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Broadband Internet's Value for Rural America

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Abstract

As broadband—or high-speed—Internet use has spread, Internet applications requiring high transmission speeds have become an integral part of the “Information Economy,” raising concerns about those who lack broadband access. This report analyzes (1) rural broadband use by consumers, the community-at-large, and businesses; (2) rural broadband availability; and (3) broadband’s social and economic effects on rural areas. It also summarizes results from an ERS-sponsored workshop on rural broadband use, and other ERS-commissioned studies. In general, rural communities have less broadband Internet use than metro communities, with differing degrees of broadband availability across rural communities. Rural communities that had greater broadband Internet access had greater economic growth, which conforms to supplemental research on the benefits that rural businesses, consumers, and communities ascribe to broadband Internet use.

Keywords: Internet, broadband, high-speed Internet, rural economies, rural economic growth, digital economy, telemedicine, rural, urban, Census data, June Agricultural Survey, Agricultural Resource Management Survey (ARMS), ERS, USDA

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Contents

Summary	iii
Introduction	1
The Internet Economy	3
Broadband Internet Adoption and Use	5
Dial-Up Versus Broadband Internet Use	5
Rural Internet Use	7
Further Factors in Rural Broadband Use	10
Geography of Rural Broadband Providers	14
Broadband's Effect on the Rural Economy	20
Rural Communities and Broadband Internet Use	23
Community Interactions and the Internet	23
Telemedicine and Telehealth	24
Distance Education	25
The Service Sector in the Internet Economy	25
Telework	26
Broadband Availability Leads to Use	28
Broadband Adoption on the Farm	28
Rural Broadband Availability and Adoption	29
Broadband Internet Use and Rural Businesses	31
Rural Businesses and Broadband	31
Rural Retailers and Broadband	32
Farm Businesses and Broadband	32
Farm-Rural Linkages in the Internet Economy	36
Conclusion	38
References	40
Appendix A: Bureau of the Census Regions	47
Appendix B: Data Used in the Study	48
Appendix C: Using the FCC Data	50
Appendix D: Modeling Broadband Use on the Farm	59
Appendix E: Quasi-Experimental Design	60
Appendix F: Economic Research Service's Broadband Workshop, September 29-30, 2008	61

Summary

The Internet has become widely, but not universally, available. Two-thirds of U.S. adults had in-home Internet access by 2008. Rural businesses and consumers have become almost as likely as their urban counterparts to use the Internet, though broadband—or high-speed—access is less prevalent in rural areas than in more densely populated areas. The 2008 Farm Act reauthorized USDA's telemedicine, distance learning, and rural broadband access grant and loan programs.

What Is the Issue?

Broadband access is viewed as necessary to fully utilize the Internet's potential. As the Internet economy has matured, more applications now require higher data transmission rates, even in the case of simple shopping websites. In a recessionary economy a number of Internet activities—including job searches and home businesses—may become more critical for households. Whereas an estimated 55 percent of U.S. adults had broadband access at home in 2008, only 41 percent of adults in rural households had broadband access. Evidence suggests that some of this shortfall in broadband use is involuntary, and may be due to the higher cost of broadband provision or lower returns to broadband investment in sparsely populated areas.

What Did the Study Find?

Analysis suggests that rural economies benefit generally from broadband availability. In comparing counties that had broadband access relatively early (by 2000) with similarly situated counties that had little or no broadband access as of 2000, employment growth was higher and nonfarm private earnings greater in counties with a longer history of broadband availability.

By 2007, most households (82 percent) with in-home Internet access had a broadband connection. A marked difference exists, however, between urban and rural broadband use—only 70 percent of rural households with in-home Internet access had a broadband connection in 2007, compared with 84 percent of urban households. The rural-urban difference in in-home broadband adoption among households with similar income levels reflects the more limited availability of broadband in rural settings.

Areas with low population size, locations that have experienced persistent population loss and an aging population, or places where population is widely dispersed over demanding terrain generally have difficulty attracting broadband service providers. These characteristics can make the fixed cost of providing broadband access too high, or limit potential demand, thus depressing the profitability of providing service. Clusters of lower service exist in sparsely populated areas, such as the Dakotas, eastern Montana, northern Minnesota, and eastern Oregon. Other low-service areas, such as the Missouri-Iowa border and Appalachia, have aging and declining numbers of residents. Nonetheless, rural areas in some States (such as Nebraska, Kansas, and Vermont) have higher-than-expected broadband service given their population characteristics, suggesting that policy, economic, and social factors can overcome common barriers to broadband expansion.

In general, rural America has shared in the growth of the Internet economy. Online course offerings for students in primary, secondary, post-secondary, and continuing education programs have improved educational opportunities, especially in small, isolated rural areas. And interaction among students, parents, teachers, and school administrators has been enhanced via online forums, which is especially significant given the importance of ongoing parental involvement in children's education.

Telemedicine and telehealth have been hailed as vital to health care provision in rural communities, whether simply improving the perception of locally provided health care quality or expanding the menu of medical services. More accessible health information, products, and services confer real economic benefits on rural communities: reducing transportation time and expenses, treating emergencies more effectively, reducing time missed at work, increasing local lab and pharmacy work, and generating savings for health facilities from outsourcing specialized medical procedures. One study of 24 rural hospitals placed the annual cost of not having telemedicine at \$370,000 per hospital.

Most employment growth in the U.S. over the last several decades has been in the service sector, a sector especially conducive for broadband applications. Broadband allows rural areas to compete for low- and high-end service jobs, from call centers to software development, but does not guarantee that rural communities will get them.

Rural businesses have been adopting more e-commerce and Internet practices, improving efficiency and expanding market reach. Some rural retailers use the Internet to satisfy supplier requirements. The farm sector, a pioneer in rural Internet use, is increasingly comprised of farm businesses that purchase inputs and make sales online. Farm household characteristics such as age, education, presence of children, and household income are significant factors in adopting broadband Internet use, whereas distance from urban centers was not a factor. Larger farm businesses are more apt to use broadband in managing their operation; the more multifaceted the farm business, the more the farm used the Internet.

How Was the Study Conducted?

This report summarizes all available nationwide data on broadband use and availability and analyzes the data to isolate interactions between broadband use and economic activities. It also presents results from an ERS-sponsored workshop on rural broadband and ERS-commissioned research studies conducted by others. The aim is to assess the economic impact of not having broadband service on rural communities and their growth, community facilities, access to health care, and well-being, as requested by Congress on December 26, 2007.

We first analyze who uses broadband, what it is used for, and what differences exist between the average urban and rural user to better understand the perceived usefulness of the Internet, especially broadband. We then identify rural areas that have broadband (by ZIP Code), determine when they acquired broadband service, and develop measurements of broadband availability over time. We analyze the effect of broadband Internet access on the rural economy using quasi-experimental design (QED), which allows us to compare two sets of counties alike in most aspects other than broadband availability. The results are interpreted using further analysis of rural businesses and consumers, including farm business logistic regression analysis, rural-farm linkage logistic regression analysis, and workshop research exploring many complex interactions between the Internet and socioeconomic components of the rural community: rural community social interactions; telemedicine; distance education; and rural businesses, including retail, service, and farm.