

Discussion Papers

Does the Health Care
Safety Net Narrow
the Access Gap?

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Assessing
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Assessing the New Federalism is a multiyear Urban Institute project designed to analyze the devolution of responsibility for social programs from the federal government to the states. It focuses primarily on health care, income security, employment and training programs, and social services. Researchers monitor program changes and fiscal developments. Alan Weil is the project director. In collaboration with Child Trends, the project studies changes in family well-being. The project provides timely, nonpartisan information to inform public debate and to help state and local decisionmakers carry out their new responsibilities more effectively.

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ABSTRACT

This study examines the role of the health care safety net in increasing utilization and access for uninsured adults and narrowing the gap between the uninsured and the insured. Using data from the 1997 National Survey of American Families and county-level data on local safety net conditions, we estimate how insurance coverage, safety net capacity, and safety net stresses are related to physician and emergency room visits, hospital use, usual source of care, and confidence. We found little variation in utilization and access among low-income adults by local safety net conditions, but we found large differences by insurance status, after controlling for several individual demographic characteristics. In addition, most measures of the local safety net conditions were not related to use and access differences between insured and uninsured adults. Our results suggest that expanding insurance coverage would be more effective as a means of increasing use and access among low-income adults than expanding the safety net.

Keywords: Uninsured, utilization and access gap, safety net, managed care.

INTRODUCTION

Nearly one in three low-income adults lacks health insurance (Zuckerman, Haley, and Holahan 2000). An extensive literature documents that those who lack insurance receive less care and perceive greater barriers to access (American College of Physicians 2000; Hadley 2002; Marquis and Long 1994/95; Monheit 1994). Although much policy focus is on the health needs of children, uninsured adults also represent a vulnerable population, since the prevalence of many serious but treatable diseases rises with age. Ayanian et al. (2000) found that uninsured adults were far more likely to report unmet needs, particularly if they were in fair or poor health, and far less likely to have received preventive or diagnostic services such as breast cancer or hypertension screening, and Baker et al. (2001) found that uninsured or intermittently insured adults aged 50 to 60 were more likely to have a major health decline than those with continuous coverage. The potential consequences of inadequate care for this substantial proportion of the population are a public health concern and may have implications for future Medicare costs.

Policy debates focus on two approaches to address this concern. One is expanding insurance, enhancing individuals' ability to pay for care, wherever received. The second is increasing direct financial support to providers that disproportionately serve the poor and uninsured, collectively the health care "safety net." Both approaches have been reflected in Bush administration budget proposals, which have included tax credits for insurance purchases, by low-income families and increased support for community health centers (White House 2001). Ample evidence shows that safety net providers primarily serve disadvantaged populations (Forrest and Whelan 2000; IOM 2000), and that changes in health care markets and high uninsurance rates threaten the financial viability of these providers. There is little evidence, however, on how stresses are affecting their ability to serve the uninsured or whether adding

safety net capacity would improve access and use for the uninsured or narrow the gap between the uninsured and the insured.

In this paper we examine the relative importance of insurance and the safety net for reducing the magnitude of disparity in health care for adults. We use multivariate models to assess the relationship between specific local safety net conditions and utilization and access by low-income uninsured and insured adults. We also examine the relationship between local safety net conditions and differences in access and use between uninsured and insured adults. Our safety net measures attempt to capture key factors in the performance of the safety net: the capacity of safety net providers and stresses on the safety net system (Norton and Lipson 1998).

BACKGROUND AND LITERATURE

In a recent report, the Institute of Medicine profiled the health care safety net and the stresses believed to be weakening it (IOM 2000). The message is that there is a “core” of safety net providers, defined either by their legal obligation to serve disadvantaged populations in medically underserved areas or by their high caseload of such persons, but that the functional safety net encompasses the full range of providers available. The core safety net comprises community health centers, public hospitals, and private nonprofit and, to some extent, teaching hospitals in inner cities and other areas with low-income populations and high rates of uninsurance.

Safety Net Providers

Federally Qualified Health Centers (FQHCs) are federally supported, nonprofit, tax-exempt, or public facilities in medically underserved areas or which serve a medically underserved population. They are required to provide services regardless of ability to pay. More than 70 percent of their clientele were Medicaid or uninsured in 1998. FQHC “look-alikes” meet

the eligibility requirements of FQHCs, but do not receive federal grants, and yet other community health centers fulfill the same role without FQHC designation (IOM 2000).

Public hospitals—accessible by law to all types of patients—represent a quarter of all hospitals and also are a key part of the safety net, both for outpatient and inpatient care. Nearly 80 percent of outpatient revenues at public hospitals are from Medicaid or self-pay (often uninsured) patients (IOM 2000). Unpaid care represents 29 percent of costs at large metropolitan public hospitals, compared with 6 percent of costs for all hospitals (Fagnani et al. 2000).

Despite their disproportionate role in caring for underserved populations, the small share of health resources represented by these key safety net providers assures that the larger health care system will represent the majority of the functional safety net. For example, focusing on primary care visits, Forrest and Whelan (2000) found that the Medicaid-insured and uninsured account for a disproportionately large share of all primary care visits to community health centers and hospital outpatient departments, but that these providers account for only about 30 percent of primary care visits by Medicaid-insured persons and 20 percent of visits by uninsured persons.

Safety Net Pressures

Restructuring of the health care system places pressures on safety net providers (IOM 2000; Norton and Lipson 1998). The rapid growth of public and private managed care, with its cost control incentives and the ability to bargain effectively with providers, squeezes surplus from the health care system that historically has cross-subsidized unpaid or underpaid care. This is more important for safety net providers because of their relatively small base of privately insured patients. There also is evidence that physicians who receive larger shares of their revenues from managed care provide less charity care and that those in areas with high managed

care penetration provide less charity care regardless of their own managed care participation (Cunningham et al.1999), suggesting that managed care effects on use and access by the uninsured extend beyond direct effects on safety net providers.

The growth of Medicaid managed care is especially critical for safety net providers because of their high proportion of Medicaid clients. Safety net providers who participate in Medicaid managed care arrangements may find their payment rates affected. Other managed care providers may be able to compete away lower cost Medicaid clients, leaving safety net providers with a potentially sicker, more difficult to serve, and less profitable residual Medicaid caseload.

States vary in the extent to which they address financial pressures from managed care and high demand for uncompensated care. A few states provide direct support to safety net hospitals through bad debt and charity care pools (Bovbjerg, Cuellar, and Holahan 2000), and Medicaid disproportionate share hospital (DSH) payments also can bolster the financial position of providers with high volumes of Medicaid and indigent patients. However, some states are very aggressive in using DSH funds, while others barely participate (Coughlin and Liska 1997). State and local support for public hospitals, a key source of support in some areas, has increased in recent years, but not enough to offset declines in Medicaid and DSH revenues (IOM 2000).

