

How Are You Connected?



These days, the question, “Are you connected to the Internet?” has been typically replaced by, “How are you connected to the Internet?” To examine how Internet connectivity in rural and urban Pennsylvania has changed over the past few years, the Center for Rural Pennsylvania compared and analyzed data from three sources. According to the analysis, there are three distinct “divides” among rural Pennsylvania households and among rural and urban Pennsylvania households.

Methods

The Center for Rural Pennsylvania used three data sets to measure Internet access among rural and urban households.

The first data set was from the Center’s 2003 *Attitudinal Survey of Rural Residents*. The survey collected information on rural residents’ attitudes regarding the economy, government, and the environment. There were also four specific questions on Internet access, connectivity, and use. These questions helped determine whether a rural household had Internet access and the way the household connected to the Internet.

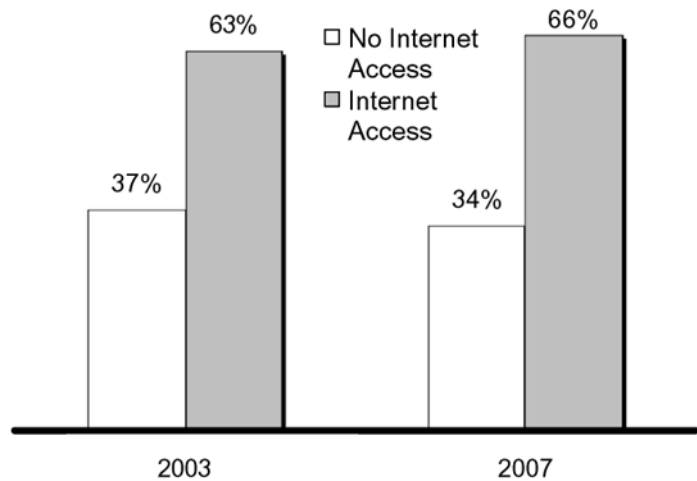
The survey was mailed to 4,000 rural households, and 53 percent, or 1,737 households, responded. The margin of error (confidence level) was plus or minus 3 percentage points.

The second data set was the 2007 Rural Pennsylvania Current Population Survey (RuralPA-CPS). This household phone survey of 3,037 Pennsylvania households (67 percent rural and 33 percent

urban) is closely modeled after the March Supplement of the federal Current Population Survey (CPS). The overall cooperation rate for the survey was 59 percent and the confidence level was plus or minus 1.6 percentage points.

To understand how rural Pennsylvania compares to the nation, data from a December 2006 survey by the Pew Internet and American Life Project were also used. This survey, which was funded by the Pew Charitable Trusts, randomly interviewed 2,373 adults (18 years old and older) across the U.S. This phone survey had a cooperation rate of 41 percent

Figure 1: Rural Households With and Without Internet Access, 2003 and 2007



Data source: 2003 Attitudinal Survey of Rural Residents and 2007 RuralPA-CPS

Data Limitations

No Internet Access at Home Does Not Mean a Lack of Internet Access: This analysis, in part, compares those who have Internet access at home with those who do not. The group that does not have Internet access at home could, however, have access at work, libraries, or other locations. Thus, readers are cautioned not to assume that persons who lack Internet access at home do not have any access at all.

Reasons for Broadband Use, and Non-Use, are Unknown: From the available data, it is unknown if the choice not to have broadband Internet access is because of a lack of availability, cost or some other factor. Therefore, caution should be used when making assumptions as to why some households have broadband access while others do not.

2003 Survey Method is Different from the 2007 Survey Method: The 2003 Attitudinal Survey of Rural Residents was conducted by mail and was designed to provide information on rural residents' attitudes, and only included data on rural residents. The 2007 RuralPA-CPS was conducted by telephone and designed to gather demographic and economic information, and collected data about rural and urban households. These and other methodological differences can limit the comparability of the two surveys.

Definitions

Rural and Urban: Households, and individuals within those households, were considered rural if they were in a county with a population density below the statewide average of 274 persons per square mile. Households in counties with a population at or above 274 persons per square mile were considered urban.

Broadband: Any of the following methods used to access the Internet: cable modem, DSL (digital subscriber line), satellite, and other wireless technologies. For a more in-depth discussion of broadband technologies, see the Center for Rural Pennsylvania report, *Broadband Internet Service in Rural and Urban Pennsylvania: A Common Wealth or Digital Divide?*

and a confidence level of plus or minus 3 percentage points.

