

The Use of Broadband and Demand for iFiber Among Community Anchor Institutions

July 2012

Columbia Telecommunications Corporation

10613 Concord Street • Kensington, MD 20895 • Tel: 301-933-1488 • Fax: 301-933-3340 • www.ctcnet.us

Table of Contents

1.	Executive Summary	1
1.1	Project Background	1
1.2	Approach to Market Research.....	1
1.3	Summary of Survey Findings.....	2
1.4	Key Survey Insights	4
2.	Survey Objectives and Methodology.....	7
3.	Survey Results	9
3.1	Respondent Characteristics	9
3.2	Internet Service Types, Costs, Uses, and Experiences.....	12
3.3	Importance of Aspects of Current Internet Service.....	24
3.4	Satisfaction with Aspects of Current Internet Service	27
3.5	Use of Internet.....	29
3.6	Willingness to Pay More for Service	32
4.	Survey Results by Sector	36
4.1	Educational Organizations	36
4.2	Government Entities.....	40
4.3	Health Care Facilities	43
4.4	Libraries	46
5.	Survey Results by Geography.....	49
6.	Survey Results by Mailing List	50
	Appendix A: Survey Respondents' Written Comments	51

Table of Tables

Table 1: Grouping of Counties for Survey Analysis	2
Table 2: ISPs Are Underperforming Relative to CAI Customers' Expectations.....	5
Table 3: CAIs Are Not Completely Satisfied with ISP Performance in All Categories.....	28

Table of Figures

Figure 1: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Sector)	3
Figure 2: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Current Price Paid)	3
Figure 3: CAIs Are Only Moderately Satisfied with ISP Performance in All Categories	5
Figure 4: Survey Results – Type of Organization	9
Figure 5: Survey Results – Number of Employees and Computers	10
Figure 6: Survey Results – County of Respondent	10
Figure 7: Locations of All Respondents	11
Figure 8: Survey Results – Internet Connection Type	12
Figure 9: Survey Results – Internet Type by Number of Employees	13
Figure 10: Survey Results – Type of Organization by Connection Type	13
Figure 11: Survey Results – Internet Connection by Region	14
Figure 12: Survey Results – Monthly Internet Service Cost	15
Figure 13: Survey Results – Average Monthly Internet Cost by Type	15
Figure 14: Survey Results – Primary Internet Service Provider	16
Figure 15: Survey Results – Where Internet Decisions Are Made	16
Figure 16: Survey Results – Organizations with Websites and Intranets	17
Figure 17: Survey Results – Who Provides Internet Support	17
Figure 18: Survey Results – Organization’s Use of Internet	18
Figure 19: Survey Results – Internet Connection Speed	19
Figure 20: Survey Results – Internet Connection Speed by Type	19
Figure 21: Survey Results – Internet Connection by Number of PCs	20
Figure 22: Survey Results – Useful to Have Very Fast Internet?	21
Figure 23: Survey Results – Useful to Have Very High Speed Internet by Connection Type	21
Figure 24: Survey Results – Frequency of Internet Downtime	22
Figure 25: Survey Results – Frequency of Downtime by Connection Type	22
Figure 26: Survey Results – Contacted ISP for Technical Difficulties	23
Figure 27: Survey Results – ISP Response Time for Technical Difficulties	23
Figure 28: Survey Results – Importance of Internet Service Aspects	24
Figure 29: Importance of Internet Reliability by Region	25
Figure 30: Importance of Internet Speed by Region	26
Figure 31: Survey Results – Satisfaction with Internet Service Aspects	27
Figure 32: Survey Results – Satisfaction with and Importance of Internet Service Aspects	28
Figure 33: Survey Results – Importance of Internet Activities	29
Figure 34: Survey Results – Importance of Internet Activities by Region	30
Figure 35: Survey Results – Opinions About High-Speed Internet Use and Availability	31
Figure 36: Survey Results – Willingness to Pay More for Very Fast Internet	32
Figure 37: Survey Results – Willingness to Pay More for Very Fast Internet (Mean, by Sector)	33
Figure 38: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Sector)	33
Figure 39: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Current Price Paid)	34
Figure 40: Survey Results – Willingness to Pay More for Very Fast Internet (by Region)	35
Figure 41: Locations of Respondents in Education Sector	37
Figure 42: Survey Results – Type of Educational Organization	38

Figure 43: Survey Results – Internet Use by Educational Organizations.....	39
Figure 44: Survey Results – Educational Organizations	39
Figure 45: Survey Results – Type of Government Entity.....	40
Figure 46: Survey Results – Internet Use by Government Entities.....	41
Figure 47: Survey Results – Government Entities.....	41
Figure 48: Locations of Respondents in Government Sector	42
Figure 49: Survey Results – Type of Health Care Organization	43
Figure 50: Survey Results – Internet Use by Health Care Organizations.....	44
Figure 51: Survey Results – Health Care Organizations	44
Figure 52: Locations of Respondents in Health Care Sector.....	45
Figure 53: Survey Results – Library Locations	46
Figure 54: Survey Results – Internet Use by Libraries.....	46
Figure 55: Survey Results – Libraries	47
Figure 56: Locations of Respondents in Library Sector	48

1. Executive Summary

Northern Illinois University (NIU) and its Regional Development Institute have, for many years, played a leading role in advancing broadband connectivity throughout Illinois. One of NIU's initiatives includes active involvement in two Broadband Technology Opportunities Program (BTOP) grants. One grant was received by DeKalb County but NIU information technology network design staff was involved in the development of the proposal and in the implementation of the project. This project, the DeKalb Advancement of Technology Authority (DATA), will result in a broadband network in DeKalb County, Illinois. The second project includes nine counties in northwest Illinois and the grant was received by NIU with Illinois Fiber Resources Group (iFiber) being a sub-recipient.

1.1 Project Background

So that it can maximize the benefit of the iFiber and DATA infrastructure in terms of both regional economic growth and improved connectivity for individual organizations, NIU seeks to understand how community anchor institutions (CAI) in northwestern Illinois currently use their Internet connections, and how CAIs can be better served over broadband networks.

To these ends, NIU engaged CTC Technology and Energy (CTC) to provide this research and analysis. The focus of the project engagement was to provide insights into the Internet service used by CAIs in 10 counties in northwestern Illinois, and the CAIs' satisfaction with and uses of their Internet connections. CTC was charged to conduct a statistically valid survey of CAIs to gather data that would:

- Illustrate current and future broadband needs, and gaps between current market offerings and those needs.
- Establish baseline measurements for broadband usage among CAIs in the region, for future research and comparison once the iFiber and DATA networks are providing service.

1.2 Approach to Market Research

The geographic scope of the survey included 10 counties: Boone, Carroll, DeKalb, Jo Daviess, LaSalle, Lee, Ogle, Stephenson, Whiteside, and Winnebago. CTC sent surveys to all CAIs for which NIU had itself compiled mailing addresses and for which NIU had received mailing addresses from Partnership for a Connected Illinois (PCI).¹ Given the relatively small size of the CAI population in the survey area, we used this comprehensive approach rather than a random sampling, as would be appropriate for a larger survey area. Our mailing list comprised two

¹ PCI is a non-profit organization authorized by the Illinois Department of Commerce and Economic Opportunity (DCEO) to implement statewide high-speed internet strategy. PCI is Illinois' designated agent to NTIA under the State Broadband Data and Development grant program.

distinct groupings: CAIs that had previously been contacted by iFiber and DATA representatives as part of the BTOP application process (the list provided by NIU), and CAIs that had not been contacted (the list provided to NIU by PCI).

We compared the lists with that available from a commercial database provider and found the NIU/PCI list to be comprehensive and comparable to the commercial vendor's.

In addition to a range of questions that were applicable to all respondents, we included questions tailored for respondents in five key CAI sectors: Education, health care, government, libraries, and community organizations. We also provided space for respondents to add written comments about their organizations' access to and use of high-speed Internet; this anecdotal material is included in Appendix A.

The final survey response rate was 14.4 percent (164 out of 1,141), which, in our experience, is higher than the response rate to most business surveys. In order to understand the survey responses on a more granular regional level (as well as in the aggregate), we created subgroups of responses by grouping the counties based on their proximity to each other and to Chicago, their economic similarities, and the distribution of survey respondents.² In consultation with NIU, we developed the following groupings:

Table 1: Grouping of Counties for Survey Analysis

Region	Counties Included	Number of Survey Responses
Eastern	Boone, DeKalb, Winnebago	42
Central	Lee, Ogle, Stephenson	42
Western	Carroll, Jo Daviess, Whiteside	37
LaSalle	LaSalle	42

1.3 *Summary of Survey Findings*

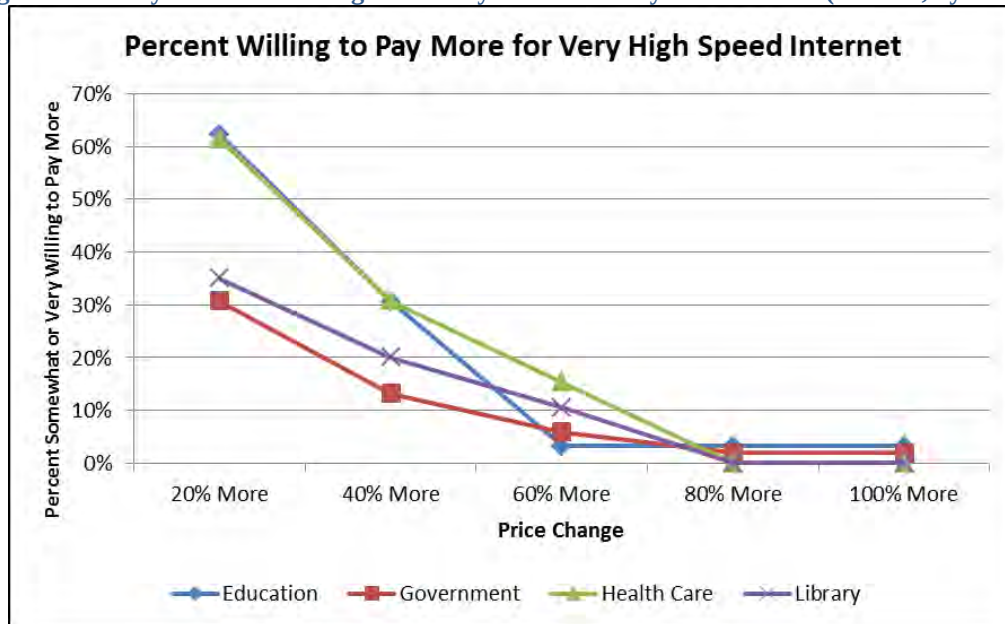
Key findings from the survey include the following:

- 100 percent of responding CAIs purchase some form of Internet access.
- Respondents rated reliability (uptime) as the most important Internet service aspect, followed by online security and connection speed. The price paid ranks below these aspects, but is still important to respondents.

² The survey response rate did not provide enough data to reliably compare results across all questions on a county-by-county basis.

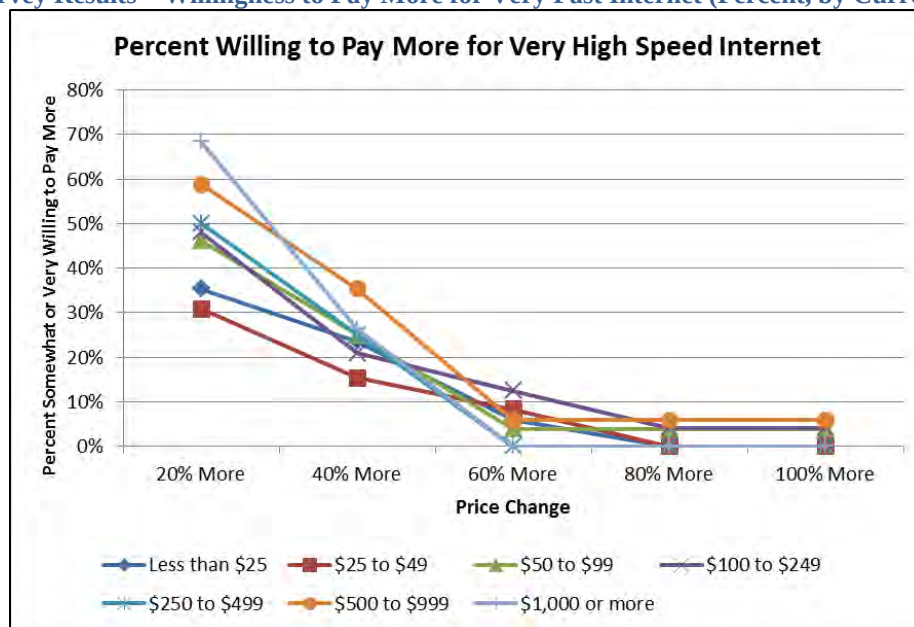
- Respondents in the health care and education sectors tended to be more willing to pay for very high speed Internet than were government entities or libraries.

Figure 1: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Sector)



- Respondents who currently pay more for high-speed Internet service report being more willing to pay more for faster Internet service. Respondents who are currently paying the least for Internet service were the least willing to pay more.

Figure 2: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Current Price Paid)



- Connection speed is the area with the largest gap between respondents' rating of the *importance* of an aspect of their service and their *satisfaction* with that aspect; connection speed could thus be a key selling point for improved Internet services.
- Almost one-third of respondents report experiencing Internet downtime daily, weekly, or monthly; 3.7 percent of respondents report that they experience Internet downtime on a daily basis.
- Respondents in the western region (Carroll, Jo Daviess, and Whiteside counties) placed higher importance on many Internet activities compared to other regions.
- Respondents in the western region were more willing to pay more for a very fast Internet connection. Combined with high level of importance placed on many Internet aspects, the western region appears to be a key focal area for improved Internet service.
- The vast majority of CAIs make Internet service decisions locally (within the 10-county region). This insight may be helpful for coordinating potential service improvements.
- Cable represents the most prevalent connection type, with approximately 34 percent market share, followed by leased line (20 percent), DSL (17 percent), and fiber-optics (11 percent).
- Larger operations are more likely to have fiber-optics or leased line Internet connections, while most small CAIs use cable or DSL, which are less costly.
- Government entities more frequently had DSL Internet connections, libraries more frequently had cable connections, and health care facilities more frequently had fiber optic connections.

1.4 Key Survey Insights

The most critical survey finding involves respondents' opinions about their current broadband services: CAIs are only moderately satisfied with each of the six aspects of Internet service about which we inquired (i.e., connection speed, customer service, meeting technical standards, price paid, reliability, and security).

With just two exceptions, the survey results indicate a statistically significant satisfaction gap for each of these six parameters—not just for the entire respondent pool, but in every county grouping individually. The largest gap is in connection speed—which the iFiber and DATA infrastructure would, from a purely technological standpoint, be able to address for any customer need.

As the chart below illustrates, the importance that respondents placed on each of these parameters of Internet service exceeded their satisfaction with their current providers' service delivery. Thus, the existing providers in this market are underperforming relative to the existing needs of CAIs.

Figure 3: CAIs Are Only Moderately Satisfied with ISP Performance in All Categories

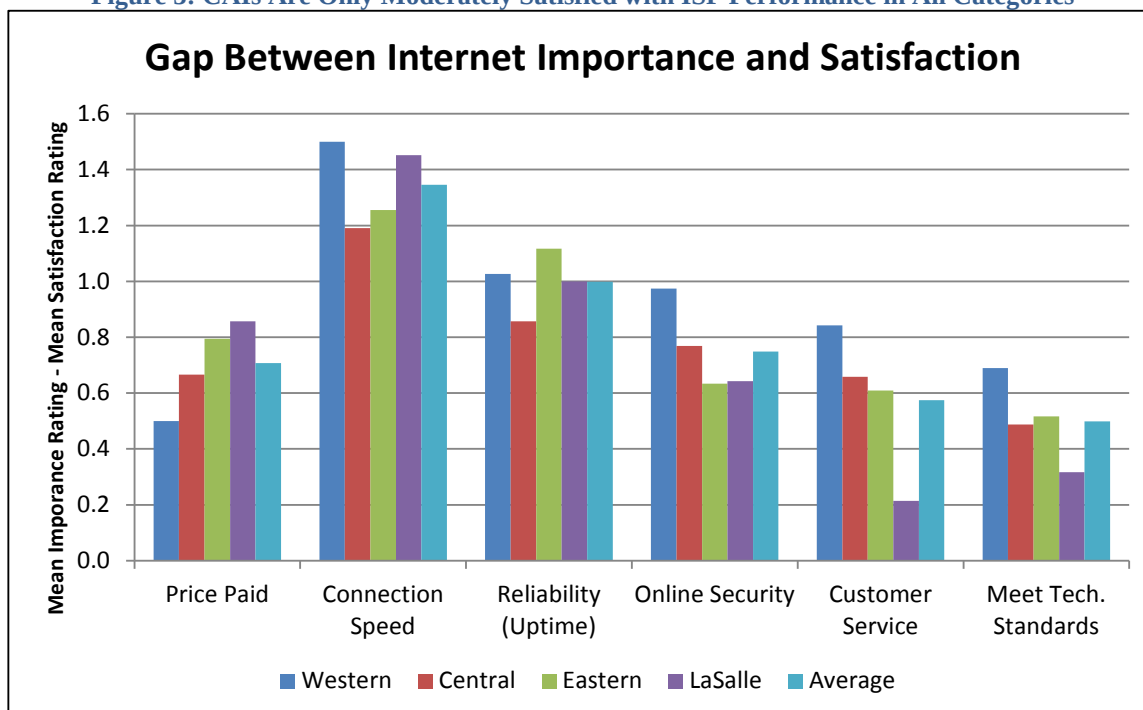


Table 2: ISPs Are Underperforming Relative to CAI Customers' Expectations

	Western Region	Central Region	Eastern Region	LaSalle Region
Connection Speed	Underperform	Underperform	Underperform	Underperform
Customer Service	Underperform	Underperform	Underperform	Inconclusive
Online Security	Underperform	Underperform	Underperform	Underperform
Price Paid	Underperform	Underperform	Underperform	Underperform
Reliability (Uptime)	Underperform	Underperform	Underperform	Underperform
Technical Standards	Underperform	Underperform	Underperform	Inconclusive

So, while 100 percent of respondents reported having Internet access, they were, almost uniformly, less than completely satisfied in many aspects of their service that are important to them. Interestingly, while we believed that there is better service available in the eastern counties, the survey results indicate that the satisfaction gap is just as significant there as it is in the central and western counties, which we believed to be less well served.

As one respondent noted, “[Broadband] is essential for our library to operate. Unfortunately our choices are between slow, too slow for our needs DSL and unreliable cable Internet.” At the

same time, however, the responses to the survey's price questions show that the CAIs are very price sensitive, so iFiber, DATA, or another broadband provider would need to deliver a significant improvement in quality aspects with a modest increase in price in order to meet the respondents' stated parameters.

Detailed survey results are described and analyzed below.

2. Survey Objectives and Methodology

On NIU's behalf, we conducted a survey of community anchor institutions (CAI) in northwestern Illinois to determine customer satisfaction with current Internet service providers and the services offered. The survey aimed to collect data that would allow NIU to understand both the potential unmet broadband needs among CAIs and ways in which improved communications services could benefit the organizations.³

A total of 1,141 surveys were mailed to CAIs in northwestern Illinois in late January and early February 2012, a time that was selected to ensure the highest possible response rate (falling between the year-end and spring holiday seasons and before the end months of the fiscal year, both of which can reduce response rates because of competing activities).

The survey included questions about CAIs' current Internet services, the price paid, the use of the Internet in their operations, and their opinions regarding their current Internet use and future needs.

The database of recipients' names and addresses was provided by the iFiber and DATA teams and included two sub-categories of recipients: A list of CAIs that had been contacted as part of an earlier effort to develop the state's Broadband Technology Opportunities Program (BTOP) grant application, and a list of CAIs that had not previously been contacted. This latter list had been provided to NIU by PCI. Based on our comparison of the lists to a commercially-available data base, these lists included the vast majority of CAIs in the 10-county region who fit iFiber and DATA's mission: education, libraries, health care, and state/local government.

A total of 164 responses were received by the cut-off date, providing an aggregate response rate of 14.4 percent. Response rates for the two separate mailing lists were 20.3 percent and 9.1 percent, respectively, suggesting that the earlier discussions between NIU representatives and CAIs on the first list had the effect of increasing interest and awareness in that group. Many in that group also received follow-up calls asking them to complete the survey.

Given the total number of CAIs in the target community (assumed to be the 1,141 CAIs to which the survey was sent), the results are available with a precision level of ± 7.1 percent at the 95 percent probability level for aggregate responses. That is, 19 times out of 20, one would expect the survey results to be within a confidence interval of ± 7.1 percent of the actual value across the entire population of CAIs in the region.

For purposes of analysis, responses at the county level were grouped into four distinct geographic regions. This grouping allows for comparisons across a manageable number of regions with economic similarities, and provides larger sub-samples of responses compared to the county-level results.

³ CTC was responsible for all project communications, coordination, methodologies, and reporting of results. CTC also managed the work of contractors involved in survey printing, mailing, and processing. NIU staff provided feedback on the draft survey instrument and provided a database for survey recipient selection.

