



CENTER *for* RURAL POLICY *and* DEVELOPMENT

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2002 Rural Minnesota Internet Study

How rural Minnesotans are adopting and using communication technology

As Minnesota's economy continues to embrace the digital tools that our high tech companies develop, policy makers continue to examine the growing incongruity between our telecommunications policies and the ways telecommunications services are actually delivered. Such concern is certainly warranted. As most knowledgeable observers would note, recent advances and convergences of communication technology would likely render policies written only five years ago obsolete, and Minnesota has not rewritten its basic telecommunications statutes in decades.

Among rural legislators and advocates, concern continues to mount that rural Minnesota may become seriously disadvantaged without the availability and adoption of these digital tools. Of specific concern is the availability and adoption of broadband communications technology. As the state, national and global economies grow in their utilization of digital technology, there is great concern that commercial and industrial enterprises in rural Minnesota will be competitively disadvantaged by a lack of access to high-speed, or broadband, connectivity.

Access to and adoption of Internet and broadband technologies by residents is particularly important to businesses in rural Minnesota, largely because of the economies of scale involved in providing these services. Outside of large population centers, the ratio of businesses to residences is much lower in a given geographic area, affecting the costs of providing Internet and broadband services to an individual business. In densely populated areas, this issue is practically invisible. There are enough business customers purchasing services to create an affordable market. In rural areas, this problem is more pronounced, and consequently businesses find telecommunications services less affordable. As a result, residential customers are often looked on as a means of enlarging the purchasing pool, making providing services more cost effective for providers and more affordable for customers.

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The Center for Rural Policy and Development, based in Mankato, Minn., is a private, not-for-profit policy research organization dedicated to providing Minnesota's policymakers with an unbiased evaluation of issues from a rural perspective to benefit Minnesota.

Initiated in 2001, The Rural Minnesota Internet Study is an annual survey designed to monitor Internet access, market penetration and technology utilization in rural Minnesota. This year's study has two primary components: 1) a random sample of rural Minnesota households to better understand rural residents' utilization and orientation toward the Internet; and 2) a survey of communication companies serving rural Minnesota communities that measures the services they offer, market penetration and pricing. This report documents the findings of the residential survey. Results of the communications provider survey will be released later this year.

The survey was conducted by telephone interview, using phone numbers randomly selected from the entire state outside of the Census-defined Metropolitan Statistical Areas generated through random-digit dialing techniques. The data were collected in late May through early June 2002. A total of 663 rural residents were interviewed for this study. The data was analyzed using SPSS and the estimates generated have a margin of error of ± 4 percent.

A quick look at the major findings of this survey conclude that ...

- Growth in the overall number of people owning home computers or in the overall number of people connecting to the Internet between 2001 and 2002 appears to be flat. As in 2001, approximately 60% of rural Minnesota households own a working computer and of those with a computer, approximately 80% are connected to the Internet. Consequently, the overall percentage of rural Minnesotans "online," remains at 47 percent.
- Of those online, however, there has been a discernible shift toward broadband technology. In 2001, 13% of those online utilized a broadband connection, where as that percentage has increased to 21% in 2002.
- Overall, the data documents a distinct shift toward spending less time online between 2001 and 2002. Broadband customers reported spending more time online than dial-up users.

- The benchmark price people are willing to pay to switch from a dial-up to a broadband connection remains at \$30. This number has not changed from last year's survey. However, the number of residential dial-up customers who reported that they were not interested in a broadband connection has dropped significantly, from 55 percent in 2001 to 31 percent in 2002.
- More than 50 percent of rural dial-up customers reported that they have never experienced high-speed service. And while half of rural dial-up users reported that high-speed access was available in their area and they could purchase it for their home, one-quarter said it wasn't available, and another one-quarter didn't know.
- When it comes to technology adoption, income is a major factor. Computer ownership, Internet use and high-speed access all significantly increased with income. Nearly two-thirds of those with high-speed service reported household incomes over \$50,000. And while 84 percent of respondents with incomes of \$75,000 and over reported being online, only 25 percent of respondents with incomes under \$25,000 reported being online.
- Also, respondents with high-speed service also tended more to have cell phones and a higher monthly telecommunications bill, which may also be more an indication of an ability to afford these items than a case of "technology following technology."
- Lastly, age matters. While approximately 60 percent of respondents 55 years or younger reported having an Internet connection at home, only 26 percent of those over 55 reported having such a connection.

