



# CENTER *for* RURAL POLICY *and* DEVELOPMENT

January 2006

## *The 2005 Minnesota Internet Study: An examination of metro/rural differences in digital technology adoption*

### *Introduction*

Since 2001 the Center for Rural Policy & Development has annually conducted surveys of rural Minnesota households to discern the level of computer ownership, Internet connectivity and broadband adoption throughout rural Minnesota. Since the beginning of this longitudinal effort we have observed and reported significant increases in technology adoption. This is especially true in the continually increasing number of rural Minnesotans who connect to the Internet using a broadband connection.

Throughout the years, however, our data and information, while useful to both industry and policy makers, was continually met with one question that we were never able to answer. That question was, “How do these numbers compare with households in Minnesota’s seven-county metro area?” Unfortunately, we were never able to answer that question, as our surveys were administered exclusively outside the Twin Cities metro and we were unaware of any other organization that conducted similar studies in the metro with which we could compare our findings.

Accordingly, in 2005 we made the decision to double our efforts. To mark the fifth year of our continuing study of technology adoption throughout Minnesota, we decided to administer our surveys across both rural and metro Minnesota. To do that we conducted two separate surveys simultaneously, one for the seven-county Twin Cities area and one for the 80 counties of Greater Minnesota. Random samples were drawn simulating random digit dialing, and the surveys were then administered in October and November 2005 via telephone interviews.

The data collection process yielded 759 completed interviews from the rural 80-county sample and 691 completed interviews for the seven-county metro sample. The data were then weighted by age, based upon current U.S. Census estimates. Accordingly, the survey results have tolerated margins of error at the 95 percent confidence level of  $\pm 3.49$  percent for the rural sample and  $\pm 3.66$  percent for the metro sample. Finally, for those results that combine both the rural and metro sample together to yield a statewide estimate, the data was further weighted using U.S. Census estimates to reflect that 54.3

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*The Center for Rural Policy and Development, based in St. Peter, Minn., is a private, not-for-profit policy research organization dedicated to benefiting Minnesota by providing its policy makers with an unbiased evaluation of issues from a rural perspective.*

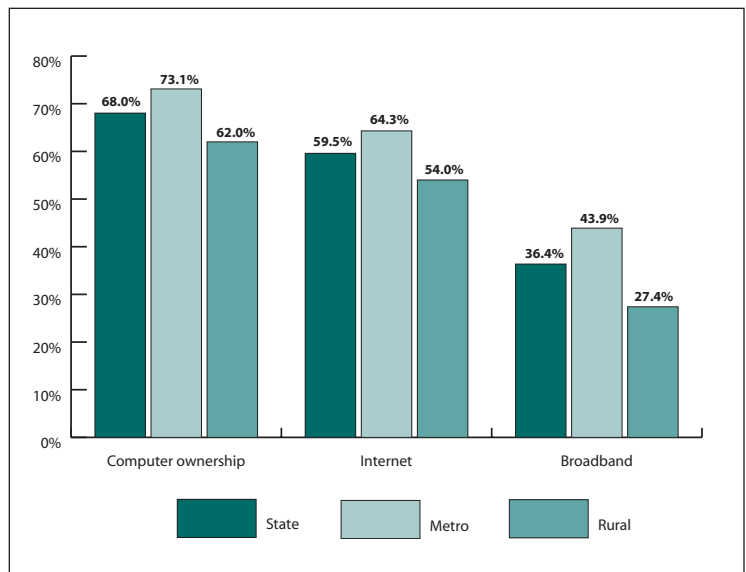
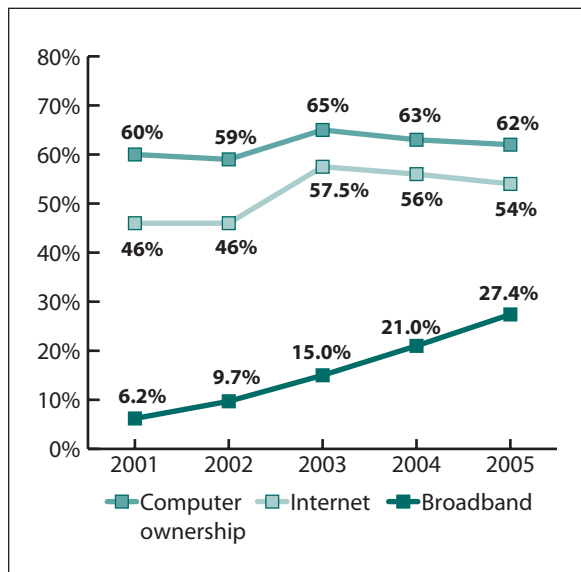
percent of all Minnesota households are located in the seven-county metro, while 45.7 percent are located throughout the remaining 80 counties.

