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Effects of the discount matrix on e-rate funds from 1998 to 2012



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ABSTRACT

Broadband in schools has been financially supported by the e-rate program for over fifteen years in the United States. This study focuses on distribution effects of priority 2 internal connections funds from 1998 to 2012. Regressions estimate the effects of the discount matrix and effects of the National School Lunch Program (NSLP) student population on fund distribution by state. Regressions also provide per-student and per-school estimates of funds from the number of city, suburb, town, and rural students and schools per state. Treatment groups provide more detailed comparisons across the 50 states and the District of Columbia, a smaller sample of 48 states excluding New York, California, and Texas, and a quasi-experiment from FY2010. The effect of the discount rate is statistically significant, along with the number of NSLP students in the treatments. Results show that NSLP students in city locales account for a large proportion of funds directed toward New York, California, and Texas. Given these results, e-rate reformers may consider student population demographics implicit in the discount matrix to evaluate distribution of priority 2 funds.

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1. Introduction

Improving high-speed broadband access to community anchor institutions such as schools and libraries is a public policy goal of the ConnectEd initiative (Federal Communications Commission (FCC), 2013). Federal funding of broadband infrastructure, however, invites scrutiny on the means and efficacy of the distribution of such funds. For community anchor institutions, the critical question is how public money is disbursed and whether grant criteria serve statutory goals.

Under e-rate reform efforts of 2014, policymakers are evaluating the distribution criteria of funds for broadband deployment to these community anchor institutions. Schools and school districts continue to request increased funding levels to improve broadband connectivity through the e-rate program (*Funds for Learning (FFL)*, 2003). In FY2013, the Universal Service Administrative Company (USAC) processed 46,198 applications for nearly \$5 billion in support requests (FCC, 2013).

With large investments in broadband infrastructure to schools, the problem remains on how to evaluate such projects. Vague requirements to improve speeds and upgrade connections can be an invitation for rent-seekers, waste, and fraud (Rosston & Wallsten, 2013). Defining cost-effective broadband speed remains an open question, whether acceptable download speed is 4 mbps or 100 mbps or 1 gbps (FCC, 2013; *New America Foundation*, 2013). Thus, simply increasing

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funds for upgraded connections may lead to economically inefficient results without adequate evaluation. Real limitations exist for central administrators to determine which broadband projects are more efficient to pursue, and then, to measure broadband speeds actually delivered (NAF, 2013). This is a systematic weakness in federal broadband application and grant mechanisms (Comments of 71 Concerned Economists, 2009; Rosston & Wallsten, 2013).

This article contributes to analysis of federal broadband projects, particularly the e-rate program. Table 1 shows that for fifteen years, the e-rate program, formally known as the schools and libraries universal service support mechanism (FCC, 2013), has distributed a total of \$34 billion in priority 1 and 2 funds, including \$13.8 billion to schools and libraries for broadband capacity through upgraded networks and internal equipment purchases (USAC Advanced Search Tool, 2013). An important question is whether funds have led to cost-effective broadband deployment and improved educational outcomes. The intermediate question is whether funds have been distributed in a reasonable manner to satisfy broadband priorities across the states over fifteen years. Empirical analysis can help efforts to evaluate the program by measuring effects of the discount matrix on fund distribution.

2. Universal service and e-rate for schools and libraries

The e-rate program was created in 1998 by Section 254(h) of the Telecommunications Act of 1996 as a schools and libraries universal service support mechanism. The Federal-State Joint Board on Universal Service set an annual funding cap for spending by the e-rate program to \$2.25 billion in 1997, with inflation indexing set in 2010 (FCC, 2013).

Since 1998, \$34 billion in priority 1 and priority 2 funds have been distributed through an application and funding commitment process (USAC Advanced Search Tool, 2013). Tens of thousands of public and private schools and school districts in the United States have received these funds under a schedule of priority 1 (telecommunications and internet access) and priority 2 (internal connections and internal connections management) services. Figs. 1 and 2 present data aggregated from the USAC Advanced Search Tool (2013). Fig. 1 presents a simple time series of funds by year and service type. Fig. 2 presents a simple time series of the number of unique recipients of funds by year and service type.

Fig. 2 shows the number of recipients for internal connections priority 2 funds, compared with the rising number of recipients of priority 1 funds. Priority 2 internal connections funds constitute nearly half of e-rate fund outlays as seen in Table 1 and Fig. 1, directed to a limited number of recipients annually. These statistics highlight the importance of further investigation of this particular category of e-rate funding.

Table 1
E-rate funds aggregated by service type 1998–2012.
Source: USAC Advanced Search Tool (2013).

Service type	E-rate funds 1998–2012
Priority 1: Telecommunications	\$15,575,746,684
Priority 1: Internet access	\$4,297,768,108
Priority 2: Internal connections	\$13,796,627,176
Priority 2: Internal connections management	\$1,194,943,636
Total	\$34,865,085,604

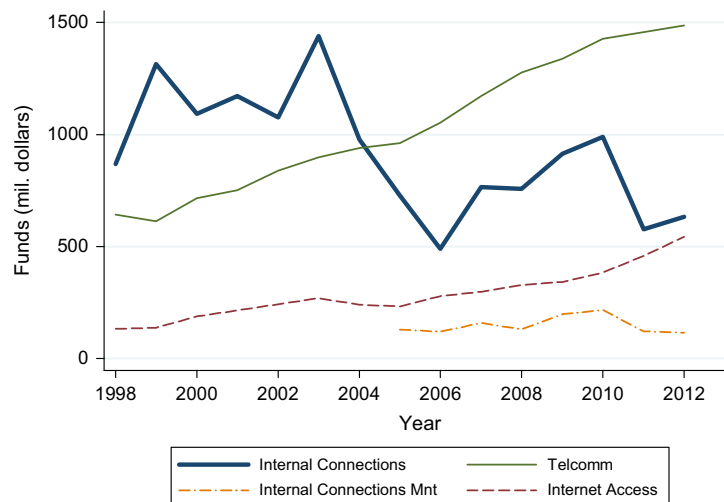


Fig. 1. E-rate funds by year and service type.

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