2002 Study Findings: Technology Adoption

Among the 663 respondents, nearly 59 percent reported having at least one working computer in their home, and of those, 78 percent are connected to the Internet. This reported number of households

with computers is higher than the national average of 56.5 percent, as reported by the U.S. Department of Commerce in September 2001 (“A Nation Online”). However, the rural Minnesota figure of 78 percent lags behind the national average of 88.1 percent. Across all rural Minnesota households (regardless of computer ownership) 46 percent of respondents reported being connected to the Internet at home. This percentage is unchanged from the 2001 survey.

Table 1: Percentage of respondents with at least one working computer in their home and percentage connected to the Internet.

	Working computer	Connected to the Internet
2002	59%	78%
2001	60%	81%

How Rural Minnesotans Connect to the Internet

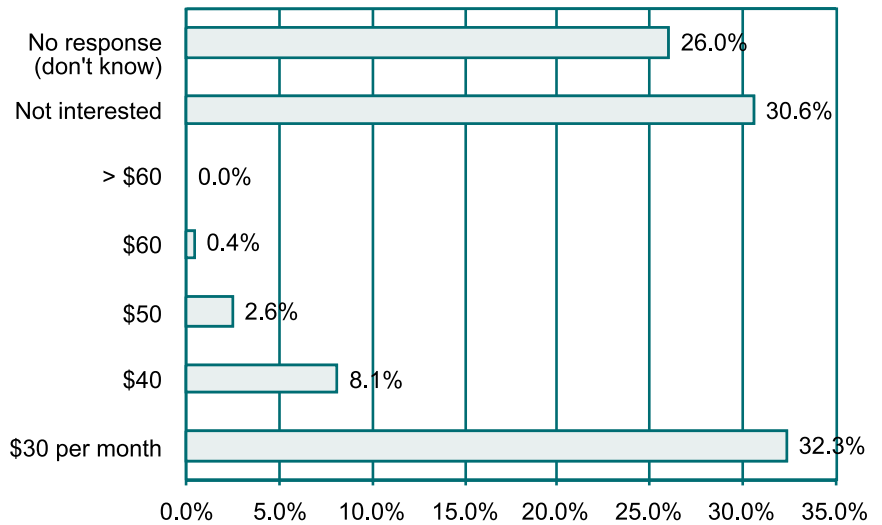
When asked how they connect to the Internet, 77 percent of Internet users responded that they use a dial-up connection, again, virtually unchanged from 2001. However, respondents reported a significant increase in the use of broadband connections, with 21 percent of those online reporting the use of such high-speed services. This compares with 13 percent in 2001.

Table 2: How respondents connect to the Internet.

	Respondents 2002	Respondents 2001
Dial up	77%	78%
Broadband	21%	13%
Don't know	3%	9%

When dial-up users were asked how much they would be willing to pay for high-speed Internet access (Figure 1), the primary price point was clearly \$30 a month; this number has not changed from last year. At the same time, however, 31 percent of dial-up users said they simply weren't interested in a high-speed connection. This number is considerably less than the 55 percent that reported having no interest in 2001.

Figure 1: Percentage of dial-up users willing to pay selected amounts each month for high-speed Internet service.



Two other questions indicate a lack of experience with high-speed Internet access among dial-up users. When dial-up users were asked if they had ever used high-speed Internet access at work, at a friend's house, or elsewhere, 55 percent said no. When asked if high-speed access was available in their area and could be brought into their home, 51 percent said yes, but 25 percent said they didn't know.

