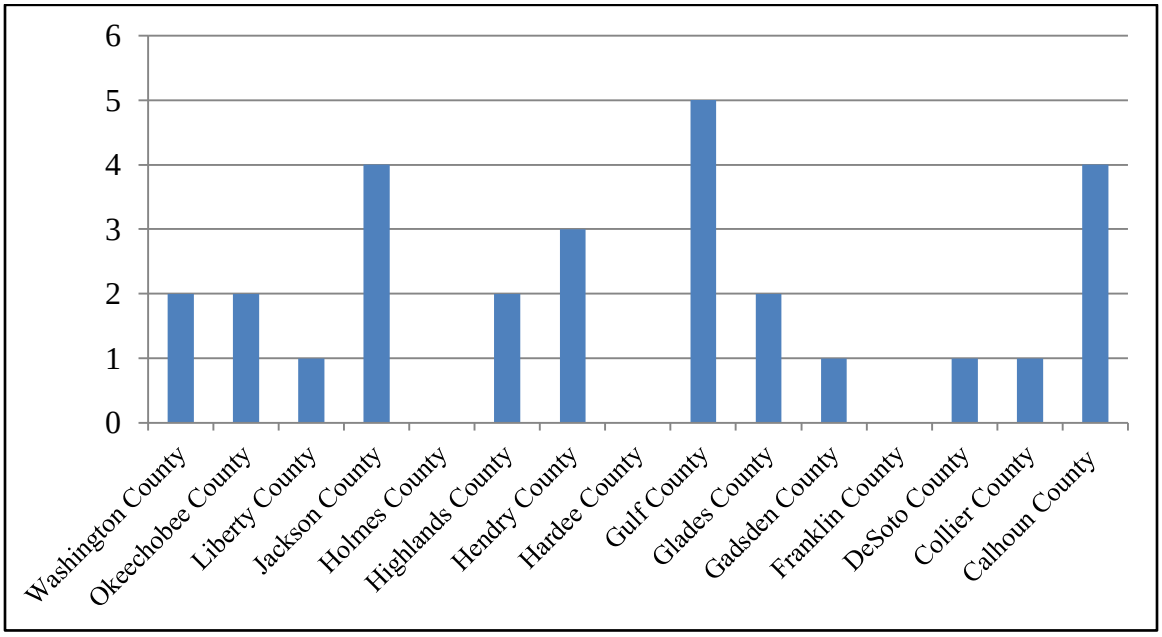


Figure 34. Number of Representatives from Each County in FRBA Focus Groups

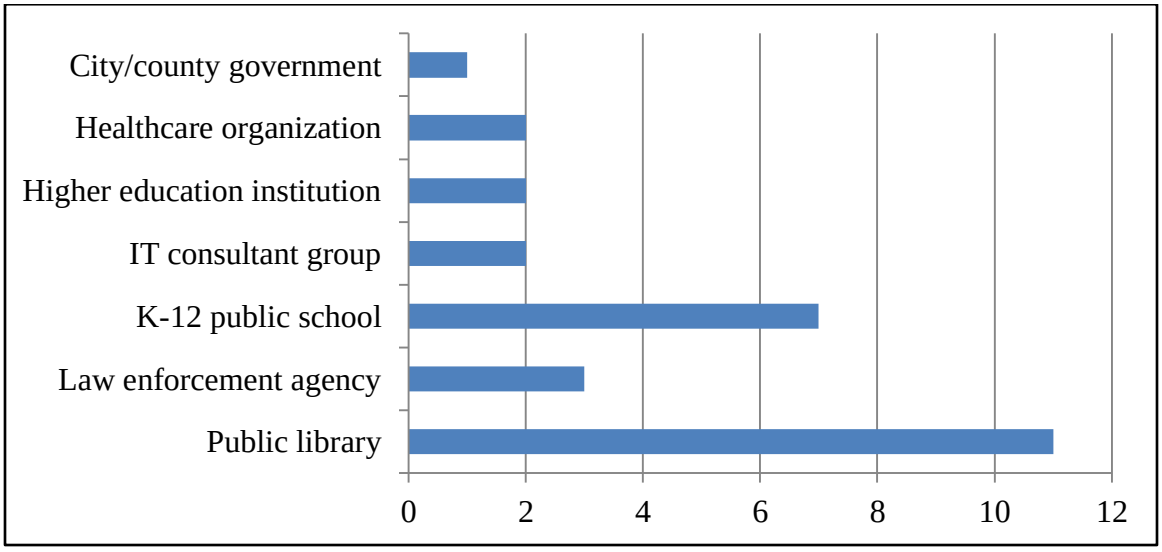


Figure 35. Number of Representatives from Each Anchor Institution Type in FRBA Focus Groups

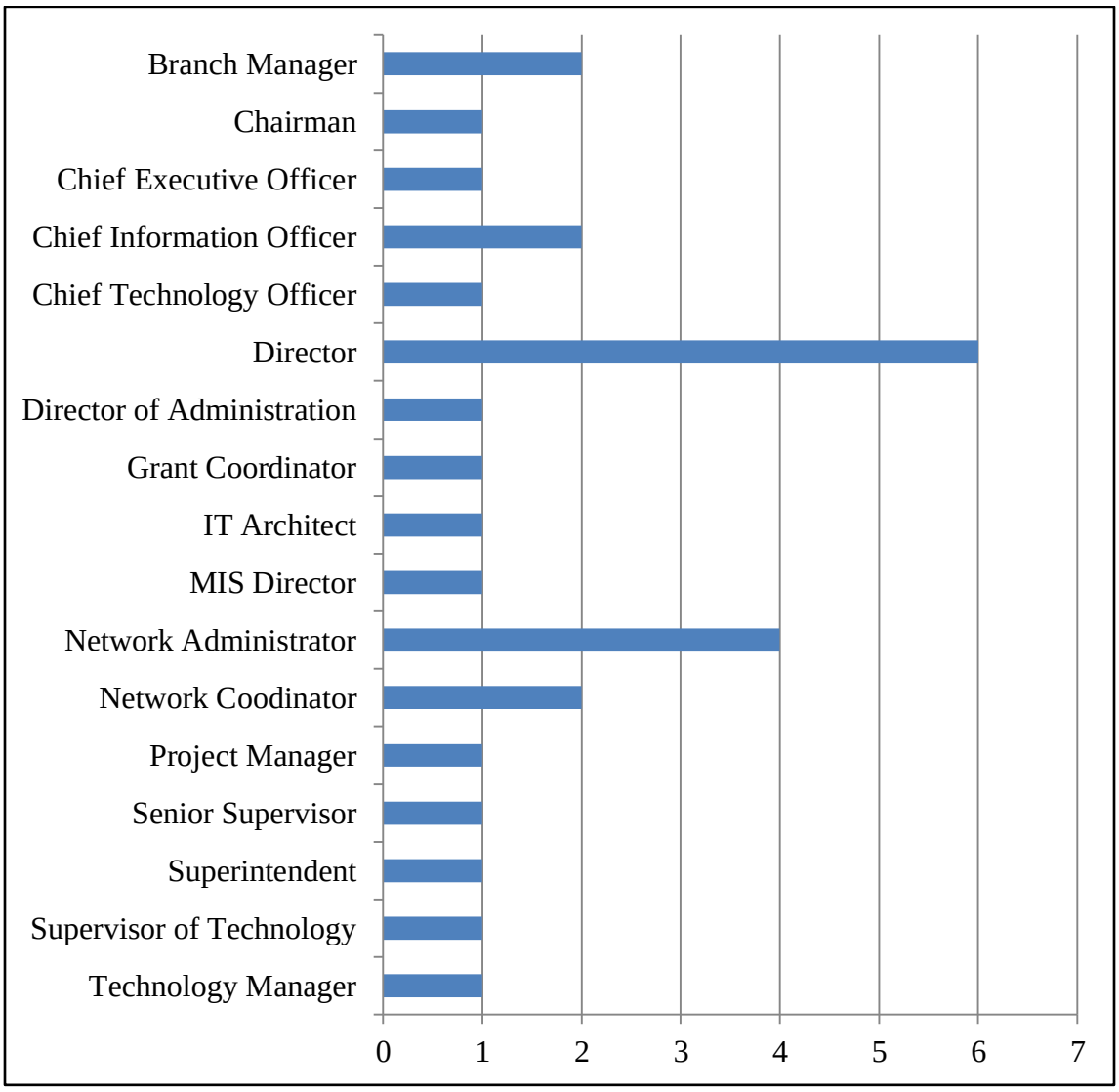


Figure 36. Job Titles Held by Anchor Institution Representatives at FRBA Focus Groups

Anchor Institutions' Existing and Future Broadband Uses and Applications

Internet Connectivity

Participants report a broad array of types of Internet connectivity from a range of ISPs at varying degrees of cost. Connections range from dial-up speeds, to 20 Mbps at the front door, to locations in selected counties where only an air card or satellite connection are possible because no ISPs make broadband connections available. Assessment of the quality and/or cost of broadband from the various ISPs shows a wide range. Most participants do not understand pricing structures for governmental units, other anchor institutions, and residences as there appear to be significant differences in pricing depending on which type of organization or residence is involved.

Participants have a number of horror stories regarding getting connected, negotiating contracts, obtaining reliable services, etc. One participant comments that he attempted to improve his institution's connection with another DSL connection line, but the ISP provided only one IP address that nullified an increase in speed. Others report there are parts of their counties where residents barely receive landline phone service and cannot get cable television connections, to say nothing of Internet connections. This raises a concern shared by many of the focus group attendees whose institutions have users who need to access services from their homes (e.g., hospitals, schools, libraries, cities and counties with e-government services): improved speeds to the institution will not mean anything without a concurrent adoption of residential, high-speed broadband.

Participants' define "sustainability" of any new or upgraded broadband connections largely in terms of obtaining the broadband initially at a cheaper cost than they pay now, but there is no real notion of finding extra resources to sustain better broadband if it were to cost more than what the anchor institution pays now. Many focus group participants doubt their institution's ability to sustain a broadband connection due to their poor network configuration and outdated equipment. The only factors that many participants could think of as possibly enabling sustained use of broadband are dramatically reduced cost and increased service quality.

