

Introduction

The Internet in its infancy was simply an alternative, and quite straightforward, communication device. Electronic mail was sent from one person to another. Intrinsicly the Internet remains a communications device, but as it has grown more universally available, it has become more integrated into the rest of the economy. The simple e-mail system of sending a note has evolved to incorporate blogs, instant messaging (IM), text messaging, Facebook, and Twitter. Business, household, and government activities have moved and are moving onto Internet platforms (Greenstein and Prince, 2006; Leamer and Storper, 2001). Many Internet activities are self-sustaining as personal computers download upgrades and “patches” to their systems and automatic ordering, billing, and payment functions are conducted for households and businesses. The Internet is integral to the development and functioning of the digital or information economy.

Rural communities have not been left out, though from the outset equal access to the Internet has been a contentious issue. The farm sector of the rural economy helped to pioneer rural Internet use (Stenberg and Morehart, 2007), and rural businesses and households have become almost as likely as their urban counterparts to use the Internet (Stenberg and Morehart, 2008). Access to the Internet through broadband (i.e., high-speed) technologies, however, has been less prevalent in rural areas than in much more densely populated areas of the country (see box, “What Is Broadband?”). Broadband Internet access has become the crux of today’s policy debate on equal access among urban and rural communities.

Broadband access is viewed as necessary to fully utilize the Internet’s potential (Greenstein and Prince, 2006; Parker, 2000). As the Internet economy has matured, more applications now require higher data transmission rates, even in the case of simple shopping websites.

The broad scope of the research presented here complements earlier studies on rural telecommunication policy by Parker and Hudson (1992), Internet access in the Appalachian region by Oden and Strover (2002), and businesses in the digital economy by Malecki (2008).

This report examines (1) what role the Internet plays in the national economy; (2) how much, and for what purposes, consumers use the Internet, especially what differences might exist between broadband and non-broadband Internet use by rural and urban consumers, including such uses as telemedicine, distance learning, and community involvement; (3) what determines whether and how rural businesses use broadband Internet; and (4) how broadband Internet affects the broader rural economy. Specifically, we address a question posed to ERS by Congress on December 26, 2007, concerning broadband’s impact on rural communities and their growth, community facilities, access to healthcare, and overall well-being.

While we attempt to measure the observable economic effects of broadband Internet access and use, this study makes no attempt to comprehensively examine all the issues surrounding the growth of the Internet. For one, there are inherent limitations in measuring the economic impact, or value, of a rapidly evolving technology. The telegraph age, for example, ushered in a

number of unpredicted developments like the emergence of such companies as Sears Roebuck. This report neither forecasts new developments nor addresses social issues pertaining to Internet uses like privacy, chat rooms, or parental supervision.

What Is Broadband?

The transmission capacity, or bandwidth, of Internet access has been a major impediment limiting the economic returns from online activity. The slower the Internet access speed, the less useful the Internet is. Dial-up, which was the primary access method before broadband access became more widely available, is the slowest way to connect to the Internet. The highest speed by which data can be transferred using dial-up is 56 kilobytes per second (kbps). In rural areas the speed often has been much less, with connection speeds of 14 kbps common. Effectively, this consigns rural dial-up users to using the Internet for text e-mail messages only. Anything requiring large graphics is simply not practical. High-speed Internet access is necessary to make use of much of what is now offered on the Internet.

Broadband is the term used to denote high-speed access to the Internet. Although the term has been used to refer to other services, such as digital television, the matter of most interest to consumers, providers, and policymakers is broadband Internet connectivity (Eisenberg, 2002). With the convergence of video, audio, text, graphics, and other analogous enduring and transient products and services into digital streams that can be transported across the Internet, broadband Internet connections have become a necessity for common Internet usages and applications.

The Federal Communications Commission (FCC), though altering the broadband definition recently, historically defined 200 kilobits per second in one transmission direction as the minimum speed for Internet service to be classified as broadband. Unfortunately, the definition includes a wide array of technologies ranging from the old ISDN and T-1 lines to satellite service. Lumping very slow transmission and sometimes unreliable service in with superfast fiber-optic home service makes economic impact analysis and discussion of broadband Internet service from historical data challenging.

Most broadband Internet access in U.S. households is through DSL or cable modem technologies and is faster than the FCC standard. As of 2007, 55 percent of all households had broadband Internet access: 46 percent of these had DSL, 39 percent had cable modem, and 12 percent had wireless connections (PEW). DSL was the first technology to become widely deployed; cable and, more recently, fiber-optic lines are becoming the technologies of choice.