NIU Broadband Survey Report

Survey responses were entered into Statistical Package for the Social Scientist (SPSS) software for data analysis. The survey data were evaluated using techniques in SPSS including frequency tables, cross-tabulations, and means functions. Survey results were exported to Microsoft Excel software for additional analysis, summary, and graphing purposes, and for easy presentation of results. Most of the illustrations in this report were created in Excel.

3. Survey Results

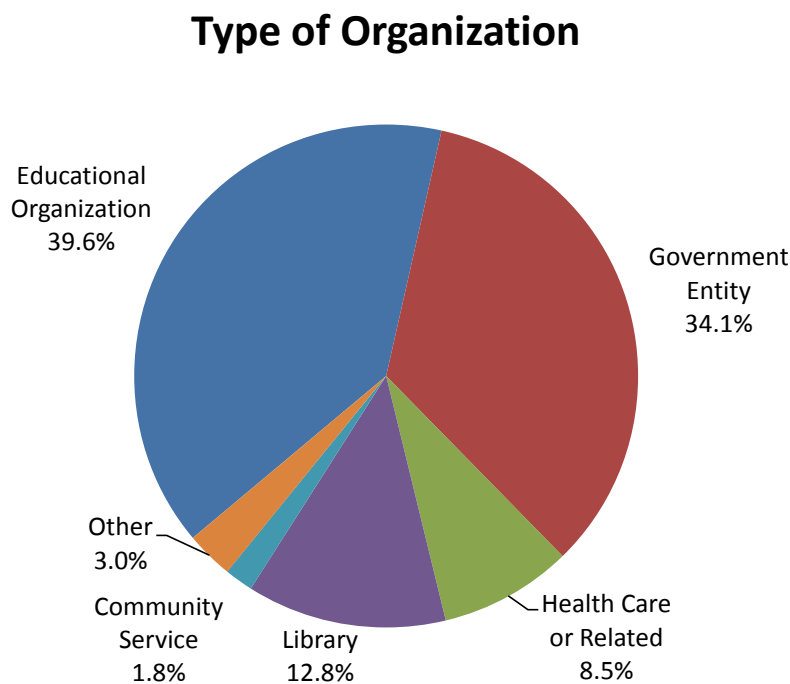
The following sections present and discuss the CAI survey results. The 164 total responses to the survey result in a confidence interval of ± 7.1 percent at the 95 percent probability level for aggregate results. Analyses within sub-segments of the responses have broader confidence intervals, and the comparisons among sub-groups may not yield statistically distinct results due to the breadth of the confidence intervals associated with small samples of some sub-segments.

3.1 Respondent Characteristics

Survey recipients were asked to describe their organization. Approximately 40 percent of respondents were educational organizations, including K-12 schools, community colleges, four-year colleges, and other education-related entities. Over one-third of respondents were government entities, 12.8 percent were libraries, 8.5 percent were in the health care industry, 1.8 percent were community service organizations, and 3.0 percent were some other type of CAI organization.

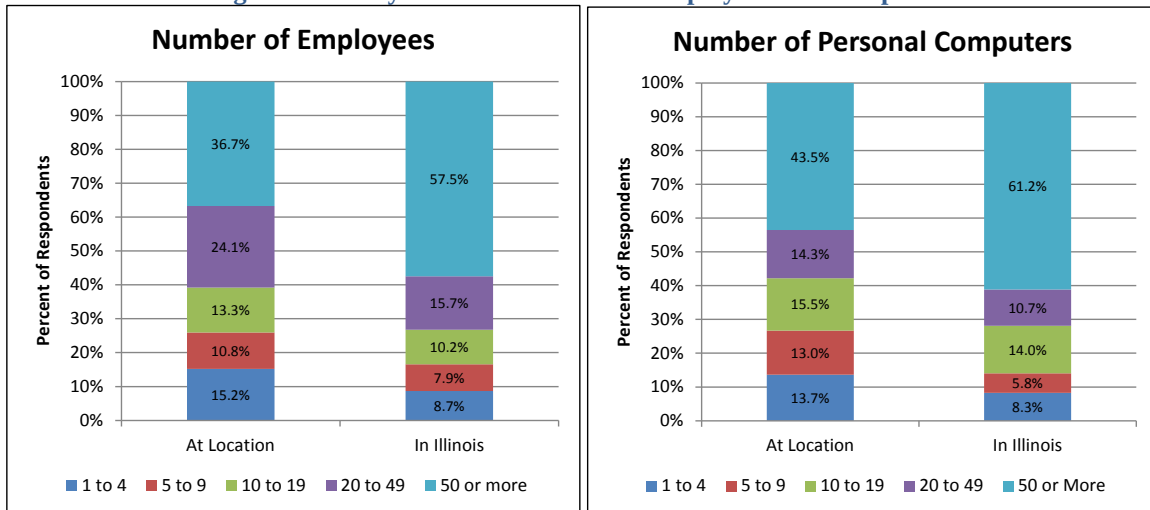
Subsequent sections of this report provide comparisons of key results by type of organization, where relevant. In addition, a handful of specific questions were asked to respondents from each of these organizational categories; those results are also discussed later in this report. We caution that the relatively small sample sizes for some organization types, such as health care and libraries, may not yield statistically significant results for comparisons to other sectors.

Figure 4: Survey Results – Type of Organization



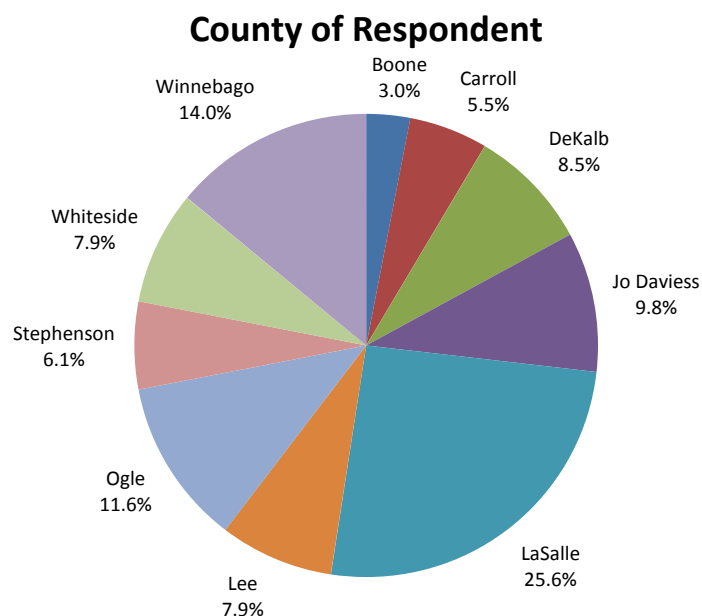
Over one-third of respondents had more than 50 employees at the location surveyed, and over one-half had more than 50 employees in Illinois. Only about one-fourth of respondents had fewer than 10 employees at the surveyed location. The size of the organization is correlated to key metrics about Internet service and use, and will be discussed in subsequent sections of this report.

Figure 5: Survey Results – Number of Employees and Computers



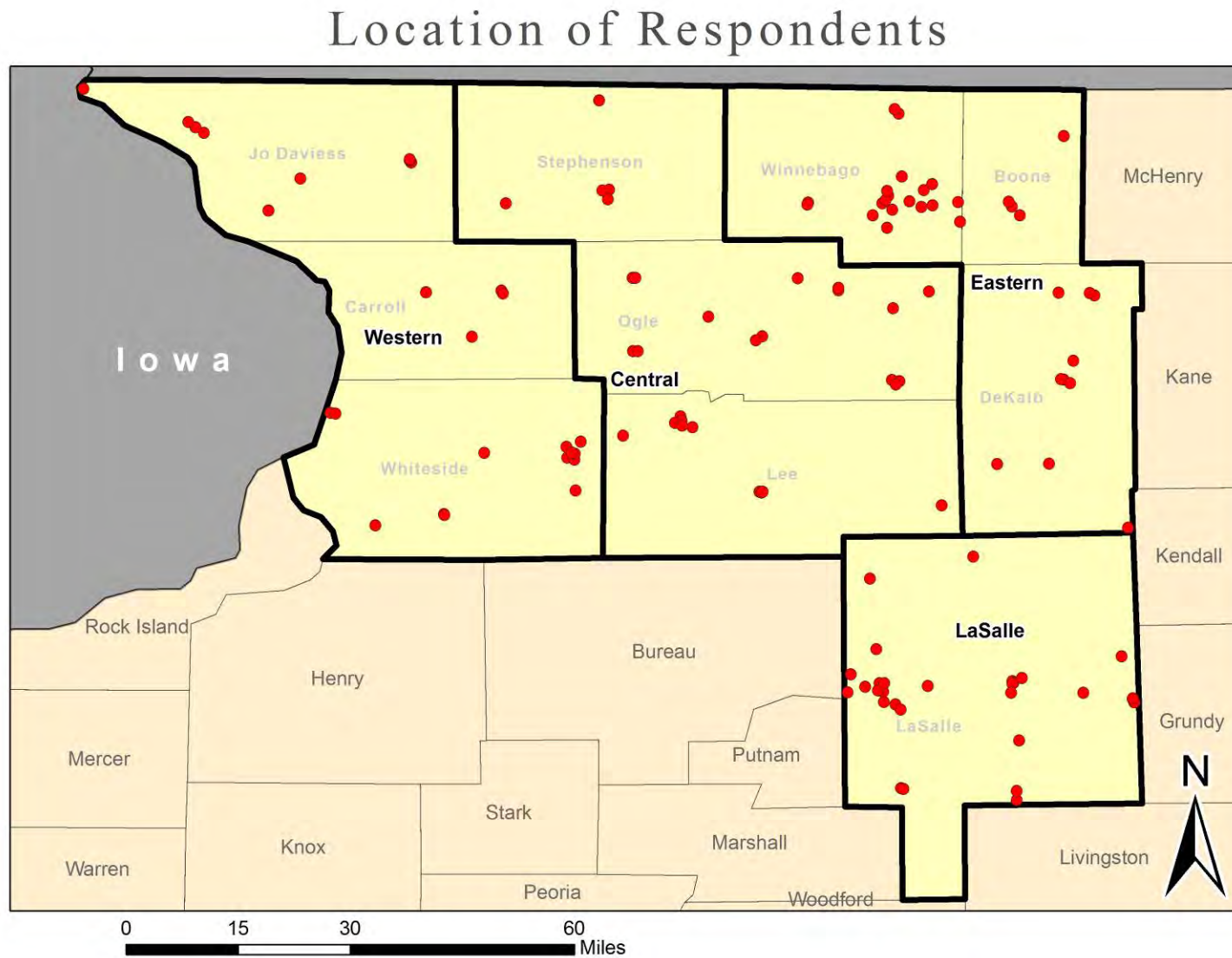
A county breakdown of the respondents is illustrated in the following chart. LaSalle is the largest county and had the largest number of survey respondents.

Figure 6: Survey Results – County of Respondent



The locations of all of the respondents are illustrated on the map below.

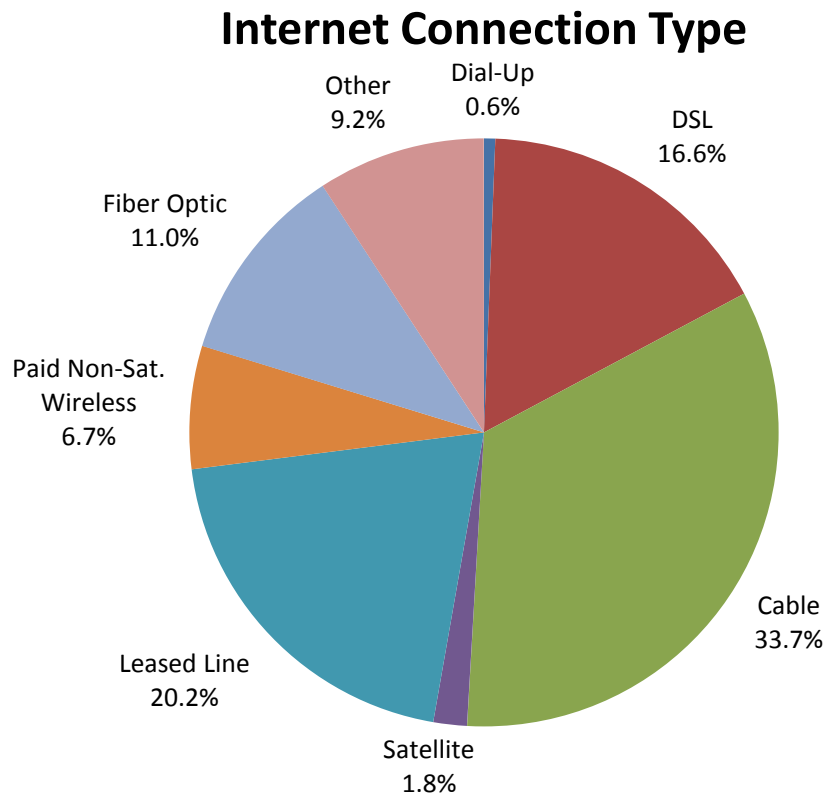
Figure 7: Locations of All Respondents



3.2 Internet Service Types, Costs, Uses, and Experiences

All CAI survey respondents had Internet service, and only one respondent had a dial-up connection, demonstrating a high adoption level of broadband by CAIs in this area of Illinois. Cable connections had the largest market share, comprising one-third of respondents' connections, followed by leased line (20.2 percent), digital subscriber line (DSL) (16.6 percent), and fiber optics (11.0 percent). Paid, non-satellite wireless, satellite, and dial-up connections had market shares of less than ten percent each.

Figure 8: Survey Results – Internet Connection Type

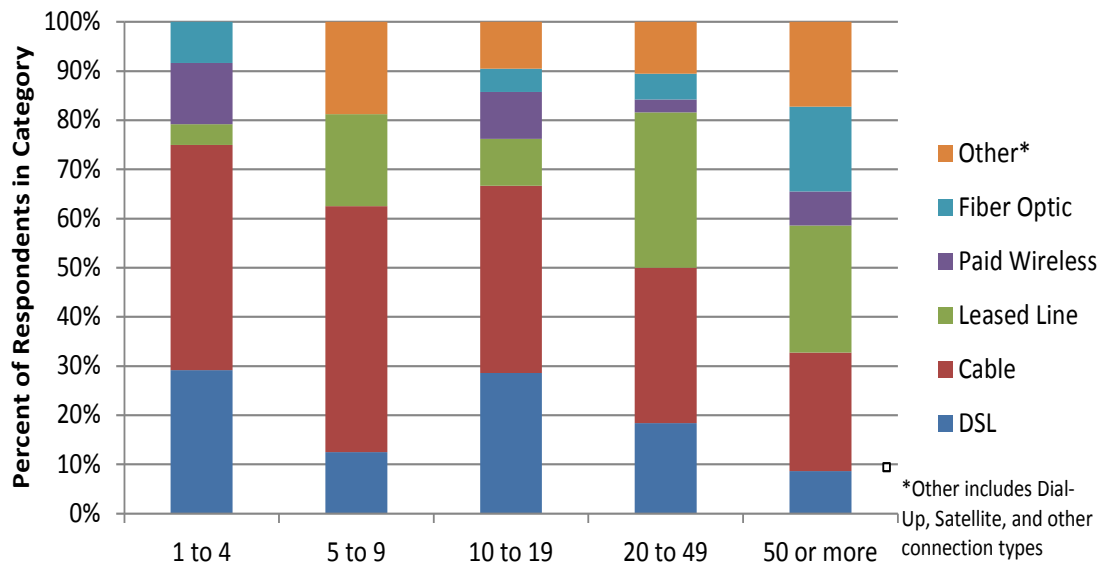


There is some apparent correlation between the Internet connection type and the size of the organization, although the results are not statistically significant due to the small sample sizes within some categories. Larger organizations, especially those with 20 or more employees, tend to be more likely to have leased line or fiber optic connections, while smaller organizations tend to be more likely to have cable connections.

Figure 9: Survey Results – Internet Type by Number of Employees

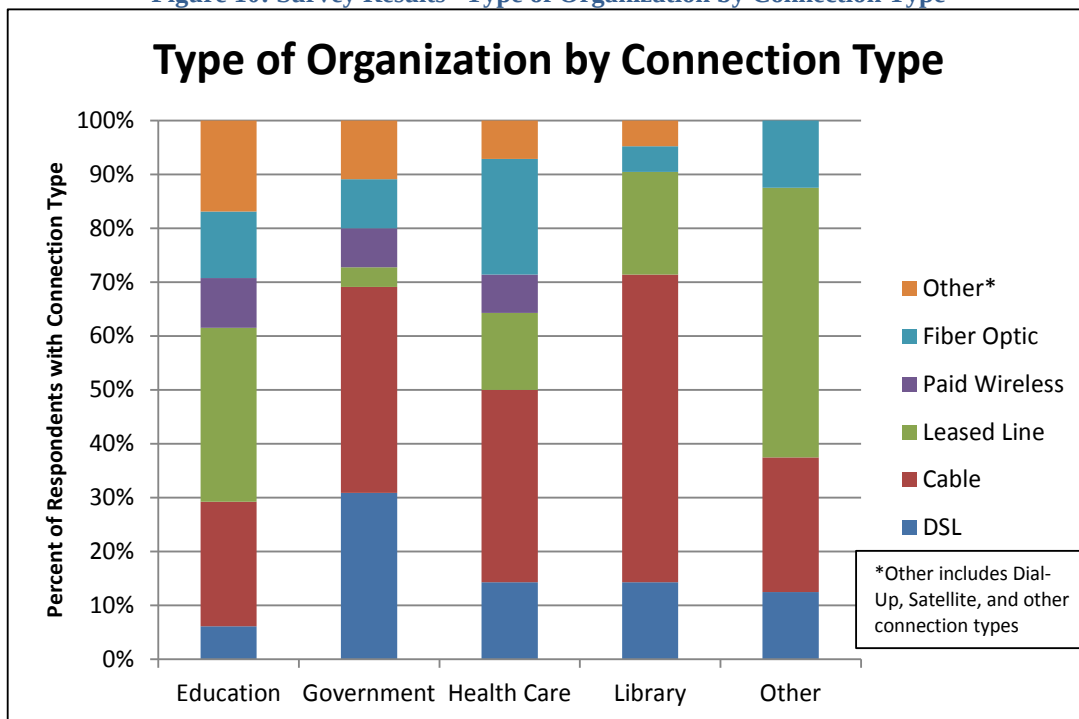
□

Internet Type by Number Employees at Location



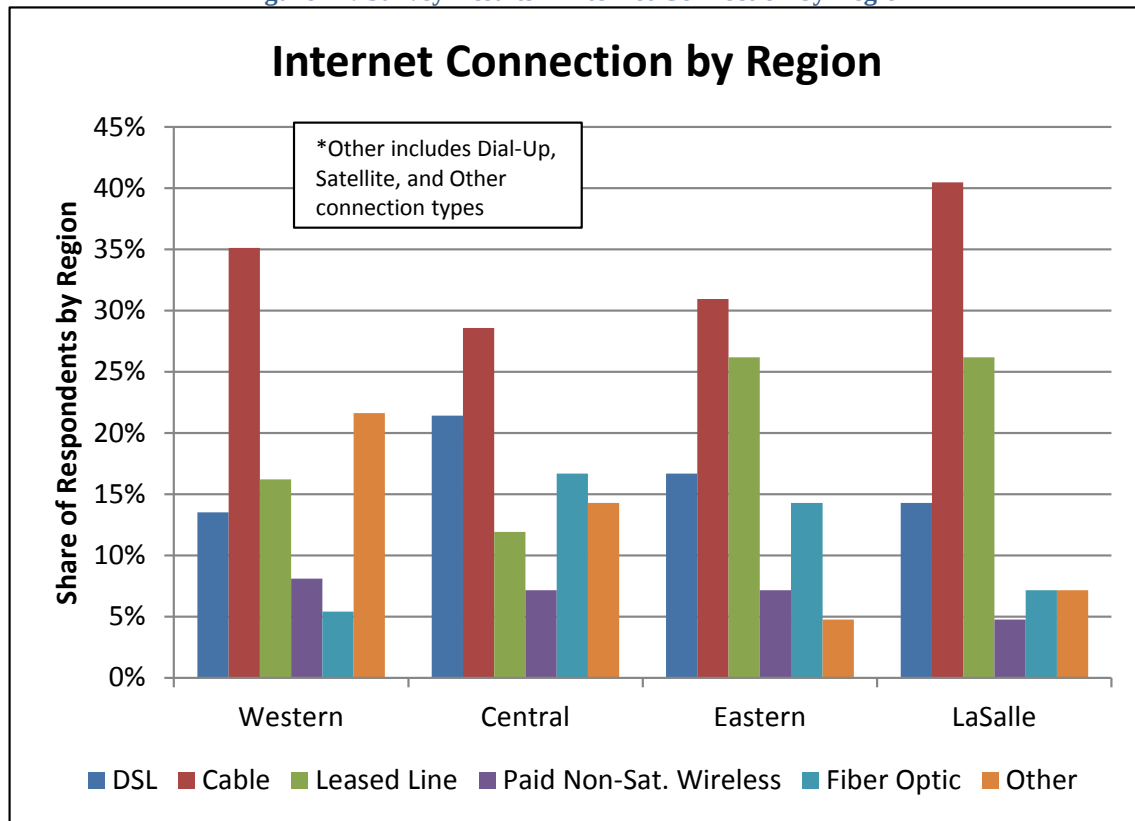
Government entities most frequently had DSL Internet connections, libraries most frequently had cable connections, and health care facilities most frequently had fiber optic connections compared to other sectors (although within statistical uncertainty ranges in some cases).

