

THE IMPACT OF THE USDA BROADBAND LOAN PROGRAM ON U.S. AGRICULTURE

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Increasing the availability of broadband in rural communities has been an important US rural development policy goal over the past decade. Since 2000, federal Broadband Loan Programs authorized under consecutive Farm Bills have directed more than \$1.8 billion to private telecommunications providers in 40 states with the explicit goal of making high-speed data transmission capacity available to rural residents and businesses. Program criteria

restrict eligibility to communities having a population of 20,000 or less with no prior access to broadband, as well as establishing a minimum matching contribution of 15 percent by recipients of the loan. Loans have been extended mainly to small telecommunications services firms at varying (subsidized) interest rates, typically on the order of four percent (Cowan, 2008). In 2002 and 2003 a Pilot program administered by the USDA's Rural Utilities Service

extended loans worth \$180 million to broadband providers serving 98 communities located in 13 states (see Figure 1). Beginning with the 2002 Farm Bill, funding for the current (post-Pilot) Broadband Loan Program was expanded. The current program also instituted administrative changes to address problems with repayment, and to facilitate better targeting of loans to remote rural locations.

Distribution of USDA Broadband Loans

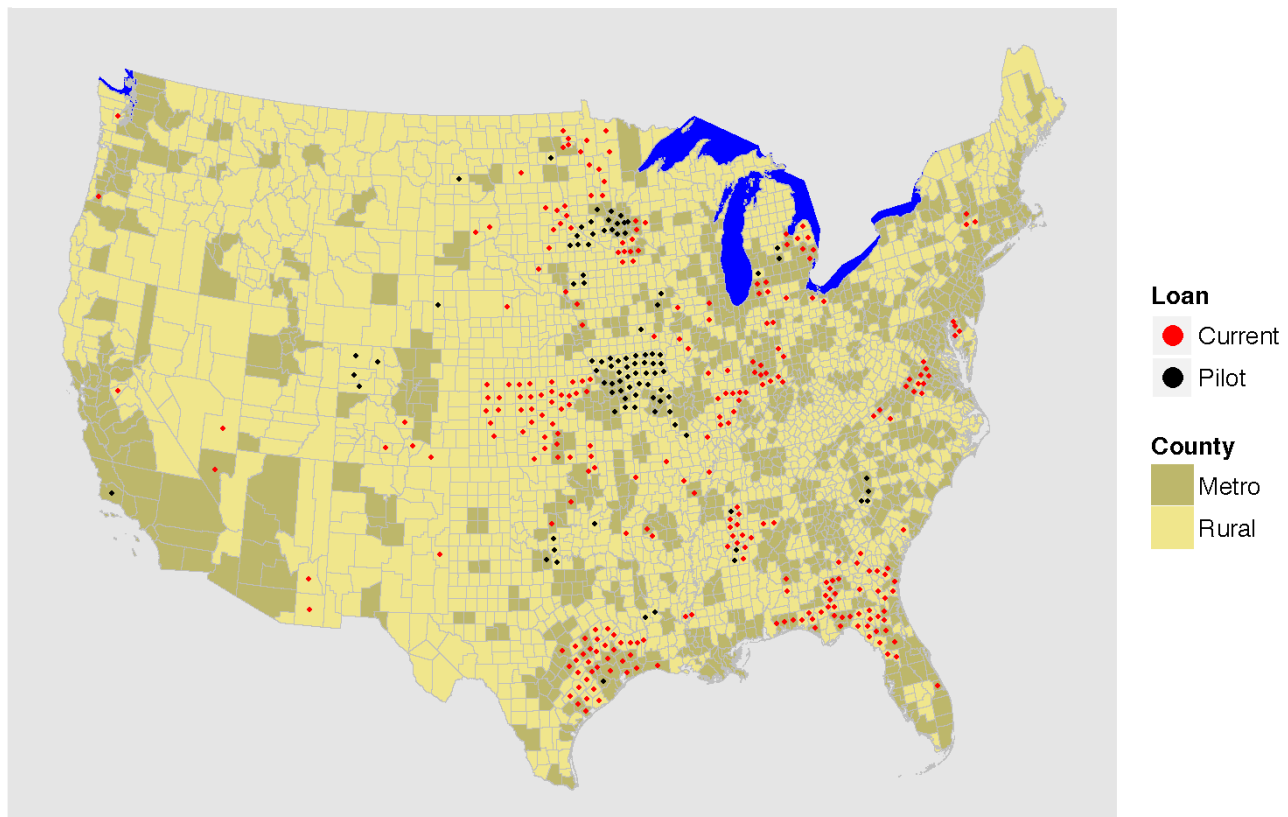


Figure 1. Distribution of USDA Broadband Loans, 2002-2008.

Proponents of these programs generally point to research projecting large aggregate economic benefits from widespread broadband deployment (for example, Crandall and Jackson, 2001 and Crandall et al., 2007). However, in a recent study comparing rural communities that received USDA broadband loans with communities that did not, we found that the reality is much more nuanced than this simple depiction (Kandilov and Renkow, 2010). Specifically, we found that the Broadband Loan Programs have produced a range of impacts in recipient communities – some positive some negative – that vary depending on the industry considered and by where a community lies on the rural-urban continuum (e.g., whether or not it is near a metropolitan area).