**A quick look at the major findings**

- Our statewide estimate at the end of 2005 is that 1,379,570 or 68.0 percent of all Minnesota households currently possess at least one working computer; 1,208,526 or 59.6 percent of all Minnesota households currently maintain a home Internet connection; and 737,397 or 36.4 percent of all Minnesota households connect to the Internet from home using a broadband connection.
- Overall levels of computer ownership and Internet connectivity throughout rural Minnesota have been relatively flat for some time. Ownership estimates from 2003 through 2005 are all within 3 percent of each other, well within the margin of error, suggesting that there is no evidence of discernable growth within this time frame. On the other hand, broadband adoption continues to grow unabated throughout rural Minnesota, from 21.0 percent of all rural Minnesota households in 2004 to 27.4 percent in 2005.
- As many have suspected, there are significant

differences in technology adoption between households in rural and metro Minnesota. While 62 percent of rural households report owning a home computer, 73.1 percent of metro households report likewise. Similarly, 54.0 percent of rural households report having Internet connectivity vs. 64.3 percent of metro households; and 27.4 percent of rural households report connecting to the Internet with a broadband connection compared to 43.9 percent of metro area households.

- Of those households reporting Internet connectivity, the majority now report connecting with some type of broadband connection instead of a dial-up connection. This is true in both metro and rural households. Among rural households online, 47.2 percent report still having a dial-up connection; 47.3 percent report having a broadband connection via DSL or cable modem; 3.4 percent report having a wireless broadband connection; and 2.1 percent report not knowing how their computer is connected to the Internet. Among metro area households 30.8 percent reported still having a dial-up connection; 65.7 percent report having a broadband connection via DSL or cable modem; 1.4 percent report having a wireless broadband connection; and 1.4 percent



**Figure 1:** In rural communities, computer ownership and Internet connectivity have stayed relatively flat while broadband adoption has climbed steadily over the last five years.

**Figure 2:** Computer ownership, Internet connectivity and broadband adoption rates for 2005 for the Twin Cities metro, rural Minnesota and the state as a whole.

report not knowing how their computer connected to the Internet.

- Finally, socio-demographic factors such as age, income, or whether school-age kids are present in the home are extremely good predictors of technology adoption in both rural and metro Minnesota.

### Findings from the 2005 Study

#### A majority of Minnesotans are online

Figure 1 documents the five-year trend line for computer ownership, Internet connectivity and broadband adoption in rural Minnesota; Figure 2 documents the current differences in rural and metro areas for the same parameters. Two observations found in these charts are particularly noteworthy.

First, note in Figure 1 that computer ownership and Internet connectivity has been essentially flat for some time among rural households. In fact, as the study has a margin of error of 3-4 percent, one can say that there is little evidence to suggest that there has been any discernable change for some time. Simply stated, if one did not have a computer in their home in 2004, there was little reason to think that one would appear in 2005. Further, it is equally clear that the overwhelming majority of home computers are already connected to the Internet. Thus Internet connectivity will likely grow primarily as a result of further penetration of computers into homes throughout rural Minnesota. Consequently, the only discernable growth in rural Minnesota is among those residents who are switching from a dial-up connection to a broadband connection. Here we find a steady and unmistakable upward trend.