Table 3: Percentage of dial-up users that have or have not experienced high-speed Internet access.

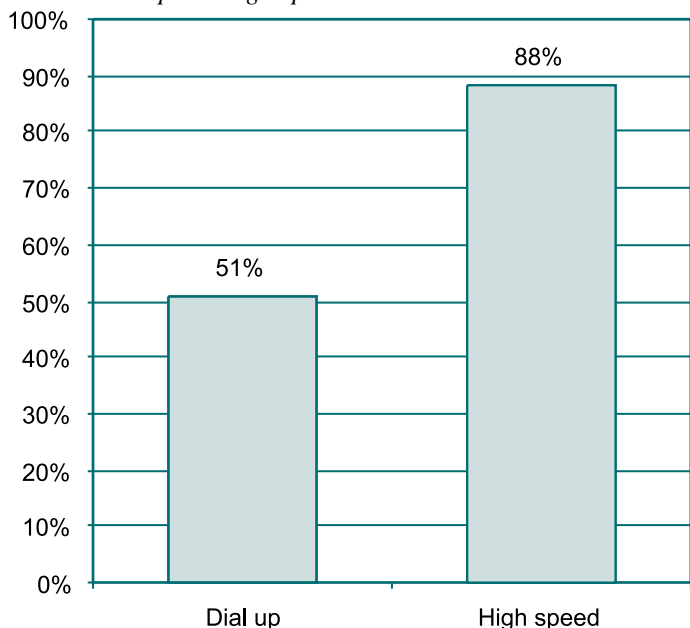
Have you experienced high-speed Internet access?	
Yes, at work	17.6%
Yes, at a friend or relative's house	10.5%
Yes, elsewhere	13.0%
No	54.6%
No response	4.2%

Table 4: Percentage of dial-up users with access to high speed.

Do you have access to high speed services for your home?	
Yes	50.6%
No	23.4%
Don't know	24.7%
No response	1.3%

Respondents were also asked if they were satisfied with their Internet connection speeds of both their dial-up and broadband connections. Not surprisingly, almost 90 percent of broadband users reported being satisfied with their connection speed, while only half of the dial-up users reported being satisfied with their connection speed.

Figure 2: Satisfaction with speed of service among dial-up and high-speed users.



factor in understanding the adoption of these technologies. For example, among those rural Minnesotans reporting a household income of \$75,000 and above, 90 percent own a home computer; 84 percent are online; and 25 percent use a high-speed connection. On the other hand, among those rural Minnesota households with incomes of \$25,000 or less, only 37 percent own a computer; 25 percent are online; and 2 percent use a high-speed connection. Simply put, income matters.

Income Matters

Perhaps of more concern than the availability of broadband is the issue of affordability. To examine the relationship between household income and adoption of technology, we examined the adoption rates of home computers, Internet service and high-speed connections across income categories. As one can see in Figures 3a - 3c, income is a significant

Figure 3b: Adoption of Internet service by income categories. Dollar amount in the 1,000's.