Figure 10: Survey Results –Type of Organization by Connection Type



Some apparent correlations exist between the geographic region of the respondent and the type of Internet service purchased, although the results lie within statistical uncertainty ranges in most cases. Cable connections tend to be more prevalent in the western and LaSalle regions than other regions, and leased line connections tend to be more prevalent in the eastern and LaSalle region.

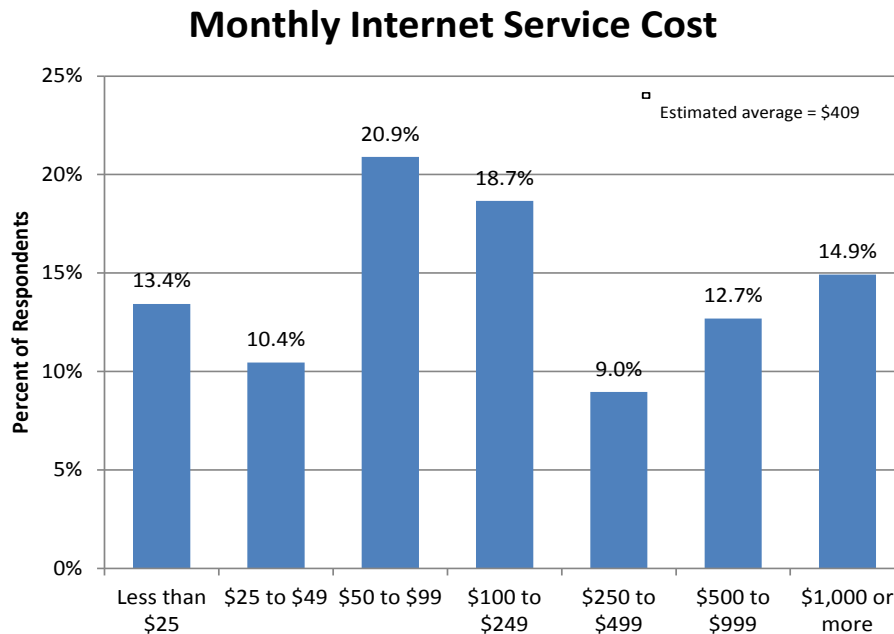
Figure 11: Survey Results – Internet Connection by Region



It should be noted that geographic comparisons are based on relatively small sub-samples and some differences illustrated in the previous graph may lie within statistical uncertainty ranges of the sub-sample of respondents in each category.

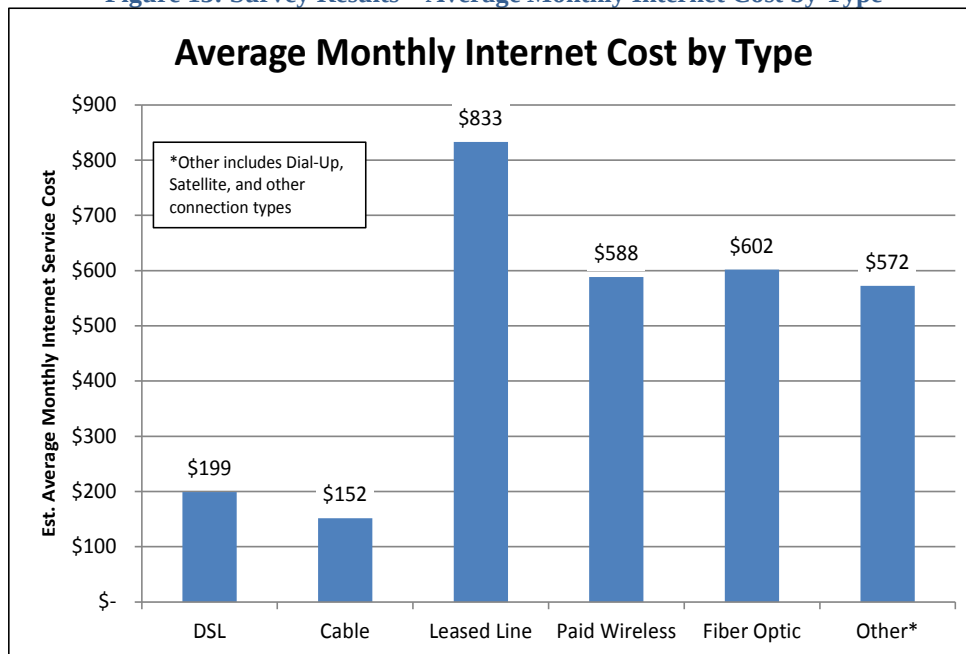
Nearly one-fourth of CAI respondents pay less than \$50 per month for Internet service while 15 percent pay \$1,000 or more. The price paid varies widely by the size of the organization and the type of connection. And, as noted in Section 3.6 below, respondents in the health care and education sectors tended to be more willing to pay for very high speed Internet than were government entities or libraries. Across the entire set of respondents, CAIs pay an estimated average monthly price of \$409 for Internet service.

Figure 12: Survey Results – Monthly Internet Service Cost



On average, leased line subscribers pay more than those with other connection types, while cable and DSL are the cheapest of the primary connection types. It should be noted that data from some connection types are based on a very small sample, and thus have a greater level of uncertainty associated with the estimated average costs.

Figure 13: Survey Results – Average Monthly Internet Cost by Type



Respondents were asked to list their primary Internet service provider (ISP). The primary ISPs were separated in the summary results, although there are a wide variety of providers across this

relatively-broad geographic area. Across the region, Comcast, Mediacom, and Illinois Century Network (ICN) have the largest number of CAI subscribers, all with between 10 and 20 percent market share. More than one-third of respondents have another ISP, each with only a handful of customers in the survey.

Figure 14: Survey Results – Primary Internet Service Provider

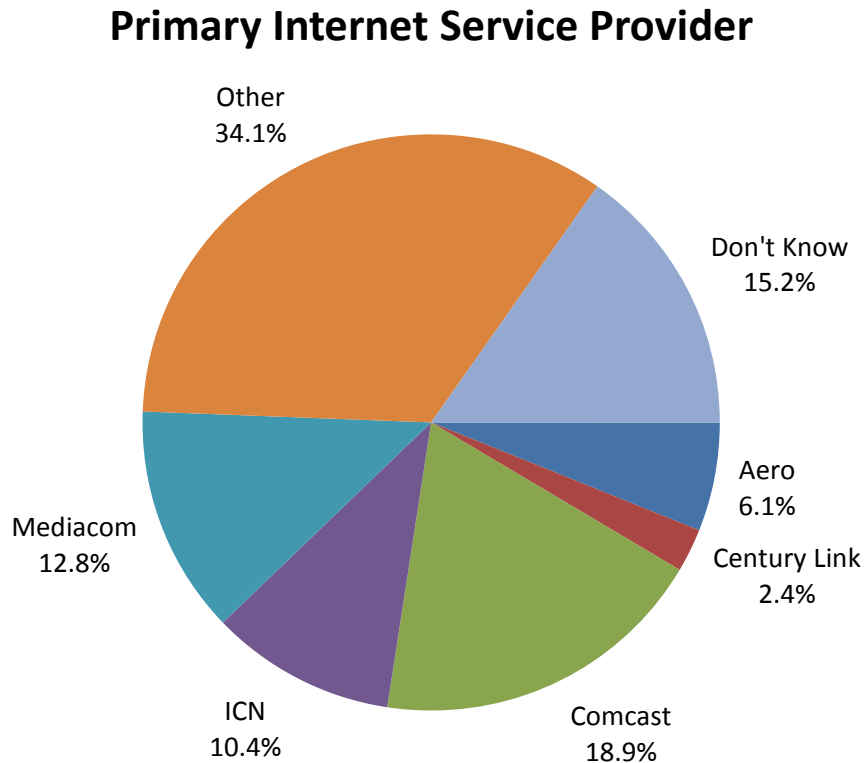
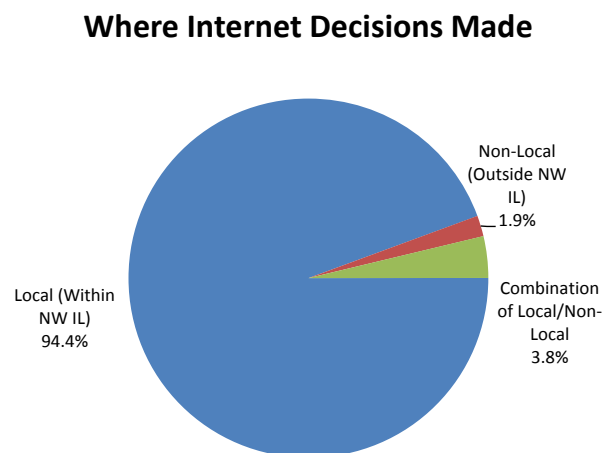


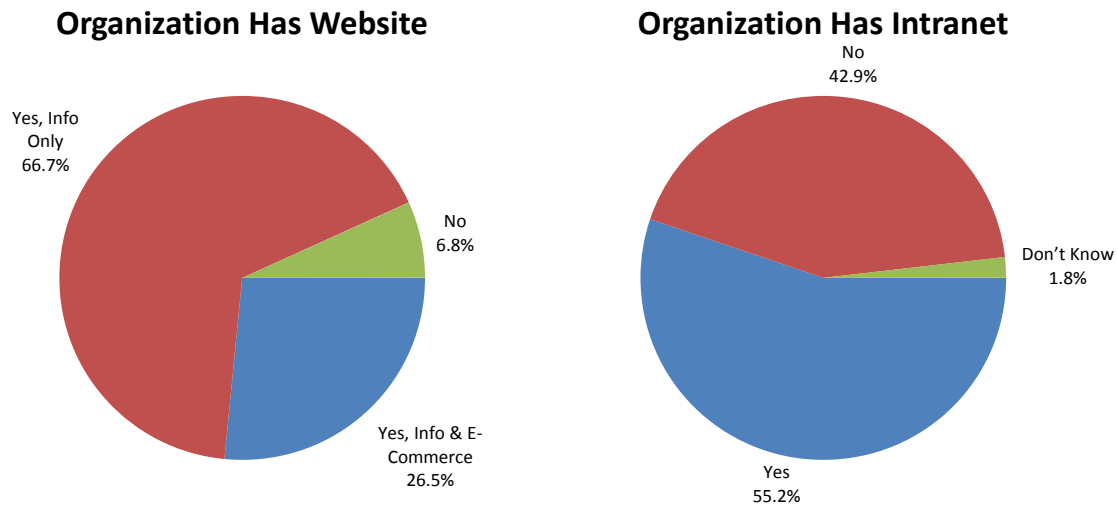
Figure 15: Survey Results – Where Internet Decisions Are Made

The vast majority of CAI respondents make their Internet service decisions locally (within northwestern Illinois). This provides the opportunity to engage these organizations about their Internet service connections, purchasing, and needs while having the decision-maker located in the immediate region. Only 1.9 percent of respondents responded that Internet service decisions are made outside the 10-county region.



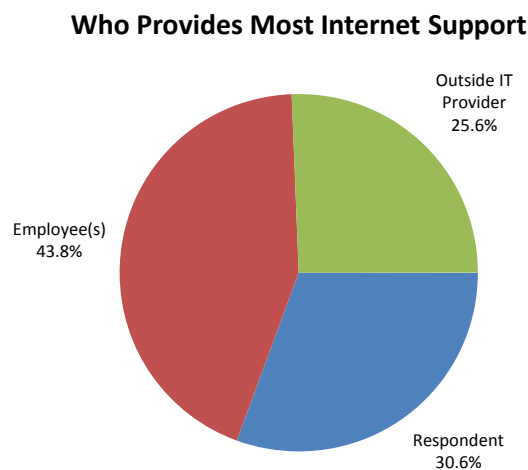
Over 90 percent of responding CAIs have a website, and over one-fourth use it for e-commerce. Slightly more than one-half of CAIs have an Intranet within their organization.

Figure 16: Survey Results – Organizations with Websites and Intranets



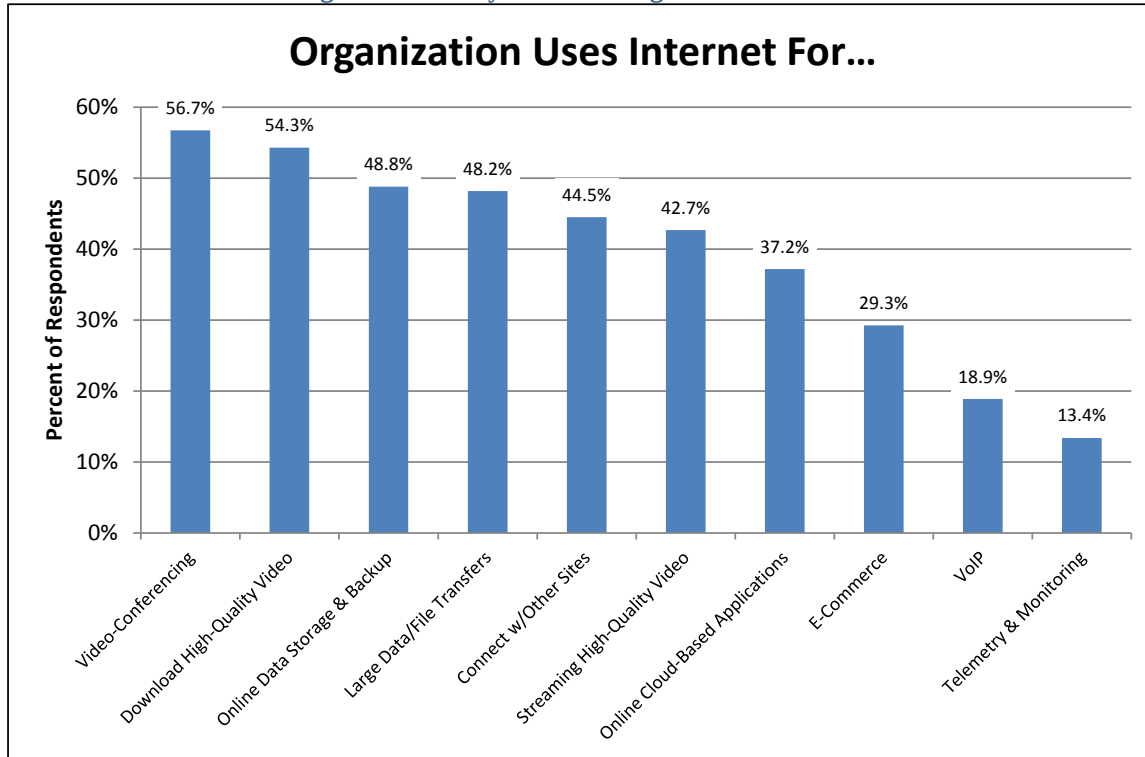
Only about one-fourth of respondents use an outside IT firm or other vendor for most of their Internet technology support. Approximately 30.6 percent of survey respondents serve as the primary person in charge of Internet technology support while 43.8 percent of respondents have other employees providing Internet support.

Figure 17: Survey Results – Who Provides Internet Support



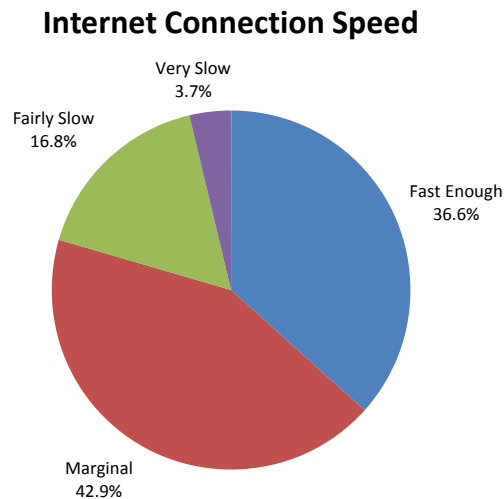
CAIs use the Internet for a variety of purposes. More than one-half of CAIs use the Internet for video-conferencing and/or downloading high-quality video, the most common of the Internet uses solicited in the survey. More than one-third of CAIs use the Internet for on-line data storage and backup, large data transfers, connecting with other sites within the organization, streaming high-quality video, and/or some form of cloud-based application.

Figure 18: Survey Results – Organization’s Use of Internet



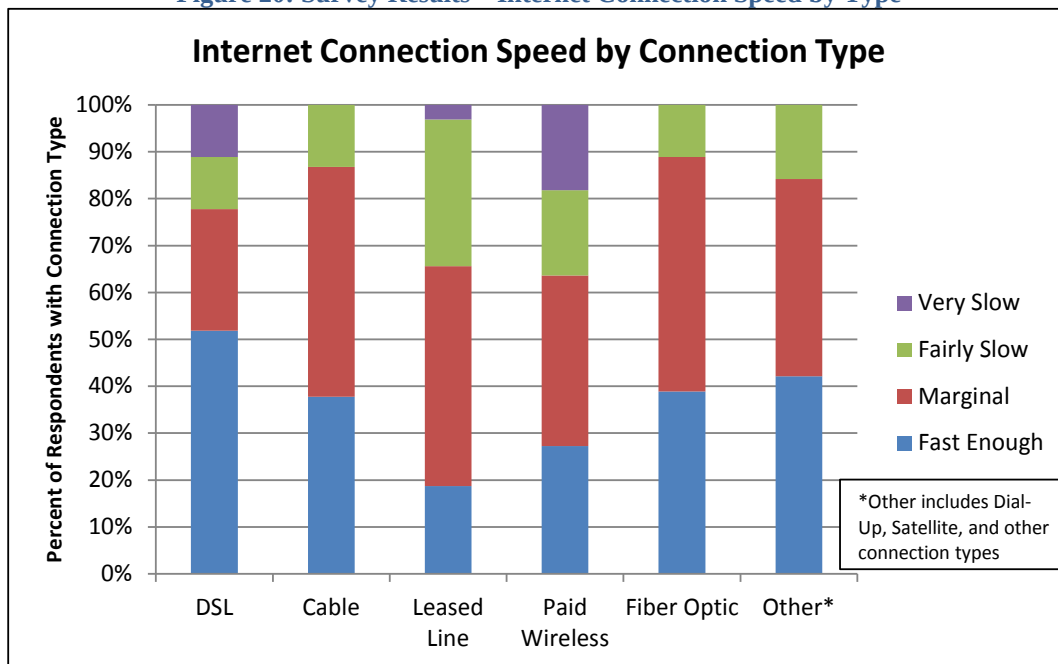
One-third of respondents rate their Internet speed as “fast enough” for their existing needs. More than 20.5 percent of respondents rate their current Internet speed as “fairly slow” or “very slow” and would like to connect at higher speeds.

Figure 19: Survey Results – Internet Connection Speed



Respondents with leased line or paid wireless connections were more likely to rate their speed as “fairly slow” or “very slow” (although this lies within the statistical uncertainty range of the survey results for the sub-samples).

Figure 20: Survey Results – Internet Connection Speed by Type



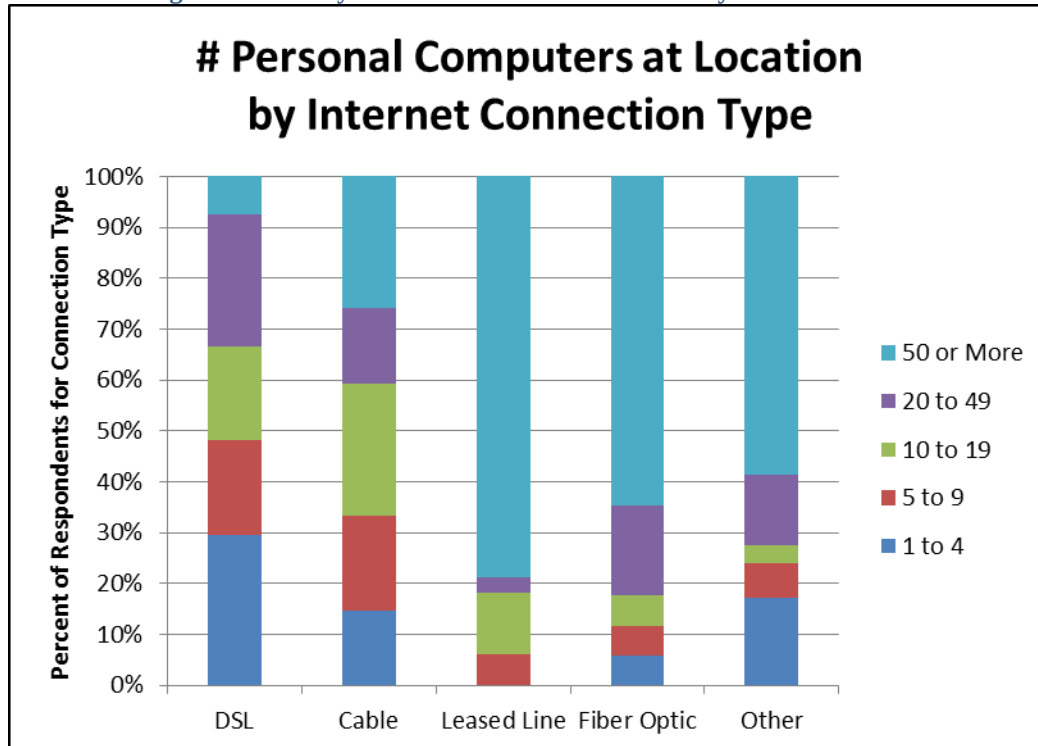
Surprisingly, a larger share of DSL subscribers rated their service as “fast enough”, despite the fact that DSL data rates are typically slower than other forms of broadband. This may suggest that current DSL users have lower bandwidth needs than other users—and thus find this inexpensive, low-speed service adequate to meet modest connectivity needs.