Previous Safety Net Studies

There is little empirical evidence on the effect of specific safety net characteristics on utilization by the uninsured or on utilization gaps between the uninsured and the insured. We found no study that focused on adults and little direct evidence of the relationship between safety net characteristics and utilization or access.

Long and Marquis (1999) examined utilization by uninsured children in 10 states and found that states where low-income uninsured children had higher predicted mean annual

physician visits also had higher values for safety net characteristics such as state and local health spending, public hospital beds, and National Health Service Corps providers in FQHCs.

Although they did not examine utilization gaps directly, estimates presented elsewhere in the study suggest smaller gaps in states with greater capacity.

Cunningham (1999) directly tested two measures of stress on the safety net—the local uninsured rate and managed care penetration—in models estimating the percent of low-income children and adults combined who reported any ambulatory care, no usual source of care, or any unmet medical need. State-level Medicaid managed care penetration above 10 percent was associated with a higher percent of low-income uninsured persons reporting no usual source of care and a lower likelihood of any ambulatory care. Average local physician-reported percent of revenues from managed care payers was associated with lower ambulatory visits for the uninsured, but only at high levels. For insured persons, both the likelihood of having an ambulatory visit and the likelihood of reporting unmet need were higher at this highest managed care revenue level. Moderate local uninsurance rates were associated with a lower likelihood of ambulatory care for both uninsured and insured persons, and high uninsurance rates also were associated with a greater likelihood of having no usual source of care for uninsured persons.

In this study, we focus on adults and on a broader set of safety net measures to try to describe more completely the relative roles of insurance and the safety net in increasing absolute and relative use and access by the adult uninsured. We also use only local, rather than state-level, measures because local safety net conditions are more relevant to individual utilization and access to care than state measures.

METHODS AND DATA

Our data are from the 1997 National Survey of American Families (NSAF), conducted as part of the *Assessing the New Federalism* project at the Urban Institute. The NSAF is a household survey representing the civilian noninstitutional population under age 65 (Kenney, Scheuren, and Wang 1999).

We analyze adults age 18 or older who are either full year uninsured or full year insured by either private insurance or Medicaid. We selected those with no change in insurance during the year to avoid a downward bias in utilization differentials that can occur when insurance status and utilization and access measures are not contemporaneous (Marquis and Long 1994/5). Including those with part-year coverage would bias downward any safety net effects on differentials. To focus on the role of safety net providers in supporting access to care for the low-income population, the sample is further limited to adults with incomes less than 200 percent of the federal poverty line who live in Metropolitan Statistical Areas (MSAs). Focusing on those in MSAs provides a more homogeneous sample than if we included rural areas and avoids the potential for overstating safety net effects by attributing urban/rural differences in utilization to safety net characteristics. These selections yield a sample of 4,086 uninsured adults and 8,642 insured adults. In all analyses, survey sample weights are used, and variance estimates are adjusted for the complex survey design.

Empirical Model

We estimate three types of utilization and access regressions. First, we use a conventional model of health care utilization and access as a function of personal characteristics, including age, gender, education, race/ethnicity, health status, disability, and family structure; and economic characteristics, including poverty status, employment status, and a dummy variable

indicating lack of insurance. From this model we obtain our initial (adjusted) estimates of the access gap. Second, we add several variables to this basic model that represent characteristics of the local safety net to measure safety net effects for all low-income adults. Finally, in a third set of models, we add interactions between the safety net variables and the dummy variable indicating lack of insurance to assess whether there are different effects for the uninsured. We did not correct for potential selection bias that would arise if safety net characteristics affect individual insurance status choices by altering the ability to receive care while uninsured. We use a logit regression procedure to handle our dichotomous dependent variables and present our results as marginal effects computed at the mean of the independent variables. (Full regression results are in appendix tables B-D.)

Dependent Variables

We examined three utilization measures and two measures of access. The utilization measures are self-reported use in the year prior to interview of physicians, inpatient hospital care unrelated to childbirth, and emergency rooms. Emergency room visits include all visits. The data do not allow us to distinguish true emergencies from use of an emergency room as a substitute for primary care. Access measures are whether the respondent reported having a usual source of health care other than an emergency room and whether the respondent lacked confidence that care could be obtained if needed.

Safety Net Variables

We chose the county as the unit of measurement for safety net characteristics. However, catchment areas for safety net providers such as FQHCs and hospitals may be larger or smaller than the county—or any arbitrary geographic unit—which could lead to some measurement error in variables related to these providers. We also estimated models that measured the safety net at

the MSA level and found little qualitative difference between the results. We report only the county-level results. The definition and source of all measures are provided in appendix table A.¹

Safety net capacity

We include three measures of general health system capacity and two measures of specific safety net capacity. The three general measures are primary care physicians per 1,000 county residents, short term general hospital beds per 1,000 residents, and a categorical variable identifying that all or part of a county has been designated as a health provider shortage area. The two safety net provider measures are indicator variables identifying counties with at least one public hospital and those with at least one FQHC or “look-alike” clinic.² County-level data on FQHCs and FQHC look-alikes were constructed from data input from the Bureau of Primary Health Care (BPHC) primary care programs directory for 1994 (U.S. Department of Health and Human Services 1994). These data are the best national data available on dedicated clinics serving the poor, but they do not include community health centers that are not part of the FQHC program.

Generally, controlling for other factors, we would expect that both general provider capacity and safety net capacity would be positively related to use by low-income adults, and that safety net capacity would have a greater positive effect for uninsured adults than for those covered by either Medicaid or private insurance. However, the cross-sectional relationships we estimate are not necessarily indicative of causal effects of the safety net, due to limitations in the ability to hold all relevant factors constant, which is inherent in cross-sectional studies. By including several individual control variables and county-level variables, we have sought to minimize the potential for bias caused by omitted variables.

Interpretation of the effects of the FQHC variables is complicated by the fact that FQHCs, by definition, are located in areas that are medically underserved or where health resources are not evenly distributed so that there are concentrations of medically underserved persons. Public hospitals also tend to be located in such areas. Therefore, in addition to measuring safety net capacity, variables identifying the presence of FQHCs and public hospitals in a county may also be serving as proxies for the presence of underserved areas within that county. Further, if FQHCs are able to improve access to primary care, we might expect to see increased outpatient visits and reduced hospitalizations for acute care sensitive conditions and emergency room use, but if the FQHC measure identifies shortage areas, it may be associated with increased emergency room use, as ERs substitute for primary care.