The second noteworthy observation is that as many have suspected, there are significant differences in technology adoption between rural and metro households (Figure 2). Here we see again that it originates with computer ownership, as the percentage of home computers that are connected to the Internet is quite similar in both rural and metro homes. It is in fact due to the greater penetration of computer ownership in metro area homes that we see higher rates of Internet connectivity. However, this relationship breaks down when we examine differences in broadband adoption across metro and

rural locations. In fact, here we find that the rate of broadband adoption in metro area homes (43.9%) is much greater than in rural homes (27.4%). This is likely due to a variety of factors, including age, income and broadband availability, which will be discussed later in this report.

Figure 3 shows how those households that are online connect their computers to the Internet. As one can see, we have now reached the point where we can say that the majority of those Minnesotans that go online connect to the Internet with some type of broadband connection. This is true for both rural households (51%) and metro households (68%); however, metro area users are clearly dropping their dial-up connections at a faster rate.

Here, too, a few observations are noteworthy. First, note that rural Minnesotans report a somewhat higher rate of wireless Internet adoption than metro area residents. This is likely a function of the fact that many more households in rural Minnesota have fewer broadband options. In fact a study we released in April 2004 found more than 40 rural communities reporting that wireless Internet was their only broadband option.

Second, we are finding that the acronym “DSL” — Digital Subscriber Line, a broadband product provided by telephone companies — is becoming for some more of a generic definition for a high-speed Internet connection, rather than a definition for a specific type of broadband technology. In fact, when we asked respondents how they connected to the Internet, we also asked what type of company they purchased their Internet connection from. In cross-tabulating these

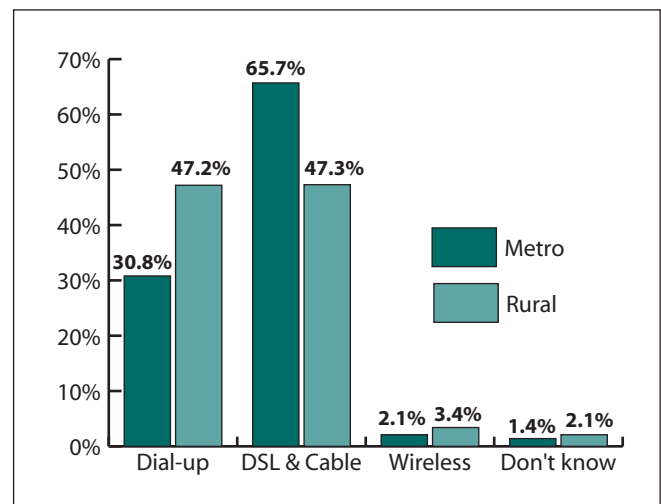


Figure 3: Metro households use broadband at a higher rate than rural households.

variables we observed that close to 10 percent of respondents who reported having a “DSL” connection also reported purchasing it from the local cable TV company. Such an observation leads us to question how respondents actually define and understand DSL. Since for this reason it’s difficult for us to determine the take rate of DSL and cable broadband separately, we combined both connections in Figure 3.

Tables 1 and 2 examine the reasons some Minnesota residents do not have a computer in their home and why current dial-up users in both rural and metro areas report that they have yet to switch to a broadband connection.

**Table 1: Reasons given for not owning a computer.**

	<b>Metro</b>	<b>Rural</b>
<b>Don’t need one</b>	40.5%	50.2%
<b>Too expensive</b>	15.3%	11.9%
<b>Don’t know how to use one</b>	10.5%	11.1%
<b>Have access to one elsewhere</b>	14.2%	12.5%
<b>Other</b>	19.5%	14.2%

As one can see from Table 1 the most common reason Minnesotans cite for not having a computer in their home is simply that they do not need a computer. This is equally true for respondents in both rural and metro areas. Other often-cited reasons for not having a computer include not knowing how to use a computer or having computer access elsewhere (e.g., public library). Surprisingly, only a small percentage of those who reported not having a home computer cited the costs of a computer as a significant barrier (15% metro and 12% rural). This is likely reflective of the major price reductions in computer prices witnessed over the past 24 months.