Findings

Rural Households With and Without Internet Access

In 2007, data from the RuralPA-CPS found that 66 percent of rural households had Internet access and 34 percent did not. From 2003 to 2007, the percent of rural households with Internet access increased 3 percentage points. In 2003, 63 percent of rural households had Internet access and 37 percent did not.

Characteristics of Rural Households With and Without Internet Access

In 2007, rural households with Internet access were characterized as younger, more affluent, and more educated than households without Internet access. For example:

- The average age of persons living in households with Internet access was 38 years old; the average age of persons in households without Internet access was 53 years old.
- The median household income in households with Internet access was \$60,000, while the median income for households without access was \$24,000.
- Among adults (18 years old and older) living in households with Internet access, 28 percent had a bachelor's degree or higher. Among adults living in households without Internet access, 7 percent had a bachelor's degree or higher.

Other differences between rural households with and without Internet access include the following:

- Rural households with Internet access were more likely to have children (38 percent) than rural households without Internet access (13 percent).
- Households with Internet access had an average of 2.8 persons, while households without Internet access had an average of 1.9 persons.
- 90 percent of rural householders with Internet access were homeowners and 10 percent were renters. Among householders without Internet access, 75 percent were homeowners and 25 percent were renters.
- The poverty rate of households with Internet access was 5 percent, while the rate for households without Internet access was 22 percent.

Table 1: Characteristics of Rural and Urban Households With and Without Internet Access, 2007

	INTERNET ACCESS		NO INTERNET ACCESS	
	Rural	Urban	Rural	Urban
Average # persons living in household	2.8	2.7	2.2	2.2
Average age	37.7	38.0	59.9	60.3
% Minorities (Non-White and/or Hispanic)	4%	13%	3%	22%
% Households with children	38%	37%	13%	15%
% Married couple households	78%	73%	48%	39%
Median households income	\$60,000	\$65,000	\$27,500	\$30,000
Household poverty rate	5%	4%	22%	24%
% Adults with bachelor's degree or higher	28%	41%	7%	13%
Homeownership rate	90%	86%	75%	68%
% Adults employed	65%	67%	35%	35%

Data source: 2007 RuralPA-CPS

- Among rural households with Internet access, 65 percent of adults were employed. Among rural households without Internet access, 35 percent of the adults were employed.

Comparison of Rural and Urban Households With and Without Internet Access

There was a significant gap between rural and urban households with Internet access. In 2007, 72 percent of urban households had Internet access and 28 percent did not. In rural areas, 63 percent of households had Internet access and 37 percent did not.

Despite this gap, rural and urban households with Internet access shared some similar characteristics. As Table 1 shows, some of these characteristics included similar employment rates, average ages, and children. Some of the differences included income, adults with a bachelor’s degree and the number of minority households.

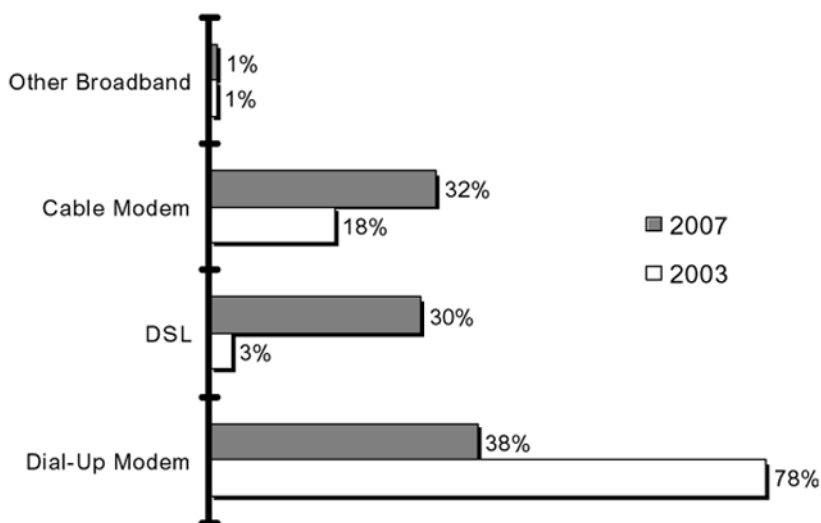
There was a similar pattern among rural and urban households without Internet access. Some of the similarities included employment rates, age, and poverty. Some of the differences included homeownership, adults with a bachelor’s degree, and the number of minority households.

Rural Internet Connectivity

In 2007, 62 percent of rural households with Internet access connected to the Internet using a broadband connection while 38 percent used a dial-up modem.