Demand for safety net services

We conceptualize demand on the safety net as the percent of a county's population that is most likely to depend on safety net providers for care. Safety net providers serve low-income insured persons, but the most important component of this demand is the low-income uninsured. We had no direct measure of local uninsured rates. We created a proxy measure by multiplying the state-level uninsured rate by the ratio of the percent of county residents who were poor to the state poverty rate. This proxy measure is higher in relatively poorer counties within a state.³ We constructed dichotomous variables indicating whether the proxy uninsured rate was low (below 12 percent), moderate (12 to 20 percent), or high (20 percent or higher) and excluded the low category. All else equal, we would expect to find lower utilization and access among the uninsured in moderate and high uninsured rate areas because higher local uninsured rates would suggest greater competition for safety net services and for unpaid or underpaid care from other providers.

Financial pressures on the safety net system

Whether safety net providers can meet the demand for services and the willingness and ability of other providers to provide unpaid or underpaid care depend in part on the amount of surplus available to support care for those who cannot pay for it. As discussed, managed care is a key source of downward pressure on reimbursements, and the level of public payments, particularly Medicaid reimbursement and DSH payments, also affects the size of margins available to cross-subsidize uncompensated care.

We used two measures to characterize managed care penetration. The first is an indicator that the county has mandatory Medicaid HMOs. The second measure is the private managed care penetration rate. We created indicators of low (below 9 percent), moderate (9 to 30 percent) and high (30 percent or greater) penetration, and again excluded the low category. We would expect mandatory Medicaid managed care and moderate and high private managed care penetration to be associated with impaired access and utilization for the uninsured.

We also included the Medicaid payment to cost ratio for hospitals, which includes both Medicaid DSH payments and reimbursements, to capture the effect of more generous payments. We again created indicators for low, moderate, and high ratios, with the excluded low category corresponding to values below the 25th percentile ratio value among our counties and the high category corresponding to values at or above the 75th percentile. The main hypothesis is that more generous Medicaid payment ratios would increase surplus in the system available to support care for the uninsured and have a positive effect on their use and access. However, higher reimbursements also may make less costly Medicaid recipients more attractive to other providers, reducing any positive effect by drawing off an important source of safety net support.

Means of Dependent and Safety Net Variables

Means of dependent and safety net variables for uninsured and insured low-income adults are shown in table 1. The uninsured are less than half as likely to have a physician visit or a hospital admission and more than twice as likely to lack confidence that they could get care if needed. Only in emergency room use do they approach the level of the insured.

There are, however, no striking differences in the means of safety net characteristics for the uninsured. Nearly all means are statistically different from those for the insured, but differences are modest. Both hospital beds and physicians per 1,000 persons are somewhat lower for the uninsured, and a slightly higher proportion are in counties where there are FQHCs and public hospitals. Not surprisingly, a larger proportion of the uninsured live in counties with the highest uninsured rates, and a smaller proportion live where uninsurance rates are the lowest. However, on average the uninsured also appear to be slightly less likely to be in counties with greater financial stress. They are less likely to be in counties with mandatory Medicaid HMOs and where there is moderate managed care penetration, and more likely to be in areas with favorable Medicaid payment to cost ratios.

REGRESSION ANALYSIS

Regression results are displayed in three tables. First, we show the net effect of being uninsured on access and use among low-income adults—the access gap. Second, we examine whether, after controlling for insurance status and personal characteristics, individual safety net characteristics affect utilization and access for all low-income adults. Finally, we examine whether various dimensions of the safety net affect the uninsured and the insured differently.

Do Safety Net Characteristics Affect the Gap?

Table 2 shows the effect of personal and safety net characteristics on utilization and access gaps, measured by the marginal effect of the dichotomous variable identifying the uninsured, in models with no other control variables, with controls only for personal characteristics, and with controls for both personal characteristics and safety net characteristics. Consistent with table 1, with no controls for any other characteristics, lacking insurance results in large utilization and access gaps (first column). The uninsured are 34 percentage points less likely to have any physician visits, 30 percentage points less likely to have a usual source of care other than an emergency room, about 7 percentage points less likely to have a hospital stay, and nearly 6 percentage points less likely to have an emergency room visit. Not surprisingly, they also are 17 percentage points more likely to lack confidence in their ability to get needed care.

These gaps could reflect in part differences in personal characteristics of the uninsured rather than the effect of being uninsured. For example, the uninsured are more likely to be Hispanic, a group that uses fewer services even when insured (Weinick, Zuvekas, and Cohen 2000; Zuvekas and Weinick 1999). However, we find that while controlling for personal characteristics adds dramatically to explanatory value of the model for all dependent variables,⁴ it has little effect on the size of the gap for the three utilization measures (second column). For the two access measures, adding personal characteristics reduced the magnitude of the access gap by at most 30 percent (for having a usual source of care). In all cases, the gap is still large and statistically significant after controlling for individual characteristics.

After additionally controlling for the safety net characteristics (final column) the effect of being uninsured is essentially unchanged, indicating that the differences shown in table 1 in the mean safety net characteristics faced by the two groups are not sufficient to affect the size of

utilization and access gaps. That is, if the insured and the uninsured had identical characteristics and faced identical safety net conditions, gaps in utilization and access would not be significantly larger or smaller. We explore this finding further after examining how individual safety net characteristics affect low-income adults as a group.

What is the Role of the Safety Net for Low-Income Adults?

After controlling for personal characteristics and insurance status, neither the individual safety net dimensions we examine nor general provider capacity were significantly related to access and use among low-income adults (table 3). Greater availability of primary care physicians was associated with significantly higher rates of physician use and a significantly greater likelihood of having a usual source of care other than an emergency room, but lower confidence in the ability to get care. Greater general hospital capacity was associated with a lower likelihood of having a non-ER usual source of care and greater confidence in the ability to get care. However, holding physician supply and short-term general bed supply constant, having FQHC or public hospital capacity had no significant effect on any of our dependent variables, contrary to our expectations.

It might be reasonable to argue that, given the association of FQHC capacity with medical underservice, the lack of any impact for FQHCs reflects ambiguities in what this variable measures. That is, having an FQHC in a county may indicate both safety net capacity and the presence of underserved subareas within the county. In the former situation we would expect the FQHC measure to be associated with better access and use, while in the latter the FQHC measure could suggest inferior access and use. If our FQHC measure is capturing these two opposing effects, the net impact depends on their relative magnitudes. However, we have controlled for the presence of provider shortage areas in our counties, so that such an argument

would have to rely on the distribution of underservice and FQHC capacity at a subcounty level or on the systematic location of FQHCs in areas with the greatest degree of underservice.