**Table 2: Reasons given by dial-up users for not switching to broadband.**

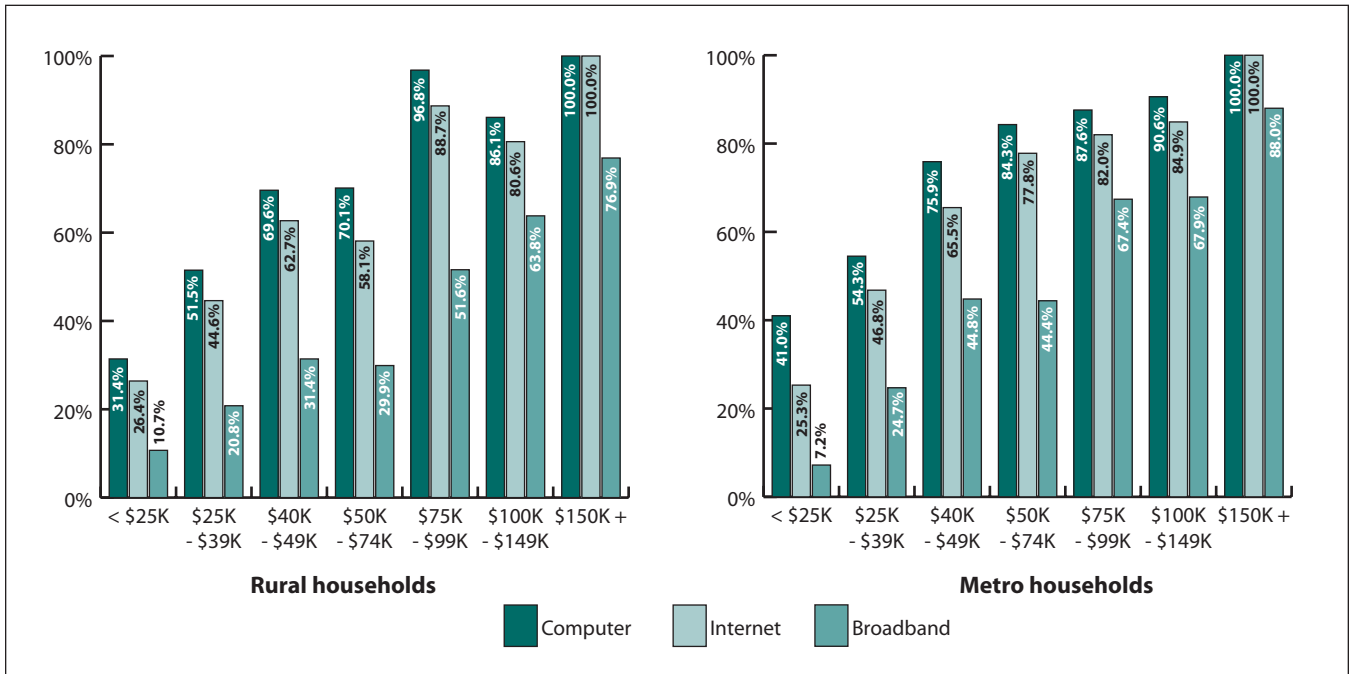
	<b>Metro</b>	<b>Rural</b>
<b>Not available</b>	5.9%	19.0%
<b>Haven’t thought about it</b>	6.0%	10.2%
<b>Don’t use the Internet enough</b>	23.7%	29.7%
<b>Have access to broadband elsewhere</b>	6.8%	6.8%
<b>Too expensive</b>	44.8%	25.7%
<b>Computer doesn’t have capability</b>	5.5%	3.1%
<b>Other</b>	7.2%	5.5%

