

***Understanding Participation in Social Programs:
Why Don't Households Pick up the Lifeline?****

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ABSTRACT

In this study, we address the participation of eligible households in social programs designed to alleviate financial hardship by utilizing recent data on participation levels in the low-income targeted Lifeline Assistance Program (Lifeline) for telephone service. Our results provide insight into the reasons for low participation levels that extend well beyond traditional explanations rooted in the social stigma that may be associated with participation in welfare programs. In particular, while we find that participation is significantly influenced by eligibility, we also find that enrollment in Lifeline is significantly negatively influenced by both the presence of conditions placed on the receipt of the subsidy and the bureaucratic costs associated with the enrollment process. Additionally, our results provide insights into the role of the level of benefits, special outreach efforts and the expansion of eligibility portals. These results collectively indicate that, beyond possible inherent distastes for participation in welfare programs (viz., stigma), variations in the design and administration of these programs can have quite consequential impacts on participation levels, significantly altering the ultimate effectiveness of the program in achieving its goals.

Understanding Participation in Social Programs: Why Don't Households Pick up the Lifeline?

I. INTRODUCTION

Low participation among eligible households in social programs that are designed to alleviate financial hardships is well documented. Indeed, a number of studies have focused on explaining variations in participation rates, and, in particular, the low levels at which eligible households take advantage of these programs.¹ Beginning with Moffitt (1983), the most frequently mentioned factor driving low participation rates is the presence of a perceived or actual stigma associated with a household's participation in welfare programs. While considerable insights have been achieved by these inquiries, a number of important questions remain unanswered. For instance, while stigma may play a role, it remains to be seen what, if any, impact is played by bureaucratic requirements for demonstrating eligibility and enrolling in such programs. Additionally, for the development of any specific program, it is important to have an understanding of the sensitivity of the propensity to enroll to changes in eligibility criteria, the level of benefits or conditions that may be placed on the receipt of benefits.

In this study, we address these and other issues surrounding the participation of eligible households in social programs designed to alleviate financial hardship by utilizing recent data on participation levels in the low-income targeted Lifeline Assistance Program (Lifeline) for telephone service. Our results provide insight into the reasons for low participation levels that extend well beyond traditional explanations rooted in the social stigma that may be associated

¹ For a recent review, see Currie (2004). Hoynes (1996), for example identifies participation rates for AFDC-UP at 65 percent while Moffitt (1983) reported earlier participation rates of 43 percent for AFDC-UP and 38 percent for the Food Stamps Program.

with participation in welfare programs. In particular, while we find that participation is significantly influenced by eligibility, we find also find that that enrollment in Lifeline is significantly negatively influenced by both the presence of conditions placed on the receipt of the subsidy and the bureaucratic costs associated with the enrollment process. Additionally, our results provide insights into the role of the level of benefits, special outreach efforts and the expansion of eligibility portals.

The remainder of the paper is organized as follows. Section II describes the history of the pursuit of universal service in telephony. Section III then turns to a focus on the specific characteristics of the Lifeline program. A conceptual framework for understanding Lifeline participation decisions is provided in Section IV and a corresponding empirical model is developed in Section V. Empirical results are provided and discussed in Section VI. Finally, Section VII offers conclusions and a discussion of broader policy implications.

II. THE HISTORY OF SOCIAL PROGRAMS TO PROMOTE UNIVERSAL ACCESS AND SUBSCRIPTION TO TELEPHONE SERVICE

The universal availability of, and subscription to, the public telephone network, (i.e., universal service) has been a goal in the United States since at least 1907. At that time, the president of AT&T Theodore Vail introduced the universal service concept with the slogan “one system, one policy, universal service” as part of a larger proffer in which AT&T would cease a variety of anticompetitive activities against competitors, avoid antitrust prosecution, embrace regulatory oversight and promote the universal availability and affordability of telephones throughout the nation.²

² For a detailed studies of the evolution of universal service, see Mueller (1997) and Riordan (2002).

Complementary to the private efforts by the Bell system to promote universal service, public efforts also began early on to encourage subscription to the public switched network. These efforts consisted principally of efforts to suppress local telephone rates through the practice of “residual pricing.” Under residual pricing, prices for a variety of telephone services (most notably long-distance) were set to maximize contributions toward recovery of the telephone network’s fixed costs and local telephone rates were then set “residually” to ensure that the telephone company providing service received a “fair rate of return.”³ The resulting suppression of local telephone rates was implicitly seen as an instrument to promote the achievement of universal service.