Among the remaining characteristics intended to capture pressures on the safety net from high uninsurance rates and financial pressure imposed by payers, we found only a single significant factor. We had expected higher local uninsured rates to result in generally impaired access, but the only significant effect we found was lower confidence in the ability to get care in areas with the highest uninsured rates. Neither public nor private managed care had a significant effect on utilization or access for low-income adults as a whole, and Medicaid payments were similarly unimportant.

Does the Safety Net Affect Uninsured and Insured Adults Differently?

There are a number of ways that safety net characteristics could fail to be associated with any narrowing or widening of access and utilization gaps between uninsured and insured adults, as seen in table 2. For example, safety net characteristics that help and hurt the uninsured could be offsetting, leaving their net position relative to the insured unchanged. On the other hand, the uninsured and the insured could be affected similarly by safety net characteristics, so that their utilization rises and falls together. We begin this section by examining how the various dimensions of the safety net we measure relate to use and access specifically for the uninsured and then consider whether each dimension widens or narrows gaps between the uninsured and the insured.

Table 4 reports effects of our safety net measures on access and use for uninsured low-income adults, derived from models that interact the insurance status indicator with each dimension of the safety net.⁵ Although there are more significant effects among the uninsured

than among all low-income adults, we still do not find a strong relationship between safety net characteristics and the access and use measures we examined.

In fact, unlike all low-income adults, uninsured adults in areas with greater primary care physician supply do not have a higher probability of seeing a doctor. This finding is somewhat surprising because they also are *more* likely to report having a non-ER usual source of care. Also unlike low-income adults as a whole, the uninsured in counties with FQHCs have a lower likelihood of having an emergency visit or having a usual source of care. Having greater general hospital capacity is associated significantly only with a greater likelihood of a hospital stay, while public hospital capacity is associated with a lower likelihood of seeing a physician.

Public managed care appears to be associated with worse outcomes for the uninsured. The uninsured in counties with mandatory Medicaid HMOs are less likely to see a physician and more likely to have a hospital stay, a combination that is at least consistent with increased hospitalization because of inadequate ambulatory care. Conversely, private managed care appears to have no effect on the uninsured. The only other significant effect is for those in areas with high uninsurance rates, who appear to have a *higher* likelihood of seeing a physician, contrary to expectations. Table 5 summarizes the extent to which these individual safety net characteristics are associated with a widening or narrowing of the access gap between uninsured and insured low-income adults. Only significant differences are shown.⁶

It is evident that the safety net variables considered in this study are not significantly related to the access gap for most utilization and access measures. Physician supply, public hospital beds, and being in a county with provider shortage areas have no effect for any measure, while the gap in confidence between the insured and the uninsured appears to be greater where the supply of short term general hospital beds is greater. Being in a county with an FQHC

appears to result in a wider gap in emergency room use and having a usual source of care, but has no other positive or negative effects on access or utilization by the uninsured relative to the insured. The managed care variables, which have been found to adversely affect the uninsured in other studies, have only a few significant effects. Consistent with the findings seen within the uninsured population, having mandatory Medicaid HMOs in a county widens the gap for physician visits but narrows the gap for hospital use. While high private HMO penetration has no significant effect on any of the utilization measures, moderate penetration appears to narrow the gap in emergency room use. The highest level of Medicaid payment margins appears to narrow gaps for both physician and hospital use.

DISCUSSION

While the health care safety net unquestionably provides care to low-income populations, we found that the level of care and access among low-income adults varies little with safety net capacity and financial pressures across counties. Nor does the gap in utilization and access between low-income uninsured and insured adults vary substantially by county safety net characteristics. Examining key measures of safety net resources and pressures, we found no clear-cut pattern supporting the hypothesis that the uninsured would fare better where there are safety net providers and less pressure on safety net supports.

For example, gaps in physician visits are greater where there is mandatory Medicaid managed care because it appears to reduce access and utilization for the uninsured but has no effect on the insured. This finding is generally consistent with Cunningham (1999), although that study used a state-level Medicaid managed care measure. We did not, however, find the detrimental effects of private managed care and high uninsurance rates found in that study. We found that counties where there are FQHCs have wider gaps in emergency room use and having

a usual source of care. The presence of FQHCs was not associated with increases in other use and access measures for either the insured or the uninsured, perhaps because their resources are not great enough to overcome access deficits in areas where they are located. Being in a county with an underserved area does not have a significant effect on the gap between low-income uninsured and insured adults.

This analysis is only a first attempt at understanding the effects of individual safety net conditions. In general, local health care systems are complex and heterogeneous. Factors we were not able to control for in our models could affect our findings. We are particularly concerned that the FQHC results reflect in part the association of these providers with underserved areas, despite our attempt to control for the presence of medically underserved areas within the county. Because we control for general physician supply, the effect of any net contributions FQHCs make to increased physician supply may be captured by that variable, although, as noted, greater physician supply is associated with a greater likelihood of having a usual source of care but does not appear to otherwise help the uninsured. Thus, the net effect of FQHCs reflects only their contribution to the number of facilities available, improvements in the distribution of facilities in areas of greater need within counties, and the fact that they are known to provide care regardless of ability to pay. In addition, if FQHCs are systematically located where otherwise unmeasured differences in underservice are most severe, their contributions would be masked. In fact, about 20 percent of our weighted sample lived in counties where there is FQHC capacity but not a designated health professional shortage area, presumably because they are serving an underserved population in an area where underservice is not a generalized problem.

Although the BPHC data we use are the best we are aware of for measuring clinics dedicated to serving patients regardless of ability to pay, other clinics that serve this function are not in the FQHC program. Thus, in areas such as Los Angeles and New York, where such clinics are more common, our FQHCs variable may not reflect all relevant clinic capacity. The county also may be too imprecise as a unit of measurement. For example, it may be fruitful to develop individual-level measures of distance to safety net resources. Work in progress elsewhere also is attempting to instrument FQHC capacity to attempt to disentangle the effect of clinics from the effects of their location in underserved areas.

Nevertheless, while measurement problems may affect the relationships we estimate for particular safety net characteristics, we do not believe they would change our basic finding that gaps between the uninsured and the insured have relatively little relation to safety net capacity and pressures within a county.

CONCLUSION

The empirical results in this paper find little variation in utilization and access among low-income adults by local safety net conditions, but very large differences by insurance status, after controlling for several individual demographic characteristics. In addition, use and access differences between insured and uninsured adults were found to have relatively little relation to local safety net conditions. These results suggest that expanding insurance coverage would be a more effective tool for increasing access to health care among low-income adults than expanding the safety net.