Internet Connectivity Costs and ISP Contracts

One participant notes that, until recently, his institution could not pay for its current Internet connection due to lack of funding and the high cost of the connection. This point about cost is critical. Almost all respondents note that whatever they currently pay for Internet connection would be the maximum they could pay for any new or enhanced connections that might result from the FRBA middle mile project. The majority of the participants are under pressure to reduce ISP and broadband costs due to limited funding in their counties. Most agree that cost for broadband is the single most important factor that would determine the purchase of higher speed broadband. Every participant is interested in what the cost of broadband will be with FRBA and the initial cost estimates of $75-$150 are met with enthusiasm across the board, but many are skeptical of actually getting broadband at this price for a number of reasons.

Some county and municipal government representatives are uncertain as to the provisions of the state contract with AT&T and how the availability of that contract affects their access to other ISPs for obtaining high-speed broadband or how FRBA will impact the current system. Participants from schools and libraries are particularly interested in the news that the discounted rate will be available through the state contract with AT&T. Yet, many do not know how to navigate through appropriate channels to request more bandwidth and faster connection speeds.

A number of the library and school representatives do understand the E-rate program[12] and its importance to the support and sustenance of broadband in their institutions, but others have no familiarity with the E-rate program. Participants from schools and libraries clearly understand that AT&T qualifies to provide E-rate discounts, and firmly assert they will not be able to use any connection that is not eligible for the E-rate discount. It is not as clear if other

[12] For additional information regarding the E-rate program see: http://www.usac.org/sl/

institutional representatives, including some city/county officials, understand what the E-rate program is and its importance to schools and libraries. The news that FRBA will not be an eligible provider under the E-rate until the end of 2011 at the earliest complicates things for libraries, schools, and rural health clinics (which are covered under the Rural Health Care Pilot Program; RHCPP).[13] The best case scenario is that FRBA becomes an eligible E-rate provider by November 2011 as that is when the institutions must submit their applications for E-rate. Schools, libraries, and rural health clinics then could start receiving the E-rate discount for FRBA-supplied broadband connections as early as July 2012.

Networks

Participants also report a broad range of internal organizational types of networks and configurations with various types of servers, routers, workstations, and other equipment. Depending on available resources and physical requirements, some counties have countywide networks and others do not. There is significant agreement that much of the network hardware is dated (i.e., three or more years old) and that this likely contributes to poor Internet connectivity. In addition, a number of participants are not technically oriented and have limited knowledge about their ISPs, Internet connections, or natures of their internal networks

Administrators' Understanding of Broadband

A number of the administrators in organizations represented by focus group attendees do not see the importance or need for improved broadband. One person notes that many of the administrators are former farmers and do not necessarily understand a need for better Internet connections. Administrative support is important for the sustainability of the network as counties struggle to maintain services once they are set up.

Evaluation

Participants normally describe their Internet connection as "good enough" for the services their institution provides. The question of exactly what constitutes "good enough," however, is not easy for many participants to identify. Many are unaware of possible services and applications that broadband connections might provide if their institution did have a high-speed connection. Some believe they already have "good enough" bandwidth and "good enough" applications and do not see the need for ongoing institutional- and community-based evaluation of broadband connectivity and services.

Participants also identify the importance of evaluating their users' broadband needs as a basis for developing and deploying various broadband applications and services. They note, however, some concerns with such an effort:

[13] Like E-rate, the Rural Health Care Pilot Program (RHCPP) is a federally funded subsidy program to provide discounted telecommunication service (including Internet) to rural healthcare institutions. For more information, see http://www.usac.org/rhc-pilot-program/

- There are few resources available at the anchor institutions to identify the broadband needs of either institution staff or clientele in a systematic way;
- If they were to ask staff or clientele what broadband services or applications they need, it is unlikely that they would have adequate knowledge to know what to request; and
- A number of participants state, quite frankly, that they do not know which broadband services and applications they could recommend for implementation.

Once again, the sense from a number of the participants is that they would need help in identifying which broadband services are needed *now* and how to prepare staff and/or clientele for *future* broadband services.

Some participants recognize the need for an ongoing data collection process to document and determine the degree to which anchor institutions improve, extend, or expand broadband connectivity and services. All are aware that similar to other organizational expenses, their administrations would require justification and accountability of broadband and broadband services. But data are not available from all North Central RACEC and Wakulla County anchor institutions to benchmark their existing broadband connections, services provided, speed, and cost, for example, because many do not know what they are and either have not or are unable to report this data on the survey discussed above.

All the participants noted the importance for their institution to demonstrate the impacts, outcomes, increased productivity, benefits, jobs retained or added, and cost-savings, among other potential measures, resulting from subscribing to high-speed broadband. One participant comments that he would need ample examples of the way broadband will benefit his institution to even hope that its adoption would be approved. Other participants also note they currently operate off external funding sources and will need some kind of evaluation measures to obtain additional external funding for any kind of improvements. They are unclear, however, as to how to do this type of evaluation and who, specifically, would do it.

Situational Factors and Issues Impacting Whether Anchor Institutions Obtain or Increase Broadband Capacity

Barriers/Enablers

Broadband "barriers" and "enablers" are factors that either contribute to or limit the success with which individuals and organizations obtain, deploy, manage, and apply broadband. These factors can be demographic, technical, economic, political, or educational in nature and can originate within or external to an organization. From the focus group sessions, the study team identified a number of possible enablers that are likely to contribute to broadband success in anchor institutions, including:

- Individual knowledge of broadband, its use, how best to deploy it, and so on;
- Existence of a high-quality internal network within the anchor institution;
- Existence of new (er) equipment;
- Access to additional funding to support network/computer upgrades and/or upgraded broadband connectivity;

- Administrative leadership and support;
- Available and trained IT staff;
- Access to an ISP with inexpensive broadband connections;
- Ability to develop a strategic plan to obtain and deploy broadband – especially if that plan cuts across and leverages various anchor institutions in the county; and
- Interest and enthusiasm to experiment with and promote innovative applications of broadband.

A number of participants believe these are significant factors related to their organizations' success in broadband access, deployment, and use, but only few of these factors are present in their institutions.

The focus group sessions also indicate a number of possible barriers that are likely to limit the success of broadband access, deployment, and use in anchor institutions, including:

- Lack of resources;
- Limited knowledge/awareness about broadband and broadband applications and how best to deploy and use them;
- Failure to recognize innovative broadband applications and how to apply them for organizational effectiveness or improved services to clientele;
- Inability to contract successfully with ISPs;
- Difficulties in educating clientele (e.g., hospital patients, library patrons, county government services users, etc.) on how to use new broadband-based services successfully;
- Local elected officials (or others in positions of authority) who lack awareness of the potential for broadband deployment;
- Failed previous efforts to upgrade broadband availability and/or reduce its cost;
- Resistance to change;
- Organizational inertia;
- Old and out-of date network hardware and software; and
- Inability of various city/county or other anchor institutions to work together on broadband planning and economic development.

Many of the barriers participants identify ultimately relate to lack of resources and Figure 37 depicts how these barriers can affect five key factors contributing to whether or not an institution may be able to obtain or upgrade broadband connectivity.

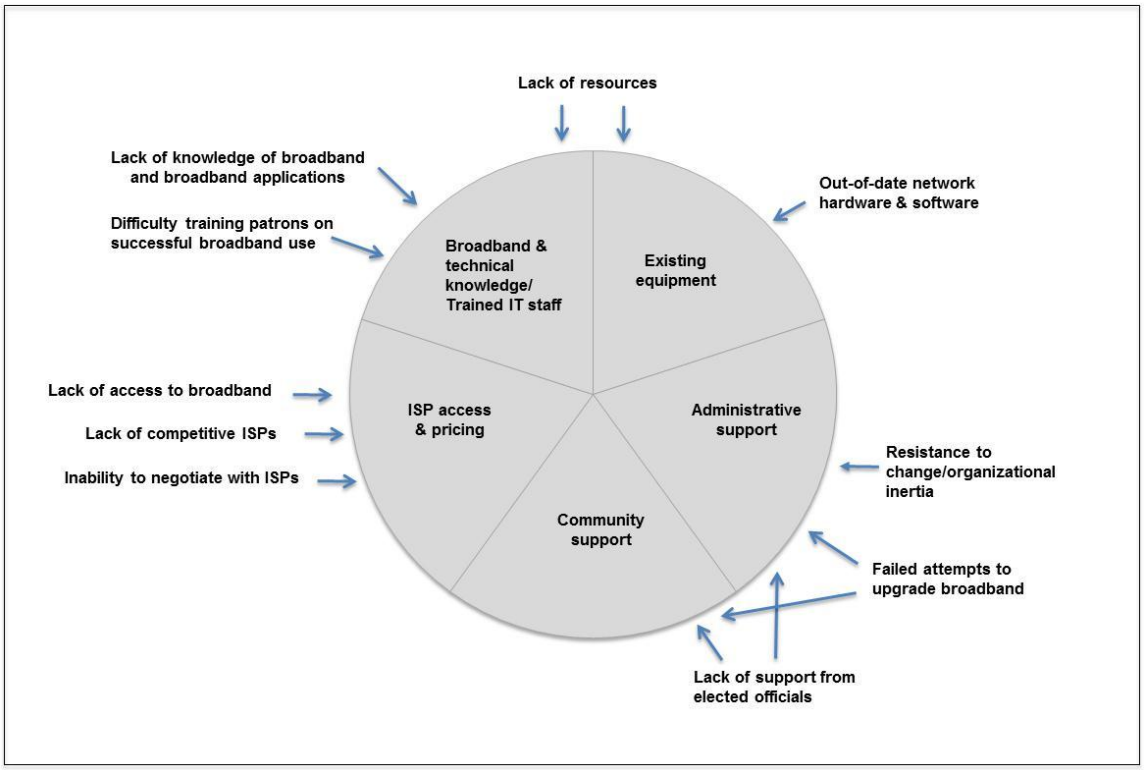


Figure 37. Broadband Barriers and Their Effect on Factors Contributing to Adoption

The lists of barriers and enablers above are likely only beginning lists, as they pertain only to Northwest and South Central RACEC and City of Immokalee anchor institutions. Moreover, a number of participants point out that some enablers and barriers likely will vary considerably depending on the nature of the organization, its staff members, its geographic location, and a host of other situational factors. In addition, participants note that anchor institution staffs and administrators may not understand specific strategies for maximizing enablers and minimizing barriers, thus, they welcome information on the need for specific training and/or procedures and strategies for maximizing enablers and minimizing barriers.