With the divestiture of AT&T, efforts to promote universal service became more explicit. Most notably, in the 1980s, two principal types of universal service mechanisms were established by the Federal Communications Commission (FCC). First, an untargeted subsidy mechanism, known as the High Cost Fund, was established which provided a subsidy to telephone companies that experienced costs that were in excess of a federally established threshold. Second, two programs arose that made subsidies available to low-income households that were viewed as at risk of not subscribing to telephone service in the absence of a subsidy.⁴ The Link-up program was established to provide means-tested subsidies for the initial subscription to the public switched network. At the time (1984), the Lifeline program was established to provide a subsidy to qualifying low-income households for the recurring monthly charges for telephone service. While the program was initially established as a relatively small

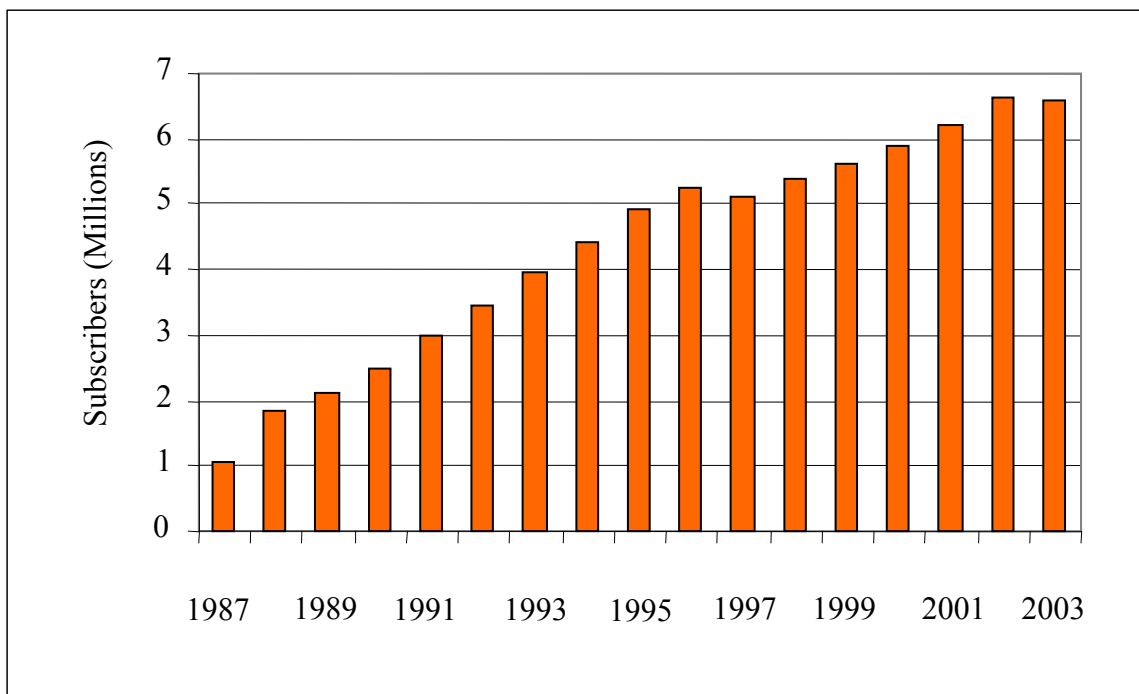
³ For an analytical description and evidence of the effects of such residual pricing in telecommunications, see Kaserman, Mayo, Blank and Kahai (1999).

⁴ For a study of the effectiveness of the untargeted and targeted subsidy mechanisms in promoting household subscribership, see Eriksson, Kaserman and Mayo (1998).

federal program, in 1988 the program benefits were expanded and incentives in the form of federal matching funds were added to encourage the establishment of state-level lifeline programs to raise the available subsidies.⁵ Individual states that established their own state-level lifeline program to complement available federal funds were provided the latitude to establish their own state-specific eligibility criteria.

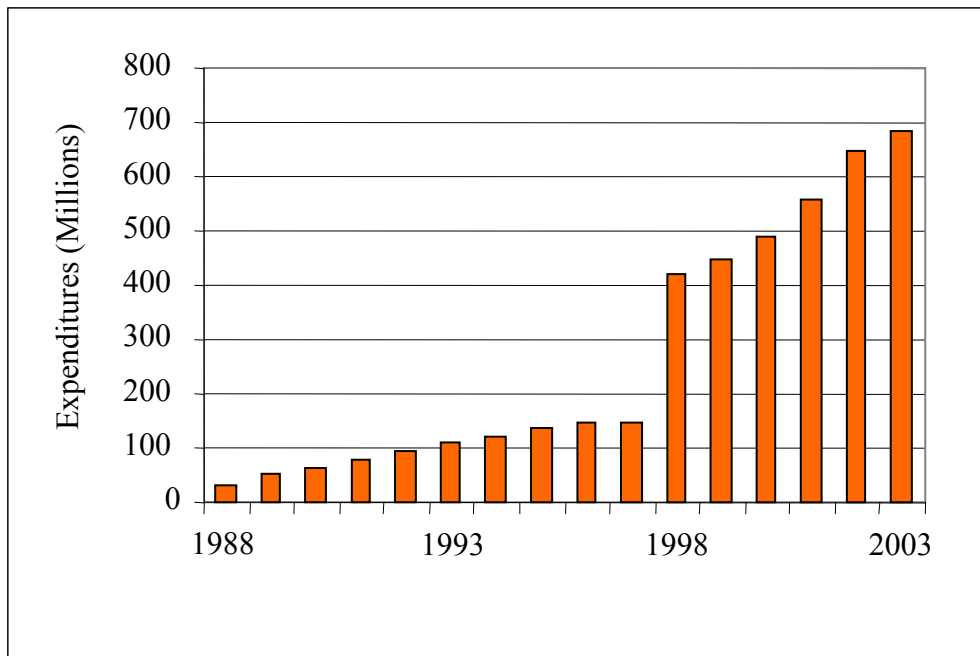
The result of the policy change was that subsidy levels expanded sharply from \$148 in 1987 to \$422 million in 1988. Subsequent to this expansion, both the number of Lifeline subscribers and program expenditures have grown considerably. As illustrated in Figure 1, the number of households participating in Lifeline has grown from under 2 million in the late 1980s to approximately 6.5 million in 2003. Similarly, as shown in Figure 2, total subsidy expenditures have grown to roughly \$700 million annually.