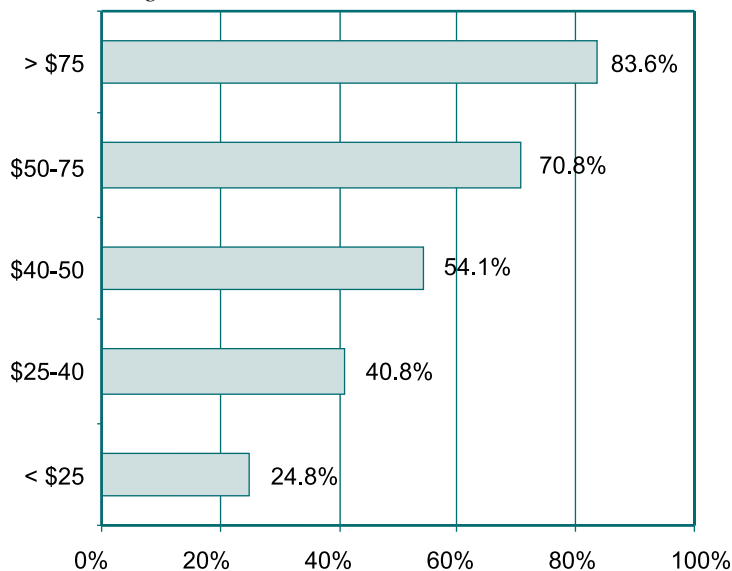


Figure 3a: Home computer adoption by income categories. Dollar amount in the 1,000's.

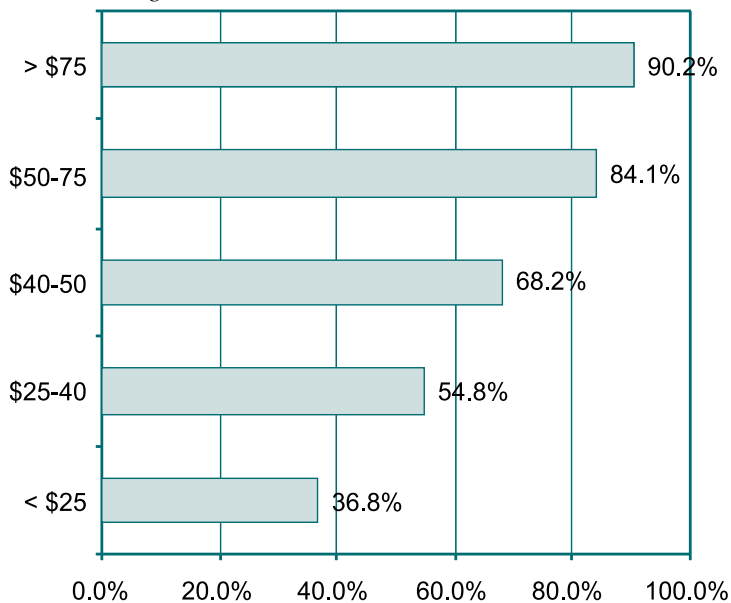


Figure 3c: Adoption of high-speed connection by income categories. Dollar amount in the 1,000's.

