center for **rural policy** and development

Seeking Solutions for Greater Minnesota's Future

2012 Minnesota Internet Survey

Digital Divide 2.0 and beyond

After more than ten years of asking rural Minnesotans about their access to high-speed Internet service, it is possible to draw a few conclusions:

1. It is fairly well accepted now that broadband access has become a necessity for functioning at full capacity in today's world. In other words, Internet access and broadband access are no longer considered a luxury but rather a necessity by most people.
2. The digital divide isn't what it used to be. The divide can be characterized as the haves and have-nots, those who have broadband and those who do not. In the early days of broadband, the main barrier to being a "have" was availability of the service itself. Now that infrastructure is nearly ubiquitous, at least in Minnesota, the other barriers, which have always been there, are becoming more apparent, particularly in the area of bandwidth.
3. Broadband no longer ties the user to a fixed location (i.e., the home). In just the past few years, technology has been introduced that makes it possible for people to access the Internet from just about anywhere. This trend is important not only to people who use the Internet and do business on it, but to those who provide access and create policy affecting it.
4. The preceding points tie into what appears to be a generational change in how people access, use, and think of the Internet.

This study was completed with support from the W.K. Kellogg Foundation, the Minnesota Telecom Alliance, Networks United for Rural Voice, the Blandin Foundation, and the McKnight Foundation. Thanks also to the City of Minneapolis for their collaboration.

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.

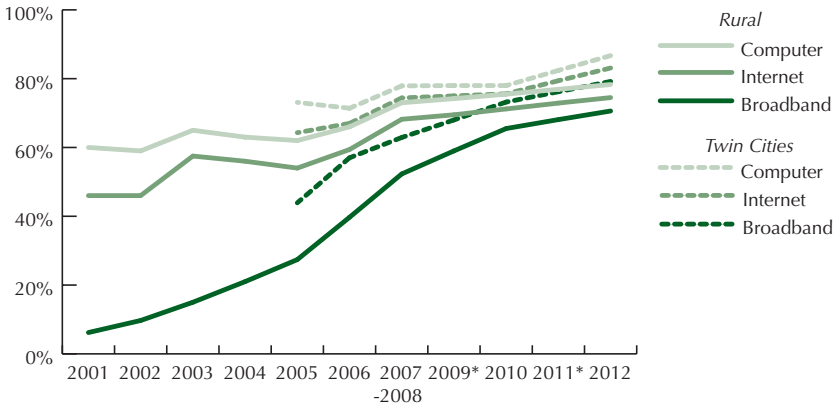

Figure 1: Adoption rates of computers, Internet service, and broadband in the Twin Cities metro area and the rest of Minnesota since 2001.

History of the study

The Center included questions on broadband adoption in its first rural Minnesota survey in 2001. The next year, the survey focused solely on broadband and the Internet. In 2005, the seven-county Twin Cities metropolitan area was included for the first time to provide a comparison to rural counties. And in 2012, interviewers called cell phone numbers for the first time, recognizing the number of households that have given up landline phones and now use cell phones as their only phone.

Major findings

- Adoption rates for computers, Internet access, and broadband continue to go up but at a slower rate in both the rural counties and the Twin Cities. The Twin Cities is still several percentage points ahead of the rest of the state in terms of adoption: 79.2% for the Twin Cities vs. 70.6% for rural Minnesota.
- Over one quarter of Minnesota households (27%) use cell phones only, no landlines. The rate for rural Minnesota is similar to that of the Twin Cities.
- The use of social media, voice over Internet Protocol (VOIP, online phone calls), and streaming video are up dramatically in the last two years.
- While the home computer is still by far the most common means of accessing the Internet for Minnesota households, the number of people accessing the Internet outside their homes continues to grow, as does the number and variety of devices they are using to access it.
- There are a number of reasons people do not purchase broadband for their homes, but the primary ones are lack of interest and cost.

Methodology

As in past studies, the state was divided into two regions, the seven-county Twin Cities metropolitan area, or "Metro," and the remaining 80 counties making up the rest of Minnesota, or "Rural." The Social Science Research Institute at the University of North Dakota, Grand Forks, conducted the 2012 Minnesota Internet Survey. A total of 1,652 adults in Minnesota were interviewed. A combination of landline and cellular random digit dial (RDD) samples was used to represent adults in the target areas who have access to either a landline or cellular telephone. The margin of error for the statewide sample was ±2.53% at a 95% confidence level. The margin of error for both the Twin Cities sample and the rest of Minnesota sample was ±3.58%. The complete methodology report can be found at www.ruralmn.org.