Figure 1. Lifeline Subscribers



⁵ See Federal Communications Commission (2004b), Table 19.8, note 1.

Figure 2 Lifeline Expenditures



While both the number of households participating and the dollars spent on the Lifeline program have grown, the actual participation levels among eligible households remains low. In 2003, only 34 percent of eligible households received Lifeline support. Thus, similar to other social programs designed to relieve financial hardship, many eligible households do not avail themselves of the subsidy. Indeed, even among social programs, the take-rates for Lifeline service appear particularly low. This naturally raises the question of why households that are identified as being particularly resource constrained would choose to ignore “free money.”

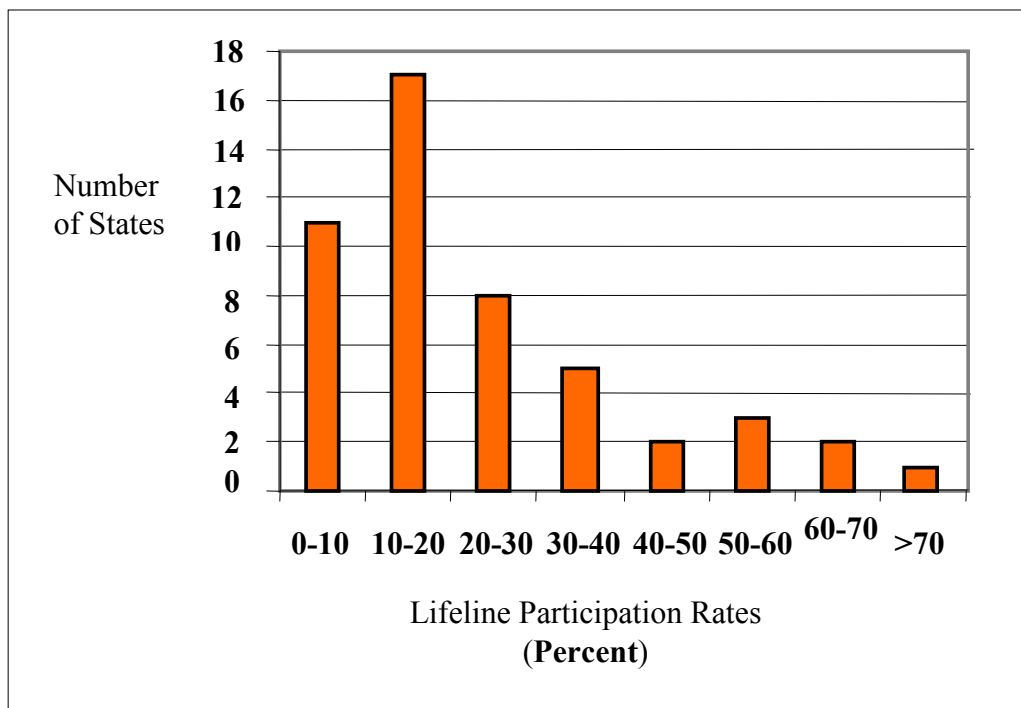
While the traditional explanation of a stigma associated with participation in social program affords a starting point for an empirical inquiry, both the nature of this particular

subsidy and an examination of state-level participation rates immediately raise questions about whether stigma is, in this instance, the principal driver of the less than complete subscription among eligible households. For instance, the notion that there is a stigma associated with the receipt of social welfare benefits often is thought to emanate from the visibility of the receipt of the benefits.⁶ But in this regard, the relatively public nature of participation in programs such as Food Stamps or the National School Lunch Program stands in relatively stark contrast to the relatively private Lifeline program wherein participation is generally unobservable to anyone other than the participant and a virtually anonymous program administrator.

Also, an examination of the actual variation in participation rates in the Lifeline program across the states suggests that while stigma may be one reason for low participation rates, it may not be the most typical. Consider Figure 3. There we see that there are dramatic differences in state-level participation rates. Eleven states have participation rates of fewer than 10 percent of eligible households. Another 17 have participation rates between 10 and 20 percent. At the other extreme, three states have penetration rates in excess of 60 percent, with California reporting more households receiving Lifeline assistance than are reported as eligible. While households may prefer to avoid the stigma associated with participation in social programs that target low-income households, the wide variation in the Lifeline participation rates across the states suggests the presence of other important drivers. For instance, it is difficult to imagine that Arkansans are characterized by such overwhelming stigma (an inherent distaste for participation) that only 4 percent of them enroll in Lifeline while Californians have such little stigma that enrollment rates exceed the level of eligible households.

⁶ See e.g., Handler and Hollingsworth (1969).