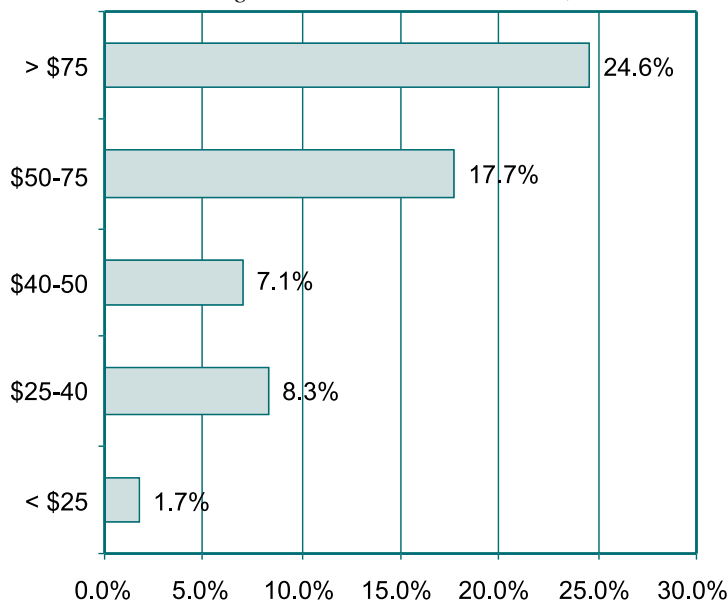
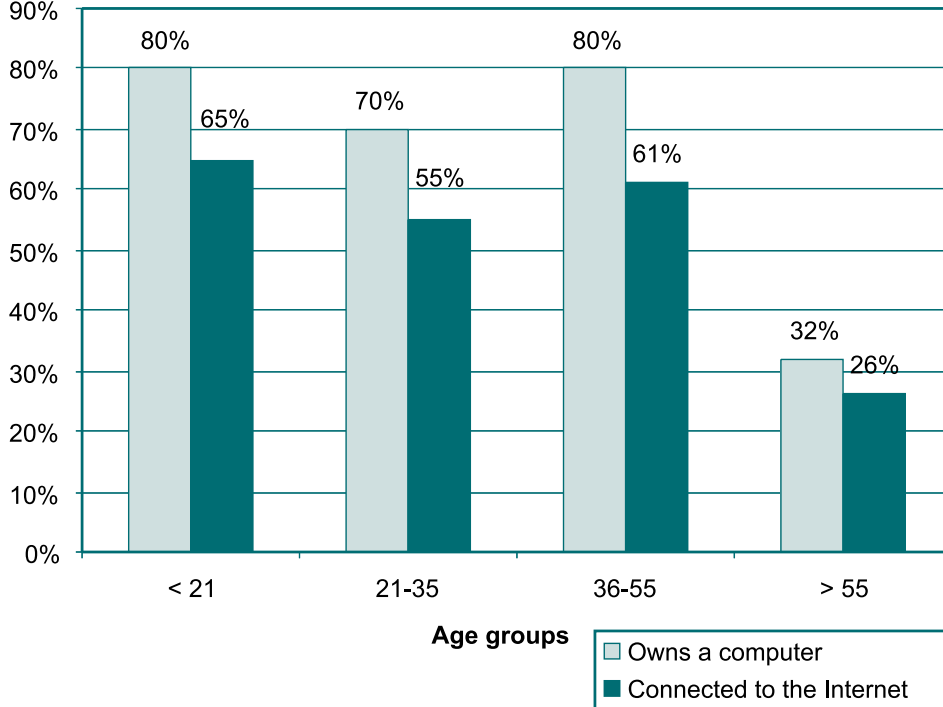


Figure 4: Home computer and Internet use by age.



Age Matters

In much the same way as income, the age of the respondent relates significantly to their orientation toward computer and Internet technology. The data suggests that elderly residents are far less likely than younger residents to adopt these technologies. As one can see in Figure 4, 70-80 percent of respondents 55 years of age or younger report owning a home computer, while only 32 percent of respondents over age 55 reported owning a home computer. A similar pattern is found regarding their Internet utilization. Approximately 60 percent of those 55 and younger reported having an Internet connection at home, while only 26 percent of those over 55 reported having an Internet connection. Such disparities based on age and income have been widely documented in other studies of Internet and broadband access and need to be considered if we are to fully understand what many call the “digital divide.”

Things We Do Online

Respondents were given a list of online activities and asked if they or anyone in their household had engaged in any during the last twelve months. As one can see in Table 5, the most popular activity was, of course, e-mail, with 97 percent reporting that they

use it (use was 94 percent in 2001). The next most popular activities were using the Internet “for fun,” (86%), researching health information (59%), playing computer games (54%) and researching the price of a major purchase (52%). The responses for these popular activities were similar between dial-up users and high-speed users

Some activities were more popular than others depending on the type of access, however. For instance, 43 percent of dial-up users had used chat rooms or instant

Table 5: Percentage of Internet users who reported that someone in their household engaged in these activities in the last 12 months.