Also surprising is that more than 60 percent of respondents who report having fiber-optic

connections said that their connections are “marginal” or “fairly slow.” There may be a few explanations for this result.

For instance, among survey respondents, organizations with more PCs were more likely to have fiber or leased line connections (see Figure 21). Of the 17 fiber respondents, 11 had 50 or more computers at their locations, and three had 20 to 49 computers. It is quite possible that those large organizations either have connections that are more heavily loaded, or that their slowdowns are caused by internal networks and/or servers, rather than the connection itself.

Figure 21: Survey Results – Internet Connection by Number of PCs



It is also possible that respondents with fiber connections have higher expectations for the perceived speed of their service, which could cause respondents to rate it slower even if speed tests might indicate otherwise.

Figure 22: Survey Results – Useful to Have Very Fast Internet?

Over three-fourths of respondents indicated that it would be useful to have “very fast Internet” speeds. Only 9.3 percent indicated that they already had “very fast Internet”.

Of those who said that very high speed Internet would *not* be useful, most were DSL or cable subscribers. Many fiber optics subscribers indicated that their connection was very high speed, while few others described their connection speed as very fast.

Useful to Have Very Fast Internet?

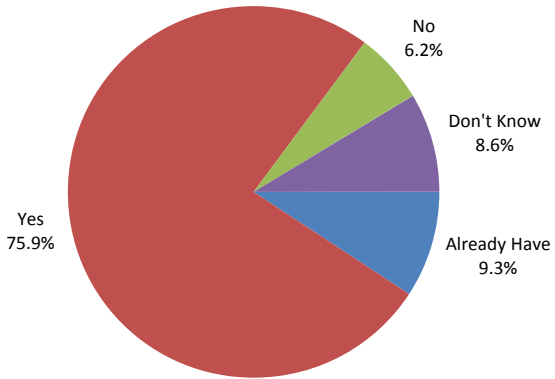


Figure 23: Survey Results – Useful to Have Very High Speed Internet by Connection Type

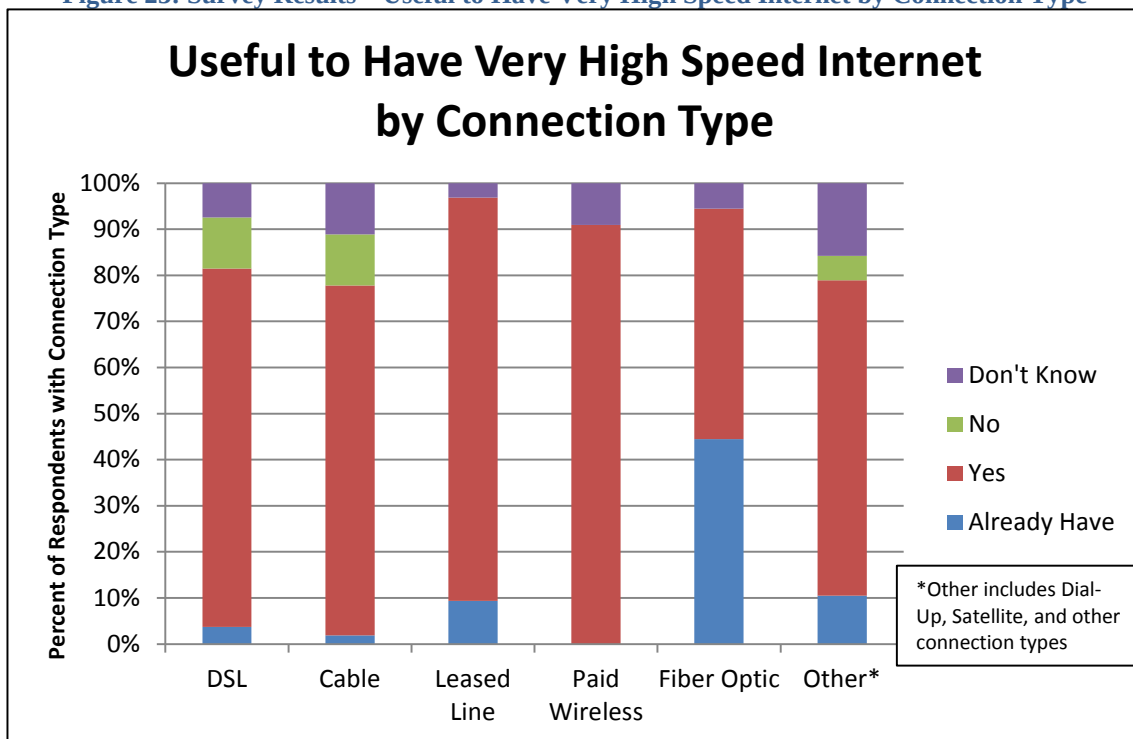


Figure 24: Survey Results – Frequency of Internet Downtime

Almost one-third of respondents report experiencing Internet downtime daily, weekly, or monthly; 3.7 percent of respondents report that they experience Internet downtime on a daily basis.

Fiber optics subscribers tended to be somewhat less likely to experience downtime compared to other connection types (although this lies within the statistical uncertainty of responses for other connection types). Most respondents of all connection types experienced downtime less than once per month.

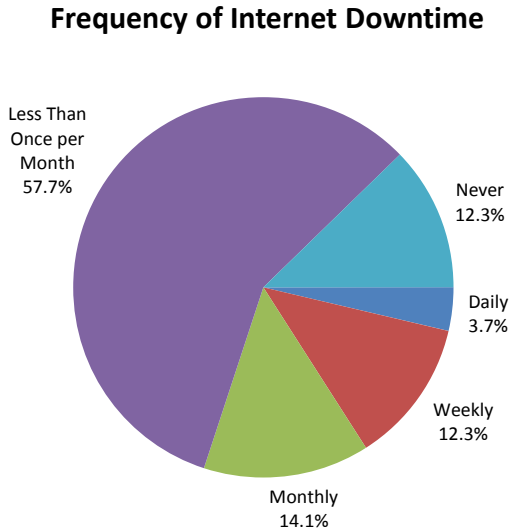
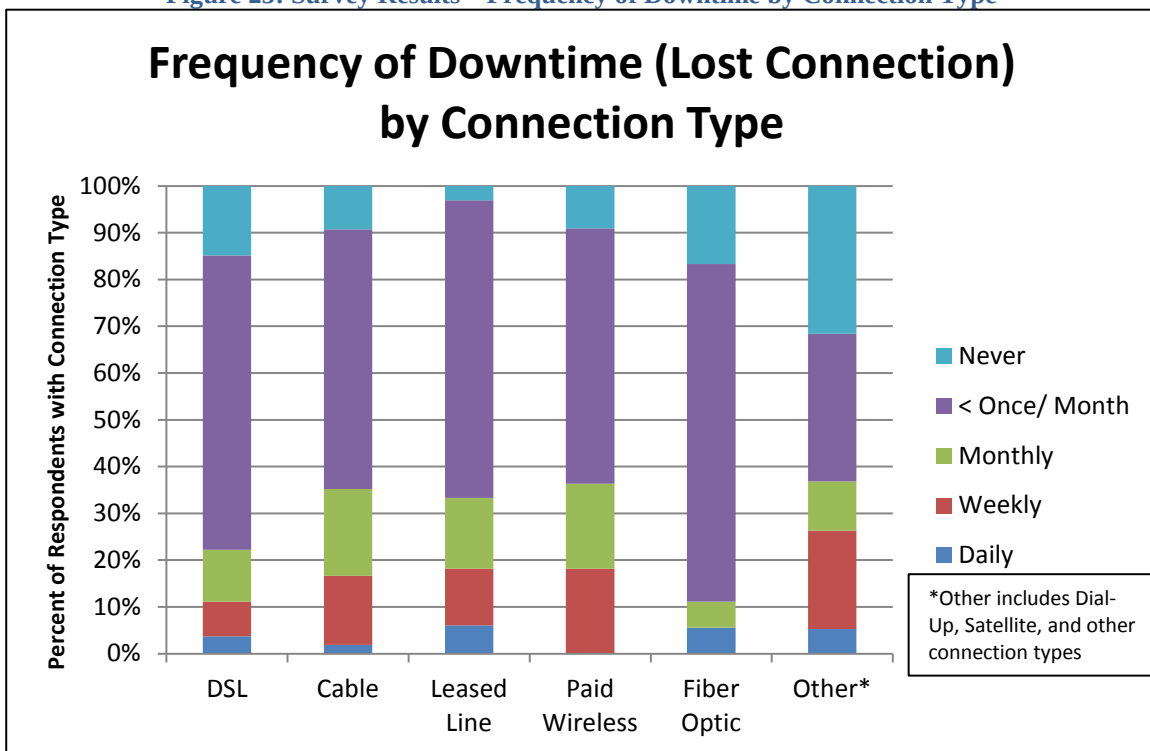


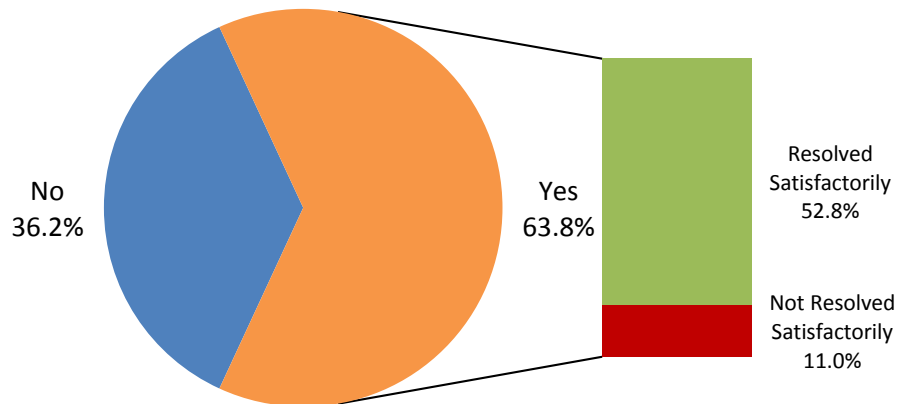
Figure 25: Survey Results – Frequency of Downtime by Connection Type



Nearly one-third of respondents had contacted their ISP within the past 12 months as a result of technical difficulties. Most of these issues were resolved in a satisfactory manner, with 83 percent of those with difficulties (52.8 percent of all respondents) reporting that their concern was resolved satisfactorily.

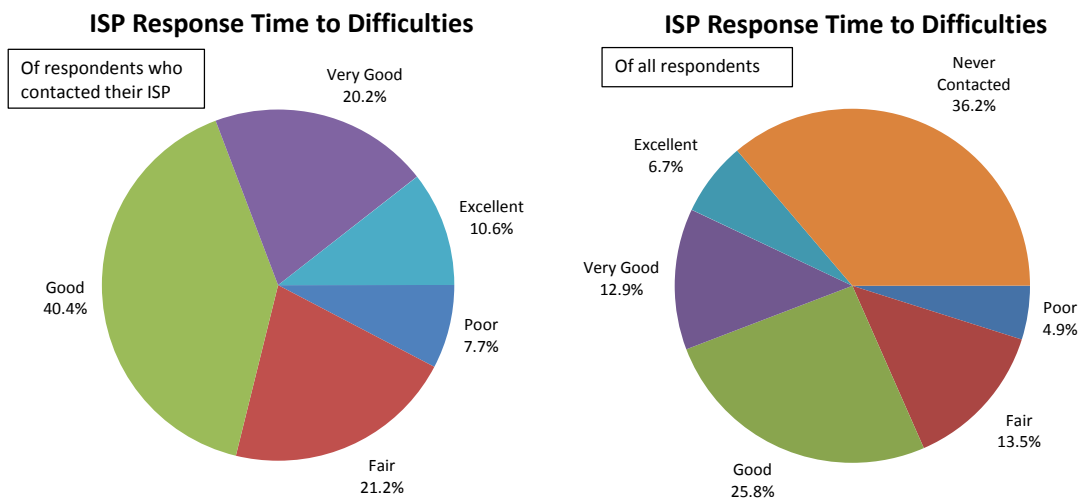
Figure 26: Survey Results – Contacted ISP for Technical Difficulties

Contacted ISP for Technical Difficulties



Nearly 30 percent of respondents report that response time for technical difficulties was “fair” or “poor,” while 40 percent who had contacted their ISP for technical difficulties said the response time was “good,” and 30.8 percent said it was “very good or “excellent.”

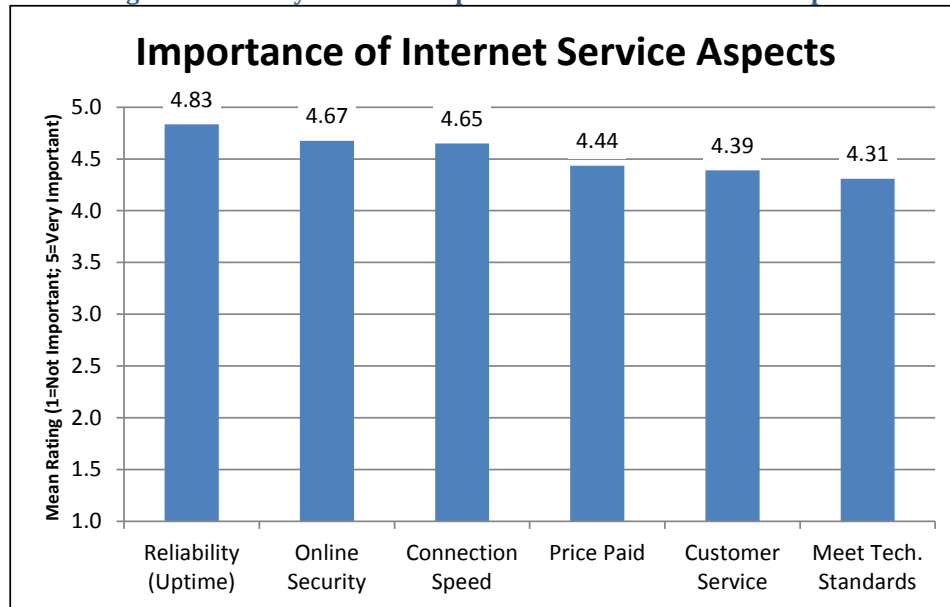
Figure 27: Survey Results – ISP Response Time for Technical Difficulties



3.3 Importance of Aspects of Current Internet Service

Respondents were asked to indicate the importance of several Internet service aspects. The most important aspect was reliability (uptime), followed by online security and connection speed. Of the six options provided, respondents indicated that price was fourth.

Figure 28: Survey Results – Importance of Internet Service Aspects



Looking at the data by region, respondents indicated that reliability and connection speed are important factors at a high level across all counties. (See Figure 29 and Figure 30, below.)

Figure 29: Importance of Internet Reliability by Region

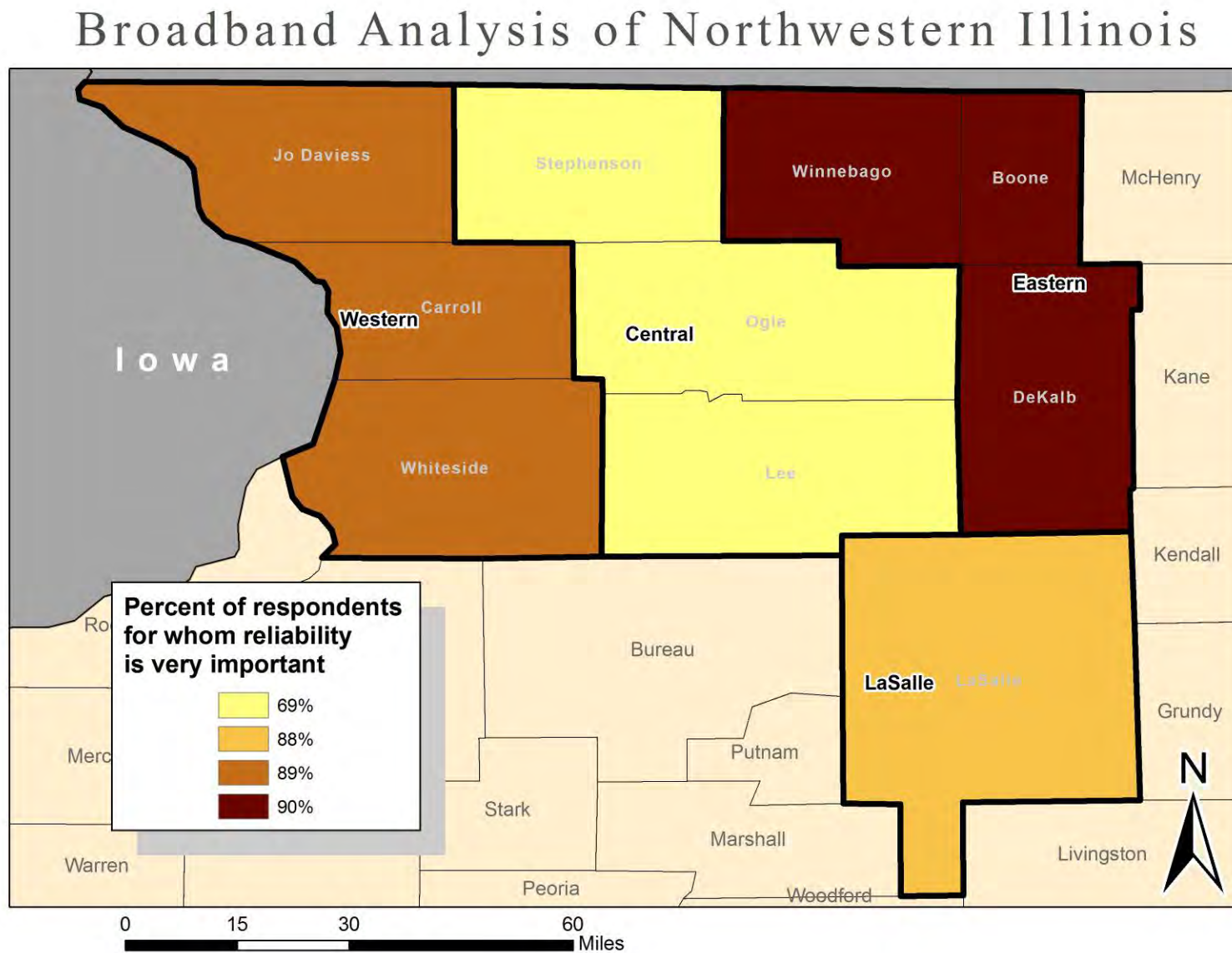
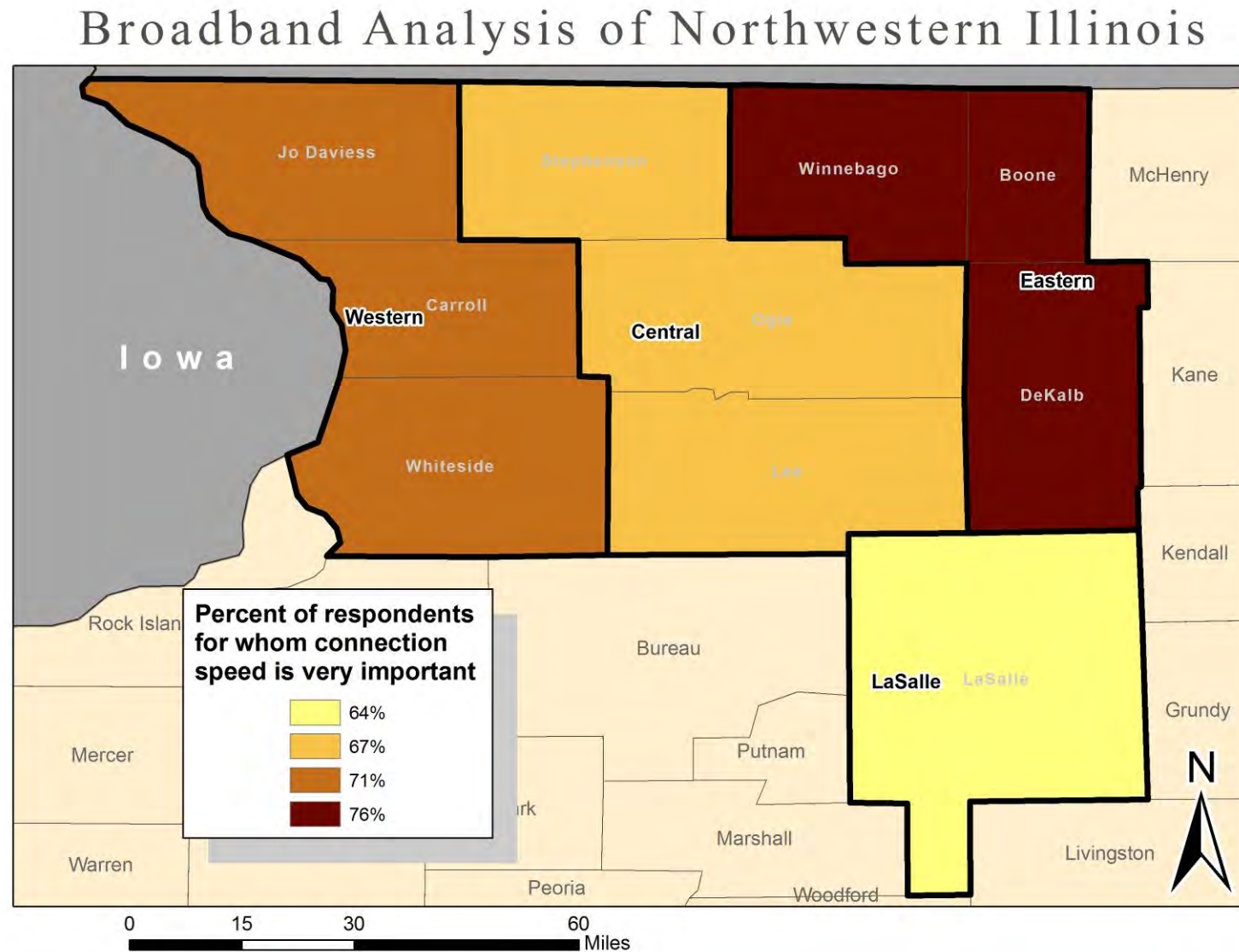