One particularly interesting finding from our work is that agriculture is one of the industries that has experienced positive outcomes (in terms of payroll and number of establishments) in counties receiving broadband loans *vis-à-vis* non-recipient counties. This has led us to explore in greater detail the impact of broadband loans on the agricultural industry. To do so, we have used modern program evaluation technique to ascertain whether or not various indicators of economic performance in the agricultural sector, such as commodity sales and production expenses, have been positively affected by the Broadband Loan Programs. The analysis was conducted using county-level data from the Bureau of Economic Analysis (BEA), the county being the smallest level of geographic disaggregation for which data are publically available on both the receipt of broadband loans and performance indicators for agriculture. (A

detailed description of our methods and findings can be found at http://www.nardep.info/uploads/Appendix_USDABroadband.pdf.)

Broadly speaking, this analysis confirms that these programs have indeed benefitted the agricultural sector:

- Receipt of USDA broadband loans under both the pilot and the current programs is positively associated with a larger fraction of farms using high-speed internet, but only in rural counties adjacent to metro counties.
- Counties that have received USDA broadband loans have enjoyed 11.2 to 17.3 percent greater farm revenues after loan receipt, while in these same recipient counties total farm expenditures have increased by 6.6 to 9.6 percent. In combination, these results suggest that the Broadband Loan Program has, on average, been associated with a 4.6 to 7.7 percent increase in farm profits in recipient counties *vis-à-vis* non-recipient counties.
- In terms of the distribution of these effects across sub-sectors, both livestock and crop sales have increased in counties that have received broadband loans. However, the evidence also suggests that impacts on the livestock sector have effectively disappeared with changes made between the Pilot and current programs, whereas positive impacts on crop sales have remained quite stable across both programs.
- The benefits of the Pilot Broadband Loan program were smaller in relatively

remote rural counties not adjacent to metro counties than in either metro counties or rural counties adjacent to metro counties. Under the current program, by contrast, benefits are concentrated in rural areas. In both types of rural counties (adjacent and non-adjacent), agricultural sales increased by about 11 percent in recipient counties compared with non-recipients. However, because expenditures in recipient non-adjacent counties increased by much more than in recipient adjacent counties, our results imply that significant increases in farm profits only occurred in rural adjacent counties.

WHY MIGHT ACCESS TO HIGH-SPEED INTERNET MATTER FOR FARMERS?

High-speed internet can substantially reduce the costs of interaction between spatially dispersed market participants and provide real-time access to information relevant for both production and marketing decisions of farmers. It can greatly facilitate access to current weather and pricing information for inputs and output; it can also speed technology adoption and improve management practices. All of these improvements can result in a reduction in farmers' costs and an increase in their revenue, ultimately leading to higher profits.

More specifically, access to high-speed internet can increase total farm revenue in two ways – by allowing farmers to search for new customers for their output, which may lead to an increase in output produced; or by enabling farmers to find buyers willing to pay a higher price than what they currently charge. On the

cost side, having access to high-speed internet may reveal cheaper sources of inputs such as seeds, fertilizers, and farm equipment; or it can increase the diffusion of better management practices that can help farmers produce the same amount of output with fewer inputs. Of course, total expenditures might rise – if, for example, the scale of operation increases or the quality of output rises via the use of better and more expensive inputs. As long as the revenue gains outpace the expenditure increases – as was found for rural adjacent counties, but not rural non-adjacent counties – then the net effect is higher profits for farmers with access to high-speed internet.

CONCLUDING REMARKS

Our analysis indicates that the USDA Broadband Loan Program has promoted greater high-speed connectivity in recipient counties, and that this in turn has been associated with higher profits in some – but not all – of these counties. The BEA data used in our analysis are not sufficiently disaggregated to enable pinpointing the mechanism(s) facilitating this increased profitability – for example, via improving the quality of production decisions versus improvements in marketing efficiency. Neither did the data allow us to investigate whether or not there are differences across farm-size classes of the positive impacts of high-speed internet on economic performance. These issues are fertile ground for future investigation using more disaggregated data – work that is currently underway.

Finally, it is important to reiterate that the positive impacts of the Broadband Loan Programs on agricultural producers

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is only one element of an array of the Programs' impacts on various industries within rural America. As noted earlier, our prior analysis of impacts across the entire range of industries within rural communities suggested that while some industries – for example agriculture – have benefitted from participation in the Broadband Loan Programs, others have actually been weakened. For example, the retail sector in remote rural communities is generally vulnerable to the competitive forces unleashed by widespread access to online commerce that is facilitated by high-speed internet access (Kandilov and Renkow, 2010). Thus, it is important to recognize that the Program's apparent positive impacts on agriculture reflect only one aspect – albeit an important one – of a distribution of positive and negative effects that to an extent may have canceled out one another in the context of overall community economic well-being. In short, a full benefit-cost analysis is needed to fully assess these multiple impacts of the Broadband Loan Program and the costs of achieving those impacts. ↴

REFERENCES

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