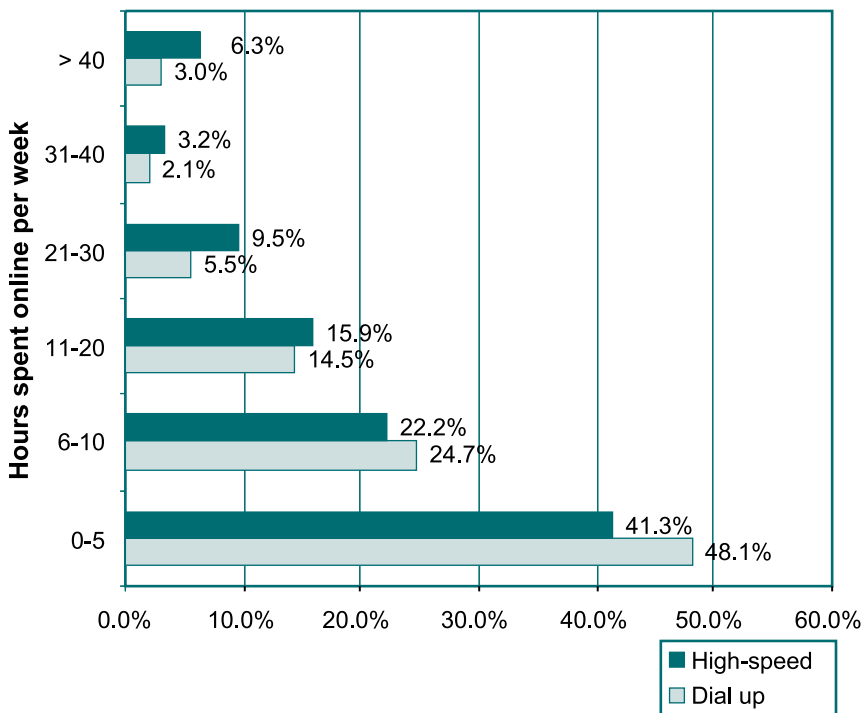
	Dial-up users	High-speed users	All users
E-mail	96.6%	96.8%	96.6%
For fun	86.4%	85.7%	86.2%
Researching health information	58.3%	61.9%	59.1%
Games	54.5%	54.5%	54.0%
Research the price of a major purchase item	53.2%	49.2%	52.3%
Accessing an online newspaper	50.6%	44.4%	49.3%
Travel sites	48.1%	50.8%	48.7%
Purchasing something that can't be gotten locally	44.7%	50.8%	46.0%
Conversing in chat rooms or through instant messaging	43.4%	54.0%	45.6%
Downloading music or videos	43.4%	49.2%	44.6%
Doing work for employer at home	31.9%	46.0%	34.9%
Researching personal finance	28.9%	38.1%	30.9%
Purchasing something online because it is cheaper than at local stores	29.4%	23.8%	28.2%
Using an online auction	19.6%	28.6%	21.5%
Other ways to earn money	11.5%	15.9%	12.4%
Trading stocks	8.9%	19.0%	11.1%

Note: The percentages for activities that differ by more than 5 percentage points are highlighted.

messaging, while 54 percent of high-speed users reported using them. High-speed users also reported researching personal finance, bidding in auctions and trading stocks online more often than dial-up users. And while 32 percent of dial-up users reported using their Internet access for work done for their employer at home, 46 percent of high-speed users reported doing the same.

The amount of time people spend online also appears to be somewhat a function of the type of Internet access used. Almost half of the respondents said they spend fewer than five hours a week online, but while more dial-up users are in that five hours and less category, a higher percent of high-speed users are spending ten hours or more online.

Figure 5: Hours per week online by connection type.



Compared to the 2001 survey, many more users, whether dial up or high speed, are spending a lot less time online. The 2002 survey documents that 73 percent of respondents reported spending ten hours or less a week online, while in 2001, 57 percent spent ten hours or less online and 23 percent spent 11 to 20 hours online.

Table 6: Hours spent online per week, 2002 and 2001.

	2002	2001
0-10 hours	72.8%	56.8%
11-20 hours	14.8%	23.3%
21-30 hours	6.4%	8.4%
31-40 hours	2.3%	4.1%
More than 40 hours	3.7%	7.4%

Examining the Total Telecommunications Bill

Respondents were asked to estimate their total telecommunications bill by reporting what services they purchase (telephone, cell phone, cable TV, satellite video, and Internet) and their approximate total monthly cost. Not surprisingly, high-speed users are more likely to purchase other telecommunication services as well. This finding probably reflects both an affinity for technology as well as an ability to pay. At the same time, dial-up users are more likely to purchase their video services through a satellite provider than were high-speed users. This finding may be a function of living in a more remote location, where cable TV and broadband services are less likely to be available.