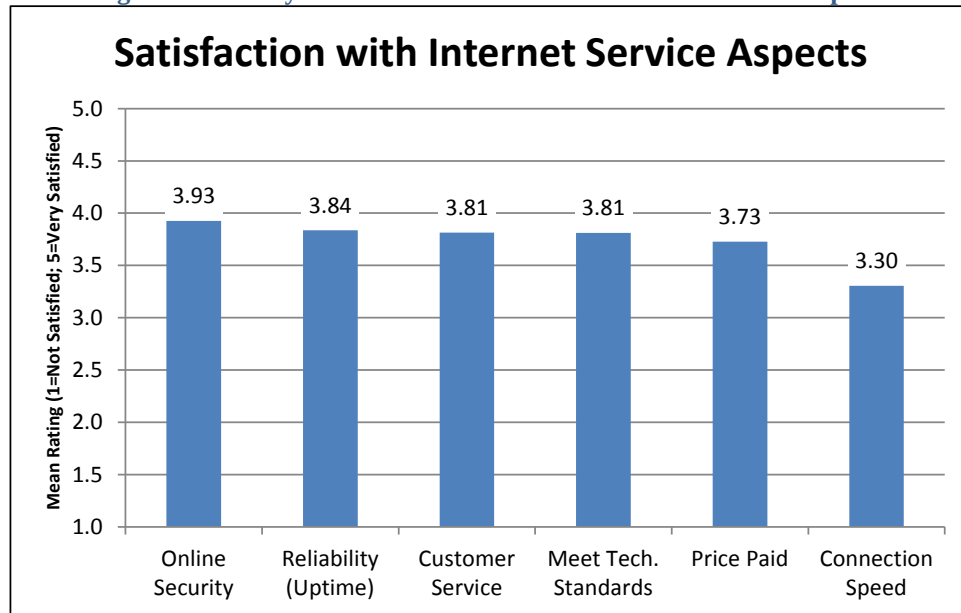
Figure 30: Importance of Internet Speed by Region



3.4 *Satisfaction with Aspects of Current Internet Service*

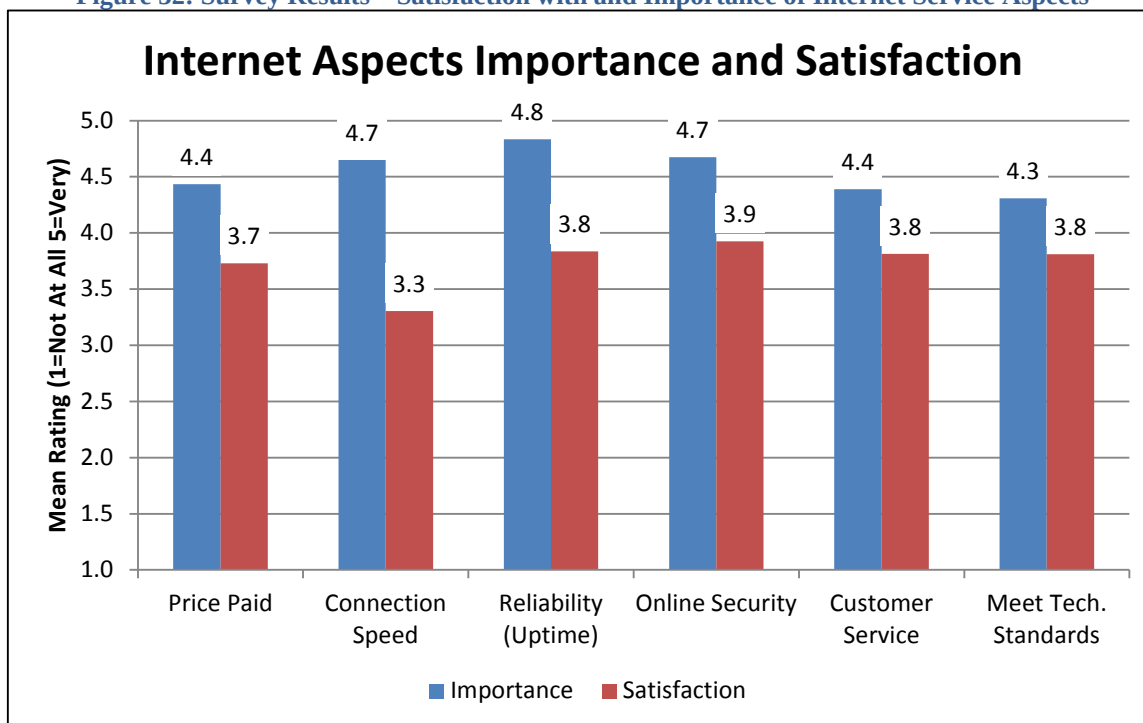
Respondents were also asked to rank their satisfaction with the same aspects of their Internet service. They were most satisfied with online security and least satisfied with connection speed.

Figure 31: Survey Results – Satisfaction with Internet Service Aspects



Comparing the respondents' expressed importance and satisfaction with various Internet service aspects allows examination of the gap between the two that can indicate focal areas for service improvement. The largest gap between importance and satisfaction is for connection speed, driven by the relatively low satisfaction with that aspect. The gap between mean importance rating and mean satisfaction rating for connection speed was 1.4, compared to gaps of no more than 1.0 for other aspects.

Figure 32: Survey Results – Satisfaction with and Importance of Internet Service Aspects



The following table summarizes the mean importance and satisfaction with these Internet aspects, and the performance of Internet service providers (ISP) in those categories. For all aspects, the gap is statistically significant—indicating that CAI customers are not adequately satisfied with aspects of their ISPs' service, relative to the importance they place on those aspects. That is, the ISPs are underperforming in these aspects.

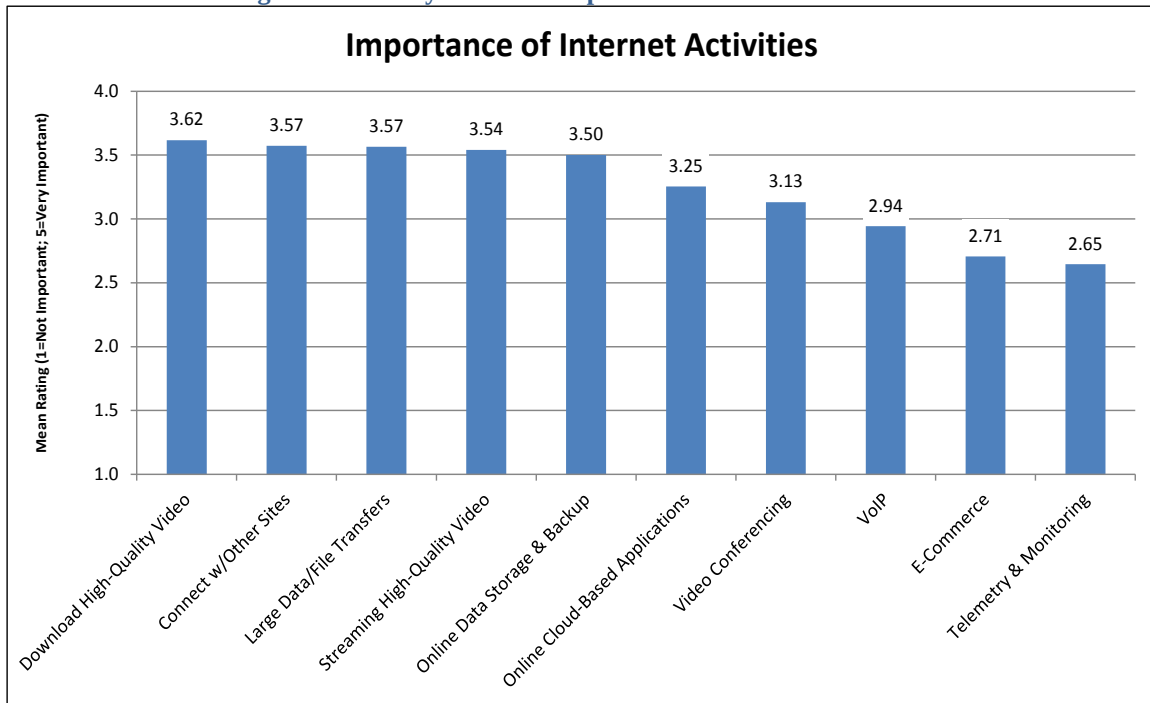
Table 3: CAIs Are Not Completely Satisfied with ISP Performance in All Categories

	Mean Importance	Mean Satisfaction	GAP < -- >	Provider Performance
Price Paid (n=162)	4.4	3.7	-0.7	Underperform
Connection Speed (n=163)	4.7	3.3	-1.4	Underperform
Reliability (Uptime) (n=163)	4.8	3.8	-1.0	Underperform
Online Security (n=162)	4.7	3.9	-0.8	Underperform
Customer Service (n=162)	4.4	3.8	-0.6	Underperform
Technical Standards (n=158)	4.3	3.8	-0.5	Underperform

3.5 Use of Internet

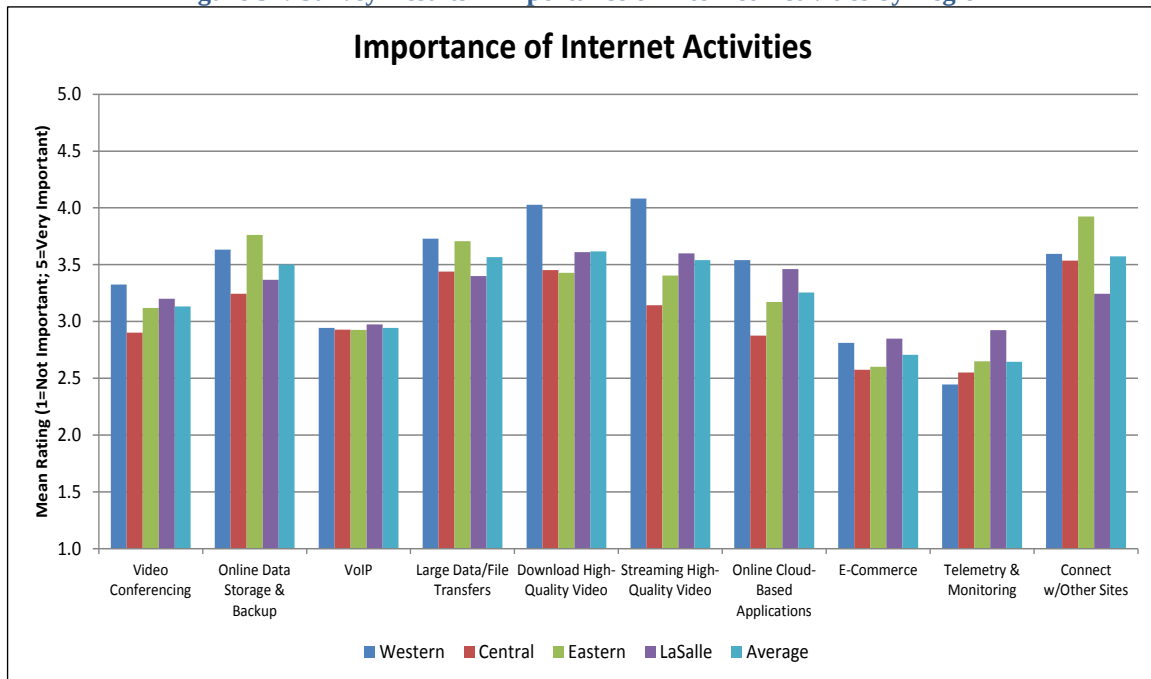
Respondents were asked about several Internet activities and the importance of those activities to them. Of the activities listed, the most important was downloading high-quality video, followed by connecting with other sites and performing large data or file transfers. Three activities ranked below the “neutral” importance level (below 3.0 on the five-point scale), including voice over Internet Protocol (VoIP; aka Internet-based telephone), e-commerce, and telemetry and monitoring.

Figure 33: Survey Results – Importance of Internet Activities



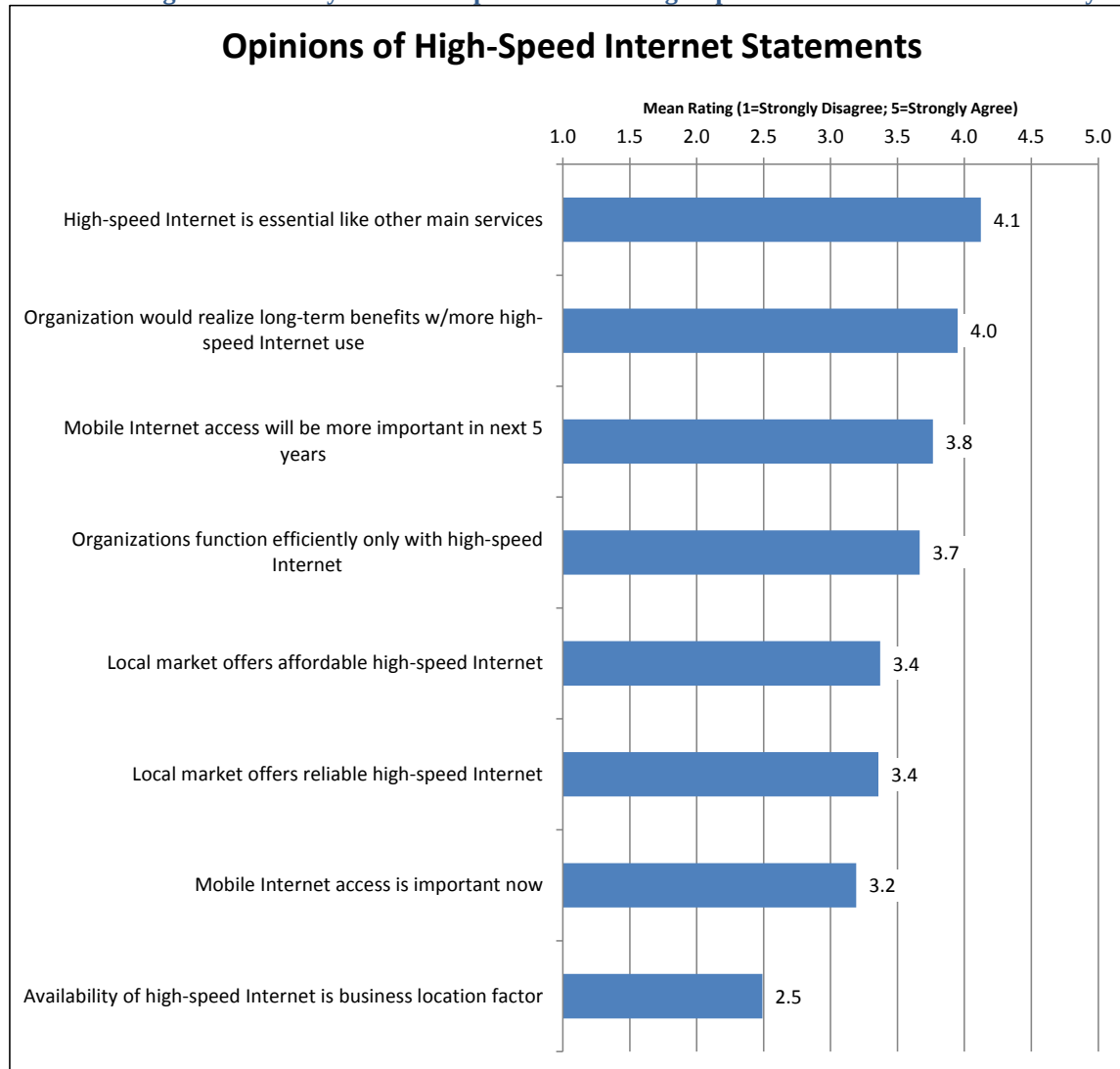
A comparison of the importance of Internet activities across geographic regions reveals that respondents in the western region rank several Internet activities as more important than do counterparts in other regions. Western respondents placed greater importance on video conferencing, data transfer, downloading high-speed video, streaming high-speed video, and online cloud-based applications compared to respondents in other regions, although most of the responses are within statistical uncertainty ranges of other regions due to the relatively small sample sizes within the sub-regions.

Figure 34: Survey Results – Importance of Internet Activities by Region



The questionnaire also solicited opinions about several statements related to high-speed Internet use and availability. Respondents generally agreed that high-speed Internet is an essential service and that their organization can realize benefits from high-speed Internet use. Of the statements provided, the only one that received disagreement (on average) was that the availability of high-speed Internet factored into business location decisions.

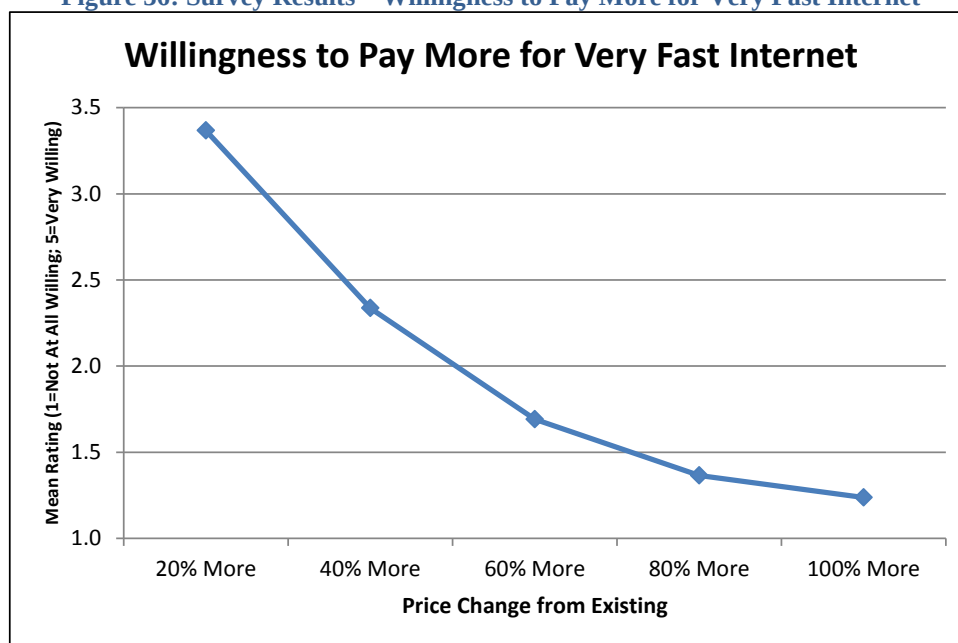
Figure 35: Survey Results – Opinions About High-Speed Internet Use and Availability



3.6 Willingness to Pay More for Service

Respondents were asked if they were willing to pay more for very high-speed Internet service that would allow them to more quickly and efficiently perform some of the activities listed in the previous question. In general, respondents were somewhat willing to pay 20 percent more for very fast Internet, and somewhat unwilling to pay 40 percent more. For price increases of more than 50 percent, very few respondents were willing to purchase very high speed Internet service.

