

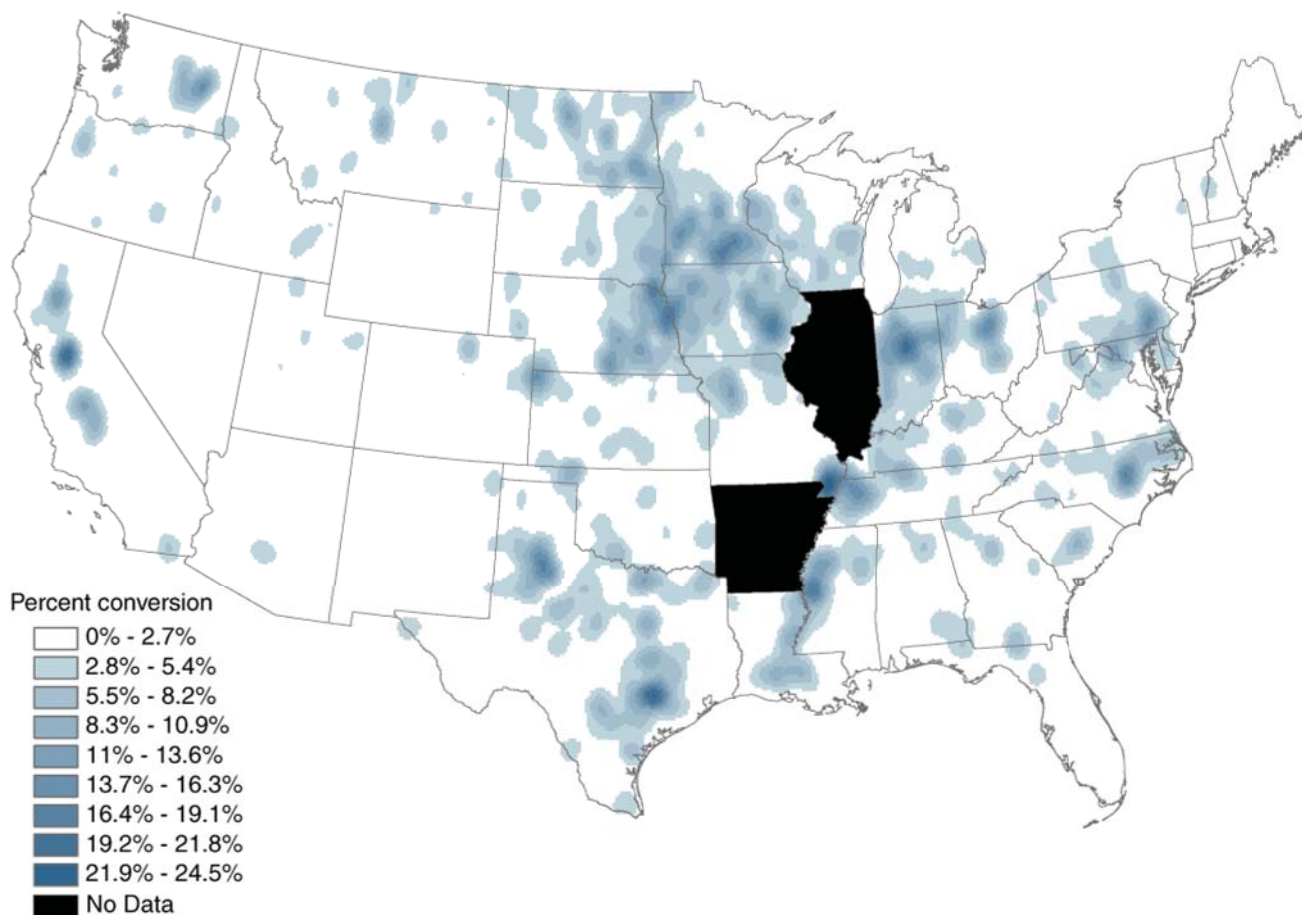
Broadband Availability Leads to Use

Several questions arise regarding policy intervention in broadband markets. Is there pent-up demand for broadband in areas that are unserved or underserved? Does greater availability beget correspondingly greater use of broadband Internet? When terrestrial broadband (DSL or cable) first becomes available, pent-up demand would be evident if conversion rates to broadband access are higher than in communities that have had terrestrial broadband for some time or are served only by satellite broadband. If the adoption rate is not higher, then broadband may be oversupplied or satellite is sufficient. A higher adoption rate would be another indicator that households do indeed value the Internet and broadband's advantages over the dial-up alternative.

Broadband Adoption on the Farm

The paucity of national geographically specific data presents a challenge in trying to analyze whether availability leads to broadband adoption. Data from USDA's June Agricultural Surveys provide a unique opportunity to examine geographically specific rural changes in Internet access methods (see Appendix B for a discussion of the June Agricultural Surveys). Figure 10 shows the conversion to broadband Internet access by farms across the

Figure 10
Conversion to broadband use among U.S. farms, 2005-07



Source: ERS, using June Agricultural Survey data from USDA's National Agricultural Statistics Service.

country between 2005 and 2007. Unfortunately, a change in area identifiers did not allow us to match data for Illinois and Arkansas; hence, these States are omitted from the map and our analysis. By conversion we mean farms that did not already have broadband Internet access converted to broadband Internet access; farms may or may not have had dial-up Internet access.