Politics and Regulatory Issues

A number of the focus group participants raise questions as to why ISPs have not made inexpensive high-speed broadband available to their communities or organizations already. There is some difficulty in understanding the different models of "open markets" and "competitive markets" versus a regulatory market, and that the FRBA project plans to rely on open and competitive markets to deploy broadband. Prior experiences of focus group participants with ISPs in their counties are not positive with regard to ISPs' desire to provide easily accessible and affordable broadband (as one participant comments that his institution has to pay over $400 a month for a T1 line).

Participants do understand that if ISPs still do not see a particular region of a county as "profitable" after deployment of the FRBA middle mile, the ISPs are unlikely to enter the

market. Many have questions as to what conditions would make "the last mile" competitive and profitable for ISPs. There is some concern that anchor institutions still might not use a new and innovative middle mile network built by the FRBA because of last mile connectivity problems and issues.[14] Participants have little knowledge in, or interest about, the role of local, state, and national information/telecommunication policies regarding broadband deployment and use.

Focus group participants do not have a good understanding of the broader context of federal and state information policies and regulations that affect provision of broadband in the RACECs and the City of Immokalee (see, for example: Federal Communications Commission *National Broadband Plan*,[15] *Telecommunications Act of 1996*,[16] Florida Public Services Commission,[17] etc.) and impact on broadband deployment to *participants'* anchor institutions. Ultimately, what participants want is easily accessed and affordable high-speed broadband at their institutions *now*.

Despite the limited interest in local, state, and federal telecommunications and broadband policies, there is much support for a "public broadband infrastructure" that everyone is *entitled* to access and use as a resident of the United States. Participants assure the study team that there is, indeed, a digital divide and most agree that this divide exists in *their* counties. There is considerable support for the idea of a public broadband infrastructure, but some participants are unclear if such a model is different than the FRBA competitive market approach or if the FRBA project will, in fact, reduce the digital divide given the many barriers that exist in their counties and organizations beyond the lack of a middle mile infrastructure.

From a number of the focus group sessions, there is the general sense that if one has not lived in these various rural counties, one really has no idea what it is like in terms of access (or lack thereof) to amenities and having high-quality services such as broadband. One participant from a sheriff's department notes the need for redundancy for their Internet connection, which they currently lack as there is only one available ISP in the area and if that ISP goes down, the sheriff's connection to squad cars also goes down. The sense is that people come through the county (and have done so for a number of years) talking about economic development or other "improvements" that will occur, but in fact, nothing much changes. Local issues are more about making a decent living and trying to keep kids from leaving the county than they are about broadband use.

Availability of Trained IT Staff

Participants worry that many local governments and other anchor institutions may not be able to take advantage of *any* "new and improved high-speed broadband" since they do not have (or only have inadequately) trained IT staff available to assist them with deploying broadband in their organizations. Participants recount numerous examples of being unable to use existing

[14] That FRBA received approval to be a "last mile provider" if no other ISP would serve a geographic area as a last mile provider does help participants to feel more assured that last mile issues could be resolved better.
[15] http://www.broadband.gov
[16] http://en.wikipedia.org/wiki/Telecommunications_Act_of_1996
[17] http://www.psc.state.fl.us/utilities/telecomm/

broadband, institutional connections and networks not working properly or at all, or trying to fix computer problems themselves when they know little to nothing about networks and computers.

Participants who have no countywide IT staff position are "jealous" of those counties that do have an IT person to help manage the broadband and internal networks. One school representative comments that they only have a contracted IT consultant who is available to them three days a week. Ultimately, as participants point out, there is no money available to hire an IT person for their institutions and if there were some funding available, it likely would not be enough to attract a qualified IT person. Finally, the issue of what constitutes a "qualified" IT person clearly differs among participants from different counties and anchor institutions. However, participants are skeptical that institutions will be able to retain quality employees.

Most participants agree that IT support during and after the time at which broadband connectivity increases is essential to the ultimate success of using broadband at their anchor institutions. One participant notes that it is a catch-22 because the county educates its students and then the students leave the county at the first opportunity. Another notes that his institution has spent the last few months trying to find an IT support person but no one has applied.

Upgrading Physical Facilities for Broadband

Some participants comment that physical facility issues at their anchor institutions would inhibit the deployment and use of broadband. Some of the concerns center on the following:

- Old buildings with many load-bearing thick concrete walls that are difficult to renovate;
- Inadequate electrical grids (and outlets) within the anchor institutions;
- Limited staff to assist clientele or other staff in how to use and take advantage of new broadband applications;
- Limited space for new or upgraded workstations to accommodate clients (in libraries or health departments, for example); and
- Old network equipment such as routers, servers, and cabling that cannot take advantage of high-speed broadband.

There are few specific strategies for how anchor institution participants would address these concerns, except the possibility of state or federal grants. None of the participants anticipate local resources being available soon to address these concerns with their physical facilities.

Ways to Deploy and Configure the Middle Mile Network to Best Meet Anchor Institutions' Current and Future Needs

Few of the focus group participants spoke directly to the topic of physical configuration of a middle mile network, largely due to lack of knowledge necessary to comment on this topic. However, much discussion centered on other factors that could contribute to successful middle mile infrastructure deployment (i.e., deployment that results in increased subscribership). These factors—education/training needs, understanding what a middle mile project is, and the role of the FRBA—are discussed below.

Education/Training Needs

Participants are very much aware of the need for additional education and training related to broadband ISPs, contract negotiation, connectivity, deployment, internal network design and management, applications, use, planning and evaluation, and other topics. Indeed, the range of educational needs and training that participants and the study team identify also includes broadband marketing, uses of broadband for economic development, retooling organizations in terms of workflow to best leverage/exploit broadband, convincing governing boards that increased broadband at the workstation actually is needed, and more.

A number of participants comment on the contributions that the public library makes in their counties to provide a range of broadband, workstation, and software training. For some, the public library is the only place in the county where "free" training and one-on-one assistance for activities such as submitting online job applications can be obtained. But library staff note they are extremely hard-pressed to maintain such training and that, most likely, their institutions will have to cut back training with any additional budget cuts.

An interesting component of this awareness for education/training needs is the participants' perceived importance of onsite and one-on-one education and training that would be most appropriate for their particular situation. Thus, many of the participants prefer a model of education/training that also includes consulting advice. While it is likely that a number of basic educational modules would be useful for many participants, during the discussions it became clear that the education/training needed for a library in Moore Haven would be quite different than that than that for an emergency management center in Gulf County. Moreover, participants point out that "they do not know what they do not know," so there they might need training in their counties related to topics about which they currently are unaware.

Participants repeatedly asked study team members if we have a schedule for education/training; the topics being offered; who or what entity provides the education/training; when education/training opportunities will be available; and if they will be onsite, online, or through a combination of delivery platforms. Some participants doubt that online webinars would be acceptable as they may not have the bandwidth to participate and others indicate limitations on staff travel. This suggests that face-to-face trainings held in central locations also may be problematic for many anchor institutions' staffs.

Understanding a "Middle Mile" Project

Many participants do not understand that there is first a connection to a trunk line (often owned by an ISP), then there is a connection from that trunk line to a location where other ISPs can compete to access that connection (could be fiber or WiMAX[18] towers), then there is a last mile connection to the actual organization (typically provided by a local ISP), and finally the "last foot" goes from the front door of the organization to individual workstations. The last foot connection is primarily the internal organizational network within the anchor institution.

[18] http://www.wimax.com/general/what-is-wimax

Some participants do not understand that while the FRBA focuses primarily on the middle mile, the FRBA became an ISP of last resort for areas where other ISPs refuse to enter a particular market/region. Participants recognize that the primary factor that likely determines if an ISP will enter a market is profitability. Thus, many are concerned that the middle mile project in and of itself may not "be enough" for ISPs to enter their region and for the ISPs to be profitable in offering the broadband service.

Some focus group participants are interested to know what incentives local governments, chambers of commerce, and other municipal entities might be willing to offer an ISP to make it more lucrative for them to enter a market. There is some concern that, in fact, local governments have little ammunition with which to bargain for such incentives. Ultimately, however, participants are clear that if ISPs, or some package of incentives for the ISPs, do not provide "cheap or better broadband," they are unlikely to subscribe. In addition, it is not clear how "cheap" broadband has to be before a local anchor institution might think it "cheap enough" to subscribe. There is a sense that what one participant considers "cheap broadband" may be quite different than what another considers to be "cheap broadband."

Role of the FRBA

There is some confusion regarding the exact roles, responsibilities, and activities of the FRBA, for example:

- Does the FRBA conduct education/training?
- Can the FRBA help anchor institutions find an ISP and can the FRBA be an ISP of last resort?
- Will the FRBA provide IT consulting/expertise in local organizations?
- Will the FRBA assist local governments in promotion and recruitment to attract new companies, retain existing jobs, and bring more jobs?
- How does the FRBA create, retain, and attract jobs at the county level? And are counties, in effect, "in competition" against other counties to get these jobs?
- How do local governments provide input to the FRBA on key issues?
- How does a "middle mile" network specifically affect anchor institutions' actual access to better and cheaper broadband?
- Will completion of the middle mile project, in fact, result in more ISP competition?
- Who or what entity is available to assist local anchor institutions and agencies exploit and use the broadband, both in their organization and for overall county economic development?
- Which particular broadband services are needed or could be deployed to *best* benefit particular organizations or user groups (e.g., paying county bills online, telemedicine, interactive high speed video conferencing)?