Figure 36: Survey Results – Willingness to Pay More for Very Fast Internet



The willingness to pay more for very high speed Internet varies somewhat based on the type of organization. Respondents in the health care and education sectors tended to be more willing to pay for very high speed Internet than were government entities or libraries. (Note that the small sample sizes in these sub-sectors, especially libraries and health care, yield results that are not statistically different than other sectors. These comparisons are simply based on averages of responses.)⁴

⁴ We caution, too, that these responses may overstate respondents' actual decisions, if they were faced with the opportunity. As a conservative approach, we assume that 50 percent of the "willing" and 100 percent of the "very willing" would actually pay extra (or switch providers).

Figure 37: Survey Results – Willingness to Pay More for Very Fast Internet (Mean, by Sector)

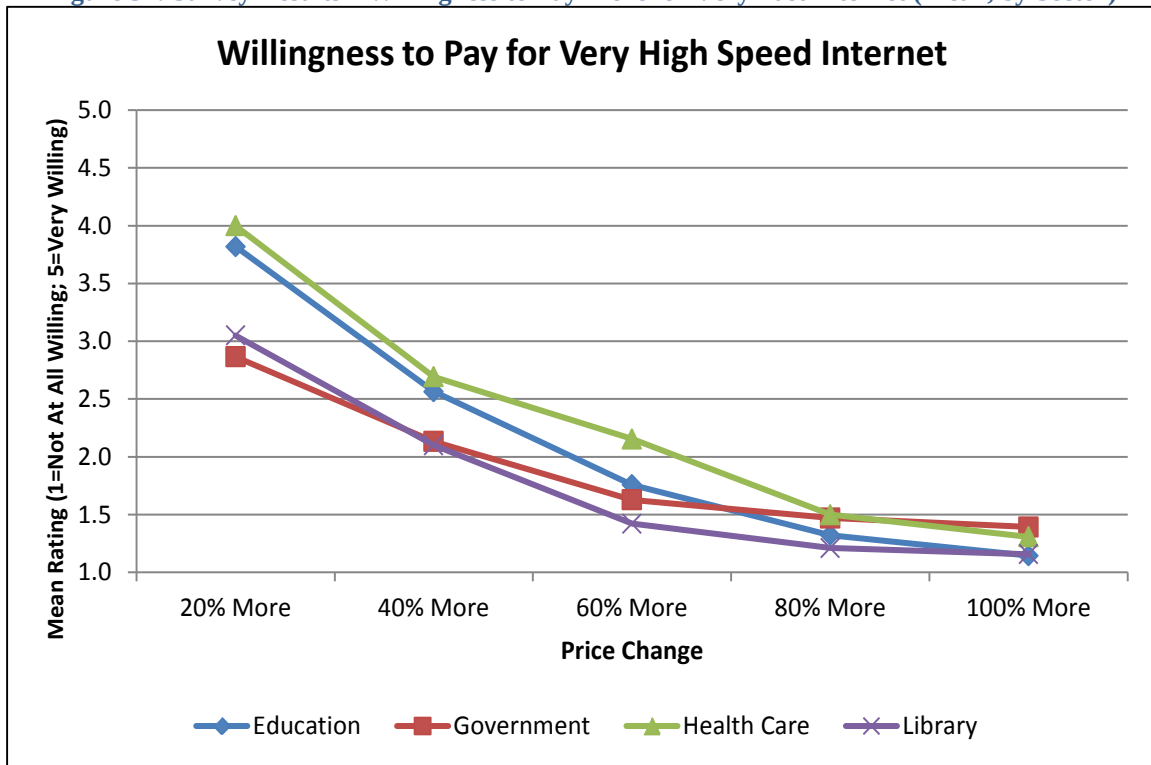
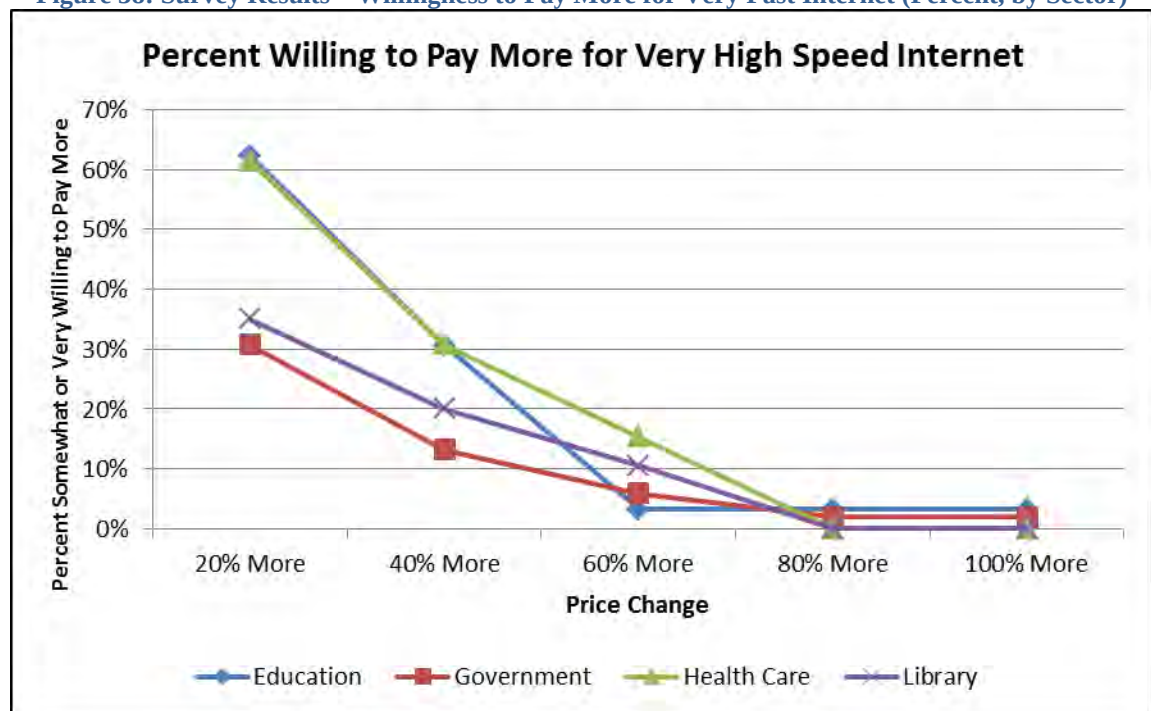
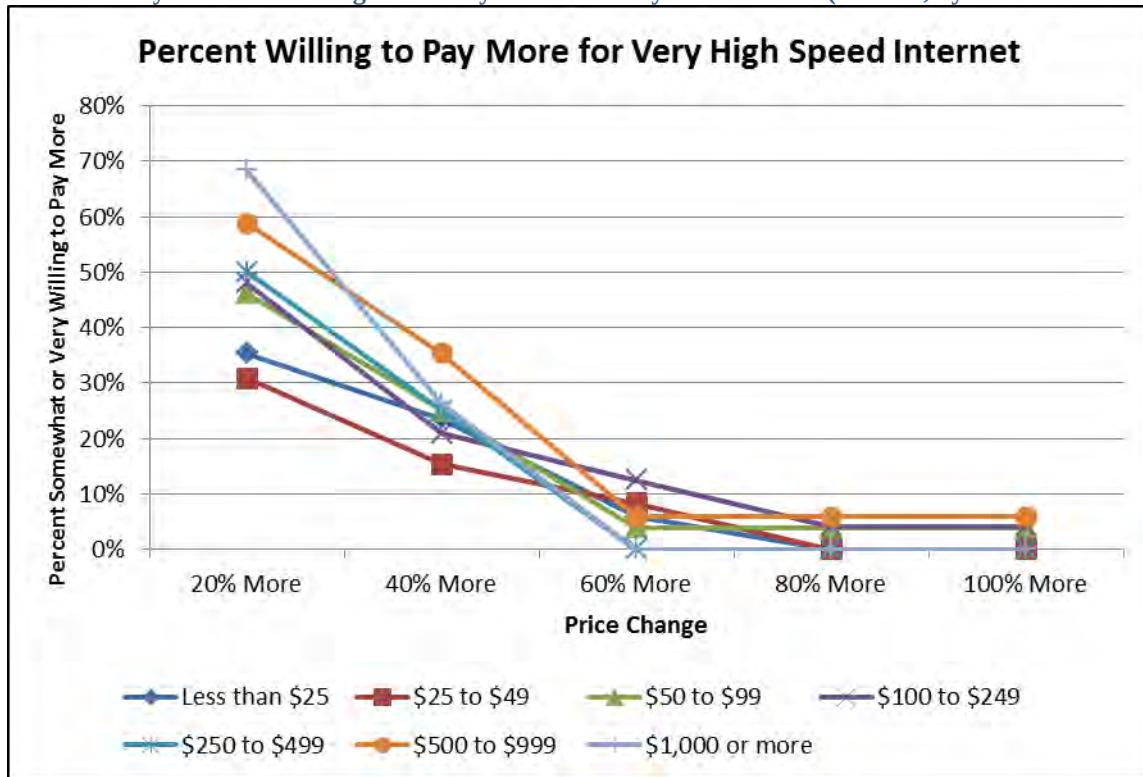


Figure 38: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Sector)



Analyzing respondent's willingness to pay more for high-speed Internet based on their current Internet service costs indicates that respondents with cheaper Internet service do not appear more likely to pay a greater percentage for very fast Internet. In fact, willingness seems to correlate with higher-priced services. Respondents in the lowest two cost brackets (<\$50/month) were the least willing to pay more (in percentage terms) for very fast Internet service. Those in the higher cost brackets were more willing to pay extra for very fast Internet service.

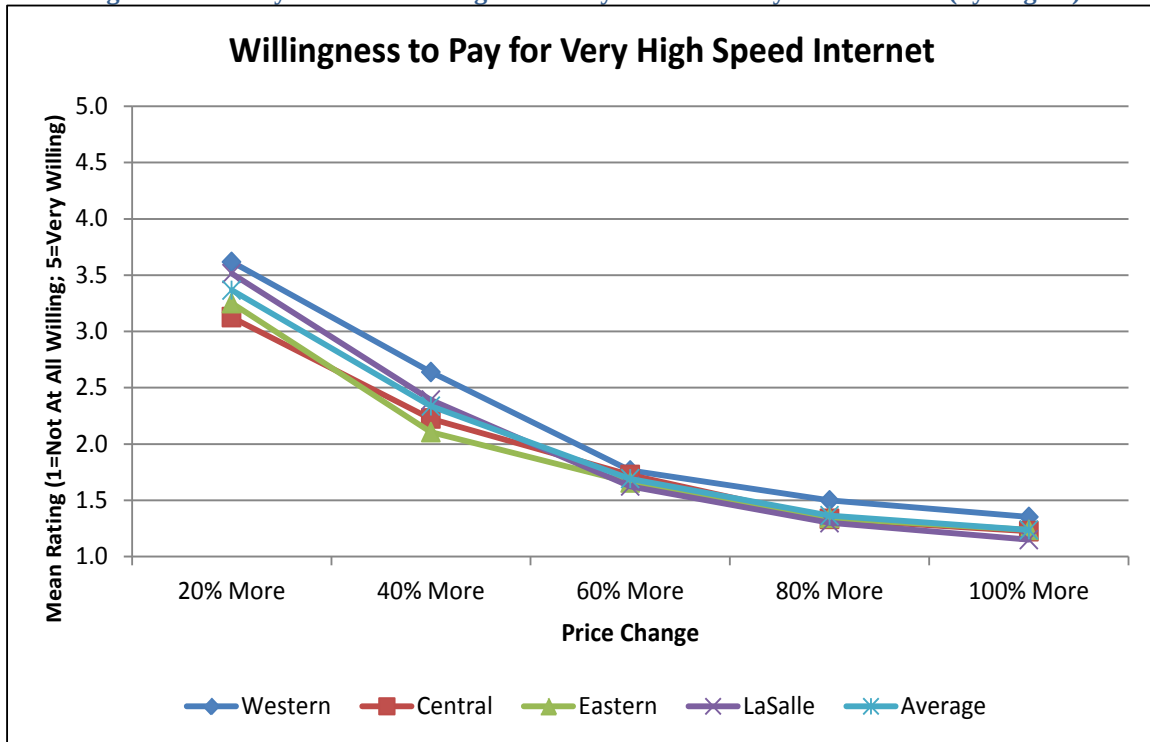
Figure 39: Survey Results – Willingness to Pay More for Very Fast Internet (Percent, by Current Price Paid)



One explanation for this finding might be that smaller organizations (which tend to have lower-cost service) are extremely cost sensitive; they might also have modest Internet needs, so that even a cheaper service (e.g., DSL or cable) completely fulfills their needs. This could also explain why the highest share of respondents indicating that their Internet service was “fast enough for our needs” were DSL respondents, not those with a faster connection. (See Figure 20.)

In addition to the other factors, there are also apparent differences in willingness to pay by geographic region. Respondents in the western region were somewhat more willing to pay for high-speed Internet service. This may be a function of the availability in the area, the organization's use of the Internet, or the prices currently paid.

Figure 40: Survey Results – Willingness to Pay More for Very Fast Internet (by Region)



4. Survey Results by Sector

The questionnaire included a page of questions specific to each of the major CAI sectors, including educational organizations, government entities, health care facilities, libraries, and community organizations.⁵ In addition, we analyzed the responses to all of the survey questions by sector.

The survey data indicate that health care organizations, in particular, have a need for high-capacity broadband services:

- Health care respondents use the Internet more than respondents in other sectors for many applications, especially videoconferencing, large data transfers, and telemetry and monitoring.
- Connecting with other sites is much more important for health care respondents than for other sectors.
- Health care and Education respondents are more willing to pay extra for very high speed Internet compared to government or library respondents.

Analysis of the data by respondent sector yields the following additional insights:

- The largest “gap” between Internet aspects’ importance and satisfaction for all sectors is connection speed.
- Health care respondents rate mobile Internet access at a greater level of importance than respondents from other sectors.
- Cable Internet connection was most common in libraries, health care, or government facilities, while leased line was most common in education facilities.
- Libraries typically have the smallest number of employees, averaging 10 per location, but have more computers than employees, averaging 20 per location.

4.1 Educational Organizations

Educational organizations are comprised of K-12 schools, community and technical colleges, four-year universities, and other education-related institutions. The vast majority of respondents in the education sector were K-12 schools. Respondents were spread fairly evenly across all of the counties.

⁵ No summary is provided for community organizations because only three responded to the survey.

Figure 41: Locations of Respondents in Education Sector

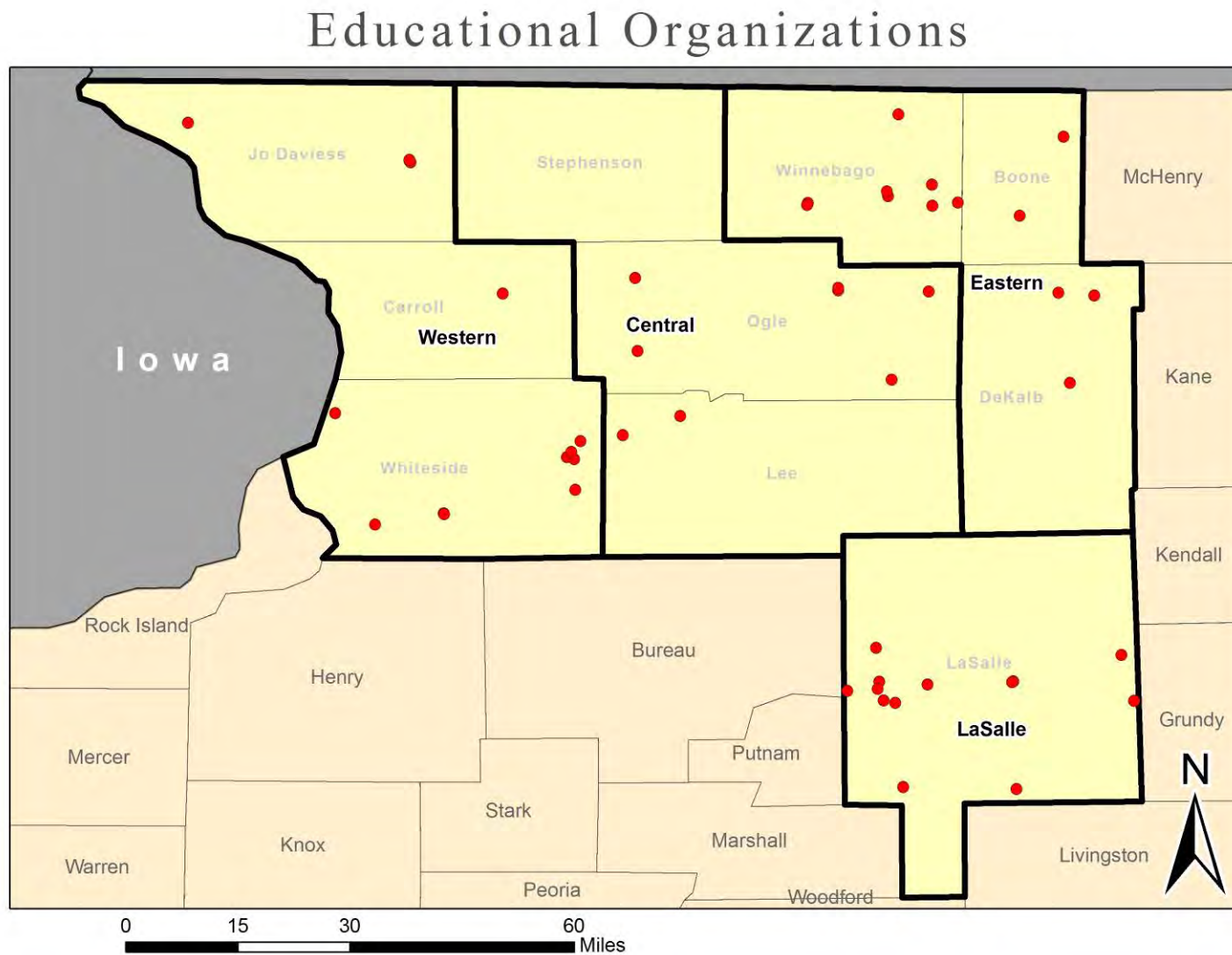
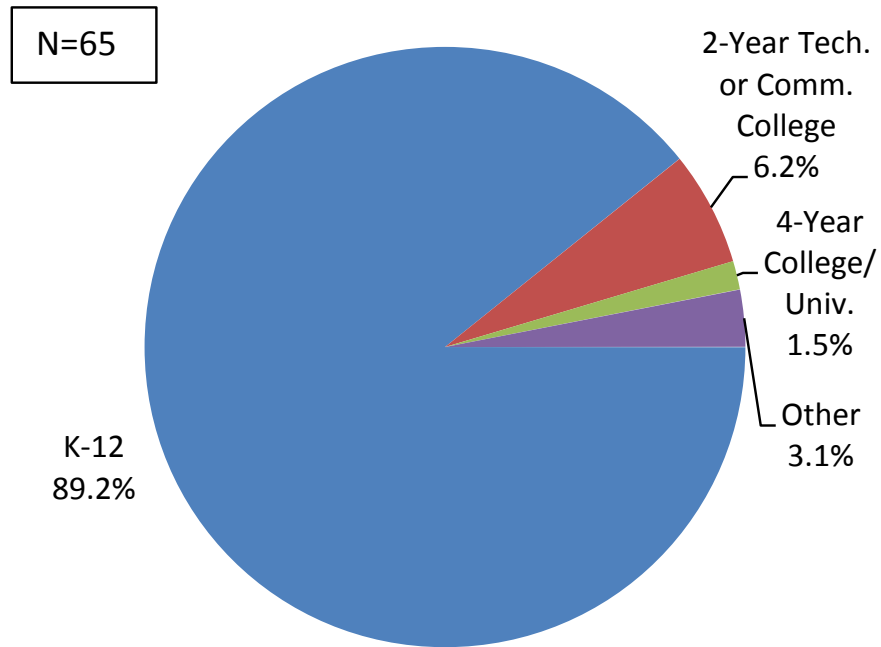


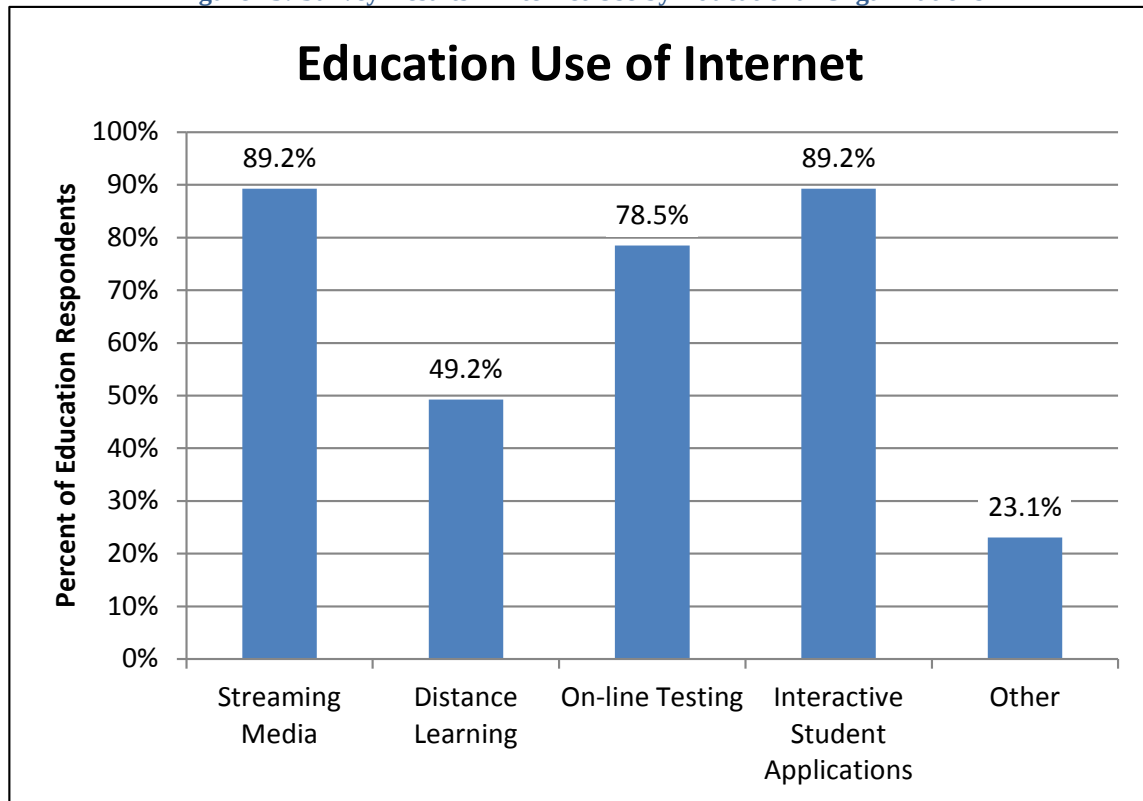
Figure 42: Survey Results – Type of Educational Organization

Type of Educational Organization



Educational organizations use the Internet for a variety of purposes. The most popular are streaming media and providing interactive student applications, used by nearly 90 percent of respondents in the education sector. Over three-fourths of education respondents use the Internet for on-line testing and approximately one-half use it for distance learning.