Regarding total monthly telecommunications expenses, approximately one-third of all respondents reported their total monthly telecommunications bill to be \$125 or higher, and approximately one-half reported a total monthly bill of \$100 or higher. Conversely, less than 10 percent of the respondents (8.6%) reported having a total monthly bill of \$50 or less.

Not surprisingly, the monthly bills differed significantly between those who had a dial-up connection and those who had a high-speed connection. Almost one-third of those with a high-speed connection reported a total monthly bill of \$150 or higher, while over half of those with a dial-up

connection reported a total monthly bill of less than \$100. These findings are quite congruent with previous findings that overall, high-speed users purchase more technology and have a greater ability to pay.

Summary & Conclusion

The purpose of the Rural Minnesota Internet Study is to monitor the adoption, diffusion and orientation toward digital technology throughout rural Minnesota. This report documented the findings of the survey of rural households in that regard. A companion study examining the service

Figure 6: Percentage of dial-up and high-speed users with cell phones, cable TV and/or satellite TV.

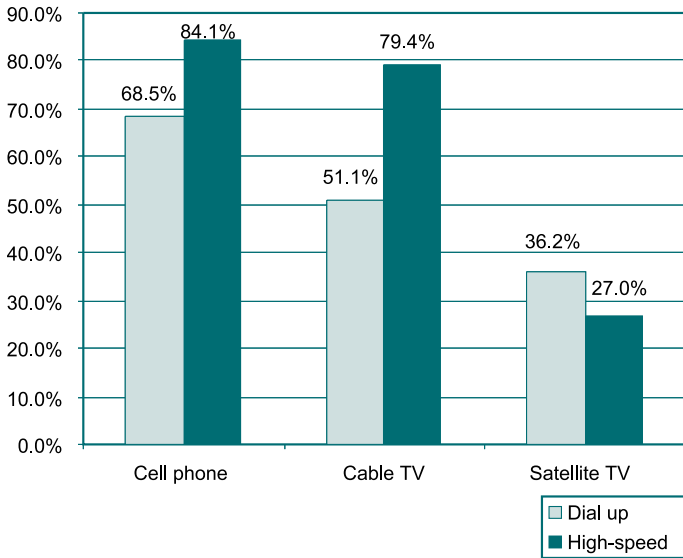
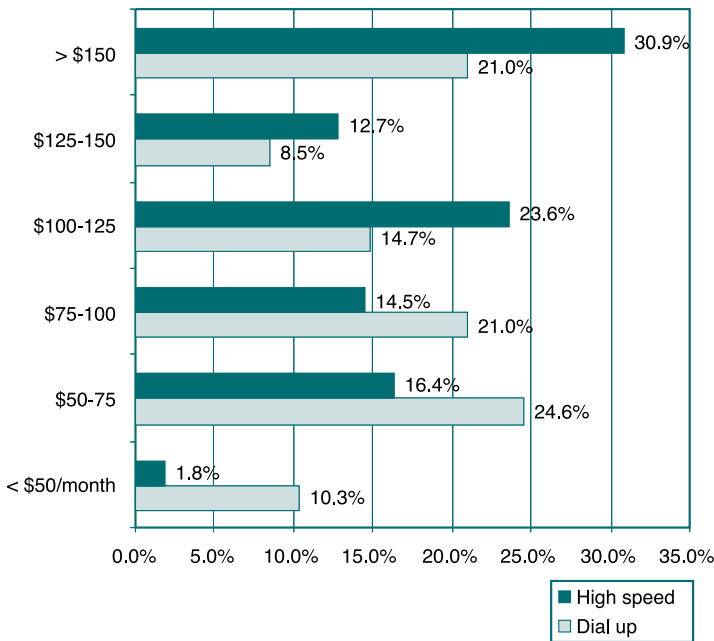


Figure 7: Estimate of total monthly telecommunications costs by connection type.



offerings, technology diffusion and pricing patterns of communications companies doing business in rural Minnesota will be released later this year.

