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POLICY OPTIONS FOR BROADBAND IN RURAL REGIONS

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SUMMARY

Broadband, or "high-speed" Internet access, has become an integral part of the everyday life of many Americans. Household broadband adoption rates are above 60 percent as of 2011, providing opportunities for communication, information, income, and entertainment. However, the persistence of a rural – urban "digital divide" in both broadband availability and adoption has prompted concerns that rural areas might be left behind in terms of the benefits of this technology. With roughly 20 percent of the American population in rural regions, issues of equity and economic productivity are paramount.

The best policy actions depend on good definitions of the problem they attempt to address. In this document we detail how discussions and action around the digital divide in rural areas have changed over time from an emphasis that initially focused on who had access to computers and connections (first dial-up and later broadband) to understanding why people do or do not choose to adopt this technology. Initially, the availability of the technology was the most straightforward dimension of the digital divide: connections either were or were not available. Several federal and state programs over the past decade have sought to expand broadband availability, with billions of dollars pumped into extending broadband services into rural regions and into subsidizing its costs to both households and community institutions such as schools and libraries, and subsidizing networks that could meet future demands for greater bandwidth. We now know that both availability and adoption factors explain why populations in rural regions lag behind their urban counterparts when it comes to broadband.

The most recent data available present striking confirmation of a persistent divide that disadvantages populations in rural locations. It also extends our understanding of the role of service quality (often expressed as "speed") and adoption factors. Over the past decade, the characteristics that have historically figured in predicting a digital divide – income, education, race and ethnicity, and age – interacted with non-metro locations to produce lags in broadband adoption. With roughly 20 percent of the American population in rural regions, issues of equity and economic productivity are paramount. Modeling results suggest that broadband (even at the modest level of 200 kbps) is positively and causally associated with improved household income and employment, and that not all broadband is created equal: slower speeds are disincentives for adoption in the most recent years. Service availability and quality are factors in rural development.

The Federal Communication Commission's (FCC) Connect America Fund appears to be committed to an approach that targets areas that lack availability. In moving from a definition of universal service that focused on telephone service to one predicated on broadband access - access specifically in regions that are underserved - the FCC's policies are moving in the right direction.[1] The service speeds espoused by the FCC, four Mbps download and one Mbps upload, also are important: our results show that higher speeds are increasingly significant in predicting adoption. We also note that bandwidth requirements for businesses imply greater quality; libraries, schools and community anchor institutions may require up to 100 Mbps speeds.[2] Nevertheless, while federal efforts to expand broadband availability and to increase quality have unfolded in the past several years, several states have sought to limit the field of providers only to private companies; laws or statutes in at least 15 states have made municipal or public-private sources of broadband illegal or very difficult (Tapia et al., 2006). Such policies should bear scrutiny.

As availability has increased over time, more studies have documented the need to target the people who do not take advantage of it. These

populations (who are poorer, often in minority ethnic or racial groups, less well educated, rural, and/or older) are sensitive to price, but to an even greater extent they are unconvinced that broadband is meaningful to their lives. Next generation policies must consider how to encourage people to subscribe to broadband services once they are present and to make the case for the efficiencies and advantages of the Internet. The FCC's attempt to experiment with the Lifeline programs through the Broadband Adoption Pilot Program, in which providers are expected to help address "other challenges" to broadband adoption such as the cost of devices and digital literacy, represents an interesting behavioral economics approach to this issue (FCC, 2012b).

Limited opportunities to see broadband utilities can depress peoples' interest in the technology. Information campaigns invoking classic diffusion factors such as trialability, observability, compatibility, simplicity, and relative advantage accruing to broadband could be useful in enhancing the opportunities for people to encounter and understand broadband (LaRose et al., 2011).[3] Programs specifically focusing on the economic development potentials of broadband applications in highly public ways – through town meetings, public demonstrations, and through mobilizing local community change agents – may contribute to improved adoption levels.

We are cautious about suggesting that increased use of mobile smartphones for broadband access "solves" the digital divide. Many of the productivity gains and economic advantages of broadband access are more difficult to realize on the cellphone, even if that technology is highly valued for social, informational and recreational purposes. Our results hint that mobile phones may be pragmatic tradeoffs with wireline broadband within the rural population, possibly a reflection of financial constraints that limit the ability to pay both a mobile phone bill as well as a wireline Internet access bill; cell phone access for broadband is growing, and the presence of additional wireless providers does not increase adoption of wired broadband access. To the extent that cell phone access is not equivalent in capabilities to other types of access, policies espousing it as a substitute for wireline broadband should proceed cautiously.

We suggest that better data be gathered on matters of adoption, use and cost. Evaluation results of NTIA's BTOP program will be available at some point in the future; this should help suppliers, civil society, and government programs make better decisions on how to address discrepancies, inequities, and opportunities for improvement.[4] In the future, federally-gathered data also should include the cost of services and indicators of service quality, since both influence adoption and use (Flamm and Chadhuri, 2007).

Finally, this research shows broadband's economic contributions to household income and employment. Matched county comparisons demonstrate the influence of broadband adoption in producing these positive outcomes, and constitute an important indication that development efforts focused on mobilizing populations to subscribe to and use broadband capabilities will reap gains. Cultivating local leadership, mobilizing the services of cooperative extension educators nationwide, and working more closely with each State Broadband Initiative grantee could be fruitful avenues for targeting adoption.[5]

ENDNOTES

[1]We are aware that the specifics of the universal service funding formula are hotly disputed at this writing.

[2]The International Economic Development Council reports that as of 2012, 76% of its professionals thought 100Mbps was the floor speed necessary to attract new businesses (http://www.cjspeaks.com/msp/IEDC2012.pdf).

[3]These factors are widely recognized as influencing rates of adoption. Trialability refers to the degree an innovation can be experimented with on a limited basis, observability is how clear the results of an innovation are to others; compatibility looks at how consistent the innovation is with existing values and needs, simplicity refers to the degree of the innovation's ease of use and understanding; and relative advantage is how much better an innovation is relative to the idea it supersedes (Rogers, 2003).

[4]Some preliminary results are available at http://www.ntia.doc.gov/report/2012/progress-towards-btop-goals-interim-report-pcc-and-sba-case-studies.

[5]Under NTIA, the State Broadband Initiative launched in 2009 awarded funds to an entity in each state to undertake mapping, data gathering, and planning for broadband.

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