Adoption rates

The survey results show that the adoption rates for computers, the Internet, and broadband were up in 2012 compared to 2010, although the increase was not as great as in past years. The statewide rate of broadband adoption went from 69.5% of households to 75.4% of households. In 2012, 70.6% of rural households reported purchasing broadband service, compared to 79.2% of Twin Cities households. Figure 1 shows how computer, Internet, and broadband adoption rates

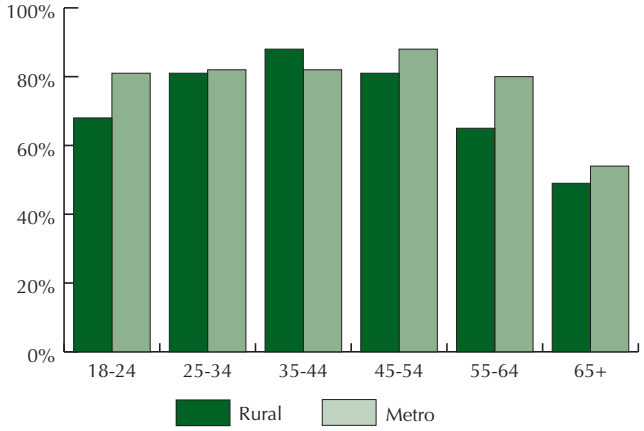

Figure 2: Broadband adoption rates by age group for the Twin Cities metro area counties and the rest of Minnesota.

have changed since 2001.

Part of the reason for a slower rate of increase may be the recent recession. A 2010 Pew Internet and American Life study indicated that adoption rates fell nationwide during the recession.[1] However, it is also likely that these technologies are reaching their natural saturation point. The broadband adoption rate in Figure 1 shows a typical S-curve associated with technology adoption: adoption starts slowly with the early adopters, gains momentum as the bulk of the population catches on, then slows down as the last late adopters come on board and adoption nears its maximum.

The impact of age, income, education

Age. In looking at who has or has not adopted broadband at home, age, income, and education are still major predictors. Figure 2 shows the breakdown of broadband adoption in the home by age group (out of all households). As it has been for the last decade, the adoption rate among seniors (age 65 and over) is still the lowest, but it continues to

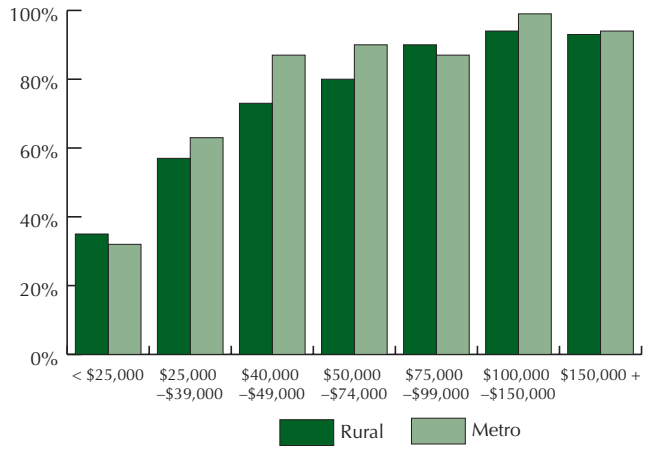

Figure 3: Broadband adoption by income group for the Twin Cities and rural Minnesota.