The most common reason given by metro area dial-up users for not switching to broadband is that it is too expensive (44.8%), followed by respondents who report that they don’t use the Internet enough to justify the added costs (23.7%). Interestingly, among the rural respondents the order was reversed, where the most common reason given was that they just don’t use the Internet enough (29.7%), followed by price (25.7%). However, while rural residents may be more accepting of the higher costs of broadband it is clear from their responses that availability of broadband is still a barrier in some locations. Almost one in five (19%) rural dial-up users reported that they have not switched to broadband because broadband is not available where they live. This compares to only 5.9 percent of metro area dial-up users who suggested that availability was their primary barrier to broadband adoption. Such findings are quite congruent with an April 2004 report which found that approximately 15 percent of rural communities reported not having broadband available, a figure that does not include those rural Minnesotans who live in the countryside (i.e., outside of the municipal boundaries of any city or town).

**Socio-demographics still matter**

Previous studies examining the socio-demographic composition of those who are more likely to adopt digital technologies consistently find that residents who are older and poorer are less likely to adopt. These studies have also found families that report having school-age children in the home are much more likely to adopt these technologies. Accordingly, Figures 4 – 6 examine how these factors influence computer ownership, Internet connectivity and broadband adoption in both rural and metro environments.

As one easily sees in Figures 4a and 4b, there is an unmistakable relationship between household income and the adoption of these technologies. This relationship holds equally true for both rural and metro areas. However, it is interesting to note that regardless of income level, metro households report higher levels of computer ownership than rural households. Such differences in computer ownership are critically important, as they significantly affect Internet connectivity and broadband adoption rates. It is especially noteworthy to recognize that even among the most

