Social Return Accounting

Researchers at an Australian university propose a new way to measure the social benefits of broadband.

By Masha Zager / *Broadband Communities*

Communities that consider investing in broadband through municipal networks, public-private partnerships or subsidies to private providers struggle to estimate the returns on their proposed investments. Estimating the investments is not difficult – at least no more difficult than for a private provider – but the returns can be confounding.

Like a private provider, a community can make a good guess about the revenues a network will yield, but unlike a private provider, a community may reap many additional benefits, such as economic development and quality of life. Communities generally don't know whether these "off the books" benefits will materialize or how to measure or account for them if they do.

Some communities, such as Rio Blanco County in Colorado, decide not to estimate ROI at all – they view their fiber networks as purchases rather than investments. (See "Rio Blanco County Stays Relevant With Broadband" in the November-December 2016 issue of this magazine.) Others rely on other communities' experiences of economic growth; this kind of hopeful thinking can be risky because the potential for economic development varies from city to city and because not all cities realize their full potential.

In this issue of **Broadband Communities**, Michael Curri describes how cities such as Sanford, Florida, are considering the benefits of connectivity cost savings for city agencies. (See p. 40.) Several successful municipal networks, such as Santa Monica CityNet in California, have used such municipal cost savings to bootstrap their broadband projects.

Yet another way to think about the benefits of public projects is outlined in a study that the University of New South Wales Sydney recently published. The three authors – Richard Holden, Alex Rosenberg and Rosalind Dixon – call their method "social return accounting." It uses social science findings to calculate rates of return for government expenditures. Social return accounting can be applied to public projects of many kinds; one example the researchers give is the Australian National Broadband Network.

APPLYING SOCIAL SCIENCE FINDINGS

The authors offer a hypothetical example of a proposal to lengthen the elementary-school day by two hours. Calculating the costs of such a proposal would be straightforward – costs might include extra funding for teachers, teaching supplies, utilities, transition costs and other expenses. The benefits, however, depend on the policy's effects.

These effects can be estimated through social science research. For example, a randomized controlled trial with 50 schools in a treatment group and 50 in the control group might reveal whether a longer school day improves student test scores. Further research could show whether early test scores affect secondary-school test scores, and whether those scores affect later-life outcomes, such as income, employment, health and incarceration. These ultimate outcomes are possible to value directly.

If lengthening the school day leads to better test scores and improved life chances for students, the net present value of the policy can be estimated, just as it can for any private

investment. If the return on investment meets the government's threshold for action, the government can implement the policy. On the other hand, if lengthening the school day just makes children tired or improves test scores but has negligible effects on later-life outcomes, the policy proposal should be rejected.

Other approaches to social return accounting have been used in the U.K. and Australia, but the method these authors propose is the first to use experimental social science data. It also takes a broader view of social capital development, including human and social capital in addition to financial and physical capital expenditure.

THE NATIONAL BROADBAND NETWORK

In 2009, the Australian government, responding to complaints about low internet speeds, announced a plan to build a nationwide infrastructure to support high-speed internet. It created the NBN Company and charged it with building a wholesale FTTH network to connect all but the most remote Australians. Retail services were to be provided by private partners.

NBN Co began building the fiber network and immediately encountered difficulties. In 2013, a new government was elected and switched to a fiber-to-the-node strategy to reduce buildout costs. The FTTN strategy, too, developed cost overruns and other problems, but the project continued to go forward. NBN broadband services are now marketed to 67 percent of Australian homes and businesses, and the network has a take rate of nearly 60 percent.

The government demanded that the NBN Co seek a 7 percent rate of return, which requires the retail providers to charge high fees. "Therein lies a tension," the authors point out. "Although NBN is safeguarding the taxpayers' investment, those same taxpayers are potential NBN users. The users may not see their tax dollars lost, but they are still paying a high price for NBN service."

The authors question whether imposing such a high rate-of-return requirement on NBN Co was reasonable or whether the social benefits of this publicly owned network should be factored in along with its financial returns. They also ask whether the social returns for the FTTH portion of the network differ from those for the FTTN portion.

SOCIAL BENEFITS OF NBN

What are the social benefits of FTTH, and how can they be measured?

Personal income. The authors look first at a German study in which certain communities received fast broadband in the 1990s before similar, neighboring communities. Residents of the well-served communities developed substantially higher technology skills and were able to command higher wages than residents of the unserved communities. Applying these findings to present-day Australia, the authors calculate a conservative estimate of the wage increases over a 30-year period that could result from NBN.

Education. Education is often cited as another benefit of broadband. The authors examine a number of studies of broadband's effects on test scores but ultimately do not calculate any benefits for education, both because the studies are contradictory and inconclusive and because any positive effects from education would ultimately be captured in their estimate of wage increases.

Health care savings. The authors cite an Australian pilot study that showed a telepediatrics program saved Queensland's Department of Health a substantial amount because fewer patient transfers were required. Applying these findings to other specialties and geographic areas and assuming that videoconferencing can save the states and territories 50 percent of the $188 million in travel assistance they spend each year, the authors add 30 years of travel cost savings to the benefit side of the ledger.

A second potential source of health care savings is the reduction of depression among senior citizens in residential care institutions. The authors use two studies – a Taiwanese study showing that such patients became less depressed if they were able to videoconference with their families and a Swiss study showing that depressed hospital patients are more likely to have longer hospital stays and be readmitted later. By calculating the number of institutionalized seniors admitted to hospitals each year throughout Australia, the authors derive a measure of potential health care savings based on the ability to videoconference with families.

Clearly, broadband networks have many other possible community benefits, such as savings on public safety and energy expenditures, increased property tax revenues and increased profits for local businesses. Cities mulling broadband investments can devise pilot studies to test the impacts of advanced broadband on any measures of importance to them.

SOCIAL RATE OF RETURN

The authors assume that the FTTN portion of the network, whose speeds are far lower than those of the FTTH portion, yields 50 percent of the social benefits they calculate for FTTH. They also take account of the fact that FTTN is less expensive to build. Weighing costs against benefits (financial plus social) for each portion of the network, they arrive at an estimate of an internal rate of return of 21.1 percent for FTTH and 15.2 percent for FTTN.

Social return estimates are based on extrapolations from small studies, often in locations different from the one under consideration. For this reason, they should be viewed with less confidence than financial return estimates. The authors of this study try to use the most conservative assumptions for every estimate – a wise precaution, as overestimating benefits risks wasting taxpayer money. Even using conservative estimates, however, they show that NBN's total return on investment is far higher than its financial return. Their evidence indicates that FTTH was probably a better investment than FTTN, even though it cost considerably more, and that there may be a good argument for reducing NBN's wholesale rates, enabling retailers to reduce retail prices for broadband.

The study discussed here may be viewed at http://research.economics.unsw.edu.au/richardholden/assets/social-return-accounting.pdf. ❖

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