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Estimating willingness-to-pay for broadband attributes among low-income consumers: Results from two FCC lifeline pilot projects

Hyun Ji Lee[a], Brian Whitacre[b,*]

[a] Texas Tech University, USA
[b] Oklahoma State University, USA

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ABSTRACT

Recent studies have confirmed that broadband adoption (as opposed to simply having access to broadband infrastructure) is positively linked with economic growth. In light of this, federal policy efforts have switched from focusing mainly on the provision of infrastructure to more explicit adoption-oriented efforts. One of those efforts was the Federal Communications Commission's (FCC's) Low-income Broadband Lifeline Pilot Projects, which ran from 2013 to 2014. The program worked with 14 private telecommunications firms to subsidize household broadband adoption for low-income households by providing discounted monthly and equipment costs. Low-income households are an important component of the broadband adoption puzzle: between 2003 and 2013, the adoption gap between low-income and high-income households actually increased by 5% points. This paper focuses on two specific FCC Broadband Lifeline Pilot projects that allowed consumers to make choices among different options, such as data allowance, speed, and wireless vs. wired connections. Conditional logit models are used to develop estimates of consumer's willingness-to-pay for specific broadband attributes. The results indicate that low-income consumers have a preference for smartphone connections (versus aircards) – and that this effect is even more pronounced for those households earning less than $20,000; that low-income consumers have a preference for wired connections (versus wireless); and that there is evidence that low-income consumers are willing to pay for an extra GB of data each month – but not for the speed of their connection.

1. Introduction

An important policy debate is underway as the internet becomes integral to the lives of most Americans. In 2015, the Federal Communications Commission (FCC) classified broadband[1] access as a public utility, recognizing its importance in everyday life (FCC, 2015a). However, broadband adoption rates are still very low for low-income households (Tomer & Kane, 2015). Wheeler (2015) noted that only half of low-income households who earn less than $25,000 adopt broadband, compared to adoption rates of 95% for households that earn more than $100,000. Whitacre (2015) pointed out that the broadband adoption gap between low and high-income households *increased* 5% points between 2003 and 2012 (Fig. 1). Concerns continue to exist that this type of digital

* Corresponding author.
E-mail address: brian.whitacre@okstate.edu (B. Whitacre).

[1] In 2015, Federal Communications Commission (FCC) defined broadband access as 25 megabits per second (mbps) for download speeds and 3 mbps for upload speeds.

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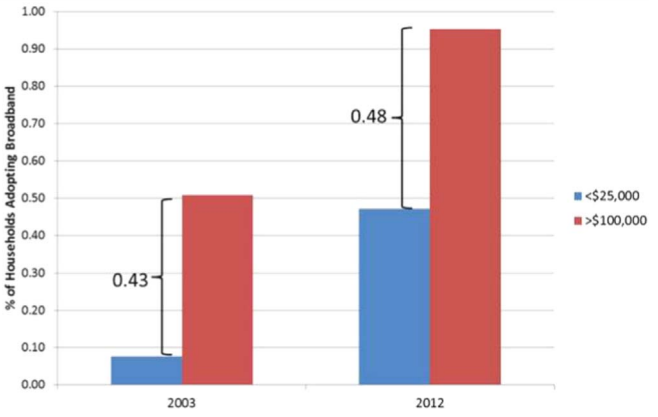

Fig. 1. Broadband Adoption Rates for Low and High Income Households.
Source: Whitacre (2015) (via Current Population Survey Internet and Use Supplement)

inequality has implications for economic activity, social capital, and general life direction (Robinson et al., 2016). The fact that the adoption gap between low and high income households grew over this period suggests that more should be done to help lower-income households obtain and keep a broadband connection.

Broadband policy in the U.S. is undergoing important changes. Historically, most policies associated with broadband were supply-side oriented, focused on pushing infrastructure into unserved or underserved areas (Kruger, 2013). Over time, access has become nearly ubiquitous, with data from the National Broadband Map indicating that almost 100% of Americans have access to speeds of 3 megabytes per second (MBPS) download and 768 kilobytes per second (KBPS) upload (NTIA, 2015a).[2] Because of this, economists and others have argued that the demand-side component is an even more important piece (Atkinson, 2009; Hauge & Prieger, 2010; Whitacre, Strover, & Gallardo, 2015). Accordingly, federal policy efforts have been moving in this direction. In 2012, the FCC established the Low-Income Broadband Pilot Projects to collect data on what policies might best overcome broadband adoption barriers faced by low income consumers. These pilot projects were run by 14 private telecommunications firms and sought to determine the best ways to include broadband as part of the Federal Lifeline subsidy program. The original Lifeline program, started by the FCC in 1984, was aimed at helping low-income households pay the cost of telecommunications services via a traditional, land-line phone. The program was reformed to include cell phone service in 2008, and was recently updated again to include broadband access (FCC, 2016). All consumer participants of the broadband pilot projects had to be eligible for the traditional Lifeline program (i.e. have income levels below 135% of the federal poverty guidelines, or participate in certain federal / state assistance programs). Each of the 14 pilot projects offered their participants different subsidy amounts, hardware costs, conditions of digital literacy, technologies, and types of service (FCC, 2015b). Each provider varied the subsidies given for broadband access, and low-income households either accepted or declined the offers made. The subsidies began in early 2013 and continued for one year. Despite the pilot projects gathering consistent data on the subscribers to the various options, the implications of what they mean for low-income households and broadband adoption have yet to be thoroughly evaluated. As the FCC proceeds with the inclusion of broadband as part of the Lifeline program, understanding what low-income residents want and are willing to pay for in such a program will be important to identify.

This study assesses the pilot projects of two specific companies: Nexus and Puerto Rico Telephone Company (PRT). While most of the 14 projects simply let households either accept or decline a specific offer, these two were the only ones that allowed consumers to make choices among different plans with varying costs.[3] Specifically, Nexus varied data limits and the type of device offered for its wireless service, and PRT allowed consumers to choose between wireless or wireline connections (and among speed and data offerings for each). Based on the data collected, the consumer's willingness-to-pay can be calculated for specific broadband attributes. These results will be important as the broadband Lifeline program moves forward and attempts to spur adoption among low-income households. Effective policies built on these results should lessen the adoption gap between different levels of household income and could potentially impact the larger economy.

2. Previous research

The following literature review has four sub-sections. The first deals with income's role in broadband adoption, and the second focuses on how low-income broadband adoption could impact the overall economy. The third section addresses public policies associated with broadband adoption and the fourth details the history of the Lifeline program with an emphasis on the recent addition of broadband.

[2] Note, however, that these speeds are significantly below the FCC's 2015 threshold for broadband (25 MBPS down, 3 MBPS up).
[3] The National Telecommunications Cooperative Association (NTCA) project also allowed consumers to make a choice – of download speeds – but only obtained 45 participants. This limited sample size led to no meaningful modeling results, and they are not included in the remaining discussion.