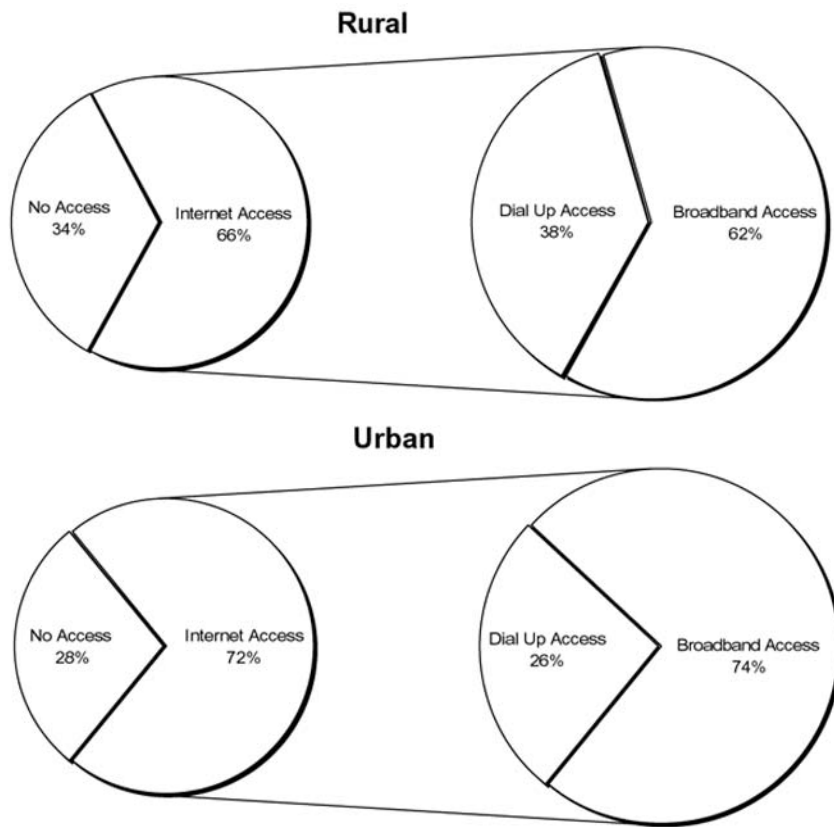
As Figure 2 shows, in 2007, the method used to connect to the Internet was nearly evenly divided into thirds: 32 percent of rural households with Internet access used a cable modem; 30 percent used a DSL connection; and 38 percent used a dial-up modem. From 2003 to 2007, the largest increase was in DSL connectivity (27 percentage point increase) followed by cable modem (14

Figure 2: Methods of Accessing the Internet by Rural Households, 2003-2007



Data source: 2003 Attitudinal Survey of Rural Residents and 2007 RuralPA-CPS

Figure 3: Rural and Urban Households With and Without Internet Access and Type of Access, 2007



Data source: 2007 RuralPA-CPS

percentage point increase); the use of dial-up modems declined 40 percentage points. Rural households using other methods to connect to the Internet (wireless/satellite, etc.) stayed relatively the same at about 1 percent.

Characteristics of Rural Households With and Without Broadband Connectivity

Rural households with broadband connectivity had many of the same characteristics as households with dial-up modem connectivity. Some of these similarities included age, employment rates, homeownership rates and minority status. There were, however, some significant differences between these two types of households. These differences included:

- **Income:** Households with broadband connectivity had a median household income of \$60,000, or \$10,000 higher than the median income for households with dial-up modems.
- **Adult Educational Attainment:** Among house-

holds with broadband connectivity, 32 percent of adults (18 years old and older) had a bachelor's degree or higher, while in households with dial-up modems, 21 percent of adults had a similar level of educational attainment.

- **Households with Children:** 40 percent of households with broadband connectivity had children compared to 36 percent of households with dial-up modems.

Comparison of Rural and Urban Households With and Without Broadband Connectivity

Among urban households with Internet access, in 2007, 74 percent connected to the Internet using broadband technologies compared to 62 percent of rural households. Twenty-six percent of urban households used dial-up modems to connect to the Internet compared to 38 percent

of rural households.