Figure 3. Lifeline Participation Rates



III. BEYOND STIGMA: CHARACTERISTICS OF THE LIFELINE PROGRAM

Moffitt (1983) notes the possibility that, beyond stigma, various program regulations and costs of applying to these programs may deter households from participating in social programs designed for their benefit. He indicates, however, that these are “almost impossible to distinguish from stigma.”⁷ Consequently, the model he develops ignores these considerations.

As described in Section II, however, both the relatively private nature of the Lifeline Program

⁷ A careful reading of the literature reveals slightly different uses of the term. In Moffitt (1983), the term is defined as “disutility arising from participation in a welfare program per se.” Later applications, e.g., Hoynes (1996) broaden the definition to be the disutility from welfare participation that “represent non-monetary costs such as transaction costs” of receiving welfare.

and the wide state-level variation in household participation across the states raise the prospect that different state-level characteristics in the design and/or implementation of the Lifeline program may be driving these variations. In particular, these variations raise the prospect that there may be important design and/or implementations characteristics that exist and which are discoverable beyond stigma, that help explain the low and variable participation in Lifeline and. Accordingly, we turn to an examination of state-level design and implementation of the Lifeline program. As we shall see, the design and implementation differ in numerous respects, and ultimately create the opportunity for empirical testing.

First, as noted in Section II, eligibility criteria are established at the state level. In states that do not have their own state-level program, the FCC has established five principal portals for eligibility. Specifically, if a household can demonstrate, under penalty of perjury, that it participates in at least one of the following federal programs: Medicaid, Food Stamps, the Low Income Home Energy Assistance Program (LIHEAP), Supplemental Security Income (SSI) or Federal Public Housing Assistance, it is eligible for participation in the Lifeline program.⁸ Beyond the federal criteria for Lifeline eligibility, states can and do exercise their rights to establish alternative/additional eligibility portals for participation in the program. The number of these portals through which households may become eligible varies from one (Alabama, California, Michigan and Montana) to 17 (Connecticut).

Second, different certification and verification procedures exist for participation in Lifeline. For states that participate only in the federal program, households are required to “self-certify” to their local exchange telephone company that they are enrolled in one of the qualifying

⁸ FCC (2004), p. 6. In addition to these basic eligibility portals, in 2000 the Commission expanded the eligibility portals for low-income household on tribal lands and, in 2004, the Commission expanded the program again to include a eligibility portals tied directly to income, Temporary Assistance to Needy Families (ANF) and the National School Lunch Program (NSL).

(portal) programs. For the federal program, no independent verification procedure exists but households are required to notify their carrier should they cease to participate in one of the qualifying programs. At the state level, procedures for certification and verification vary considerably. Some states require a written application; others require copies of income or social services documents; and still others require applicants to apply through on-site visits to social services agencies.

A third characteristic of the Lifeline program that varies across the states is the placement of restrictions on the types of residential services available to program participants. Some states restrict Lifeline subscribers to basic local exchange service over a single residential line without any advanced features or services. Other states allow Lifeline participants to purchase multiple residential lines or to purchase so-called “vertical” features such as caller ID or call-waiting.

Finally, the level of benefit associated with participation in the Lifeline program varies considerably across the states. In all cases, the federal government waves federal subscriber line charges. The federal government also pays for a reduction in basic rates up to a maximum of \$1.75 per month, depending on the level of those rates. Additionally, some states have chosen to provide state-level funds to enhance benefit levels while others have not. State-level benefits vary from \$0.92 in Arkansas to \$6.00 in Massachusetts. For those states that do provide funds, the federal government provides an additional matching contribution, again, up to a maximum of \$1.75. Finally, there is a significant federal contribution for subscribers who live on tribal lands. When these effects are summed, the maximum obtainable monthly benefit varies from \$6.53 for local exchange customers in Iowa to \$18.39 for Verizon customers in Massachusetts.⁹

⁹ While the variation affords and opportunity to econometrically examine the sources of variations in participation rates, the level of benefits is sufficiently small that we can comfortably ignore labor supply effects associated with

In sum, variations across the states in the design and implementation of the Lifeline program may serve as important sources of the observed variation in state-level participation rates among low-income eligible households. In the next section, we provide a conceptual framework that incorporates these characteristics into the household's decision to participate in the Lifeline Program.

IV. CONCEPTUAL FRAMEWORK

Households can generally be assumed to be utility maximizing. At first blush, then, it would seem rather paradoxical that eligible households would voluntarily choose not to take advantage of subsidies on their telephone service. It is, however, possible to move beyond this apparent paradox to conceptually frame the reasons why households may not participate in the Lifeline Program. First, consider the fact that the receipt of the Lifeline subsidy is tied to subscription to the public switched telephone network. In this spirit, then, consider Figure 4 which graphically portrays the relationship between a household's demand for use of the telephone, the magnitude of consumer surplus generated with usage, and the decision to subscribe under non-subsidized and subsidized rates. For the moment, we assume that households can costlessly enroll in the Lifeline program and suffer no stigma from doing so.