In other respects as well, the safety net is not a substitute for insurance, since insurance coverage confers greater access to the full range of health care providers. As noted earlier, the limited capacity of specialized safety net providers makes it inevitable that improving access

requires participation of all providers as well as support for safety net providers. A recent study based on a survey of medical directors of community health centers found that while they generally reported confidence in their ability to provide needed primary care to all of their patients, they reported far greater obstacles in helping their uninsured patients obtain additional services their clinics could not provide (Gusmano, Fairbrother, and Park 2002). There is disagreement about the desirability of expanding public insurance and various methods of subsidizing increased private insurance. Nevertheless, expanding insurance has the ability both to broaden the range of providers available to those now uninsured and to support safety net providers by reducing the level of unpaid care among their clientele.

Our findings suggest that expanded direct support for key safety net facilities, such as the increased support for community health centers in the Bush administration's budget proposal, is unlikely to be an effective policy tool for narrowing access and utilization gaps between the insured and the uninsured.

There are other arguments for expanding direct support for the core safety net, particularly community-based care. Disadvantaged groups may have better continuity of care in clinics than in physician offices, and those relying on hospital-based clinics tend to have less continuity of care and to be sicker when they present themselves for care (Forrest and Whelan 2000). Safety net providers may be "niche" providers that would improve access for some groups even in a fully insured world because of language, social, and cultural differences in their clientele. Our data do not allow us to examine the number or content of visits in different settings, and we have not yet examined whether safety net effects differ by race, ethnicity, or immigration status. In addition, pre-post studies or studies that provide additional adjustment for

endogeneity will be helpful in isolating the causal effects of the safety net. These are fruitful areas for further studies of contributions of the safety net to health of disadvantaged populations.

ENDNOTES

¹ We initially included additional variables, such as measures of employer-sponsored insurance availability, hospital competition, state Medicaid DSH spending per uninsured person, the Medicare hospital payment to cost ratio, and various additional measures of hospital capacity. These variables added little to explanatory value, and removing them did not appear to affect estimated impacts of remaining variables, so we decided to use a more parsimonious set of variables.

² We explored a number of additional variables and alternative specifications of safety net capacity, such as presence of teaching hospitals, number of public or teaching hospital beds per 1,000 population, and the number of FQHCs and look-alikes. The results we obtained were qualitatively similar when additional variables, such as presence of teaching hospitals, were included. Continuous measures, such as number of public hospital beds, appeared to dilute rather than enhance estimates, apparently because of nonlinearity of the relationships. In the end we chose to include only dichotomous variables indicating presence of FQHC and public hospital capacity and to categorize continuous measures such as private HMO penetration rate as low, moderate, and high.

³ We tested the validity of our proxy measure of the local uninsurance rate by estimating the likelihood that an individual in our sample is uninsured as a function of the proxy measure and its component parts. We found that it was an important and significant predictor net of the effects of the other regressors.

⁴ Explanatory value as measured by pseudo R^2 increased at least two-fold in all but two cases when we added personal characteristics to the model. The smallest gain was about 49 percent for having a usual source of care other than an emergency room.

⁵ Marginal effects of safety net characteristics on the uninsured relative to the uninsured in areas without that characteristic are the sum of the main effect of being in an area with a particular characteristic and the marginal effect of also being uninsured in such an area. Significance was assessed by F-tests of these sums of marginal effects. This is equivalent to a test of whether utilization and access for the uninsured in these areas differs significantly from that for the uninsured in areas without the particular characteristic. Underlying regression results are presented in appendix table D.

⁶ The direction and significance of differences between the uninsured and insured are given by the marginal effects of terms interacting safety net characteristics with the uninsured indicator in the regressions reported in appendix table D.

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Table 1. Means of Dependent and Safety Net Variables for Low-Income Insured and Uninsured Adults

	Insured	Uninsured
Dependent variables		
Any doctor visit	0.71	0.37 ***
Any nonmaternity hospital stay	0.11	0.04 ***
Any emergency room visit	0.28	0.22 ***
Has a usual source of care other than an ER	0.82	0.51 ***
Lacks confidence in care	0.10	0.29 ***
County safety net characteristics		
Capacity		
Primary care physicians per 1,000 population	0.93	0.88 ***
Short term general hospital beds per 1,000 population	1.96	1.84 ***
No public hospital beds	0.49	0.39 ***
Any public hospital beds	0.51	0.61 ***
No FQHCs in county	0.33	0.28 **
Any FQHCs in county	0.67	0.72 **
Health provider shortage area in county	0.79	0.83 **
Stresses		
Uninsured rate low	0.16	0.11 ***
Uninsured rate moderate	0.45	0.37 ***
Uninsured rate high	0.39	0.52 ***
County has mandatory Medicaid HMO	0.26	0.24
Private HMO penetration low	0.14	0.15
Private HMO penetration moderate	0.50	0.45 ***
Private HMO penetration high	0.36	0.39 **
Medicaid revenue/cost low	0.20	0.14 ***
Medicaid revenue/cost moderate	0.60	0.61
Medicaid revenue/cost high	0.20	0.25 ***

*** Difference from insured mean is significant at the 1 percent level in a two-tailed test.

** Difference from insured mean is significant at the 5 percent level in a two-tailed test

* Difference from insured mean is significant at the 10 percent level in a two-tailed test

Table 2. Marginal Effect of Being Uninsured on Utilization and Access

	Unadjusted	Adjusted for personal characteristics only ^a	Adjusted for personal characteristics and safety net ^b
Any doctor visit	-0.34 ***	-0.30 ***	-0.29 ***
Any nonmaternity hospital stay	-0.07 ***	-0.05 ***	-0.05 ***
Any emergency visit	-0.06 ***	-0.06 ***	-0.05 ***
Has a usual source of care other than an emergency department	-0.30 ***	-0.23 ***	-0.25 ***
Lacks confidence in ability to get care	0.17 ***	0.13 ***	0.13 ***

*** Marginal effect is statistically significant at the 1 percent level in a two-tailed test.

** Marginal effect is statistically significant at the 5 percent level in a two-tailed test.

* Marginal effect is statistically significant at the 10 percent level in a two-tailed test.

^a See appendix table B for full regression results.

^b See appendix table C for full regression results.

Table 3. Marginal Effects of Local Safety Net Characteristics for All Low-Income Adults

County-level characteristic	Any doctor visit	Hospital stay	Emergency visit	Non-ER usual source of care	Lacks confidence
Capacity					
Primary care physicians per 1,000 population	0.045 *	-0.016	0.016	0.066 **	0.042 **
Short term general hospital beds per 1,000 population	-0.004	0.009 **	0.004	-0.023 **	-0.019 **
Any public hospital beds	-0.044	-0.006	-0.017	-0.029	0.013
Any FQHCs in county	-0.008	0.000	-0.025	-0.025	-0.023
Health provider shortage area in county	-0.010	0.010	0.007	-0.013	-0.004
Stresses					
Uninsured rate moderate	0.014	0.001	0.014	-0.038	-0.006
Uninsured rate high	0.029	-0.004	-0.020	-0.027	0.040 *
Mandatory Medicaid HMO	-0.020	-0.001	-0.012	-0.025	0.011
Private HMO penetration moderate	0.011	0.011	-0.003	0.006	0.004
Private HMO penetration high	-0.028	-0.004	-0.010	-0.008	0.001
Medicaid revenue/cost moderate	-0.007	-0.011	-0.034	-0.002	-0.001
Medicaid revenue/cost high	-0.041	-0.002	0.002	0.000	0.003

Note: See appendix table C for full regression results.