Rural and urban households with broadband connectivity had many similar characteristics. As Table 2 shows, both types of households had similar numbers of children, employment rates, numbers of household members, average ages and poverty rates. There were, however, three characteristics that separated rural and urban households with broadband connectivity:

- **Income:** Urban households with broadband had a median household income of \$75,000, or \$15,000 higher than the median income of rural households with broadband.
- **Adult Educational Attainment:** 45 percent of adults (18 years old and older) in urban households had a bachelor's degree or higher, while 32 percent of adults in rural households had a similar level of educational attainment.
- **Minorities:** Among rural minority households with Internet access, 64 percent had broadband connectivity and 36 percent did not. Among urban

Table 2: Characteristics of Rural and Urban Households by Method of Internet Access, 2007

	BROADBAND INTERNET ACCESS		DIAL-UP MODEM INTERNET ACCESS	
	Rural	Urban	Rural	Urban
Average # persons living in the household	2.9	2.8	2.7	2.6
Average age	37.1	36.6	38.6	42.6
% Minorities (Non-White and/or Hispanic)	4%	13%	4%	13%
% Households with children	40%	40%	36%	28%
% Married couple households	78%	73%	77%	72%
Median household income	\$60,000	\$75,000	\$50,000	\$50,000
Household poverty rate	5%	4%	6%	5%
Homeownership rate	90%	86%	90%	85%
% Adults with bachelor's degree or higher	32%	45%	21%	31%
% Adults employed	65%	69%	64%	61%

Data source: 2007 RuralPA-CPS

minority households with Internet access, 75 percent had broadband and 25 percent did not.

There were fewer similarities between rural and urban households with dial-up connectivity. Rural households with dial-up connectivity were generally younger (39 years old), more likely to have children (36 percent), and more likely to be married couple households (77 percent) than urban households (43 years old, 28 percent, and 72 percent, respectively). In addition, there was an educational attainment gap separating rural and urban households with dial-up connectivity: among rural households, 21 percent of adults had a bachelors' degree or higher compared to 31 percent of urban adults. There was, however, no significant difference in household income.

National Comparison

Nationally, data from the 2006 Pew survey found that 74 percent of adults with home Internet access connected via broadband and 26 percent connected via dial-up modem. Among the adults in rural areas, 66 percent used broadband at home and 34 percent used dial-up.

Discussion

The data point to three distinct “digital divides” affecting rural Pennsylvania: The first is between households with and without Internet access; the second is between households with and without broadband connectivity; and the third is between rural and urban households with broadband connectivity.

Broadband Access for All Pennsylvanians

In December 2004, Act 183 was signed into law, requiring that broadband telecommunication services be available to all Pennsylvanians by 2015. This act encourages earlier deployment through economic incentives and reduced regulations. Act 183 also established the Broadband Outreach and Aggregation Fund (BOAF) within the Pennsylvania Department of Community and Economic Development. BOAF is a grant program designed to help communities aggregate the demand for broadband service. It also requires local telephone companies to respond to the new demand for service in a more timely fashion. The department is responsible for outreach efforts to local governments, businesses, hospitals, and others on the benefits, uses and procurement of broadband services. The department also provides seed grants to aggregate customer demand for broadband services in communities with limited access and requires broadband services from a telecommunications provider. For more information on BOAF, visit the Pennsylvania Department of Community and Economic Development's web site at www.newpa.com/default.aspx?id=199.

The digital fault line for the first divide (rural households with and without Internet access) can be traced along age, income, and educational lines. The older the household members, the lower the income, and the lower the educational attainment levels, the less likely the household is to have Internet access.

In the coming years, it is unlikely that the gap between households with and without Internet access will change significantly. From 2003 to 2007, the percent of households with Internet access only increased 3 percentage points. This slower rate could suggest that those households in rural Pennsylvania who want Internet access have it, and those who do not want it are unlikely to get it.

The second digital divide is between rural households with and without broadband connectivity. Among rural households with Internet access, 62 percent use a broadband connection while 38 percent use a dial-up modem. Households without broadband are generally less affluent, have lower levels of educational attainment, and do not have children, while households with broadband are generally more affluent, have higher levels of educational attainment and have children.

From 2003 to 2007, the percent of rural households with broadband connectivity rose from 22 percent to 62 percent—a 40 percentage point increase. In part, this increase may be attributable to the economic incentives and reduced regulations provided in Act 183; most notably the Broadband Outreach and Aggregation Fund (see the box on Page 5). However, broadband availability throughout some parts of rural Pennsylvania remains unavailable, as universal broadband service for the entire state, as defined in Act 183, is not required until 2015.

The third digital divide is between rural and urban households. Statistically, there is a slight, but significant, gap between rural and urban households with Internet access. There was also a larger gap between rural and urban households with broadband connectivity. Data from the Pew survey suggests that this rural-urban digital divide is occurring across the country. According to that data, urban and suburban areas have higher rates of connectivity than rural areas.

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