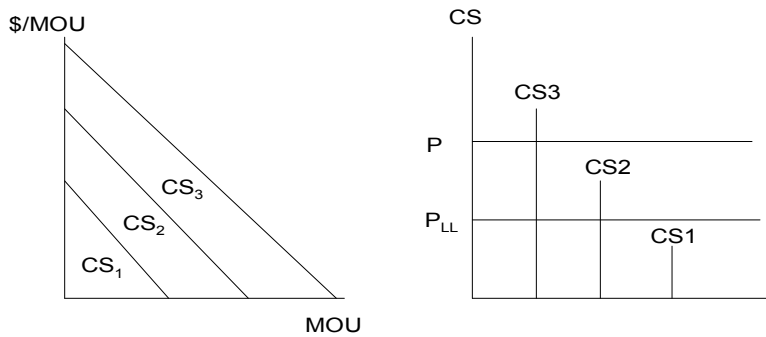
Specifically, in the left-hand panel the demand for minutes of use (MOU) for three eligible households is represented. Assuming subscription, each of the demand curves generates a different level of consumer surplus, ranging from the largest, CS3 for household 3, to the smallest, CS1 for household 1. Given that telephone service is most typically a fixed charge per

the Lifeline program. For programs with larger per capita benefits, estimation of labor supply effects becomes a considerably more prominent and significant challenge. See, for example, Moffitt and Wolfe (1992) and Hoynes (1996).

month (P), the decision to subscribe turns upon whether the household's consumer surplus associated with its usage demand curve exceeds the monthly recurring charge. In the right hand panel, then, the magnitude of the household's consumer surplus (CS) is compared to the unsubsidized monthly charge, P , and the rate that applies under the Lifeline program, P_{LL} . Household 3's usage level is such that it chooses to subscribe, and would do so even if it did not receive the Lifeline rate.¹⁰ Household 2 will subscribe only under the Lifeline rate. Despite the presence of the Lifeline benefit, household 1 finds that its consumer surplus associated with its usage is insufficient to justify subscription to the telephone network. The result is that households such as household 1 will not "pick up the Lifeline." Thus, we have a situation in which eligible households do not avail themselves of the benefits of the program (even absent any stigma associated with participation). In this instance, however, the critical role of the level of benefits ($P - P_{LL}$) is immediately apparent. For any household like consumer 1, a level of benefits could be fashioned that would be large enough to lure the household to participate in Lifeline (and, thereby, further the goal of enhancing subscription to the network.).

¹⁰ It could be argued, then, that the subsidy afforded household 3 is wasteful because even absent the subsidy the household would subscribe. That is, the subsidy expenditure on household 3 is completely unrelated to the stated goal of promoting universal service. It may, however, be very difficult for the subsidizing agency to separately identify Household 3 which it may not wish to subsidize from other households which, in the absence of the subsidy would fail to subscribe. Additionally, given that household 3 is low-income, it is sometimes argued that the monetary benefits received under the Lifeline benefit may be used to alleviate other dimensions of the household's financial hardship.

Figure 4
Consumption and the Decision to Enroll in Lifeline



Beyond the insights afforded by Figure 4, the institutional description of the Lifeline program in Section 2 suggests that other features of the design and implementation of the Lifeline program may deter enrollment among eligible households. For eligible households, we can assume that consumption is income constrained, so with no savings we can specify a household's utility as $U=U(Y)$, where Y is the household's income. For households such as 2 and 3 that have chosen to subscribe to telephone service, the decision to enroll in the Lifeline program is driven by the additional utility associated with the magnitude of the Lifeline benefit and the disutility associated with the enrollment in the Lifeline program. Thus, we can specify,

$$(1) \quad U=U(Y +\pi\delta LL) - \pi\varphi$$

where LL is the magnitude of the Lifeline benefit, δ is the "discount" attributed to a dollar of Lifeline benefits, φ is the absolute level of disutility caused by the enrollment in Lifeline and π is one if the household enrolls in Lifeline and 0 otherwise.¹¹ We can further specify, that

¹¹ Our specification follows Moffitt (1983).

$$(2) \quad \delta = \delta(R), \partial \delta / \partial R < 0 \text{ for } 0 \leq \delta \leq 1 \text{ and,}$$

where R is the degree to which the program benefits associated with Lifeline service are restricted. That is, the more restricted are the benefits available under Lifeline, the higher will be the discount attributed to a dollar of these benefits.¹² Finally,

$$(3) \quad \varphi = \varphi(B), \partial \varphi / \partial B > 0$$

where B is the level of bureaucratic red tape or hassles that the household must undergo to enroll in and continue to verify eligibility in the Lifeline Program.

Substituting (2) and (3) into (1), we get

$$(4) \quad U = U(Y + \pi \delta(R) LL) - \pi \varphi(B).$$

Setting π alternatively to 0 and 1, the household participates if:

$$(5) \quad U(Y + \delta(R) LL) - \varphi(B) > U(Y), \text{ or}$$

$$(6) \quad U(Y + \delta(R) LL) - U(Y) > \varphi(B).$$

From (6), three specific hypotheses emerge:

Hypothesis 1: As the extent of restrictions accompanying Lifeline enrollment (R) increase, the likelihood of enrollment in Lifeline will decrease;

¹² The discounting of benefits that are restricted can be traced to Friedman's (1976) seminal evaluation of the economics of cash versus in-kind subsidies.