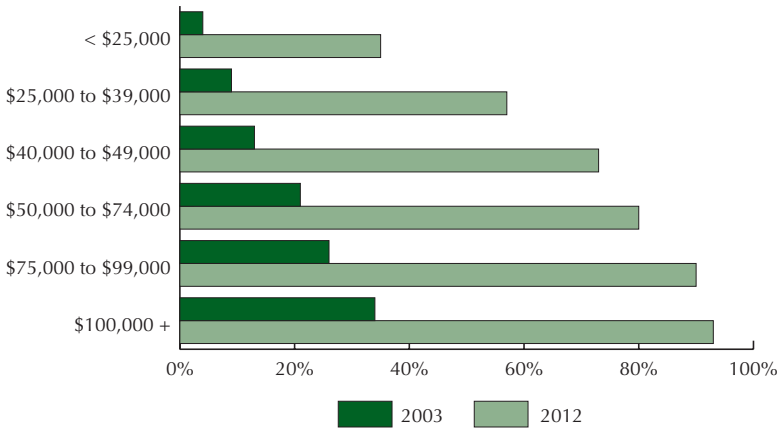

Figure 4: Broadband adoption rates by household income for rural Minnesota in 2003 and 2012.

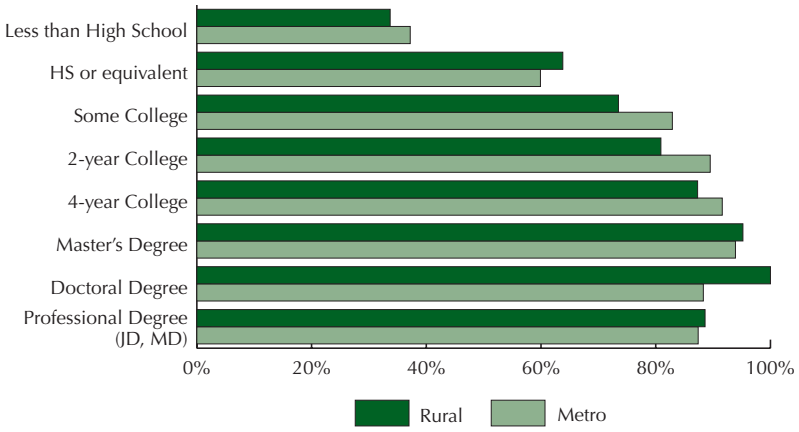

Figure 5: Broadband adoption by level of education attained, in the Twin Cities and rural Minnesota.

grow each year. In 2003, the first year we reported specifically on seniors, 5.6% of rural senior households had broadband. In 2012, 48.5% of rural senior households had broadband, while 53.7% of Twin Cities senior households did.

Interestingly, we see that the adoption rate for the youngest age group is also low, particularly in rural Minnesota (68% compared to 81% in the Twin Cities). This low figure does not necessarily mean that people in this age group are not on the Internet or not adopting broadband. It only indicates a lower percentage of households in this age group with broadband in their homes. A clue comes from another 2010 study by the Pew Internet and American Life Project that found that nationwide, 84% of young adults age 18-29 go online using their cell phones or a laptop; in other words, a portable device that can be taken out of the home.[2] The low number of 18- to 24-year-olds in rural Minnesota with a broadband connection at home may indicate that this group is bypassing a fixed home connection altogether and are simply using the cell service on their smart phones and other mobile devices or borrowing a wireless connection at a public hotspot.

Income. Income has also been a long-time predictor of Internet and broadband adoption. Figure 3 shows how broadband adoption is affected by income, while Figure 4 shows how the pattern has stayed consistent between 2003 and 2012.

While home broadband adoption has risen in the lowest income group (less than $25,000) over the last two years in rural Minnesota households, going from 25% in 2010 to 35% in 2012, it appears to have dropped for metro households, from 40% to 32%. One reason may be the recession. As mentioned earlier, a Pew Research study found that nationally, broadband adoption slowed dramatically in 2010.[3] This drop in the Twin Cities, therefore, could be a reflection of the recession. On the other hand, considering the younger median age of the Twin Cities population, it could also be a reflection of the rise in the use of smart phones and other portable devices, as discussed earlier.

Education. Breaking out the data by education levels shows a pattern similar to that of income, where the higher the level of education attained, the more likely a household is to have a computer, Internet, and broadband technology (Figure 5). The differences between rural and metro adoption rates within each group are not large.

The impact of children in the house. The findings show that households with school-age children are more likely to have

Table 1: Impact of school-age children in the household on adoption rates.