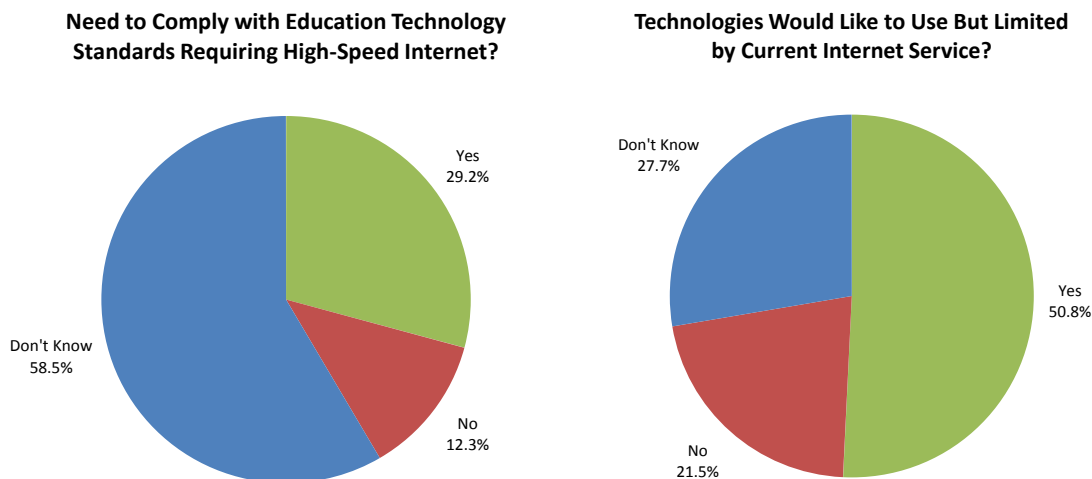
Figure 43: Survey Results – Internet Use by Educational Organizations



Most respondents did not know whether their educational organization needed to comply with sector standards that required a high-speed Internet connection. Of those that did know, more than two-thirds replied that they did need to comply with standards requiring high-speed Internet.

About one-half of respondents indicated that there were technologies they would like to use, but were limited by their current Internet service.

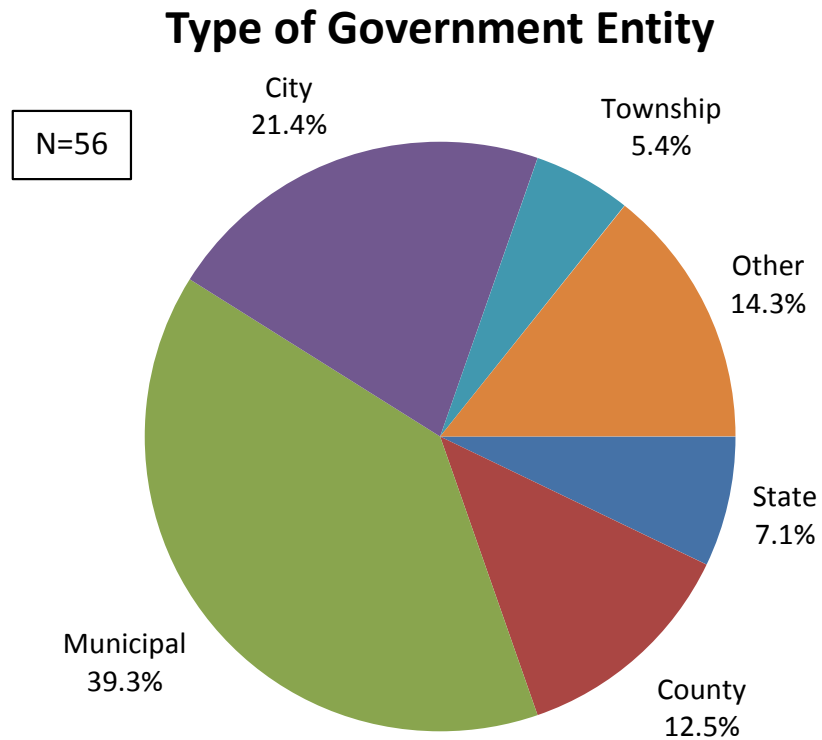
Figure 44: Survey Results – Educational Organizations



4.2 Government Entities

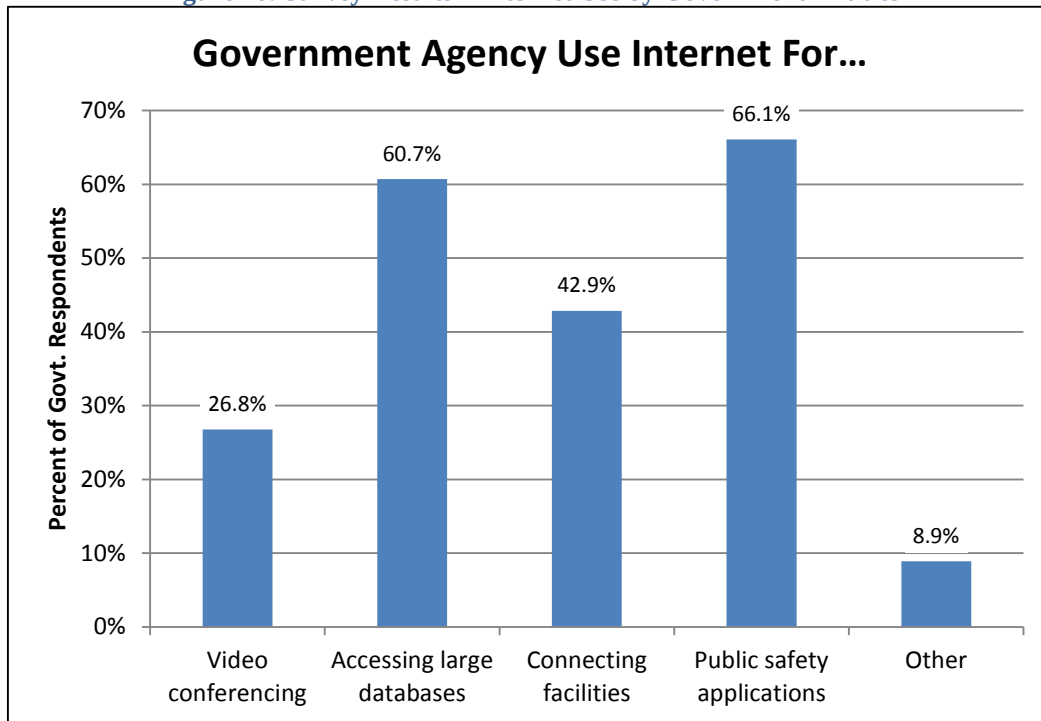
Government entities are comprised of state, county, municipal, city, township, and other government-related entities. Municipal government entities were the largest share of survey respondents, followed by city, county, state, and township government entities. Approximately two-thirds were “local” government entities (cities, municipalities, and/or townships).

Figure 45: Survey Results – Type of Government Entity



Government entities use the Internet for a variety of purposes. Over one-half of government entities use the Internet for public safety applications or accessing large databases. Nearly one-half use the Internet for connecting to other facilities and 26.8 percent use it for video conferencing.

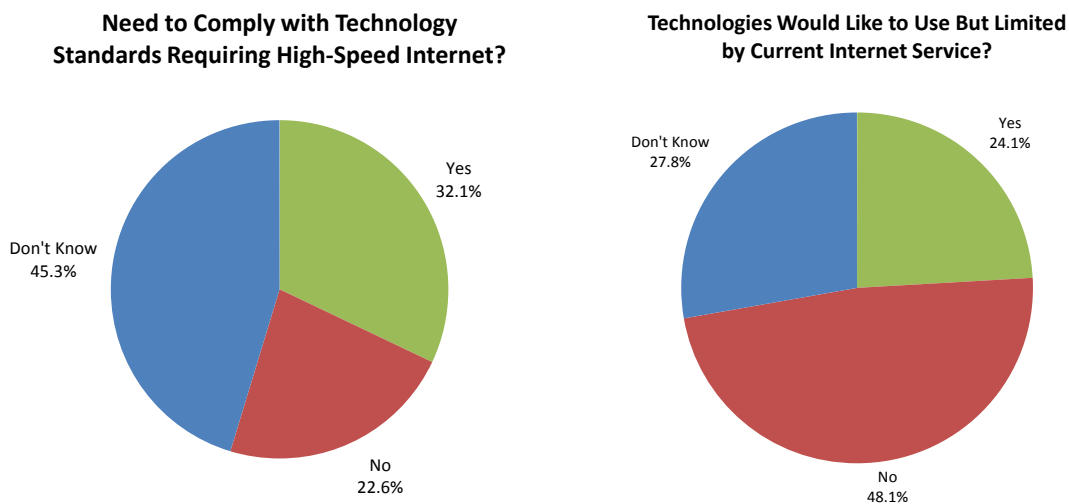
Figure 46: Survey Results – Internet Use by Government Entities



Nearly one-half of government sector respondents were unsure if they needed to comply with sector-specific standards that required a high-speed Internet connection. Of those providing a response, more than half said that they did need to comply with a sector-specific standard that required high-speed Internet.

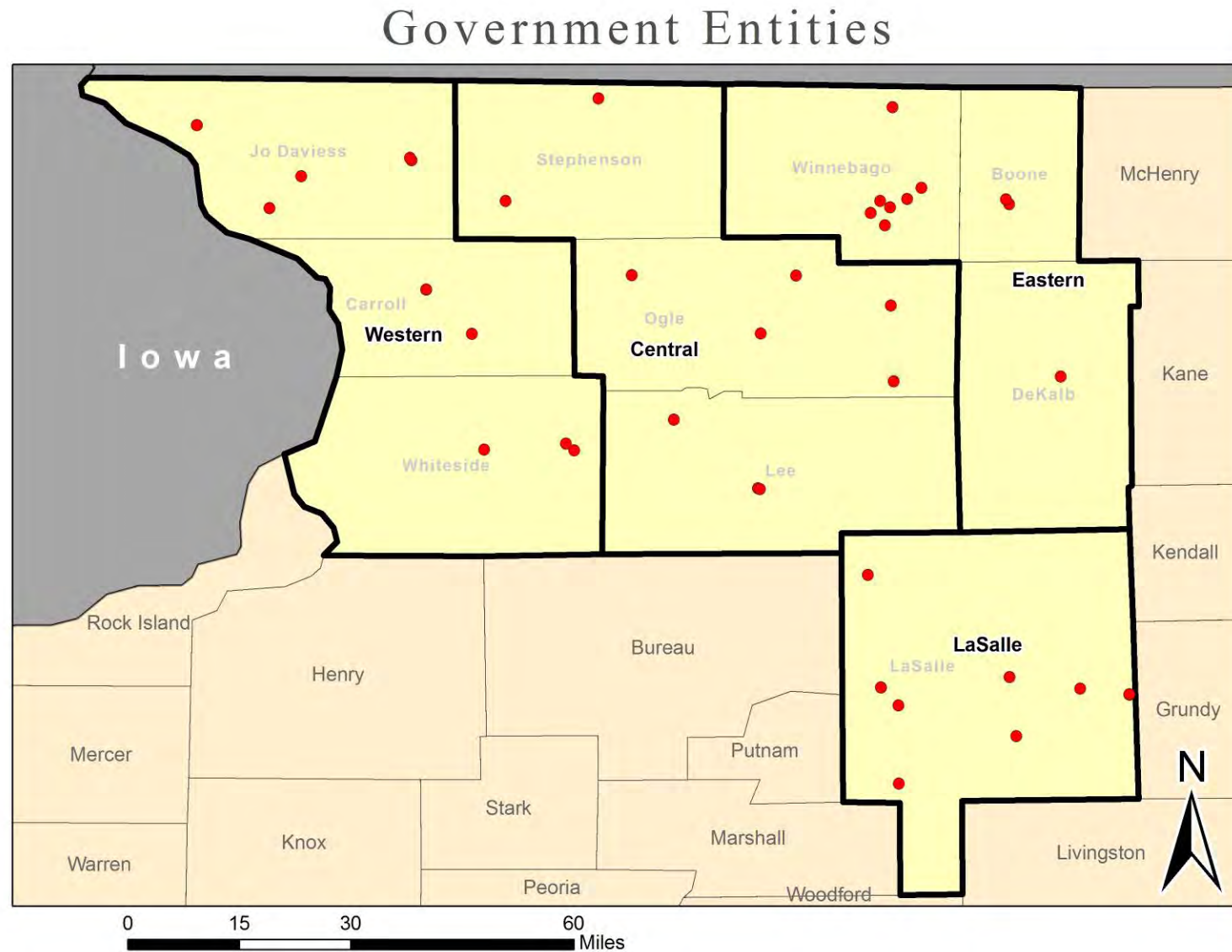
Approximately one-fourth of government sector respondents said there were technologies they would like to use, but were limited by their current Internet service.

Figure 47: Survey Results – Government Entities



Governmental entities from across the survey area submitted responses.

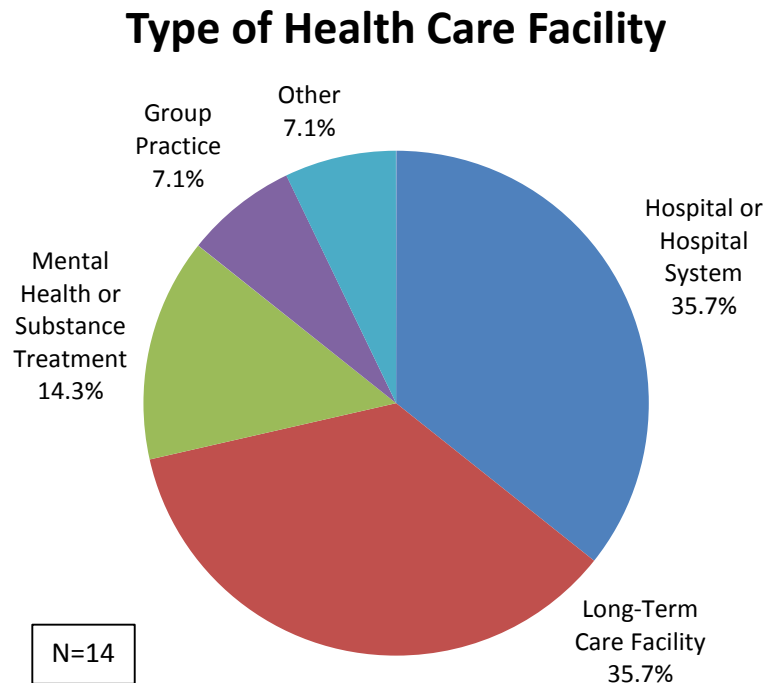
Figure 48: Locations of Respondents in Government Sector



4.3 Health Care Facilities

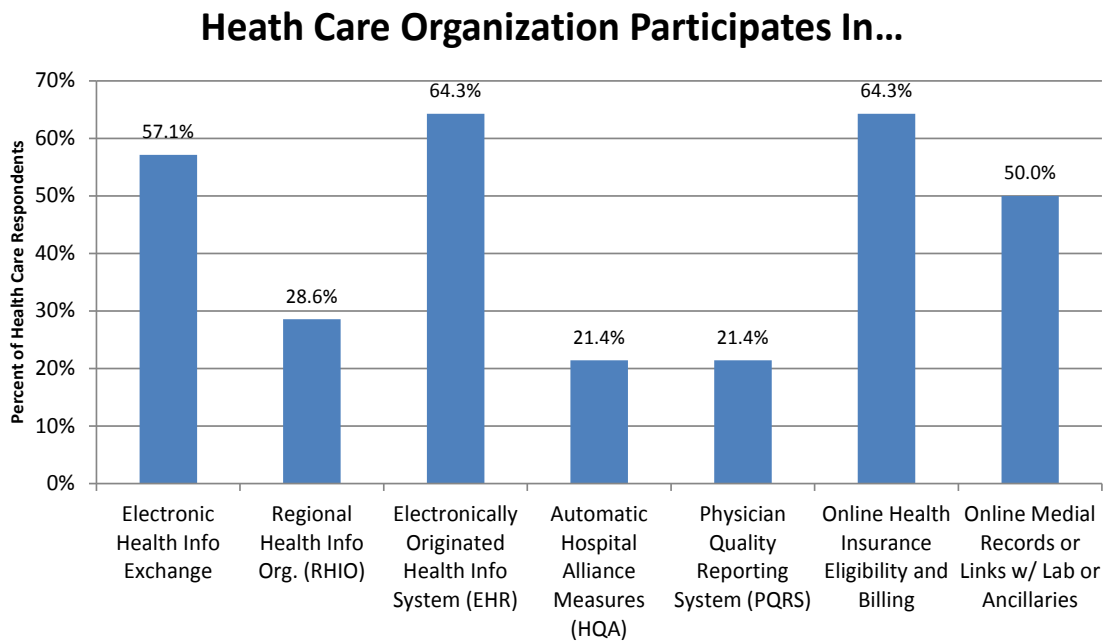
Health care facilities include hospitals, long-term care facilities, mental health or substance treatment facilities, and group practices. Hospitals and long-term care facilities were the most numerous respondents in the health care industry. It should be noted that the health care findings are based on a relatively small sub-sample of only 14 respondents.

Figure 49: Survey Results – Type of Health Care Organization



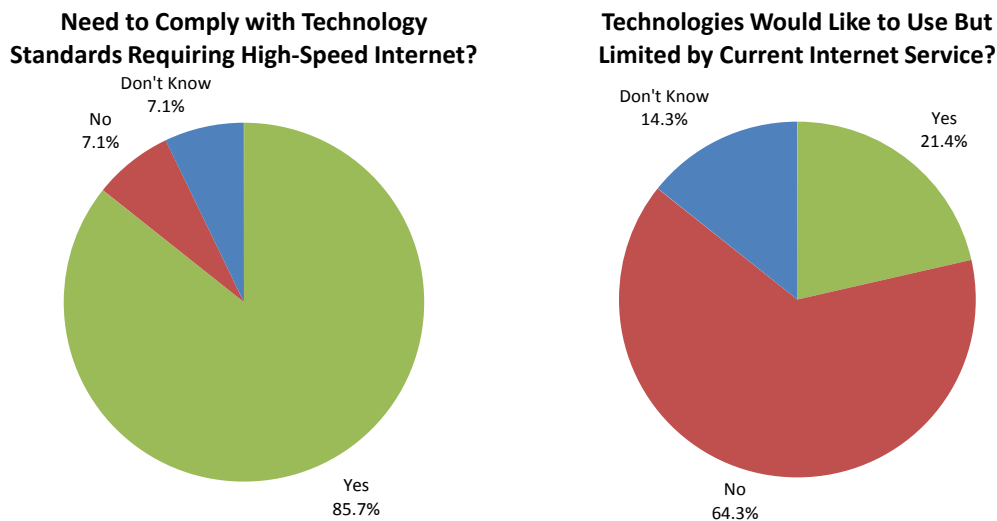
Health care organizations have a wide variety of industry-specific uses for high-speed Internet, electronic communications, recordkeeping, or other technology applications. At least one-half of the health care respondents participate in an electronically originated health information system (EHR), an online health insurance eligibility and billing system, an electronic health information exchange (HIE), or an online medical records link.