While there are straightforward answers to a number of these questions, participants are not clear on what those might be. Indeed, one participant is surprised that there still will be a cost to subscribe to the FRBA's broadband, having thought the connection would be free.

Additional Findings

In addition to the findings pertinent to the original goals of the study, the focus groups lead to several other emergent findings: the relationship between broadband availability and economic development, broadband and disaster planning and recovery, and broadband planning at the anchor institution and county levels. These topics are discussed below.

Economic Development and Broadband Access and Availability

A number of participants are not aware that an important component of the middle mile project is to promote economic development and to assist counties in becoming more competitive in attracting or retaining companies and jobs because of improved access to and reduced cost of broadband. Once they become aware of this issue as a result of participating in a focus group, participants want to know "what is the plan" and "who is in charge" for using broadband deployment and access to promote economic development.

Some participants are unclear how their county will convince a small start-up company to move there with its 20 jobs because of high-speed and inexpensive broadband. Participants point out that improved access to broadband with reduced cost is only one of a number of factors that will attract new jobs or related economic development. Other factors include:

- Schools;
- Governmental services;
- Recreation opportunities;
- Tax breaks;
- Accessibility to shopping, entertainment, and other amenities;
- Availability of a trained, knowledgeable, computer literate, and drug-free workforce; and
- Friendly and welcoming community members.

Many participants realize that the availability of high quality affordable broadband in the county or region is only a "qualifier" among a number of other factors that contribute to economic development. One participant notes that the local schools do not offer some classes and students have to take online classes from another school, as well as the importance of the Internet in developing an educated workforce in a small, isolated town. Not having good broadband is an immediate disqualifier for attracting/retaining companies and jobs in remote areas.

Participants recognize that there are a number of "models" that might promote economic development, such as:

- Expanding existing private-sector firms in the county that need more or faster broadband;
- Attracting companies (and jobs) to relocate to their county because of more or faster broadband;
- Making existing county workforce members available for remote (i.e., virtual) hiring with companies outside their county because of more or faster broadband; and

- Promoting new or start-up companies (including Mom and Pop home-based operations) because of the availability of more, faster, and cheaper broadband.

Most, however, are unsure how, exactly, they can promote these (or other) models, what resources are available to assist in the task, and who is responsible for leadership.

Overall, there is some skepticism about the role that faster and cheaper broadband could play in these rural counties. A number of participants do not understand how to market faster broadband for economic development, but they do know that there are many factors that affect rural economic development other than broadband, and that there is a general lack of resources in the county and in the state.

Disaster Planning and Recovery

At one focus group, a discussion occurred about the degree to which the FRBA network will support disaster planning and recovery. Participants are unclear as to which government agencies and what ISPs have what types of responsibilities for disaster planning and recovery related to broadband. Do key players include individual anchor institutions, middle mile providers (i.e., FRBA), emergency management offices, ISPs, other federal and state agencies, and/or others? Participants raise questions as to what kinds of redundancy will be built into the broadband network; how anchor institutions in a particular county will link to and or depend on networks outside their control; and how county governments can insure that someone will maintain broadband connectivity during a disaster such as a hurricane.

Anchor Institution and County Broadband Planning and Development

Typically, as a focus group progresses, participants become increasingly aware that to a large extent *they* are responsible for taking advantage of broadband use and deployment as a result of the FRBA middle mile project. Nonetheless, common questions are who do we go to for assistance in educating our staff, who can help us with connecting to the middle mile deployment, how do we use and deploy the broadband successfully in our organization (or governmental agency), and how do we promote our improved broadband to attract new jobs and for overall economic development.

The study team suggests that broadband deployment, use, and economic development may entail a local *planning process* that could result in a formal written plan. The process may have a number of steps, including:

- Additional broadband needs assessment of anchor and other institutions in their county;
- Broadband diagnostics for their institution/agency to determine the strengths and weaknesses of their existing broadband connection and network;
- Development of countywide vision and goals to leverage broadband use among the various anchor and other institutions and to develop a strategic plan;
- Assessment of broadband needs and services that could be provided to users and clientele;

- Obtaining regular and high quality IT staff assistance to update and maintain the broadband, network, and broadband services;
- Contracting with ISPs for high quality and inexpensive broadband through the middle mile network or elsewhere;
- Determination of how best to deploy broadband to the front door (or to the network) and then to the workstation;
- Accomplishment of future hardware and software upgrades and otherwise sustaining the broadband, services, and applications;
- Marketing and promoting the broadband for economic development; and
- Evaluation to justify/demonstrate accountability and show the impact/outcomes of the high-speed broadband on organizational and community measures.

However, it is unclear if participants have the resources and knowledge to successfully engage in such a process without some outside assistance.

Onsite Diagnostics Findings

Introduction

Each institution has specific issues, which were outlined in individual Summary Onsite Diagnostic Reports provided to each institution,[19] but there are four universal needs for every anchor institution visited during this research:

- Updating the network and technology equipment,
- Education,
- Training, and
- Planning.

The level of need varies by institution; however, there is a general lack of understanding about what the uses of broadband are and why anchor institutions and rural areas need better Internet connections. The assessment team found that each institution's staff understood the need for regularly updating computer equipment and providing Internet access in general, but institutional decision-makers did not see the importance, availability, and application of more seamless, reliable, and faster connections.

Throughout all the counties in the Northwest and South Central RACECs and the City of Immokalee, education on the importance of broadband is the primary need. More specifically education on (1) how broadband could impact the local economy, (2) training on how to use broadband to better meet the anchor institution service populations' needs, and (3) the importance of strategic planning in adopting and utilizing broadband effectively, efficiently, and successfully. Training on the practical applications of broadband was identified as a critical factor for administrators needing ample justification for changing the status quo and for staff to

[19] To maintain confidentiality of the anchor institutions that participated in this research, these individual reports are not available and all findings detailed in this report are aggregated so that each individual institution's data remains confidential to that institution.

assist patrons with broadband services. Well-developed planning was also identified to enable better preparation for broadband and increase communication among staff and patrons about practical technology applications. Without education, training, and planning, the populations in the Northwest and South Central RACECs and the City of Immokalee are extremely unlikely to adopt broadband in an efficient and timely manner.

Needs assessment and benchmarking project goals related to the onsite diagnostics portion of the project are the following:

- Describe the existing broadband networks currently deployed in the region's anchor institutions;
- Identify situational factors and issues that impact how anchor institutions deploy their broadband networks; and
- Determine ways that the region's anchor institutions can improve their network deployments to increase connection speeds at the workstation.

The following section reports onsite diagnostics in the context of those goals, with the addition of an introductory section that provides an overview of participating institutions.

Participants

The onsite diagnostics conducted by the Information Institute assessment team for the FRBA cover a broad range of anchor institutions that included 19 anchor institutions: public libraries (5), K-12 public schools (4), city or county governments (2), rural health clinics[20] (2), workforce board (1), rural hospital (1), higher education institution (1), emergency management agency (1), and sheriff's office (1). These anchor institutions provide varying services for the different communities in which they are located.

Existing Broadband Networks

This section compares the current uses of broadband and technology deployment at the visited anchor institutions in three areas: current speeds reaching workstations, the institution's size and complexity of the network, and the level of sophistication of network management. Comparison of these three areas will illustrate any shared traits among institutions with broadband or without broadband.

Connection Speeds

Speed tests conducted at all 19 locations reveal a wide variety of speeds at the different institutions (see Figure 38). The highest speeds documented at the higher education institutions (51.97 Mbps) and rural health clinic 1 (17.80 Mbps) contrast greatly with the two lowest speeds at public library 5 (2.38 Mbps) and workforce board 1 (2.91 Mbps). The majority of institutions' speeds fell into the 4-6 Mbps range. Figure 39 shows the percentage of anchor institutions with workstation speeds in the categories used in the anchor institution survey: < 1.5 Mbps, 1.5 Mbps,

[20] The staff at both rural health clinics were unavailable for a full diagnostic, however, speed tests were conducted.

1.6-5 Mbps, 5.1-10 Mbps, 101-20 Mbps, and > 20 Mbps. The diagnostics team did not observe maximum speeds at or below 1.5 Mbps at any institutions receiving onsite diagnostics.