Hypothesis 2: As the level of bureaucratic costs associated with enrollment in Lifeline (B) increase, the likelihood of enrollment in Lifeline decreases; and

Hypothesis 3: As the level of benefits (LL) increase, the likelihood of enrollment in Lifeline will increase.

V. EMPIRICAL MODEL SPECIFICATION AND DATA

Total enrollment in the Lifeline program will fundamentally be driven by variations in the eligibility criteria established at the state level. Accordingly, we specify a general relationship relating the number of Lifeline subscribers for the most recent annual data available (2002), $LLNUM_i$ in a given state i to the number of eligible households (E_i):

$$(7) LLNUM_i = \beta_i(E_i).^{13}$$

Linearizing (7) and allowing for random error (ε), we get

$$(8) LLNUM_i = \beta_0 + \beta_{1i}E_i + \varepsilon_i.$$

Both our examination of the administration of the Lifeline program in Section II and the conceptual discussion of Section IV suggest, however, that the sensitivity of Lifeline subscription to eligibility will be affected by several program characteristics including restrictions accompanying Lifeline enrollment, the level of the bureaucratic costs associated with enrollment in Lifeline, and the level of benefits.

¹³ Indeed, recent policy initiatives designed to promote enhanced subscription to the Lifeline program seem predicated on this relationship. For example, in establishing an expanded set of eligibility criteria the Federal Communication Commission recently stated “We believe adding ... [expanded eligibility] ... programs is likely to help improve participation in the [Lifeline] program.” Federal Communications Commission (2004a), p. 11.

Fortunately, data exist that allow us to capture these program characteristics.¹⁴ The measure of the restrictions placed on Lifeline participation is captured by whether a state limits the services that participating Lifeline recipients may take and still receive the Lifeline benefit. Thus, LIMITSERVE =1 for states that make such restrictions, and 0 otherwise.

To capture the bureaucratic costs associated with the enrollment process, we examined the application process for each state. There are substantial differences in the application and documentation process that may affect the magnitude of the transaction costs associated with enrollment. Specifically, some states require written applications, others do not. Some states require applicants to self-supply documents demonstrating their qualification while other states verify eligibility on behalf of the applicant. Some states require signed certifications, others do not. Some states allow application and immediate enrollment via a telephone call, while others require that applicants travel to a state social services agency. To capture the ease of the enrollment process, we included a measure, EASY, which represents those states that have been identified by the Federal Communications Commission as providing easy Lifeline enrollment procedures.¹⁵

As described in Section II above, several tiers of benefits are applicable for Lifeline participants. For each state, then, we include a measure of the maximum allowable benefits (BENEFITS) stemming from both federal and state sources for the largest telephone company serving the largest number of customers in the state.¹⁶

¹⁴ Complete data for 49 states and the District of Columbia for the most recent period (2002) were available. Excluded are Alaska and New York.

¹⁵ See FCC (2003).

¹⁶ We also examined both the average of the combined federal and state-level benefits in the individual states and the individual state-level contributions. The regression results yielded parameter estimates similar to those reported below but added less explanatory power to the model. Accordingly, we retained the focus on BENEFITS.

We also explore three additional program characteristics that vary across the states. First, the number of portals (PORTALS) for households to become eligible for Lifeline benefits varies across the states. Second, we examined whether any specific portals have differential impacts on lifeline enrollment. Accordingly, we individually account for the five principal portals established by the Federal Communications Commission (MEDICAID, FOODSTAMPS, LIHEAP, SSI AND FEDHOUSING). Third, we include a measure that accounts for the presence of state-level promotional activities designed to encourage participation in the program. Specifically, we included a dichotomous measure of state's that were identified by the Federal Communication Commission (2003) as having engaged in special outreach efforts (OUTREACH).¹⁷ These efforts include multi-lingual assistance, direct mailings, tribal outreach, coordination measures between the state's regulatory agency and social services agencies, seminars and notification of the Lifeline program to every customer that applies for telephone service. Finally, we account for the state-level variations in the level of expenditure of households for the level of telephone service. Specifically, we measure the weighted average level of expenditures on telephone services (RESEXPEND) across the states. A complete description of the dataset and the summary statistics are provided in Tables 1 and 2.

These variables are hypothesized to affect the sensitivity of the enrollment-eligibility relationship given in equation (8). Specifically, allowing β_{1i} to vary across the states, we specify

$$(9) \beta_{1i} = \gamma_0 + \gamma_1 \text{LIMITSERVE}_i + \gamma_2 \text{EASY}_i + \gamma_3 \text{BENEFITS}_i + \gamma_4 \text{PORTALS}_i + \gamma_5 \text{MEDICAID}_i + \gamma_6 \text{FOODSTAMPS}_i + \gamma_7 \text{LIHEAP}_i + \gamma_8 \text{SSI}_i + \gamma_9 \text{FEDHOUSING}_i + \gamma_{10} \text{RESEXPEND}_i + \gamma_{11} \text{OUTREACH}_i$$

¹⁷ Alternatively, we include a dichotomous variable (PROMO) denoting whether or not the governing state regulatory authority promotes the availability of Lifeline subsidies within its internet web site. Because the estimation provided no evidence that such promotional activities drive variations in Lifeline participation, this variable was subsequently deleted.