*** Marginal effect is statistically significant at the 1 percent level in a two-tailed test.

** Marginal effect is statistically significant at the 5 percent level in a two-tailed test.

* Marginal effect is statistically significant at the 10 percent level in a two-tailed test.

Table 4. Marginal effects of local safety net characteristics for low-income uninsured adults

County-level characteristic	Any doctor visit	Hospital stay	Emergency visit	Non-ER usual source of care	Lacks confidence
Capacity					
Primary care physicians per 1,000 population	0.032	-0.031	-0.005	0.055 *	0.036
Short term general hospital beds per 1,000 population	-0.013	0.014 **	0.004	-0.010	-0.001
Any public hospital beds	-0.087 **	-0.015	-0.008	-0.004	-0.003
Any FQHCs in county	-0.047	0.006	-0.086 **	-0.074 **	-0.001
Health provider shortage area in county	-0.022	-0.010	-0.033	0.016	-0.002
Stresses					
Uninsured rate moderate	0.061	-0.010	0.059	-0.050	-0.039
Uninsured rate high	0.116 *	-0.033	-0.019	-0.052	-0.012
Mandatory Medicaid HMO	-0.082 **	0.042 ***	0.039	-0.047	0.015
Private HMO penetration moderate	0.030	-0.010	0.061	0.025	0.020
Private HMO penetration high	-0.011	-0.029	-0.017	0.020	0.040
Medicaid revenue/cost moderate	0.042	0.008	0.023	0.017	-0.002
Medicaid revenue/cost high	0.041	0.029	0.028	0.044	0.009

Notes: See appendix table D for full regression results. Marginal effects of safety net characteristics within the uninsured population are the sum of the main effect of being in an area with a particular characteristic and the interaction term effect of also being uninsured in such an area. Significance was assessed by F-tests of these sums of marginal effects. This is equivalent to a test of whether utilization and access for the uninsured in these areas differs significantly from that for the uninsured in areas without the particular characteristic.

*** Marginal effect is statistically significant at the 1 percent level in a two-tailed test.

** Marginal effect is statistically significant at the 5 percent level in a two-tailed test.

* Marginal effect is statistically significant at the 10 percent level in a two-tailed test.

Table 5. Impact of Safety Net Characteristics on the Access Gap between Low-Income Uninsured and Insured Adults

County-level characteristic	Any doctor visit	Hospital stay	Emergency visit	Non-ER usual source of care	Lacks confidence
Capacity					
Primary care physicians per 1,000 population					
Short term general hospital beds per 1,000 population					W
Any public hospital beds					
Any FQHCs in county			W	W	
Health provider shortage area in county					
Stresses					
Uninsured rate moderate					
Uninsured rate high	N				N
Mandatory Medicaid HMO	W	N			
Private HMO penetration moderate			N		
Private HMO penetration high					
Medicaid revenue/cost moderate					
Medicaid revenue/cost high	N	N			

Notes: See appendix table D for full regression results. Only significant impacts are shown. **W** indicates that a factor widens the access gap, and **N** indicates that a factor narrows the gap.

Appendix Table A. Source and Description of Safety Net Variables

Safety net variable	Source and year of data	Description
Uninsured rate	Current Population Survey estimates of state uninsured rates for 1997, and county and state poverty rates from the Census Small Area Income and Poverty Estimates file from 1995	Continuous state uninsured rate \times (county poverty rate/state poverty rate), categorized by quartiles of the county-level distribution. Low: below 25th percentile (excluded) Moderate: 25th to 75th percentile High: 75th percentile or higher
Mandatory Medicaid HMO	Urban Institute survey, 1997	County-level indicator of mandatory Medicaid HMO.
Private HMO penetration	1996 county-level rates created from data collected by InterStudy Publications, provided by Douglas Wholey (University of Minnesota)	Percent of the county population enrolled in private managed care organizations, categorized by quartiles of the county-level distribution. Low: below 25th percentile (excluded) Moderate: 25th to 75th percentile High: 75th percentile or higher
Ratio of Medicaid costs to revenues	1996 American Hospital Association data, produced at HRET	Ratio of county level total hospital revenues from Medicaid DSH payments and reimbursements to Medicaid costs, categorized by quartiles of the county-level distribution. Low: below 25th percentile (excluded) Moderate: 25th to 75th percentile High: 75th percentile or higher
Presence of FQHC capacity	Data on FQHC clinics and FQHC "look-alike" clinics input from the 1994 Bureau of Primary Health Care directory, aggregated to the county level.	Categorical 0/1 variable created from BPHC data on the number of FQHCs in each county
Presence of public hospital bed capacity	1996 American Hospital Association	Categorical 0/1 variable created from data on public hospital beds in each county
Short-term general hospital beds per 1,000 population	1996 American Hospital Association	Short term general beds aggregated to the MSA level and divided by the MSA population in 1,000s
Primary care physicians per 1,000 population	1995 Area Resource File	Primary care physicians aggregated to the MSA level and divided by MSA population in 1,000s
Health provider shortage area	1995 Area Resource File	Categorical 0/1 variable indicating if all or part of the county has been designated as a health provider shortage area.

Appendix Table B. Marginal Effects for Regression with Personal Characteristics Only