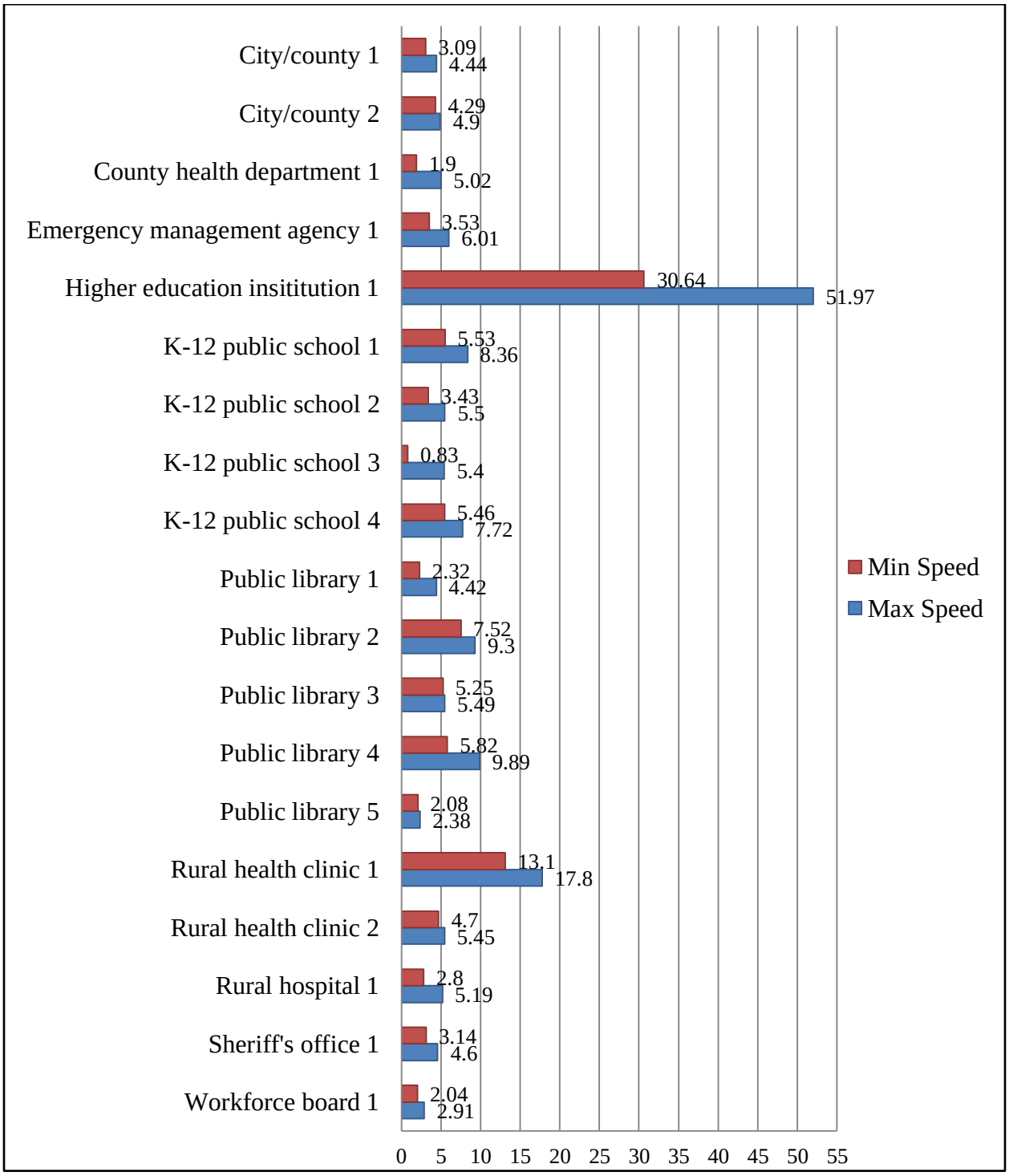


Figure 38. Minimum and Maximum Observed Internet Connection Speeds at Visited Anchor Institutions

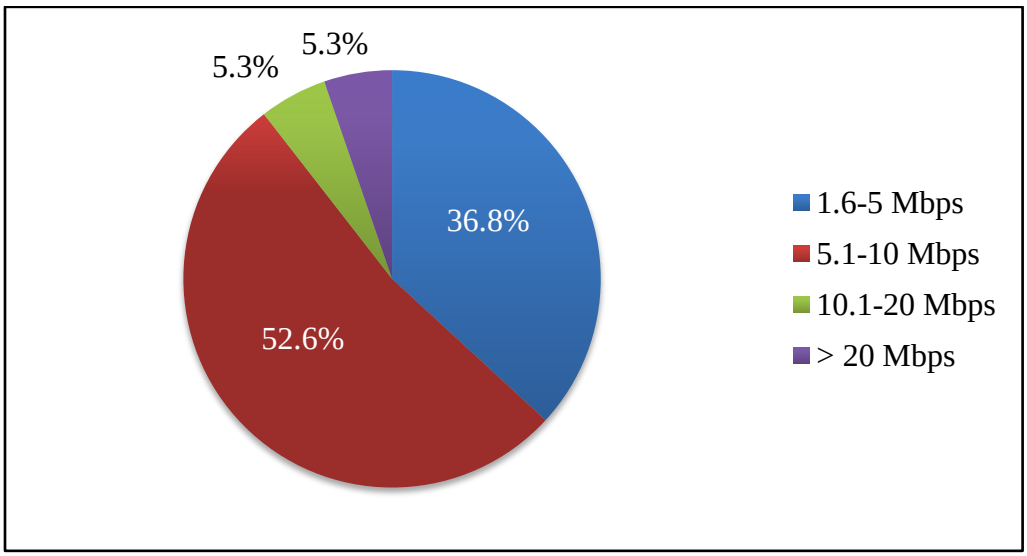


Figure 39. Tier Grouping of Speed Test Results

From both Figures 37 and 38, it is evident the majority of current connection speeds reaching individual workstations at the visited anchor institutions' fall somewhere between 4.1-6 Mbps. These data reveal that speeds for a majority of anchor institutions are in the middle range and that high-speed Internet is available in the FRBA service area. However, relatively few of the anchors that received onsite diagnostics have workstations running at speeds upwards of 10 Mbps, indicating that they are not at the highest available speeds.

Institution Size and Complexity of Network

The number of workstations at an institution gives an idea of the size, complexity, and strain placed on its network. Workstations include desktop computers hardwired into the network and portable notebook computers owned by the institution that could access the network connection. As with connection speeds, the disparity between the smallest institutions and largest is dramatic. The two city/county government offices visited have the smallest networks with only 4 workstations each (see Figure 40). Three of the four K-12 public schools and the higher education institution have the largest networks, each supporting over 500 workstations. The public libraries, emergency management agency, and one K-12 public school have 11-100 computers, and the rural hospital, workforce board, and sheriff office have 101-500 computers.

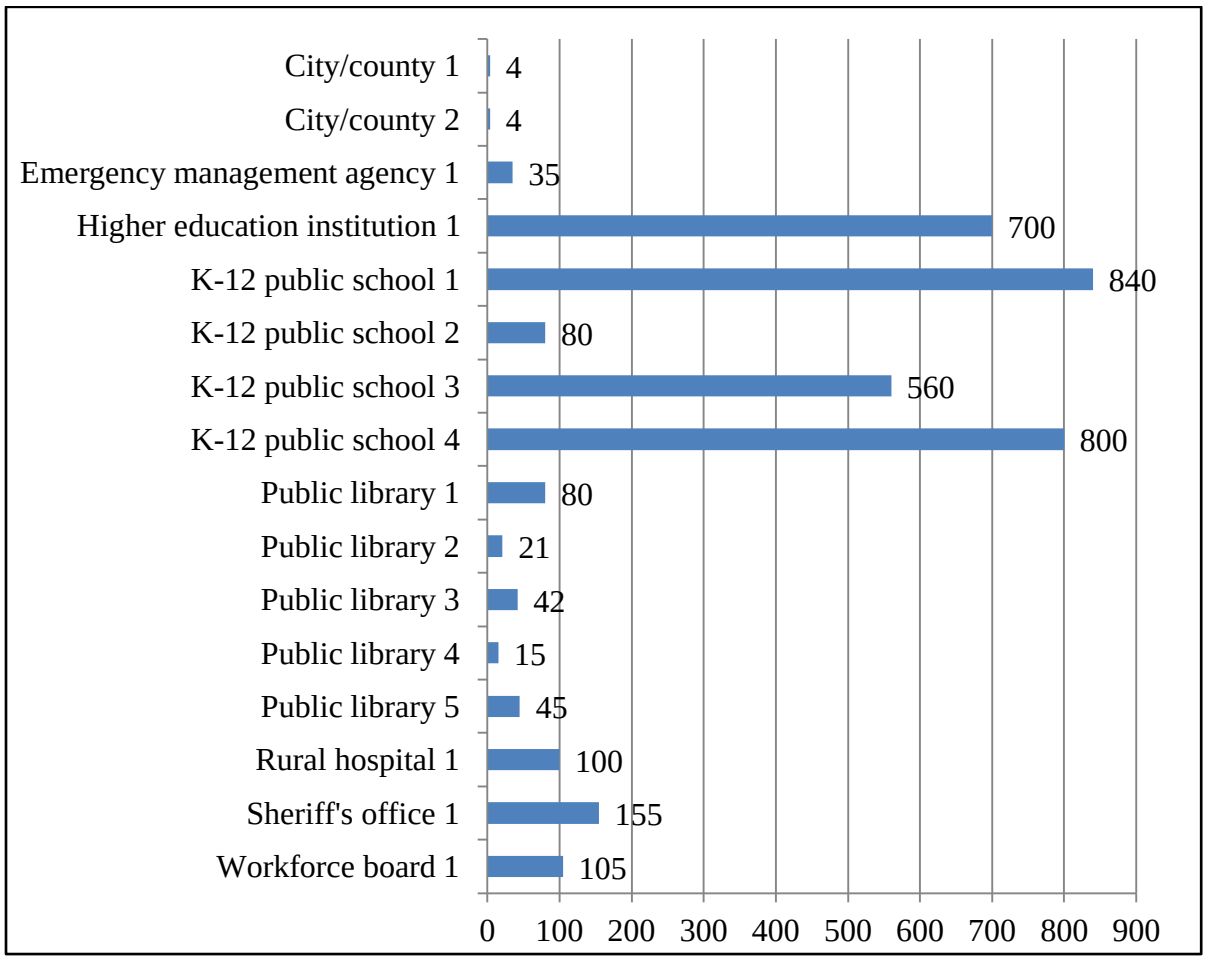


Figure 40. Number of Workstations

Comparison of the data in Figures 38 and 40 shows some correlation between an institution's size and network connection speed (Table 6; note that this table does not include the rural health clinics and county health department because information in the number of workstations was unavailable). The two city/county governments have 0-10 workstations (the smallest category) and observed workstation speeds of 1.6-5 Mbps (the smallest represented category), and these are the only institutions with 0-10 workstations. Also, the higher education institution has > 500 workstations and observed speeds in excess of 20 Mbps. However, two K-12 public schools also have > 500 workstations, and they have observed speeds in the 5.1-10 Mbps range. This indicates that there is not direct correlation between the number of workstations on a network and workstation speeds. Therefore, assuming institutions with a greater number of workstations will be more likely to adopt broadband is not supported by the data, although other factors likely impact this situations (e.g., K-12 public schools may not have the funding to support higher connectivity regardless of the size of their network).