Substituting (9) into (8), we arrive at the model to be estimated:

$$(10) \text{LLNUM}_i = \beta_0 + \gamma_0 E_i + \gamma_1 (\text{LIMITSERVE}_i * E_i) + \gamma_2 (\text{EASY}_i * E_i) + \gamma_3 (\text{BENEFITS}_i * E_i) + \gamma_4 (\text{PORTALS}_i * E_i) + \gamma_5 (\text{MEDICAID}_i * E_i) + \gamma_6 (\text{FOODSTAMPS}_i * E_i) + \gamma_7 (\text{LIHEAP}_i * E_i) + \gamma_8 (\text{SSI}_i * E_i) + \gamma_9 (\text{FEDHOUSING}_i * E_i) + \gamma_{10} (\text{RESEXPEND}_i * E_i) + \gamma_{11} (\text{OUTREACH}_i * E_i) + \varepsilon_i.$$

Table 1. Data Definitions

<i>Variable</i>	<i>Description</i>	<i>Dichotomous (D) or Continuous (C)</i>	<i>Source</i>
LLNUM	Number of Lifeline subscribers	C	Federal Communications Commission [2004(a)]
E	Number of households eligible for Lifeline service	C	FCC [2004(a)]
LIMITSERVE	Vertical services not allowed	D	Universal Service Administrative Company (USAC)
EASY	FCC Joint Board identified states with easy enrollment	D	FCC (2003)
BENEFIT	Maximum Monthly Benefit	C	USAC
PORTALS	The number of avenues for applicant qualification	C	USAC
MEDICAID	Household member is a Medicaid Recipient	D	USAC
FOODSTAMPS	Household receives food stamps	D	USAC
LIHEAP	Household receives assistance under the Low Income Home Energy Assistance Program	D	USAC
SSI	Household member is an SSI Recipient	D	USAC
FEDHOUSING	Household participates in federal housing support program	D	USAC
OUTREACH	States that have made special outreach efforts	D	FCC (2003)
RESEXPEND	Weighted average monthly household expenditure	C	Gregg (2002)

All continuous variables were converted to natural logs and parameter estimates were obtained through the use of ordinary least squares. Preliminary estimations suggested that four of the five variables denoting the availability of specific qualification portals – MEDICAID, SSI,

FOODSTAMPS, and FEDHOUSING – are consistently ineffective as explanatory variables. Accordingly, we elected to eliminate these variables from subsequent estimations.

Table 2. Summary Statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std</i>	<i>Minimum</i>	<i>Maximum</i>
LLNUM	49	122391.7	459622.3	2104.65	3232944
E	49	360025.9	457051	29449	2451057
LIMITSRV	49	0.142857	0.353553	0	1
EASY	49	0.081633	0.276642	0	1
BENEFITS	49	11.66714	2.927426	6.53	18.39
PORTALS	49	5.673469	2.718668	1	17
MEDICAID	49	0.693878	0.465657	0	1
FOODSTAMPS	49	0.653061	0.480929	0	1
LIHEAP	49	0.55102	0.502545	0	1
SSI	49	0.693878	0.465657	0	1
FEDHOUSING	49	0.163265	0.373438	0	1
RESEXPEND	49	35.02041	5.364986	24.2	51.46
OUTREACH	49	0.163265	0.373438	0	1

V. ESTIMATION RESULTS

Parameter estimates for the model described in Equation (10) are provided in Table 3.¹⁸ Overall, the estimation results are quite encouraging. Both the adjusted R^2 (.77) and the model F-Statistic (20.6) are quite strong, indicating strength of the overall model. In addition, the individual parameter coefficients largely support our *a priori* expectations.

¹⁸ Several tests were performed to validate the model’s econometric soundness. For instance, the model was tested for and found to be free from the presence of influential outliers and collinearity. See Belsley, Kuh, and Welch (1980). Additionally, we considered a model in which the ratio of participating to eligible households served as the dependent variable, with results quite similar to those reported below. Also, the model was estimated with continuous independent variables specified in linear rather than logarithmic form, again with no substantive differences from the results reported here. As reported in the discussion of individual variables, several alternative specifications of these variables were examined with little differences from the results reported here. Finally, the results were unaffected by the inclusion of Bell-company fixed effects or state-level variations in the Native American population

Consistent with the model specification embodied in equation (7), we find a positive and highly statistically significant relationship between the number of subscribers to Lifeline and the number of eligible households in a state. As specified in equation (8), however, this relationship is significantly affected by the nature of the Lifeline program characteristics that vary across the states. Our expectation regarding these program characteristics on Lifeline subscribers was embodied in Propositions 1-3 in Section IV above.

With regard to Proposition 1, the negative and statistically significant estimate for (LIMITSERVE*E) indicates that restrictions on access to additional lines or vertical services diminish the utility of the service and, therefore, dampen participation in the Lifeline program. Similarly, Proposition 2, which hypothesizes a linkage between the bureaucratic costs of enrollment in the Lifeline program and participation, is strongly supported. States that have created mechanisms to ease enrollment burdens have significantly higher participation in the Lifeline program among eligible households. Proposition 3, which hypothesizes a linkage between the level of benefits in the Lifeline program and participation is only weakly supported. The positive coefficient on (BENEFITS*E) suggests that higher levels of benefits lead to increases in participation among eligible households. The weaker statistical significance of the coefficient, however, precludes strong statements about the role of these benefits on participation.