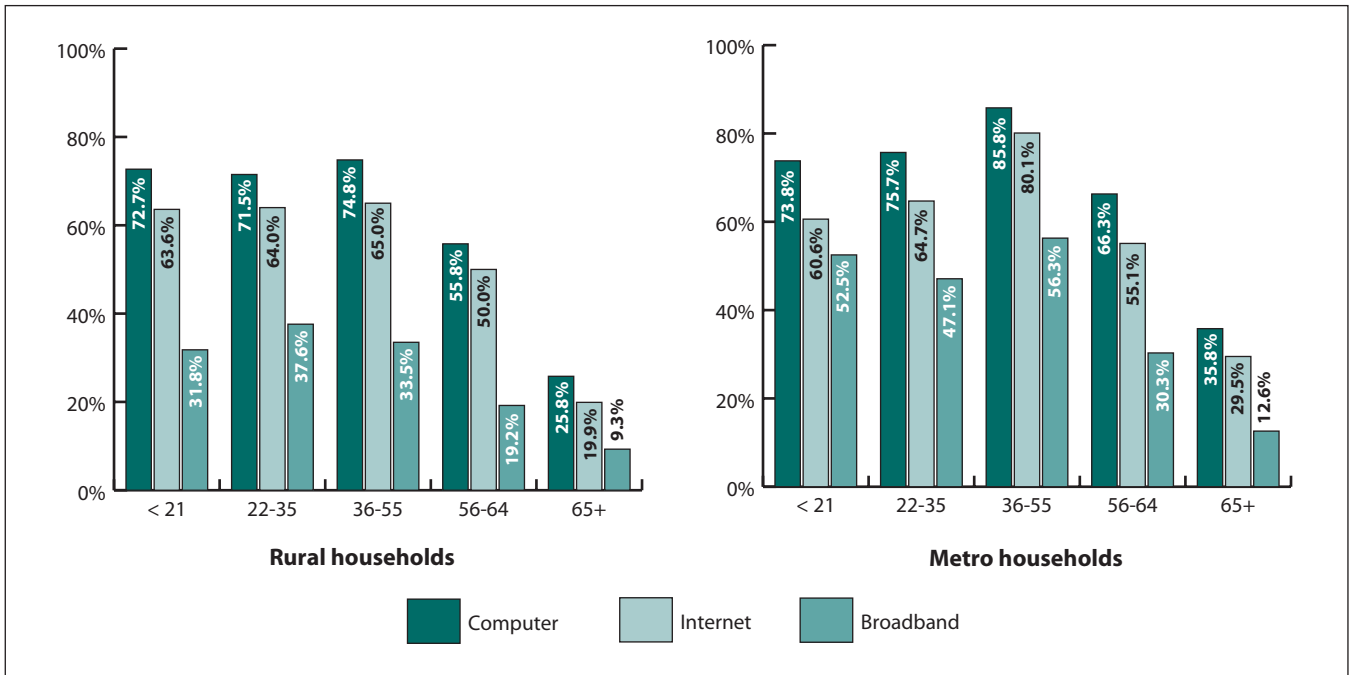


Figures 4a & 4b: Computer, Internet and broadband adoption by income for rural and metro households.

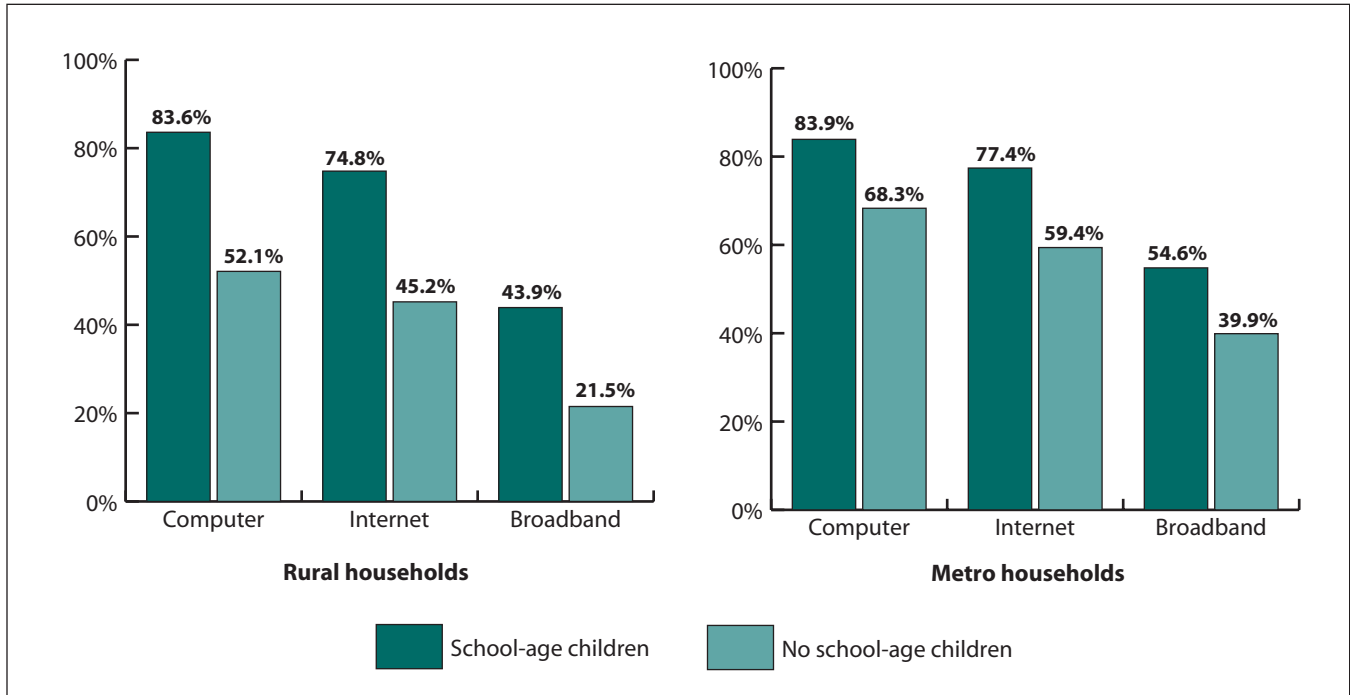
affluent respondents (incomes of \$150,000 or greater) where computer ownership and Internet connectivity is 100 percent, broadband adoption is significantly higher in metro areas. This is most likely a function of the lower availability of broadband in some rural areas.