Table 6: Comparison of Number of Workstations and Measured Workstation Speeds

Workstation Speeds	Number of Workstations			
	0-10	**11-100**	**101-500**	**> 500**
1.6-5 Mbps	City/County 1 City/County 2	Public Library 2 Public Library 5	Sheriff's Office 1 Workforce Board 1	----------
5.1-10 Mbps	----------	Emerg. Mgmt. 1 K-12 Pub. School 2 Public Library 3 Rural Hospital 1	----------	K-12 Pub. School 3 K-12 Pub. School 4
10.1-20 Mbps	----------	----------	----------	----------
> 20 Mbps				Higher Ed. Inst. 1

Sophistication of Network Management

The diagnostics team gathered several key indicators of the relative sophistication of the different institutions' network management. Well-developed and enforced network management policies and procedures provide evidence of technical knowledge and understanding of the possible need for better broadband. Figure 41 presents findings on the institutions visited that perform offsite storage of backed up data and centrally control malware on workstations. These indicators provide evidence on the level of sophistication at the visited institutions in relation to data continuity (offsite storage of backup data) and network security (centralized control of malware software).

The majority of institutions (68.4%; n=13) either do not perform offsite storage of data back-ups or do not know if their backup data is stored offsite (Figure 41). Offsite storage of back-up data provides greater protection of data from damage to or theft from an institutions' facility. The institutions that do not know whether offsite storage is performed or not (21.1% of visited anchor institutions; n=4) generally rely on outside IT consultant firms and some do not know whether back-ups to their data are performed at all. Less than half of visited anchor institutions (47.4%; n=9) do have some centralized control of malware and antivirus software, but the majority of institutions (52.6%; n=10) do not know or do not centrally manage their malware and anti-virus software. Only four institutions have offsite storage of back-up data and centrally managed malware and antivirus: higher education institution 1, K-12 public school 4, rural hospital 1, and workforce board 1.

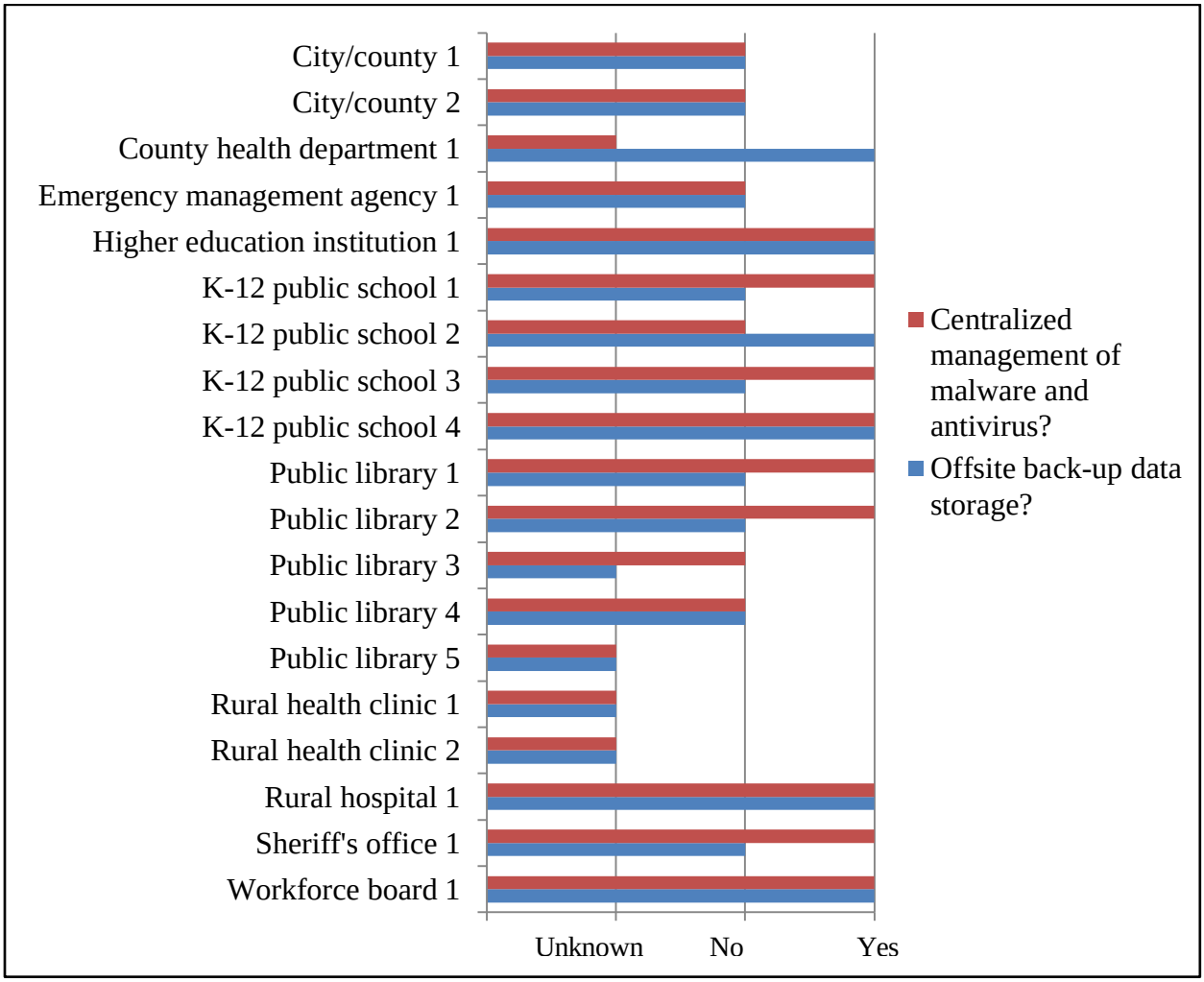


Figure 41. Institutions that Centrally Manage Malware and Antivirus and That Store Back-up Data Offsite

Situational Factors and Issues Impacting Anchor Institution Broadband Network Deployment

Each institution's individual situation and issues greatly affect the way that institution manages and deploys its network. The presence of an onsite, dedicated IT staff, [21] control over the IT budget, and a technology plan denote the presence of an administration and staff that understand the importance of broadband and how to utilize it.

Only one institution, public library 2, has all three indicators: dedicated IT staff, control over the institution's IT budget, and a technology plan (see Figure 42; note that full datasets for the rural health clinics were not available). The majority of institutions (n=10) have two of the three indicators, with six institutions having IT staff and a technology pan but no direct control over their IT budget. Four institutions have only one indicator (two have only IT staff only and

[21] Dedicated IT staff refers to IT staff assigned to one specific institution, as opposed to staff who are shared among multiple institutions in a consortium or other arrangement.

two have only a technology plan) and two institutions have no indicators: city/county 1 and city/county 2. The most common indicator is some type of dedicated IT staff, which is present in 68.4% of visited anchor institutions (n=13). The least common indicator is control over the IT budget, which is present in 21.1% of visited anchor institutions (n=4). These data show that even though the majority of institutions have staff that may understand the uses of broadband, the ability to change providers or upgrade connections may be limited by lack of control of the institution's IT budget.

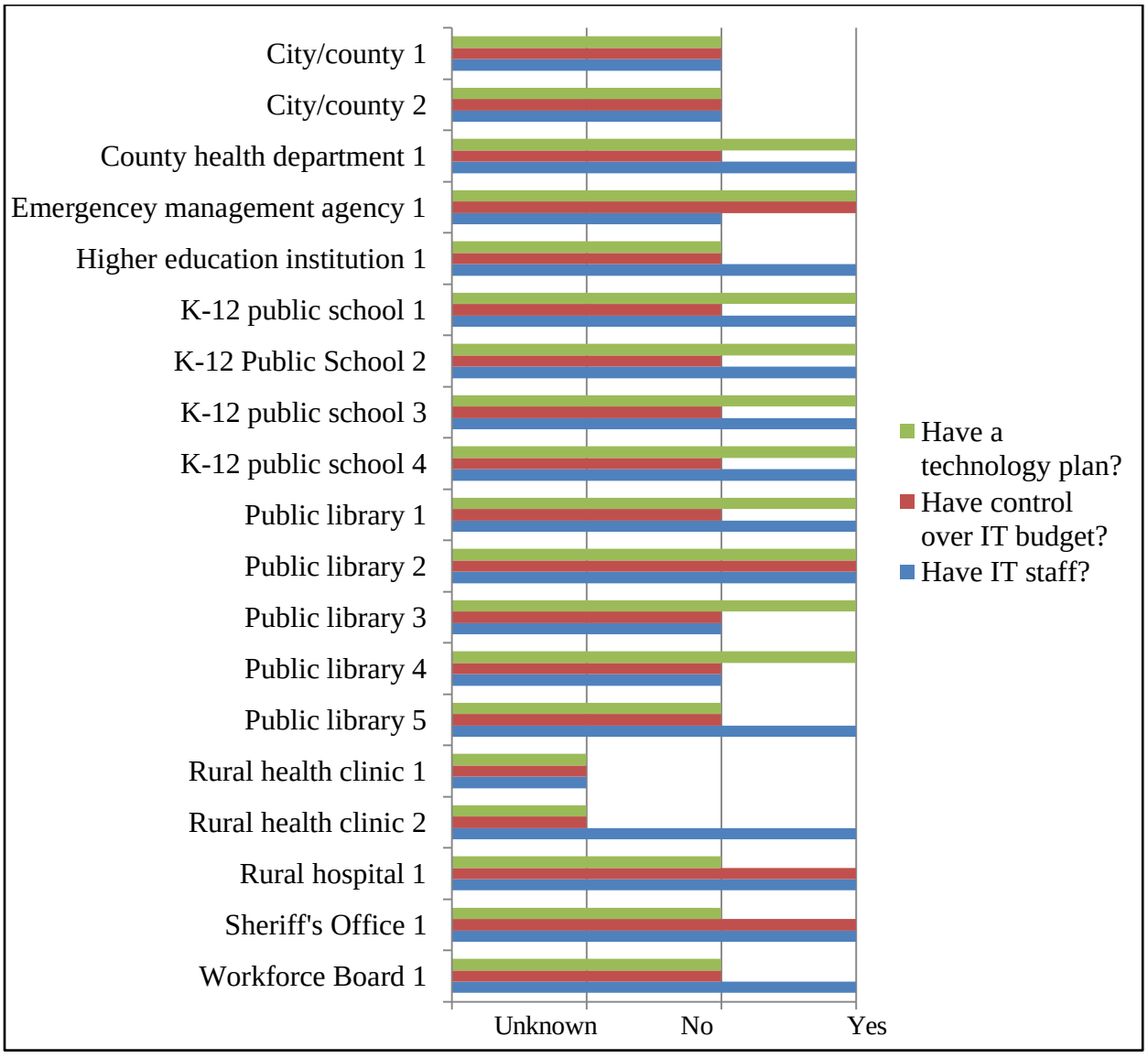


Figure 42. Whether Anchor Institutions Have IT Staff, Control over Their IT Budget, and a Technology Plan