	Any doctor visit		Hospital stay		Emergency visit		Non-ER usual source of care		Lacks confidence in ability to get care		
	Marginal		Marginal		Marginal		Marginal		Marginal		
	Effect	t-statistic	Effect	t-statistic	Effect	t-statistic	Effect	t-statistic	Effect	t-statistic	
Personal Characteristics											
Full-year uninsured	-0.295	-16.32 ***	-0.051	-5.52 ***	-0.058	-3.44 ***	-0.253	-14.53 ***	0.132	10.05 ***	
Income less than 100% FPL	-0.064	-2.81 ***	0.004	0.61	0.017	1.02	-0.028	-1.33	-0.004	-0.29	
Age	-0.016	-3.20 ***	-0.001	-0.75	-0.010	-2.07 **	-0.012	-2.60 **	0.013	3.02 ***	
Age squared	0.024	3.69 ***	0.002	0.96	0.007	1.28	0.020	3.64 ***	-0.015	-2.82 ***	
Female	0.236	10.80 ***	-0.011	-1.54	0.017	1.02	0.144	7.80 ***	-0.009	-0.75	
Has a college degree	0.128	3.85 ***	-0.009	-0.73	-0.021	-0.71	0.067	2.53 **	-0.013	-0.66	
Has some college, no degree	0.051	1.75 *	0.004	0.47	-0.009	-0.42	0.040	1.83 *	-0.005	-0.28	
Has a high school diploma	0.027	1.22	0.013	1.77 *	0.008	0.38	0.020	0.99	-0.035	-2.45 **	
Has disability that interferes with work	0.175	6.42 ***	0.038	4.61 ***	0.142	5.96 ***	0.044	1.59	-0.025	-1.63	
Hispanic	-0.143	-5.40 ***	0.003	0.22	-0.130	-4.93 ***	-0.033	-1.12	0.057	2.62 **	
Other race	-0.076	-1.50	-0.025	-1.04	-0.190	-4.2 ***	-0.097	-2.28 **	0.011	0.34	
White	0.013	0.49	0.007	0.73	-0.088	-4.32 ***	0.009	0.36	-0.005	-0.28	
Married, no kids	-0.044	-1.19	0.014	1.29	0.024	0.82	-0.076	-2.55 **	0.056	2.25 **	
Single, with kids	-0.027	-1.09	0.004	0.4	0.058	2.88 ***	-0.043	-1.59	0.006	0.34	
Single, without kids	-0.021	-0.72	0.018	1.68 *	0.042	1.9 *	-0.095	-5.06 ***	0.059	3.70 ***	
Worked full-time, full-year last year	0.007	0.26	-0.032	-2.84 ***	-0.012	-0.56	-0.013	-0.58	0.021	1.27	
Worked part-time or part-year last year	0.002	0.11	0.007	0.86	0.032	1.78 *	-0.028	-1.28	-0.003	-0.21	
Self-reported health status "good"	0.070	2.41 **	0.040	2.77 ***	0.077	3.31 ***	-0.030	-1.18	0.071	3.90 ***	
Self-reported health status "fair" or "poor"	0.072	2.06 **	0.057	5 ***	0.079	2.57 **	-0.049	-1.55	0.118	6.24 ***	
Excellent/very good health, better than last year	0.104	3.20 ***	0.069	5.99 ***	0.105	3.87 ***	0.027	0.98	-0.008	-0.31	
Excellent/very good health, worse than last year	0.180	1.28	0.088	2.57 **	0.246	3.8 ***	-0.063	-0.57	0.139	2.46 **	
Good health, better than last year	0.058	1.29	0.032	2.6 **	0.011	0.33	0.039	1.09	-0.052	-1.70 *	
Good health, worse than last year	0.069	0.85	0.051	3.09 ***	0.019	0.37	0.079	1.67 *	0.013	0.35	
Fair/poor health, better than last year	0.083	1.49	0.046	4.36 ***	0.142	3.59 ***	0.042	1.07	0.015	0.58	
Fair/poor health, worse than last year	0.024	0.51	0.041	3.92 ***	0.169	4.72 ***	0.014	0.40	0.037	1.78 *	
Constant	0.263	2.59 **	-0.157	-3.95 ***	-0.016	-0.16	0.408	4.24 ***	-0.590	-7.01 ***	
Pseudo R ²	0.155		0.174		0.090		0.138		0.119		

Note: We used Balanced Repeated Replicate methodology to adjust standard errors for the complex survey design. This reduces the effective degrees of freedom to 60, which slightly increases the t-statistic value associated with each significance level. The adjusted values are 2.66 for the 1 percent level of significance in a two-tailed test (***), 2.0 for the 5 percent level of significance (**), and 1.671 for the 10 percent level of significance (*).

Appendix Table C. Marginal Effects for Non-Interacted Model with Personal and Safety Net Characteristics