As noted above, LIHEAP is the only specific portal that proved to be a significant predictor of Lifeline participation rates. PORTALS, the variable that reflects the total number of qualifying portals is negative, though statistically insignificant. That is, there is no significant evidence that expanding the number of portals (apart from expansion in the number of eligible households, captured through E) creates additional participation in the lifeline program. The

Table 3. Regression Results

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>“t” Statistic</i>	<i>Prob. “t”</i>
Intercept	-0.94996	1.14031	-0.83	0.4098
E	1.29064	0.19506	6.62	<.0001
EASY	0.10214	0.02913	3.51	0.0011
LMTSERVE	-0.04922	0.02336	-2.11	0.0414
BENEFITS	0.04576	0.03423	1.34	0.1888
PORTALS	-0.00774	0.01264	-0.61	0.5439
LIHEAP	0.0403	0.01693	2.38	0.0222
REXEXPEND	-0.13562	0.05341	-2.54	0.0151
OUTREACH	0.01268	0.02185	0.58	0.565

N=49, Adjusted R² = 0.77, F Statistic = 20.6

negative and significant coefficient estimate for RESEXPEND suggests that not only is the magnitude of the benefit important, the amount that is left to be paid by the subscribing household is also a key determinant of participation rates.¹⁹ Finally, the estimation provides essentially no evidence that promotion of the Lifeline program through state-level outreach efforts (OUTREACH) affects participation in the Lifeline program.²⁰

The results provide an opportunity to consider the probable effects of changes to the current Lifeline program. For example, the federal or state governments could increase the level of their contributions toward monthly subscriber charges. Based on the coefficient estimate for BENEFITS as provided in Table 3, we estimate that a ten percent increase (\$1.07) in the

¹⁹ This result is underscored by an intermediate empirical result that is not evident in Table 3. Specifically, at an intermediate stage, we tested whether the level of basic monthly charges, in and of themselves, may affect participation in the Lifeline program. However, the base local exchange charge proved entirely ineffective as an explanatory variable for LLNUM. The finding that typical monthly charges (including charges for vertical features) are an important predictor of Lifeline participation and that basic local rates have no explanatory power underscores the apparent importance of vertical features to most Lifeline participants.

²⁰ This is, of course, not to say that alternative promotion methods may prove effective; only that we find no evidence that the state-level outreach efforts singled out by the FCC had significant influence on participation.

weighted average available monthly benefit (\$10.67) would induce an additional 360,000 households to participate in the program.²¹ Assuming this additional benefit would also be made available to existing subscribers, the benefit increase would require an additional \$127.4 million in funding support. Based on our estimation results, program participation could also be increased by compelling those states that current limit the purchase of vertical features to lift these restrictions. The estimation results suggest that doing so would increase the number of participating households by 226,000. Moreover, because benefits to current Lifeline participants would be unchanged, the cost of increased participation through this method would be approximately \$28.9 million annually. Finally, if all states adopted measures that substantially reduce the bureaucratic costs associated with the enrollment process by allowing self-certification and/or automatic enrollment, the coefficient estimate for EASY suggests that Lifeline participation would increase by 7.7 million, more than doubling current participation levels. This effort would, however, require additional funding of \$988.7 million

VII. CONCLUSIONS AND POLICY IMPLICATONS

A number of social programs designed to alleviate financial hardships for the poor suffer from low participation rates. Such low participation levels create markedly reduce the effectiveness of these programs in achieving their desired objectives. Like other such social programs, the Lifeline Assistance Program suffers from quite low participation levels in the aggregate. Unlike other, more visible, social programs, however, the relatively private nature of the Lifeline program suggest that low participation is not likely to be driven exclusively or merely from stigma [the “disutility arising from participation in a welfare program per se”

²¹ The benefit measure used here differs from the average reported in Table 2 because it is weighted by the number of subscribers subject to alternative, state-specific benefits levels, not the simple average.

Moffitt(1983)]. Because the program's administration and eligibility criteria are established and administered by the various states, we have been able to systematically explore a number of possible reasons for the low and variable participation levels across the states.

Our investigation indicates that a strong and positive relationship between enrollment and the size of the eligible pool of households exists. We find, however, that the participation-eligibility relationship is significantly affected by program-specific administrative characteristics such as whether Lifeline benefits are made conditional upon subscription to a restrictive set of telephone services and whether the state's application process is easy. Our estimations find only modest statistical support for the proposition that state-level variations in benefit levels are important in understanding variations in participation levels across the states. Given that the magnitude of these benefits is small relative to other social programs, this result is perhaps not surprising. No significant impact was found to be associated with a state's propensity to expand the number of portals by which households may qualify for Lifeline benefits (with the exception of the positive impact of the inclusion of the Low Income Energy Assistance Program as a portal). These results collectively indicate that, beyond possible inherent distastes for participation in welfare programs (stigma), variations in the design and administration of these programs can have quite consequential impacts on participation levels, significantly altering the ultimate effectiveness of the program in achieving its goals.

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