Figures 5a and 5b document a similar relationship

between technology adoption and the age of the respondents. As we have consistently found in the past, the findings this year continue to show that older residents are well behind their younger neighbors in technology adoption. Again, this relationship is equally true among rural and metro respondents. Again,



Figures 5a & 5b: Computer, Internet and broadband adoption by age for rural and metro households.



**Figures 6a & 6b:** Adoption of computer, Internet and broadband by whether school-age children are present in the household or not.

however, it is noteworthy to observe that at virtually all age levels, computer ownership was higher among metro respondents, where even among the more elderly respondents (65 and over), there was a 10-percent differential in computer ownership.

Next, we see that the presence of school-age children has a significant impact on computer ownership, Internet connectivity and broadband adoption (Figures 6a and 6b), with respondents with school-age children consistently reporting higher levels of technology adoption in both rural and metro areas. But again, note that metro area respondents without school-age kids adopted these technologies at consistently higher levels than rural respondents without school-age kids.

### Examining online activities

Finally, we examine the online utilization behavior of respondents, focusing on differences between rural and metro areas, as well as differences between dial-up and broadband users (Tables 3 and 4).

Table 3 documents the average number of hours Internet users report being online each week. As one

can see, two trends seem to be apparent. First, metro area respondents report spending on average two hours more online each week than rural residents. This appears to be true regardless of whether we compare dial-up users or broadband users. Second, broadband users in both metro and rural areas report spending significantly more time online than dial-up users. This is consistent with previous studies where we have found that broadband users not only use the technology to do things faster, but also apparently do more online than dial-up users as well.

Table 4 examines the percentage of respondents in both rural and metro areas who report engaging in a variety of selected online activities. As we have found with many of our other findings, two observations are particularly noteworthy. First, broadband users appear to be more active than dial-up users in both rural and metro areas. Further, these differences in online use are considerably larger for those activities that require speed and greater bandwidth (e.g., downloading audio/video files, instant messaging or selling items online).

The second noteworthy observation is simply that

	Rural households	Metro households
Dialup	8.2	10.2
Broadband	14.7	16.6

**Table 3:** Number of hours spent online by type of Internet connection.



	Metro		Rural	
	Dialup	Broadband	Dialup	Broadband
<b>Travel</b>	50.7%	60.1%	46.9%	58.7%
<b>Making a purchase</b>	53.6%	77.6%	62.4%	72.1%
<b>Email</b>	97.8%	97.7%	95.9%	96.3%
<b>Checking the news</b>	71.1%	86.8%	69.6%	84.6%
<b>Medical info</b>	64.5%	69.1%	60.3%	67.5%
<b>Surfing for fun</b>	74.6%	81.9%	78.9%	86.6%
<b>Researching a major purchase</b>	63.0%	75.3%	54.1%	76.4%
<b>Personal finance</b>	32.6%	46.9%	29.4%	38.9%
<b>Distance education</b>	6.5%	8.9%	8.2%	17.7%
<b>Pay bills</b>	29.5%	55.6%	35.6%	51.7%
<b>Search for a job</b>	36.2%	36.6%	32.5%	38.5%
<b>Buy/sell stock</b>	10.9%	14.5%	9.9%	11.5%
<b>Bid at an auction</b>	22.5%	43.6%	29.3%	39.8%
<b>Sell at an auction</b>	8.7%	19.1%	6.7%	15.8%
<b>Chat room</b>	14.4%	14.8%	19.1%	15.4%
<b>Instant message</b>	29.7%	46.7%	29.9%	52.4%
<b>Gaming</b>	47.1%	57.2%	43.8%	60.3%
<b>Check ag prices</b>	2.2%	4.3%	9.3%	8.2%
<b>Check weather</b>	63.0%	87.1%	78.9%	90.0%
<b>Downloading audio or video files</b>	26.1%	50.3%	23.7%	47.1%
<b>Doing work for employer</b>	30.4%	50.0%	21.9%	41.8%
<b>Earning money some other way</b>	9.5%	12.9%	4.1%	11.1%