	Rural		Metro	
	Kids	No kids	Kids	No kids
Do you have a computer?	89.7%	74.0%	96.4%	81.6%
Do you have an Internet connection?	88.7%	69.1%	93.9%	77.5%
Do you have broadband?	85.7%	64.9%	90.9%	73.1%
How important is being able to access broadband? (Very important)	58.5%	37.9%	65.2%	51.2%

computers and broadband as well (Table 1). Age of the primary decision makers in the household is presumably a major factor here. Notice the difference in the perceived importance of broadband between those with and those without children, especially for rural Minnesota.

Things we do online

The Minnesota Internet Study also tracks activities that home Internet users engage in. Table 2 shows the percentage of rural and Twin Cities home Internet users engaging in these activities. Email is still virtually universal. Social media, which has been available to the public for only about five years, is already at 75% for rural Minnesota and over 80% for the Twin Cities.

While the gap in participation rates between rural Minnesota and Twin Cities consumers has closed for most activities, there are still a handful of activities that home Internet users engage in more frequently in the Twin Cities compared to rural Minnesota (Table 3).

In the past two years, some activities have seen a large increase in popularity. Table 4 shows a list of activities that saw some of the largest growth in use between 2010 and 2012 in percentage points. The growth in these activities may reflect simply the increase in their availability as new services such as streaming video are introduced and in an increase in the availability of higher broadband speeds, making it possible to engage in these activities.

Table 2: Percentage of home Internet users engaging in selected activities in the last six months.

	Rural	Metro
Send and receive email	96.2%	98.6%
Check the weather	88.7%	89.3%
Access news web sites	79.9%	82.6%
Research a purchase you're planning	79.6%	86.3%
Purchase something at an online store or auction	77.6%	84.0%
Do banking, pay bills or other financial business online	77.2%	85.4%
Stay informed on community news and events	69.6%	69.6%
Share photos	69.3%	79.8%
Research medical information	63.9%	70.1%
Download music or video files	55.0%	73.0%
Watch movies or TV shows	45.7%	70.5%
Search for employment	42.9%	52.1%
Do homework	39.9%	45.0%
Place a phone call over the Internet	37.4%	44.4%
Do work for employer at home	33.4%	43.8%
Communicate with your child's school	33.0%	39.7%
Sell goods or services online or advertise	27.4%	24.3%
Interact with the government or a government official	21.0%	24.4%
Take a high school or college class online	15.8%	21.5%
Check agricultural commodity prices	13.8%	7.4%
Communicate with doctor or nurse or other caregiver	12.7%	23.4%

Table 3: Difference by percentage points in engagement, rural Minnesota Internet users compared to Twin Cities Metro Internet users.

	Rural	Metro	Difference
Watch movies or TV shows	45.7%	70.5%	24.8
Download music or video files	55.0%	73.0%	18.0
Communicate with doctor or nurse or other caregiver	12.7%	23.4%	10.7
Share photos	69.3%	79.8%	10.5
Do work for employer at home	33.4%	43.8%	10.4

Table 4: Activities with the largest increases in participation, by percentage point.

	Rural			Metro		
	2012	2010	Change	2012	2010	Change
Social media	75.1%	70.6%	4.5	81.8%	68.9%	12.9
Stay informed on community news and events	69.6%	36.4%	33.2	69.6%	53.1%	16.5
Watch movies or TV shows	45.7%	32.1%	13.6	70.5%	48.0%	22.5
Place a phone call over the Internet	37.4%	9.7%	27.7	44.4%	20.4%	24.0
Play games online with other gamers	36.2%	22.0%	14.2	40.1%	28.7%	11.4
Sell goods or services online or advertise	27.4%	14.3%	13.1	24.3%	18.0%	6.3
Communicate with doctor or nurse or other caregiver	12.7%	9.2%	3.5	23.4%	13.2%	10.2

How much time we spend online

When asked how many hours per day someone in their household is on the Internet, the average response for rural Minnesota was 4.2 hours, while the average for the Twin Cities was 4.6 hours. As a sign of how things have changed, this question used to ask how many hours per *week* someone in your household was online.

Speed and satisfaction

Although it is beyond the scope of this study to get a complete picture of what broadband speed is offered where, we can get a more general idea of whether the available speed (or the one the consumer chose) is doing the job by asking respondents if they are satisfied with the speed of their Internet service. Overall, the majority of home Internet users said they were satisfied, although Twin Cities customers were more satisfied than rural ones: 78% of rural home Internet users compared to 86% of Twin Cities home Internet users. When asked in an open-ended question if there was anything they wanted to do online that they couldn't with their current speed, the majority of replies involved being able to do things faster and referred to activities such as streaming and downloading video and music.