Administrative Leadership

A critical component for any institution to adopt and use broadband is commitment from administrative staff and parent organizations to provide the best technology available. Without a strong and clear commitment from the administration, the situation is unlikely to improve. Justifying the improvement of connection speeds to administrative staff largely depends on the perceived need of the Internet to fulfill the institution's mission or services to its users, and 79.0% (n=15) of visited anchor institutions report broadband as being highly important to their institutions (Figure 43). Also, a majority of institutions (63.2%; n=12) would not be able to function without Internet access (see Figure 44). However, an understanding of the importance of Internet access to the institution's mission and services also depends on staff with the technical skills to utilize new broadband technologies, which is discussed in the next section.

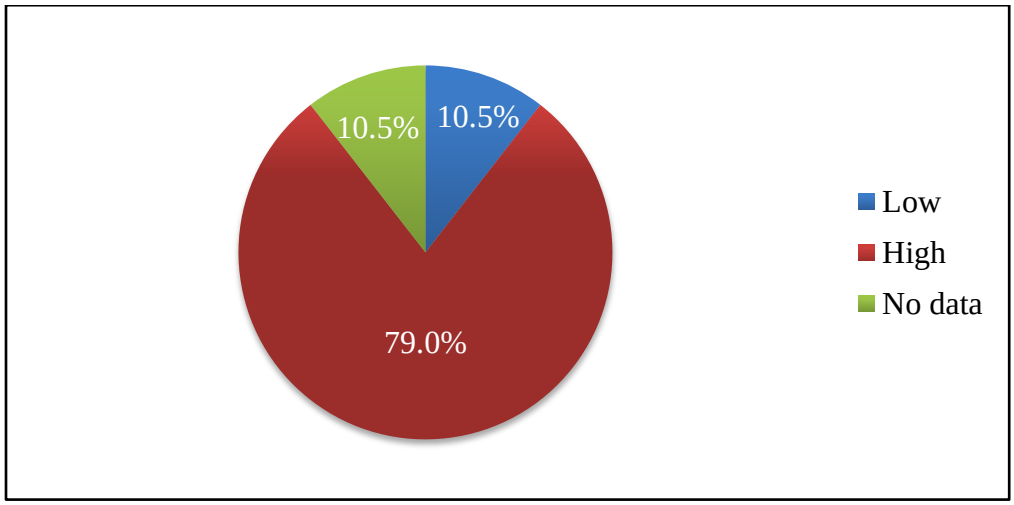


Figure 43. Importance of Broadband to the Institution

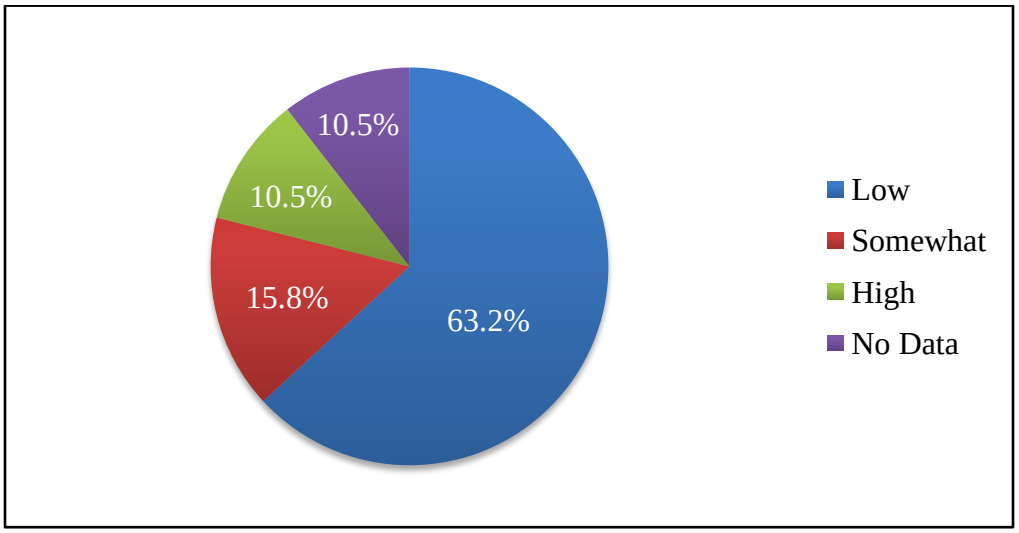


Figure 44. Ability to Function Without Internet Connection

Technical Expertise

While institutions that have their own IT staff who have a basic understanding of network management are more likely to perceive the need for broadband, actually developing applications for broadband requires ongoing technology training for all institution staff. The common perception that the current connection is "good enough," will not change without knowledge about the applications requiring higher-speed broadband. The majority of institutions (55.6%; n=11) do not perceive ongoing technology training as important (see Figure 45). Without the staff and administrators learning new ways to utilize broadband applications, it is unlikely that IT staff members will be able to justify to administrators the costs of changing service providers or upgrading connection speeds.

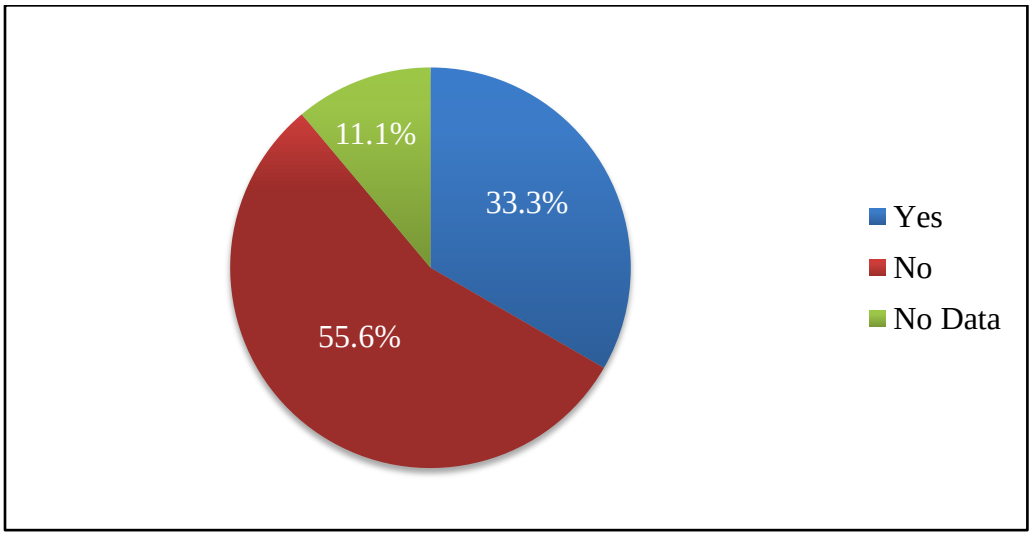


Figure 45. Whether or Not Anchors Perceive Ongoing Technology Training as Important

IT Plan

Technology planning is another critical component for an institution to adopt and utilize broadband successfully. A significant number of institutions visited have a technology plan of sorts (see Figure 42 above). Most of these institutions developed their plans to meet federal requirements for E-rate discounts for their connections. However, the federal government has dropped the requirement for an updated annual technology plan so it is unknown if these institutions will continue to participate in updating technology plans.

A technology plan is critical for maintaining clear statements of IT policies, procedures, replacement schedules, software license tracking, equipment inventories, and providing a point of reference for the institution when considering changing ISPs or vendors. One administrator expresses frustration over not knowing how much speed the institution really needs or if the ISP simply is trying to sell something. A technology plan provides a reference point and record of past experiences at the institution, enabling better continuity for technology practices. Outlining usage policies, maintenance routines, troubleshooting procedures, and succession processes also

enables greater end user autonomy and frees the IT staff to handle larger security and troubleshooting concerns.

Service Area Size

The geographic size and location of an institution's service area affects the likelihood of successfully adopting and utilizing broadband in a number of ways. Smaller service areas lead to institutions providing core essential services the community is familiar with and discourages introducing new services that may or may not be used by the community. For example, one of the small town governments that the diagnostics team visited cannot readily justify the expense of developing and maintaining GIS software and electronic records for residents that live within walking distance of the physical records. At institutions that currently have good broadband, such as the higher education institution, there is a lack of demand for broadband; for example, faculty do not use many online features made available to them. If there is no real demand for broadband from the service community, there is little reason for an anchor institution to provide services no one is likely to use.

Funding

Every visited anchor institution expresses a willingness to adopt and learn to utilize broadband connections, if the price is right and funding is available. The bottom line is that most institutions are currently struggling just to remain open as funding dwindles. The impact of decreasing budgets is a lack of suitable technology upgrade schedules resulting in tolerance of older equipment and slower connection speeds.