The data presented in figure 10 show sharp differences in conversion rates across the country. When cross-referenced with the FCC broadband availability data (as estimated for likelihood for specific farm locations in December 2004 and December 2006, see Appendix C), our analysis of farm use of broadband supports the hypothesis that people embrace terrestrial broadband when given the option. Roughly 24 percent of all farms using the Internet in 2005 already had broadband Internet access of some type, and so could not convert. Conversions were nearly nonexistent in areas where broadband was available mostly via satellite.

Farms were unlikely to make the direct jump from no Internet use to broadband Internet access; farms that already had dial-up Internet access were more likely to acquire broadband Internet access. DSL service was the most common broadband Internet access option among farms, whereas cable and fiber optics have shown the largest gains in highly urbanized areas over the last few years. The preponderance of DSL service for farms indicates both the rural location of most farms and Internet users finding satellite a less desirable option.

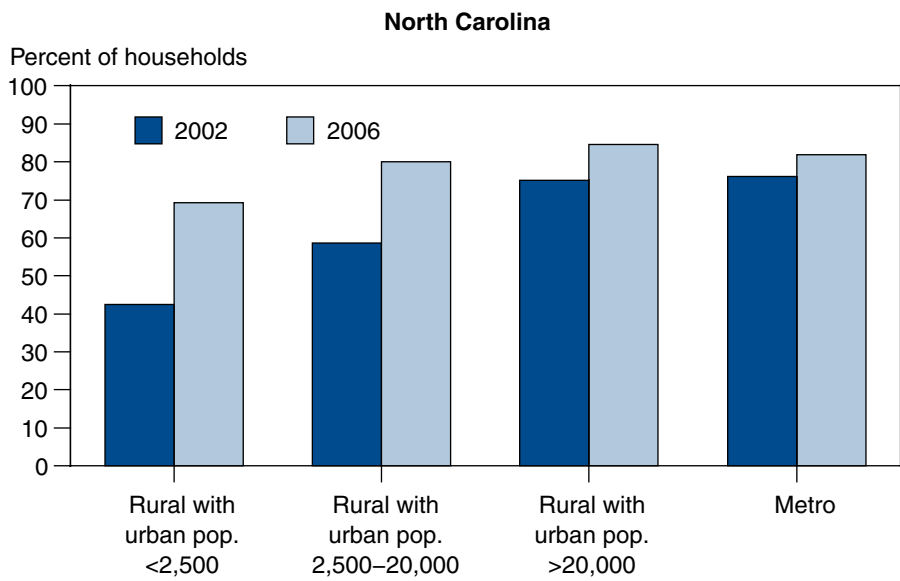
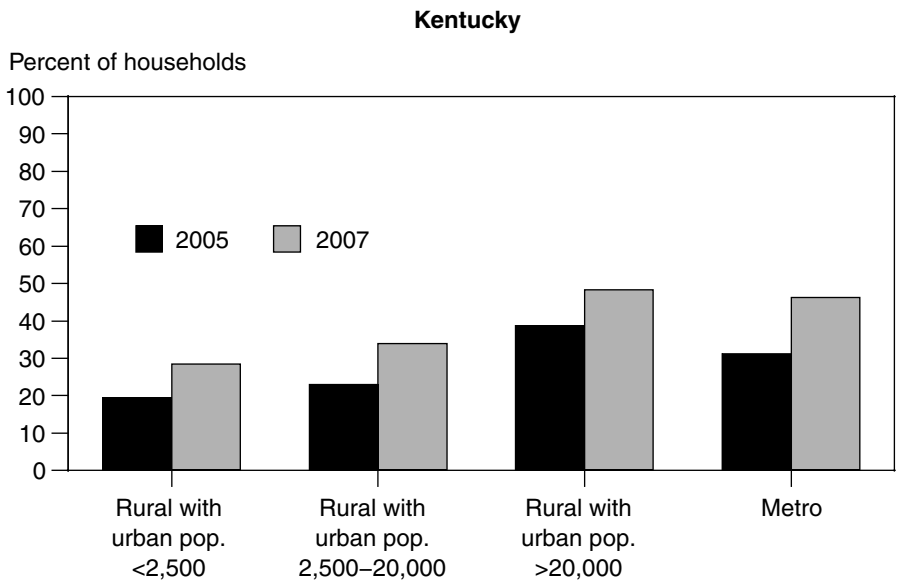
Rural Broadband Availability and Adoption

Some States collect data on broadband availability, enabling a more refined analysis of broadband deployment and adoption. Renkow (2008) examined broadband availability and adoption in two such States—Kentucky and North Carolina. Kentucky had both broadband availability and adoption data. North Carolina had broadband adoption data only. Broadband availability and adoption increased substantially during the last several years, with the largest proportional gains occurring in counties that had been the least well-served at the beginning of the period, typically rural counties. North Carolina had higher rates of adoption by all households than Kentucky (fig. 11).

Renkow found that population density was more important than income in driving broadband deployment. The relative insensitivity of local income to patterns of broadband deployment may indicate that broadband providers perceive demand as being highly income inelastic. If so, cost of physical infrastructure would be the primary consideration in extending capacity into unserved or underserved areas.

The growth of broadband availability even in the most sparsely populated counties, however, is striking. More than three-quarters of households in all but 8 of Kentucky's 120 counties had broadband available to them by 2007. Seven of these eight counties were the least densely populated counties in the State. Interestingly, county adjacency to major urban areas was not related to broadband provision, as within-region clustering seems common. In addition, Renkow found evidence to suggest that the broadband loan program administered by USDA's Rural Development Utilities Programs stimulated broadband deployment in rural areas.

Figure 11
Residential broadband adoption in Kentucky and North Carolina



Source: Renkow, 2008.