Regarding the major findings, it is clear that growth in computer ownership and Internet connectivity among rural Minnesota households has been stagnant over the past 12 months. We have been “stuck” at approximately 60 percent computer penetration and 47 percent Internet connectivity during this time period. However, among those rural Minnesotans that are online, there has been a discernible shift toward high-speed connections.

Last year 13 percent of rural Minnesotans online reported using a high-speed connection, whereas today 21 percent report using such a connection. Such a finding should be encouraging to broadband providers and advocates alike. On the other hand, slightly over half of those using a dial-up connection reported that they have never experienced using a broadband connection, suggesting that some type of educational effort may accelerate the adoption of broadband services.

The findings also presented some troubling news regarding the influence of age and income on the adoption of digital technology. Specifically, those who are over 55 years of age and those with lower household incomes were significantly less likely to own a computer, purchase Internet service, or have a broadband connection. What makes these findings so troubling is that many rural communities have both significantly lower per-capita and household incomes, as well as a disproportionately high percentage of elderly residents. Such demographics suggest that it may be unrealistic to assume that adoption rates in some rural markets can match those of more urban areas, even with a wide availability of service.

Related to this finding is the fact that price matters. Specifically, findings both in the 2001 and 2002 surveys strongly suggest that adoption of broadband technology is also related solidly to price. It is clear that the benchmark price point for broadband service is, was, and will remain \$30 per month. Not only has this price been consistently stable in our study, a recent (2002) survey of rural Illinois residents reported precisely the same price point. If rural communication providers could reach that pricing level, our study suggests that broadband adoption rates would soar.

In general, broadband users and dial-up users engage in and enjoy many of the same activities while on the Internet. The three most popular online activities reported by all users were e-mail (97%), surfing the web for fun (86%), and researching health information (59%). However, the study did discern some significant differences between the activities of rural broadband users and dial-up users. Specifically broadband users were more likely than dial-up users to do work for their employer at home, research personal finance issues, converse with others online, bid at an online auction site, or trade stocks. Such findings are not surprising given the



previous data that broadband users were more likely to have higher household incomes.

Lastly, we explored rural Minnesotans' total telecommunication expenses, including their telephone, cell phone, video and Internet expenses. Overall, the median monthly expense was approximately \$100 per month. Here too, however, the study findings document that that income matters. Those with higher incomes purchase more services and have significantly higher monthly expenses. This was especially true when we partitioned the sample between broadband users and dial-up users. Broadband users had higher incomes and were much more likely to have a total monthly bill of \$150 or greater, while the majority of dial-up users were able to keep their total monthly bills under \$100.

In conclusion, the findings of the 2002 Rural Internet Study document both the opportunities and barriers to the full deployment and adoption of today's digital toolkit. The findings suggest that significant movement in the diffusion of broadband

connections is taking place, and with over half of current dial-up users yet to experience a broadband connection, an educational effort in this direction could very well accelerate the trend.

However, the findings also suggest that major socio-demographic trends found in many rural communities will be significant barriers and may be difficult to overcome. Specifically, the disproportionately high percentage of older residents and the lower household incomes found in many rural communities are barriers to technology adoption that will have to be creatively addressed.

Lastly, the current pricing structures for broadband services by rural communications providers is in conflict with the reported price point desired by consumers. Currently, the average monthly price of \$49 for DSL throughout rural Minnesota is too distant from the consumers' price point of \$30. Consequently, we suggest that unless we see some movement toward lower pricing, broadband adoption in rural Minnesota will continue to grow at its current rate but will not soar, as many hope.