Cost

Rural and Metro households reported paying about the same amount for their Internet service each month, $47.57 on average for rural households compared to $45.82 for Twin Cities households. However, 16% of rural respondents said they did not know how much they paid, while 24% of Twin Cities households reported the same.

A comparison of how much households pay for their total communications bill shows that Twin Citians tend to pay more (Figure 6).

Going mobile and getting away from the home computer

The introduction of smart phones, tablet computers, and lightweight laptops, along with the advent of wireless Internet access (wi-fi) and Internet via a cell connection, has made it possible for Internet users to migrate out of their homes. The Pew Research study on mobile access reported that as of May 2010, 59% of all adult Americans

Figure 6: Estimated monthly communications bill.

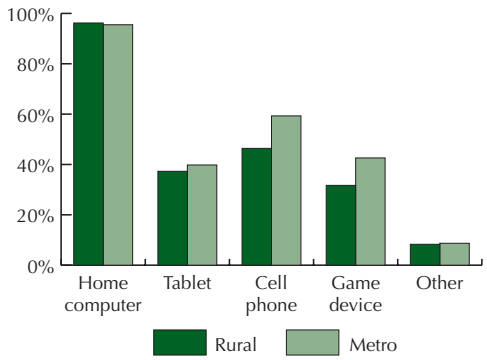

Figure 7: Devices used to connect to the Internet from home, among households with Internet.

Table 5: Preferred device used to connect to the Internet at home, among households with Internet.

	Rural	Metro
Home computer	73.8%	69.9%
Cell phone	9.6%	11.0%
Tablet computer	12.3%	11.0%
Gaming device	2.9%	5.3%
Other	1.4%	2.8%

Other devices included laptops, iPods, video streaming devices.

were going online wirelessly, using either a laptop or cell phone.[4] A look at what devices Internet users in Minnesota use to connect at home (Figure 7) shows that while the computer is still the most prevalent, other devices are catching up, especially among younger people. When asked if there were any other devices they used to access the Internet at home besides those given, respondents also mentioned laptops, iPods, e-readers, and streaming video devices such as Roku. Respondents were also asked which device they use the most in connecting to the Internet at home (Table 5).

Expense has always been a factor in choosing to purchase broadband service. One aspect of mobile Internet access that is becoming apparent in the last few years is a trend toward increased spending by households on their cell phones. A recent analysis by the Wall Street Journal of Bureau of Labor Statistics consumer spending data showed that between 2007 and 2011, Americans increased their annual spending on cell phones by $116, while decreasing in other areas of discretionary spending, such as eating out (-$48), apparel and other services (-$141), and purchasing vehicles (-$575).[5,6] As more consumers move to cell phone-based Internet service, the trends in cell-based Internet service pricing and limits on monthly data service will bear monitoring.

When people want to use their wifi-enabled devices away from home, they must find places to access the Internet. We asked everyone, regardless of whether they have Internet access at home, where they go to access the Internet outside their homes. One-fifth of rural households (20%) and nearly one-quarter of Twin Cities households (23%) reported that they had accessed the Internet at their public library in the past six months.

We also asked everyone: Besides home, the library, or work, are there any other places they go on a regular basis to access the Internet? For rural Minnesotans, 38% responded yes, they do go someplace outside the home regularly; 43% of Twin Cities households responded yes as well. Coffee shops were by far the most popular. Of those responding that they access the Internet outside of home or work, 30% of rural households and 40% of Twin Cities households reported visiting a coffee shop for Internet access. (This breaks down to 5% of all rural households and 10% of all Twin Cities households.)

Importance of access at home

Despite the new attention to mobility and being able to access the Internet from anywhere, the survey found that many respondents still believe it is very important that they be able to access broadband at home.