*Table 4: Percentage of respondents engaging in selected activities online, by geography and type of technology.*

an overall examination of Table 4 leads one to the simple conclusion that geography (i.e., rural vs. metro) does not appear to be correlated with the utilization patterns of online users. While there are some notable exceptions, such as rural residents being more likely to engage in distance education opportunities, or metro residents being more likely to engage in work online for their employer, in general, metro and rural utilization patterns are remarkably similar.

### **Summary & Conclusion**

2005 marks a new benchmark for our annual Internet studies, as for the first time we administered our surveys throughout both rural and metro areas of Minnesota. This allowed us to continue to examine

the longitudinal changes in technology adoption throughout rural Minnesota, while simultaneously examining the differences in the adoption of these digital technologies across metro and rural areas.

Our findings suggest that both computer ownership and Internet connectivity remain relatively flat throughout rural Minnesota, at 62 percent and 54 percent respectively. Although more than half of all rural Minnesota households are online, it appears that without further penetration of personal computers into rural homes, the prospects for growth in Internet connectivity will be modest. At the same time, for those rural Minnesotans who are already online, we have seen a continual and unmistakable movement from dial-up connections to broadband technologies. In that regard we are estimating that at the end of 2005, 27.4 percent of all rural Minnesota households purchased a subscription to a broadband service.

Comparable data from the seven-county Twin Cities metro suggest that there are indeed differences in technology adoption between rural and metro areas. Our findings document that 73 percent of metro households report having home computers; 64 percent have an Internet connection; and 44 percent report having a broadband connection.

Weighting both samples to reflect U.S. Census estimates that 54.3 percent of all Minnesota households reside within the seven-county metro, we are estimating that at the end of 2005, 68 percent of all Minnesota households now have home computers; 59.6 percent have an Internet connection; and 36.4

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percent have a broadband connection.

The findings also remind us that to some extent differences in broadband adoption between rural and metro households are still a function of the differences in broadband availability. Among rural respondents who still connect to the Internet using a dial-up connection, 19 percent reported lack of availability as their primary barrier to broadband adoption, compared to only 5.9 percent of dial-up users in the metro who cited availability as their primary barrier to broadband adoption.

These estimates place Minnesota above the national average, according to comparable national estimates from the PEW Foundation's "Internet and American Life Project." According to a September 2005 report released by the Pew Foundation, 53 percent of Americans that went online connected to the Internet with a broadband connection and 33 percent of Americans overall had a broadband connection at home. Based upon our data collected in October and November 2005, we estimate that 60 percent of all Minnesotans that go online (64.3% metro and 54% rural) connect to the Internet with a broadband connection and 36.4 percent of all Minnesota homes

have a broadband connection.

Similar to studies in the past, our findings continue to show that technology adoption is strongly correlated with key socio-demographic factors. These factors include but are not limited to age, income and the presence of school-age children in the home. Clearly, as we continue to examine the primary barriers to technology adoption, it would be a big mistake to overlook these key socio-demographic factors.

Finally, the study examined differences in the online utilization patterns among broadband and dial-up users. As we have found in previous years, broadband users tend to spend more time online than dial-up users and engage in more online activities. These differences were found among both rural and metro Internet users. However, the primary observation found when examining these utilization patterns was the remarkable similarities in online behavior among rural and metro Minnesotans. With the exception of a few activities such as taking classes online or checking ag prices, it appears that both rural and metro residents are unified in their online behavior.