Figure 50: Survey Results – Internet Use by Health Care Organizations



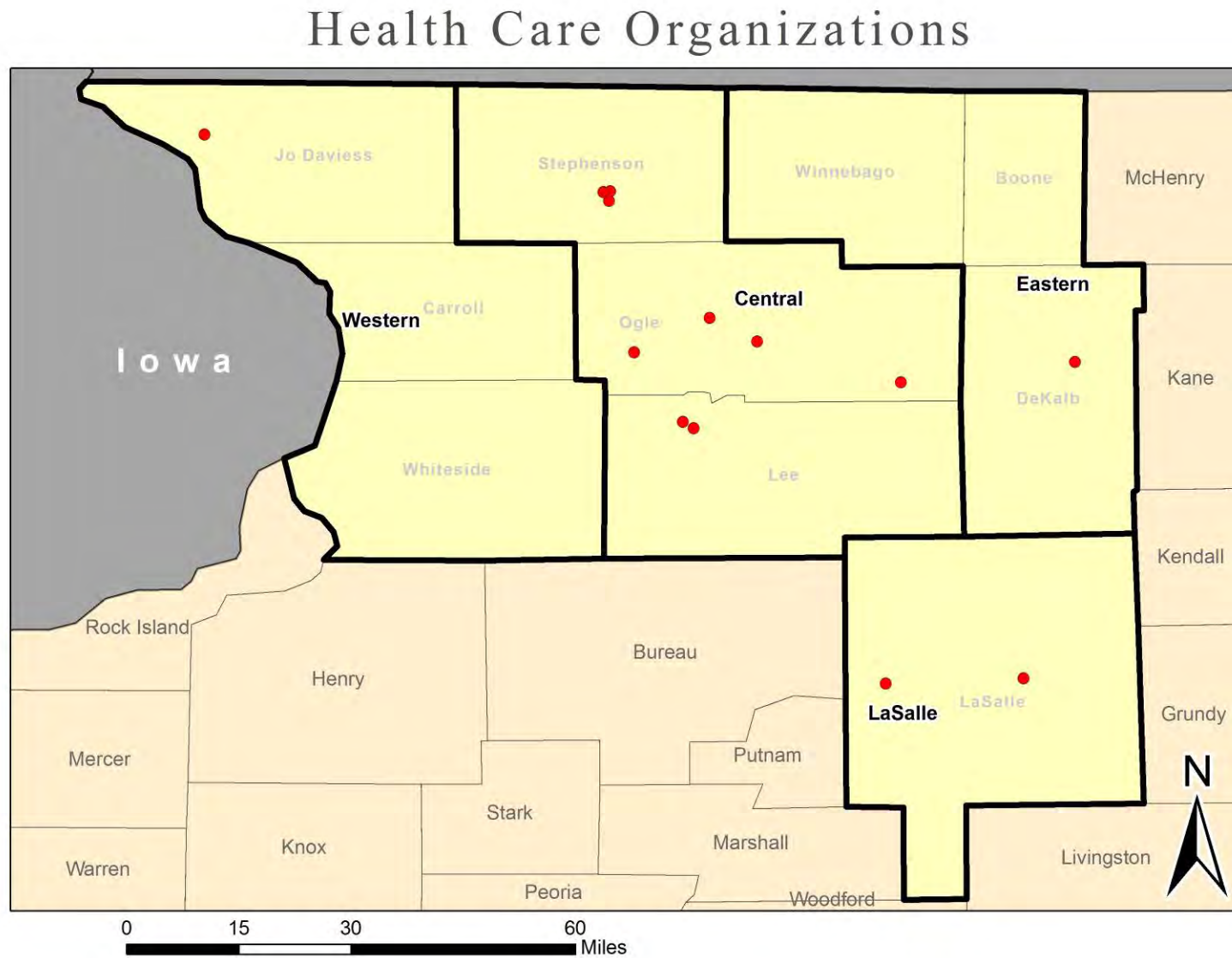
Most health care industry respondents indicated that they are or will be required to comply with technology standards that require high-speed Internet connections. Only a small share of health care industry respondents indicated that there were other technologies they would currently like to use, but that are unable to use because of the limitations of their current Internet service.

Figure 51: Survey Results – Health Care Organizations



The health care organizations that responded to the survey were geographically diverse, though they did not represent every county in the survey area. The majority were in the central region.

Figure 52: Locations of Respondents in Health Care Sector



4.4 Libraries

Only one-third of library respondents were part of a network or one of multiple locations for a library system. Nearly two-thirds were independent libraries.

Most libraries provide Internet access to the general public and use the Internet to access large files or databases. More than one-half use the Internet to support training or digital literacy, although only 38 percent use it to deliver training for staff.

Library Part of Network or Multiple Locations?

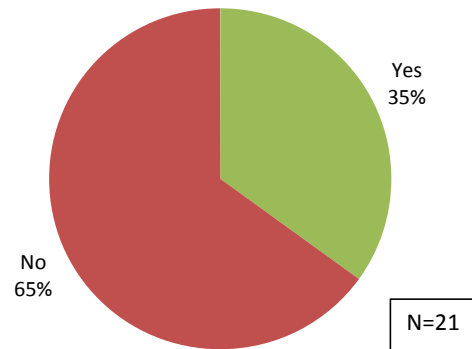
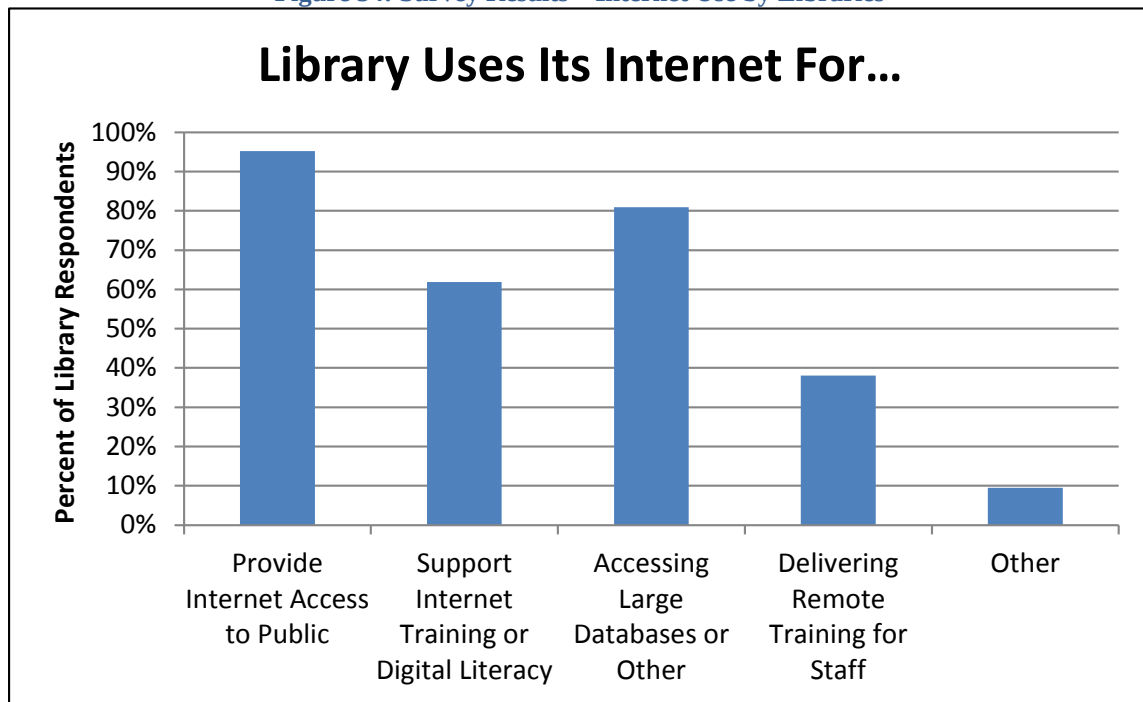


Figure 53: Survey Results – Library Locations

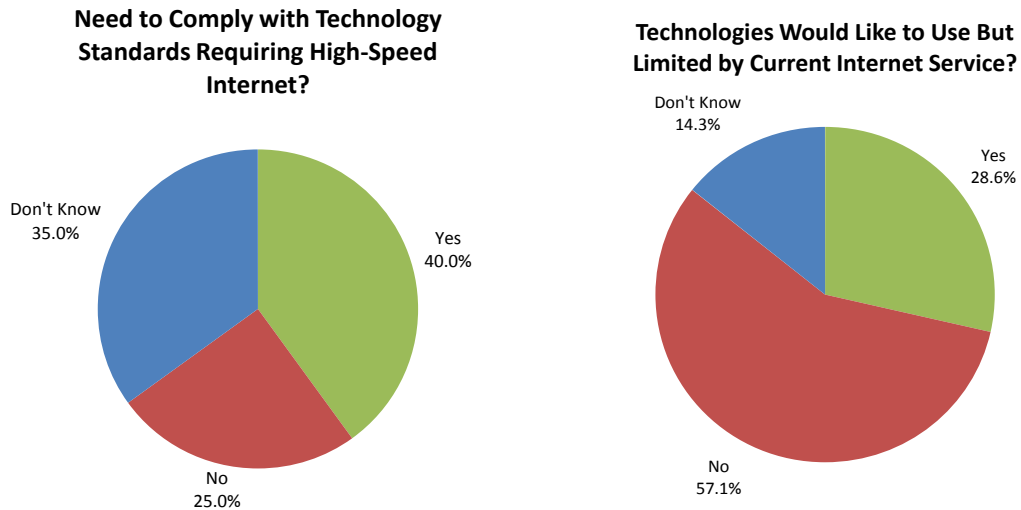
Figure 54: Survey Results – Internet Use by Libraries



Although over one-third of library respondents did not know if they needed to comply with technology standards requiring high-speed Internet, 40 percent indicated that they did need to comply while only 25 percent indicated that they did not need to comply with standards that required a high-speed Internet connection.

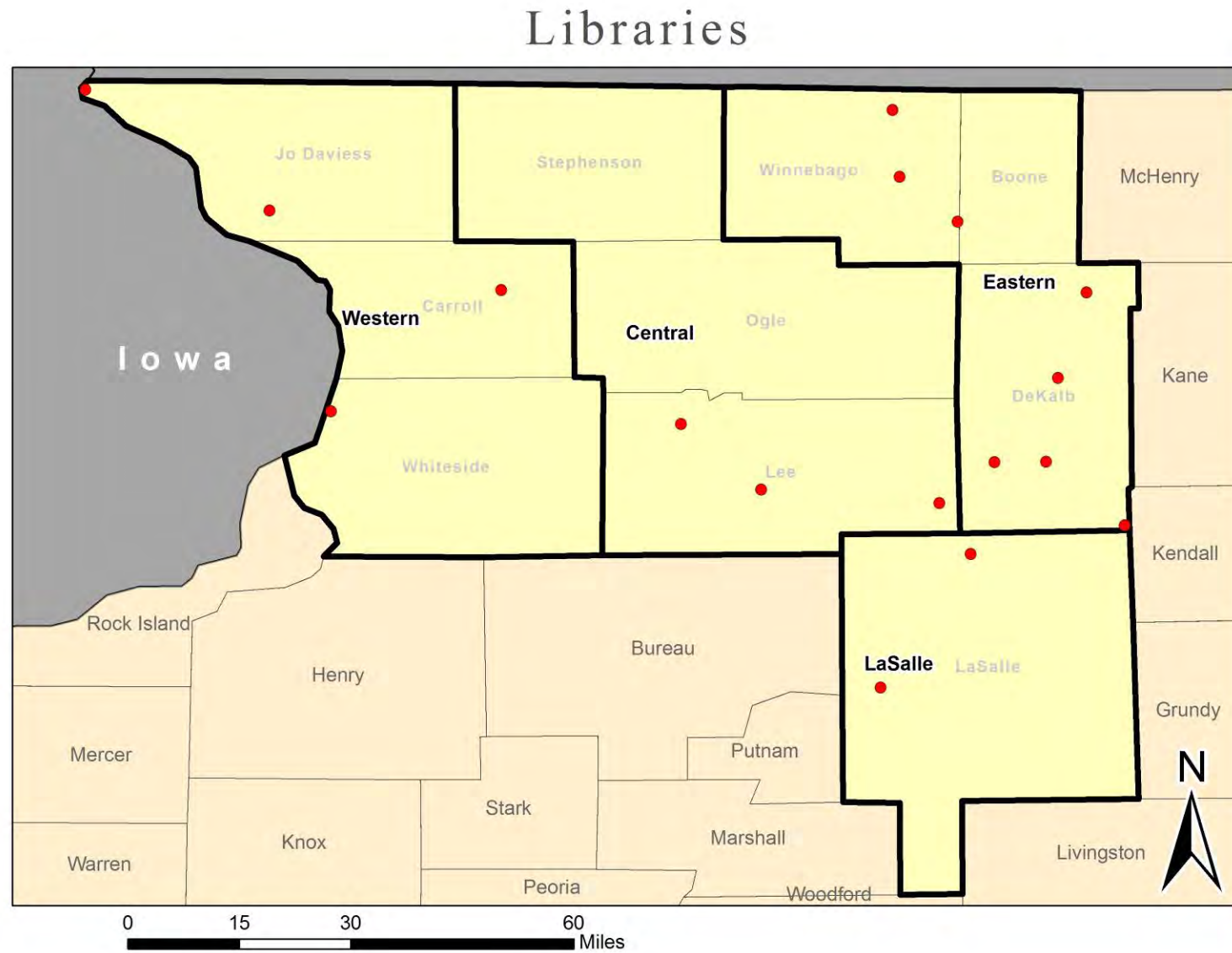
Only 29 percent of library respondents indicated that there were technologies they would like to use, but were limited by their current Internet service.

Figure 55: Survey Results – Libraries



As with the other sectors, the library respondents were geographically diverse.

Figure 56: Locations of Respondents in Library Sector



5. Survey Results by Geography

We did not summarize data from the individual CAI respondent sectors (i.e., education, health care, etc.) by region because subdividing the responses leads to numbers that are too small to provide significant insight. However, looking at the overall survey results by geography identifies a few key similarities and differences:

- On average, CAIs in the central region paid the least for Internet and CAIs in the eastern region paid the most, but this is likely influenced by the mix of connection types. Breaking out the average cost for each connection type for each region yields widely divergent results because of the very small numbers in sub-groups of sub-groups.
- Respondents in the eastern region are somewhat more likely to use the Internet for online data storage/backup, E-commerce, and connecting with other sites, although most of the differences are probably not statistically different from other regions.
- Respondents in the eastern region tend to rate their connection speed as fastest and are most satisfied, while western respondents rate their speed as the slowest and are least satisfied.
- There are not dramatic differences across regions for importance of, or satisfaction with, most Internet service aspects.
- Western respondents rate higher importance than other regions on several Internet activities, including downloading and streaming videos, and video conferencing. This may be related to their greater distance from Chicago. They are also the most willing to pay a price premium for very fast Internet.
- Over 20 percent of respondents in the central region do not have a website. In other regions, almost 100 percent of respondents have a website.
- The average CAI organization size (as measured by number of employees or number of computers) was similar across regions, with the exception of the central region, which had somewhat smaller organizations on average.
- DSL and cable comprised about 50 percent of the CAI market, with only modest variation across regions. The eastern region and LaSalle had a higher share of leased line services.

6. Survey Results by Mailing List

On an aggregate level, the differences between the two respondent sub-groups were not significant. In other words, the CAIs that previously had been contacted by iFiber or DATA, and the CAIs that had not been contacted both provided similar responses.

Among the noteworthy differences between the respondents were the following:

- The CAIs that had not previously been contacted by iFiber or DATA use online backup and storage more, and rated that as a more important aspect of their Internet use, than did the CAIs that had been contacted.
- The previously contacted CAIs had more cable subscribers and fewer DSL subscribers. However, the combination of these two was about 50 percent for both groups.
- The previously contacted CAIs had more fiber optics subscribers and fewer leased line subscribers. However, the combination of these two was about 30 percent for both batches.

Appendix A: Survey Respondents' Written Comments

The survey document included space for respondents to provide written comments about their access to and use of high-speed Internet. About one-third of respondents answered that question; their anecdotal responses included the following:

1. 26 remote locations connecting to 1 hub need fast upload speeds.
2. A representative was already here.
3. Affordability is of the utmost importance since as a municipality we have an obligation to speed our tax revenues as judiciously as possible. Reliability is also crucial in order that city services can operate uninterrupted.
4. Affordable pricing for public libraries is crucial. Illinois has cut its meager amount of state funding 'library grant money through the federal LSTA program no longer supports individual libraries' needs for network improvement; property tax assessments which are the basis for our support have fallen for 3 years and we can expect further declines or a flat picture for the foreseeable future. iFiber as a component of the federal BTOP grant opportunity was conceived in part for libraries so that the general public esp those who can't afford internet access would have free access. Public libraries who serve every age group, ethnicity, socioeconomic level etc. operate on slim margins. You cannot expect that a city or village or hospital which has all sorts of perks and statutory means to collect take revenue or fees is on par with the public library in the iFiber region, meaning libraries' budgets are tiny in comparison. Find a sliding scale for libraries based on budget/attendance, etc. if you are able. Thanks for considering. – Eve Kirk
5. Already been visited.
6. Already had presentation to the board of trustees by Daniel Payette. The cost needs to be competitive with current Internet providers. The \$100 per month figure that was given to us is twice as much as we pay now for reliable, high-speed internet that is meeting our needs. – Hanover Township Library, Shari Farral, Director 815-591-3517 hanoverlib@mchsi.com
7. Already have information.
8. Already have. Maintenance fee is WAY too high!
9. Already part of DATA fiber optic grant—expecting fiber connection soon. – Barb Coward, Cortland Library
10. Already planning on signing iFiber contract.
11. Already signed the letter of intent for iFiber.
12. Already spoke to a representative.
13. Already spoke to them waiting for engineer and contracts!
14. Called on 2/14/12 and left a message for Kathy Siebrasse to ask questions.
15. Currently signing contract with iFiber.

16. Dan already has had iFiber come. We do so many web-based applications now that are so slow due to using 100% of our 3mb capacity (2 Ti lives). This could only increase.
17. From my understanding iFiber is way too expensive. I'm very surprised this survey is paper based. You're an ISP, it should be web based.
18. He has already. Cost must be affordable. Current service is FREE. Yearly budget is less than \$30,000 total.
19. High speed Internet is critical to the growth of our city and area. We will use more when it becomes available.
20. I am concerned about the cost of this service.
21. I believe the mayor has been in contact with the Blackhawk Hills RC&D representative.
22. I believe we already had someone here.
23. I would like to talk with a rep again if costs have come down substantially. I talked with Mr. Payette before and at that time the cost was way out of sight.
24. If city hall moves from current location we may have need of iFiber services. iFiber rep has already been here.
25. It is essential for our library to operate. Unfortunately our choices are between slow, too slow for our needs DSL and unreliable cable Internet.
26. It's the future and we are all for it.
27. Just looking for what is best for our students and remain fiscally responsible to our community.
28. Looking forward to accessing iFiber network and improving redundancy and connectivity to other regional schools.
29. Member of the DATA project that pre-dates iFiber. Our internal network is lit, now waiting on the internet connection.
30. NIU/DeKalb county DATA fiber optic grant group has already sent representatives.
31. None at this time.
32. None at this time.
33. Our current provider does not charge a fee to 2 of our facilities because we are a government organization if you would charge us a fee we would not be able to have your services we are trying to cut back on expenses.
34. Our Internet service is provided free of charge.
35. Polo, Ashton and Amboy clinics would benefit from increased connectivity to Dixon hospital mainframe.
36. Signed contract with iFiber.
37. Someone has already contacted us and this time the cost of service is overwhelming \$6,000+ per year. It would be helpful but we cannot afford it.
38. The assessor's office would benefit the most. Their office is connected to the county's

Logan Center. The increased speed would improve upload and download of property information.

39. They have come once.
40. Very interested in iFiber—mainly want to know costs.
41. We already have been contacted.
42. We already have signed an agreement with iFiber.
43. We are hoping to expand our services to residents so that we can provide Internet phone and video conferencing.
44. We have a plan in place to obtain a fat pipe in the summer.
45. We have already been contacted by a representative of iFiber and are planning on participating in the program.
46. We have already been contacted by iFiber and have met with Daniel Payette. We are on fiber loop in Rock Falls.
47. We have already met with a rep from iFiber and realize the need for faster more reliable Internet access. Our institution not only would like to increase our speed and bandwidth but we must increase our speed and bandwidth.
48. We have been told that hook up to iFiber would be \$600 per month per school. This seems too high for a non-profit entity to charge to another non-profit!
49. We know that we could greatly benefit from another ISP at our present location out of the city limits. Our options are very limited.