Figure 8 shows that 44% of rural households and 56% of Twin Cities households rated having access to broadband at home as very important. When broken down by age, however, it is apparent that home broadband access is less important to the oldest and the youngest age

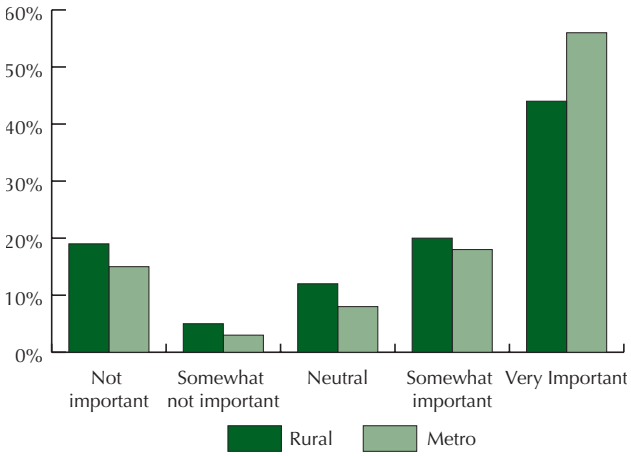

Figure 8: Importance of having access to broadband at home.

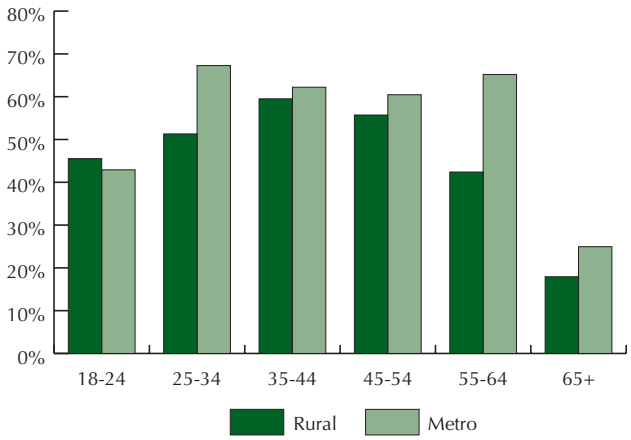

Figure 9: Percentage of respondents reporting that having broadband access at home is "very important," by age group.

groups in the survey (Figure 9). Of respondents age 18-25, only 46% of rural households and 43% of Twin Cities households said having broadband at home was very important. The answer is very likely found in the studies showing that a large percentage of young adults are accessing the Internet using devices they can take anywhere. This would imply that a broadband connection in the home is less of a requirement.

Understanding the "have nots"

At the heart of the digital divide is a concern with getting broadband access to the "have nots." But now that the barrier of basic infrastructure has been largely removed in Minnesota, other barriers show up more clearly. A 2010 analysis of data collected by the Federal Communications Commission found that the main indicators separating those who adopt broadband from those who do not are education, income, and age. The same study found the main reasons people gave for not adopting broadband have to do with affordability, relevance, and digital literacy: they can't afford it, they don't see how it would benefit them, or they believe they wouldn't know how to use it.[7]

When Minnesotans were asked why they chose not to adopt Internet service for their homes, similar reasons were given. Approximately 25% of rural households and 17% of Twin Cities households said they did not have Internet access at home. When these households were asked why, the most frequent response in each group was that they didn't need Internet access. The second most common answer in rural households was "Too expensive," while in Twin Cities households "Too expensive" was nearly tied with "Has access to the Internet someplace else." "Not available where I live" was at or near the bottom of the list.

To make a direct comparison between rural and Twin Cities households, however, we need to look at the data based on all households. While the percentages in Table 6 look small, it must be remembered that they represent thousands of households in both regions.

When responses were broken down by age, interesting pat-

Table 6: Reasons for not having Internet access at home, among all households.

	Rural	Metro
Doesn't need Internet access	12.2%	7.0%
Has access to Internet someplace else	1.8%	2.7%
Not available where they live	0.5%	1.0%
Too expensive	4.5%	2.5%
Doesn't know how to use the Internet	2.6%	1.5%
Concerned about the security of their information	1.6%	0.6%
Other reason	2.3%	1.5%