Many institutions do not have a separate IT budget or have to rely on parent organizations for technology funding. Technology more often than not is purchased on an "as needed" basis. For the public institutions, budgets must pass through approval processes, sometimes from multiple governing bodies. K-12 public schools rely heavily on revenue from the school district, which depends on property taxes that fluctuate from year to year. County health departments must navigate a complex bureaucratic structure for any changes to funding coming from the state. Even with administrative support, technical expertise, planning, and a service area where the demand for broadband is high, lack of funding is a major barrier to adoption of broadband.

Ways That Anchor Institutions Can Improve Their Network Deployments

The situational factors discussed above influence decision making at all the visited institutions. At each anchor institution, administrators and IT staff note the need for better education, training, and planning to amplify positive situational factors and alleviate negative factors. Without the education, training, and planning for all staff in the institution to understand the potential applications and uses of broadband, it is likely that the situational factors faced by individual institutions will trump abstract assurances of broadband's importance.

Education

Many of the visited institutions do not feel in control of their technology options. This feeling has a lot to do with the budget constraints under which each institution operates. Also impacting this feeling are four primary areas where greater education on broadband and broadband applications are needed and where greater understanding can enhance an institution's likelihood for adopting and utilizing broadband:

- Technical knowledge and indifference from staff toward new technology;
- Better understanding of diversified funding structures;
- Lack of demand for broadband-enabled services from the institutions' service populations; and
- Practical application of broadband connection speeds.

Each of these factors is discussed in more detail below.

Technical Knowledge and Views of Technology

At institutions without IT staff, there is a general lack of technical knowledge about connection speeds and applications of technology to daily tasks. At institutions with IT staff, a general reluctance on the part of the general staff to accept new technology discourages the IT staff from implementing new software programs or actively pushing for new equipment. Long-time staff are particularly resistant to any form of change. They do not see how incorporating more technology will enable them to perform their responsibilities better. For example:

- The sheriff's office IT staff notes a particularly negative perception of change in general;
- The IT staff at one of the K-12 public schools notes that most of the faculty generally embrace new technology but that long-term faculty members do not see much reason to change teaching methods they believe do not need improving; and
- The emergency management agency notes that attitudes toward embracing new technology vary by individual, but most staff are concerned only with what might help increase their efficiency in performing daily tasks.

Moreover, security protocols and procedures are seriously lacking at many institutions. This is largely due to a "it won't happen here" mentality that requires education for staff to understand what a cyber-attack implies.

Funding and Bureaucratic Structures

Most of the institutions receive their Internet connections from a parent organization. The majority of visited public libraries, for example, belong to consortia that help mitigate technology costs. In order to increase connection speeds or change ISPs, the majority of institutions will have to navigate through some kind of bureaucratic structure. For example, K-12 public schools will have to go to the state Department of Education and county health departments have to go through the state Department of Health to make changes in their ISPs, connections, etc. Most administrators admit to a lack of knowledge about the way change ISPs

or upgrade connections. Educating institutions on the steps needed for each to improve its connection speed is a critical component for successful broadband adoption.

Educating Service Populations on the Importance of Broadband

Providing education to the institution enables the institution to educate its service population. The visited public libraries all note the public's expectation that the library has quality equipment and technical expertise. Yet the libraries themselves are ill-equipped to handle the number of people seeking Internet access. One administrator notes that wait times for computer access can be several hours during peak usage times. Getting the public to understand that the transition of the Florida Comprehensive Assessment Test (FCAT) to an entirely web-based submission process will require schools to have more robust broadband connections to handle the large amounts of data is essential for the public to support the schools when they apply to school boards for additional technology funding. A more informed public also will provide greater incentives for ISPs to utilize the middle mile network to connect currently underserved communities, both for residential and anchor broadband connections.

Education on Practical Broadband Applications

The most critical need to spur broadband adoption is for education on the practical applications of broadband. For example, the sheriff's office network is quite good; however, the connection from the ISP is poor. Whenever the connection fails, officers in the field are unable to use the computers in their squad cars. This is a simplistic example of where there is a clear application for broadband speeds. Giving administrators, staff, and users examples of specific applications of broadband is a key component for any kind of education on broadband. City and county governments could show examples of GIS software used in interactive maps so that residents can provide property information to banks and real estate agencies and require broadband connections to work. With tangible examples of applications broadband moves from an abstraction to a tool used daily.

Training

There is a general need in most of the institutions for additional technology training for both IT and general (i.e., non-IT) staff. While the level of training required is unique to each institution, training needs can be categorized into levels of low, medium, and high in order to better organize and develop training programs:

- ***Low level***: Institutions with mostly positive situational factors (i.e., enablers) do not require much training. Training for the higher education institution, most of the K-12 public schools, and the larger public libraries need focus only on increasing staff skillsets to better assist users with software features.
- ***Medium level***: Institutions that rely on parent organizations for their IT staff but still have some level of technology support will require more training in routine planning, budgeting, and maintenance of networks. For example, the emergency management agency requires additional training on network security.

- ***High level***: Institutions with no IT staff or poor communication with IT consultants, missions that do not explicitly involve technology, and historical underappreciation of the role of technology will require the most training. The city and county governments, both of which do not have IT staff, control over budgeting for IT expenses, or technology plans, are most in need of training of all types.

Based on these levels, training programs could be developed with varied modules that could be pieced together depending on the needs of the institution.

Despite the general need for additional training, most institutions do not perceive ongoing technology training as very important (see Figure 8 above). Staff that do request additional training typically do so for specific software, such as Microsoft Excel, but most institutions do not offer training for new software or programs the vendor unless provides it. An IT administrator at a K-12 public school notes that her school discontinued technology training classes due to faculty complaints that it limited their time for lesson planning. Busy schedules and limited funding for travel of any kind are the most common factors influencing limited training opportunities. Each institution expresses the need for any training to be online and flexible enough so staff can access the training whenever they have time available. Public libraries are the best equipped type of anchor institutions to address training shortfalls as they have training modules and resources provided by consortia.

Planning

Education and training of institution staff and communities requires a high degree of technical planning currently lacking at most of the visited anchor institutions. While the majority of visited institutions have technology plans, they include only whatever the technology plan requires in order for the institution to receive funding assistance (see Figure 5). The primary mission of the institution also largely affects the priority level the institution assigns to spending the time and resources to develop a technology plan.

The public libraries' and K-12 public schools' technology plans developed to receive E-rate discounts are examples of the benefits a technology plan brings to an institution. The libraries and schools tend to have better connection speeds, equipment, and more knowledgeable staff than institutions without plans. What these plans really lack, however, are contingencies in case of funding cutbacks. Institutions that do not have technology plans typically are in worse situations. The city and county governments, for example, have poor connections speeds, outdated equipment, no IT staff, and no plan for how to improve their situations.

The big exception to the rule of thumb that a technology plan correlates to more robust technology is the higher education institution; this institution lacks a plan but did has the fastest connection speed observed in all 19 visited institutions. IT administrators there note a lack of communication between the IT department and the faculty about technology applications that currently are underutilized. Even in institutions that already have high connection speeds, there still is a need for planning to outline technology goals and objectives, such as getting the staff to actually use the technology and resources that are available to them.

The big benefits of a well-developed technology plan are more consistent performance from the network, better communication among employees, greater continuity of operations, and the ability to outline strategies for increasing public awareness about broadband applications. Poor planning, however, is just as bad as no planning. Public libraries and K-12 public schools benefit from set requirements for their technology plans. City and county governments do not have state- or federally-determined requirements or guidelines for developing technology plans and will require some form of assistance or guidance to develop useful technology plans. Without clear technology goals or objectives outlined in a central plan, it is unlikely an institution will adopt broadband.

Summary of Onsite Diagnostics Preliminary Findings

The preliminary findings from the onsite diagnostics reinforce the preliminary findings from the surveys and the focus group sessions. The needs assessment suggests that full adoption and utilization of broadband by anchor institutions will require a significant focus on educating both the institutions' staffs and service communities on the benefits and applications of broadband and detailed planning to exploit broadband to its fullest capacity and benefit. Without education, training, and planning, the situational factors influencing the different institutions will inhibit broadband adoption and growth as each institution views other issues and problems, such as maintain or increasing current funding levels, as more critical priorities than better Internet service.

TASK 4: REPORTING

The study team will develop a final draft report that describes project activities, summarizes findings, identifies key issues, and makes specific recommendations for middle mile network deployment and strategies to better meet the broadband service needs of anchor institutions in the Northwest and South Central RACECs and the City of Immokalee. Key FRBA staff will provide input to the report, and a member of the study team will be available to make an oral presentation to the FRBA Board of Directors. This task also will include the development of 2-4 self-paced, online instructional modules that will be designed now that the Information Institute identified key areas of need during Task 3: Data Analysis. Table 7 delineates key activities and a tentative time line for Task 4.

Table 7: Key Activities and Timeline for Task 4

ACTIVITY	TIMELINE
1. Develop draft report – • Describe project activities; • Summarize findings and identify key issues; • Make specific recommendations for middle mile network deployment and strategies to better meet the anchor institution broadband service needs; and • Work with FRBA liaison to finalize report.	December 1, 2011 – December 31, 2011
2. Develop 2-4 self-paced, online instructional modules regarding broadband and its importance – • Based on findings from activities 1-3, determine topics of the modules; • Develop the modules; • Pre-test the modules; • Modify modules (if necessary) based on feedback from pre-test; and • Roll out modules to FRBA anchor institutions.	December 1, 2011 – December 31, 2011
3. Deliver final report and make oral presentations of findings to FRBA staff and FRBA board of directors.	December 31, 2011

The Information Institute will conduct these activities to address Task 4 and will report outcomes in the final report due December 31, 2011.

SUMMARY

In the third project period (October 1, 2011 – November 30, 2011), the project team analyzed the data collecting using three methods: anchor institution broadband survey, focus groups and interviews, and onsite diagnostics. The team is on track to begin the next phase of the project starting December 1, 2011. Key activities to be accomplished in this next phase are triangulating the data gathered from each of the three methods into combined/comprehensive findings and reporting results of data analysis and findings. The Information Institute will deliver the Final Report to the FRBA by December 31, 2011.