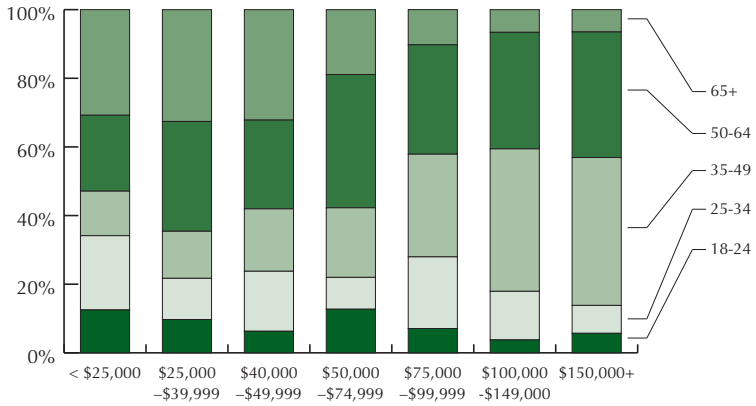

Figure 10: Income groups broken out by age groups. Each income group is dominated by certain age groups.

terns appeared. "Doesn't need Internet access" was still a frequent answer in most age groups. It was understandably highest among older respondents. However, "Has access to the Internet someplace else" was a frequent answer among younger respondents, especially in the Twin Cities.

In looking at all rural Minnesota households, seniors (age 65 and over) were the most likely to say they didn't need Internet access; a full 30% of rural senior households said so, while in the Twin Cities, the figure was 23%. The next closest age groups were half these percentages. In rural Minnesota, households in the 18-34 age range were the most likely to say home Internet access was too expensive (13.4%), while in the Twin Cities, that same age group came in at 1.8%. The Twin Cities' 55-64 age group was more likely to say home Internet was too expensive (6.9% of all households in that age group).

Income groups also reveal clues. Out of all rural households reporting an annual income of less than $25,000, 33% said they didn't need Internet, and 16% said it was too expensive. Out of all Twin Cities households in the same income group, 26% said they did not need Internet access, while 9% said it was too expensive. Also, 5% of rural households in this income group said they had access to the Internet elsewhere, while nearly 13% of Twin Cities households in this income group said the same.

For years we have known that older persons and lower income persons are the least likely to adopt broadband and Internet technology. The analysis above indicates why, and the answer appears to be largely due to a belief that they do not need it, followed by a belief that it is too expensive. It is understandable for senior citizens, who have survived most of their lives quite well without Internet access, to say they do not need the Internet. But why low-income earners? Logic would suggest that the service is too expensive. However, the response rate for "Do not need Internet" was more than double that in both groups (33% for rural, 26% for Twin Cities).

The clue again is in age. As Figure 10 shows, the oldest Minnesotans in the survey are more likely to have the lowest incomes. Seniors are less likely to have Internet at home and are less like to consider having Internet at home "very important." At the same time, one-third of households in this income group are under age 35. This is also the age group most likely to access the Internet using a mobile device. They have the technology available not to have to buy fixed-location broadband access, just as they have the technology that makes it possible not to have to buy a landline phone. Their thought process may be, "So why spend the money?"

Conclusions and areas for further study

For rural communities, the term "digital divide" has referred for the most part to geography: Access was determined largely by the presence of infrastructure, and most of that infrastructure was concentrated in larger population centers. The result was a tendency for rural residents to be behind in adopting broadband technology. As a 2010 study by Daily et al noted, over the last ten years, broadband access has increasingly become a requirement

of socio-economic inclusion, as opposed to just an outcome of it.[8] In other words, broadband has crossed the threshold from being a luxury to becoming a necessity to function in today's world.

The good news is that Minnesota, including rural Minnesota, is ahead of many states when it comes to broadband access. The infrastructure to get online is an issue for fewer and fewer households every year.

As we continue to track the development of broadband in Minnesota, though, we find that the trends have shifted now from the issue of access to the issues of mobility and bandwidth.

There are three areas in particular where we can draw some conclusions and that we believe will require continuing attention: the remaining non-adopters, the new mobile Internet, and the importance of increased bandwidth.

• *The digital divide and the remaining non-adopters.*

Today, the lack of broadband infrastructure is a barrier to access for fewer and fewer households. But now that most of those who really want broadband can get it, that leaves a group of people who could be characterized as the more tenacious non-adopters, those who have a different set of barriers: Attitudes ("I don't need Internet," "I wouldn't know how to use it"); affordability; and access to alternatives.

• Attitudes: The most common reason expressed by non-adopters was that they did not see a need for Internet. This belief was most common among seniors, and especially rural seniors. However, the percentage of seniors adopting Internet and broadband continues to grow each year.

• Affordability: Interestingly, among rural households, the youngest age groups (18-34) expressed the biggest problem with affordability among those who do not have a home Internet connection yet. On the other hand, the same age group of non-adopters in the Twin Cities expressed virtually no issue with cost.

• Access to alternatives: At the same time, nearly twice as many Twin Cities non-adopters as rural ones said they could access the Internet someplace besides their homes.

• *The mobile Internet.*

The Internet and broadband are going mobile via smart phones, lightweight laptops, tablet computers, and other handheld devices. With the spread of these portable devices, how are our expectations about access to the Internet changing? How does this mobility affect our expectations regarding reliability and our perceived need for speed? And how are people affected who live in areas with no good mobile Internet options, including cell access? Access outside the home is significant in the same way that cell phone-only homes are significant: the nature of the service is changing. Consumers do not necessarily need to purchase a broadband connection specifically for their home, and they in fact may not need to purchase broadband at all. Fixed-location home broadband, like the landline phone, is becoming optional. These factors not only affect the decisions providers make regarding what technologies they use and where they upgrade it, but how businesses should spend their technology and marketing dollars, where consumers decide to spend their time, and how policymakers design regulations that apply to access, distribution, and use.

• *Speed.*

The issue of bandwidth may be the most important of all. While the percentage of households with broadband continues to rise, what speed a household gets is still very much a function of where it is located in relation to key infrastructure. The demand for more speed will only increase as new bandwidth-eating technologies are introduced. The concern for many householders right now is the ability to do things faster, especially stream video and music smoothly. Speed has larger public implications, however. Business demands an ever-increasing bandwidth capacity. Education and health care are moving more programs and services online, and distance learning and remote health care are continuously put forward as solutions to the problems rural areas have with distance and a sparse population. Universities and health care facilities are still experimenting with providing education and services online, and therefore these activities still go somewhat unnoticed by the general public. However, in the years to come, if rural communities are not able to keep up capacity-wise, they will not be able to take advantage of these new technologies, creating the distinct possibility that they will

fall further behind, with serious implications for income and population.

As the findings from the survey showed, these barriers are more common in rural areas and are another example of why decision makers working on these issues may take into consideration whether the solution will work in the same way or as effectively for rural areas as for urban areas.

Internet service providers are well aware of these trends in the demand for mobility and bandwidth. And since the younger demographic groups are the ones most focused on going mobile and doing more things on the Internet, these are trends that are not going away. Policymakers and other decision makers should keep these trends in mind when it comes time for creating policies aimed at providing or encouraging Internet service.

Endnotes

[1] Smith, A. (2010, August). Home Broadband 2010. http://www.pewinternet.org/Reports/2010/Home-Broadband-2010.aspx

[2] Smith, A. (2010, July). Mobile Access 2010. http://www.pewinternet.org/Reports/2010/Mobile-Access-2010.aspx

[3] Smith, A. (2010, August).

[4] Smith, A. (2010, July).

[5] Troianovski, A. (2012). Cell phones are eating the family budget [Electronic version]. Wall Street Journal. http://online.wsj.com/article/SB10000872396390444083304578018731890309450.html

[6] U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditures. (2012). Consumer Expenditure Survey. http://www.bls.gov/cex/csxstnd.htm

[7] Horrigan, J.B. (2010). Broadband adoption and use in America. Retrieved Sept. 25, 2012, from http://online.wsj.com/public/resources/documents/FCCSurvey.pdf

[8] Daily, D., Bryne, A., Powell, A., Karaganis, J., & Chung, J. (2010). Broadband adoption in low-income communities. Retrieved Sept. 25, 2012, from http://webarchive.ssrc.org/pdfs/Broadband_Adoption_v1.1.pdf

center for **rural policy** and development

Seeking Solutions for Greater Minnesota's Future

600 S. Fifth Street, Suite 211, St. Peter, Minnesota 56082

www.ruralmn.org

Twitter @ruralpolicymn

www.facebook.com/ruralmn

2012 Minnesota Internet Survey