	Any doctor visit		Hospital stay		Emergency visit		Non-ER usual source of care		Lacks confidence in ability to get care	
	Marginal Effect	t-statistic	Marginal Effect	t-statistic	Marginal Effect	t-statistic	Marginal Effect	t-statistic	Marginal Effect	t-statistic
Personal Characteristics										
Full-year uninsured	-0.293	-16.04 ***	-0.048	-5.54 ***	-0.054	-3.17 ***	-0.251	-13.95 ***	0.130	10.42 ***
Income less than 100% FPL	-0.063	-2.79 ***	0.004	0.68	0.020	1.16	-0.027	-1.30	-0.005	-0.42
Age	-0.016	-3.09 ***	-0.001	-0.78	-0.010	-2.15 **	-0.011	-2.45 **	0.013	3.06 ***
Age squared	0.023	3.56 ***	0.002	1	0.008	1.35	0.019	3.46 ***	-0.015	-2.85 ***
Female	0.236	10.75 ***	-0.012	-1.76 *	0.017	1.01	0.144	7.90 ***	-0.007	-0.66
Has a college degree	0.130	3.89 ***	-0.006	-0.52	-0.020	-0.68	0.065	2.45 **	-0.017	-0.86
Has some college, no degree	0.052	1.80 *	0.007	0.87	-0.005	-0.24	0.042	1.93 *	-0.006	-0.32
Has a high school diploma	0.028	1.29	0.012	1.66	0.007	0.32	0.021	1.05	-0.034	-2.36 **
Has disability that interferes with work	0.176	6.26 ***	0.035	4.44 ***	0.146	6.22 ***	0.047	1.66	-0.023	-1.51
Hispanic	-0.129	-4.11 ***	0.012	0.83	-0.109	-4.21 ***	-0.031	-1.01	0.046	2.03 **
Other race	-0.081	-1.55	-0.016	-0.7	-0.178	-4.04 ***	-0.117	-2.82 ***	0.006	0.19
White	0.015	0.53	0.008	0.76	-0.095	-4.57 ***	0.000	0.00	0.004	0.19
Married, no kids	-0.043	-1.18	0.013	1.37	0.023	0.77	-0.071	-2.48 **	0.058	2.24 **
Single, with kids	-0.027	-1.12	0.006	0.62	0.061	3.05 ***	-0.044	-1.64	0.006	0.37
Single, without kids	-0.022	-0.77	0.018	1.8 *	0.044	2.04 **	-0.097	-4.98 ***	0.059	3.60 ***
Worked full-time, full-year last year	0.008	0.32	-0.034	-3.04 ***	-0.014	-0.6	-0.012	-0.53	0.022	1.33
Worked part-time or part-year last year	0.006	0.26	0.007	0.87	0.032	1.81 *	-0.026	-1.22	-0.004	-0.24
Self-reported health status "good"	0.070	2.38 **	0.040	2.82 ***	0.081	3.44 ***	-0.032	-1.25	0.068	3.79 ***
Self-reported health status "fair" or "poor"	0.075	2.14 **	0.058	5.2 ***	0.080	2.58 **	-0.054	-1.70 *	0.113	6.04 ***
Excellent/very good health, better than last year	0.108	3.33 ***	0.067	5.9 ***	0.107	4.01 ***	0.028	1.05	-0.010	-0.37
Excellent/very good health, worse than last year	0.189	1.28	0.087	2.49 **	0.246	3.88 ***	-0.066	-0.59	0.132	2.35 **
Good health, better than last year	0.054	1.20	0.031	2.53 **	0.007	0.2	0.037	1.06	-0.050	-1.66
Good health, worse than last year	0.066	0.82	0.049	3.12 ***	0.015	0.27	0.080	1.69 *	0.015	0.42
Fair/poor health, better than last year	0.079	1.41	0.043	4.23 ***	0.144	3.68 ***	0.049	1.26	0.018	0.71
Fair/poor health, worse than last year	0.023	0.50	0.037	3.69 ***	0.169	4.88 ***	0.022	0.64	0.037	1.81 *
Safety Net Variables										
Uninsured rate moderate	0.014	0.39	0.001	0.12	0.014	0.5	-0.038	-1.21	-0.006	-0.24
Uninsured rate high	0.029	0.76	-0.004	-0.32	-0.020	-0.71	-0.027	-0.79	0.040	1.80 *
Mandatory Medicaid HMO	-0.020	-0.95	-0.001	-0.09	-0.012	-0.65	-0.025	-1.14	0.011	0.88
Private HMO penetration moderate	0.011	0.30	0.011	1.2	-0.003	-0.12	0.006	0.20	0.004	0.13
Private HMO penetration high	-0.028	-0.78	-0.004	-0.33	-0.010	-0.37	-0.008	-0.24	0.001	0.03
Medicaid revenue/cost moderate	-0.007	-0.26	-0.011	-1.32	-0.034	-1.5	-0.002	-0.09	-0.001	-0.05
Medicaid revenue/cost high	-0.041	-1.29	-0.002	-0.22	0.002	0.09	0.0001	0.00	0.003	0.14
Any FQHCs in county	-0.008	-0.33	0.000	0.01	-0.025	-1.11	-0.025	-0.98	-0.023	-1.30
Any public hospital beds	-0.044	-1.62	-0.006	-0.76	-0.017	-0.91	-0.029	-1.39	0.013	1.04
Short-term general hospital beds per 1,000 population	-0.004	-0.39	0.009	2.91 ***	0.004	0.39	-0.023	-2.28 **	-0.019	-2.00 **
Primary care physicians per 1,000 population	0.045	1.76 *	-0.016	-1.66	0.016	0.75	0.066	2.93 ***	0.042	2.29 **
Health provider shortage area in county	-0.010	-0.29	0.010	1.06	0.007	0.22	-0.013	-0.45	-0.004	-0.20
Constant	0.285	2.52 **	-0.159	-4.44 ***	0.031	0.31	0.476	4.50 ***	-0.597	-6.59 ***
Pseudo R ²	0.158		0.185		0.090		0.144		0.126	

Note: We used Balanced Repeated Replicate methodology to adjust standard errors for the complex survey design. This reduces the effective degrees of freedom to 60, which slightly increases the t-statistic value associated with each significance level. The adjusted values are 2.66 for the 1 percent level of significance in a two-tailed test (***), 2.0 for the 5 percent level of significance (**), and 1.671 for the 10 percent level of significance (*).

Appendix Table D. Marginal Effects for Interacted Model with Personal and Safety Net Characteristics

Personal Characteristics	Any doctor visit		Hospital stay		Emergency visit		Non-ER usual source of care		Lacks confidence in ability to get care	
Full-year uninsured	-0.361	-3.65 ***	-0.020	-0.61	-0.100	-1.27	-0.292	-3.58 ***	0.151	2.68 ***
Income less than 100% FPL	-0.063	-2.89 ***	0.004	0.75	0.022	1.29	-0.029	-1.40	-0.004	-0.31
Age	-0.015	-2.97 ***	-0.001	-0.73	-0.010	-2.15 **	-0.011	-2.49 **	0.013	3.12 ***
Age squared	0.022	3.41 ***	0.002	0.96	0.008	1.37	0.019	3.50 ***	-0.015	-2.88 ***
Female	0.235	10.56 ***	-0.011	-1.61	0.017	0.97	0.143	7.97 ***	-0.008	-0.73
Has a college degree	0.127	3.68 ***	-0.005	-0.43	-0.013	-0.44	0.065	2.48 **	-0.015	-0.76
Has some college, no degree	0.052	1.78 *	0.006	0.74	-0.002	-0.09	0.043	1.94 *	-0.005	-0.28
Has a high school diploma	0.032	1.49	0.010	1.49	0.010	0.50	0.022	1.11	-0.035	-2.41 **
Has disability that interferes with work	0.180	6.50 ***	0.034	4.54 ***	0.147	6.52 ***	0.047	1.67 *	-0.022	-1.48
Hispanic	-0.129	-4.17 ***	0.011	0.76	-0.101	-3.81 ***	-0.029	-0.93	0.044	2.06 **
Other race	-0.079	-1.46	-0.015	-0.68	-0.174	-4.03 ***	-0.116	-2.81 ***	0.005	0.16
White	0.015	0.53	0.006	0.62	-0.098	-4.59 ***	0.000	-0.01	0.002	0.13
Married, no kids	-0.038	-1.04	0.012	1.39	0.020	0.70	-0.071	-2.45 **	0.055	2.21 **
Single, with kids	-0.023	-0.94	0.004	0.48	0.057	2.85 ***	-0.044	-1.66	0.002	0.13
Single, without kids	-0.016	-0.56	0.016	1.70 *	0.043	2.03 **	-0.096	-5.00 ***	0.056	3.48 ***
Worked full-time, full-year last year	0.009	0.34	-0.030	-3.08 ***	-0.010	-0.42	-0.012	-0.54	0.023	1.44
Worked part-time or part-year last year	0.006	0.24	0.007	1.01	0.033	1.89 *	-0.027	-1.27	-0.002	-0.11
Self-reported health status "good"	0.071	2.45 **	0.036	2.87 ***	0.080	3.44 ***	-0.029	-1.13	0.067	3.87 ***
Self-reported health status "fair" or "poor"	0.070	2.00 **	0.054	5.23 ***	0.081	2.72 ***	-0.054	-1.74 *	0.109	5.78 ***
Excellent/very good health, better than last year	0.104	3.26 ***	0.063	5.66 ***	0.108	4.11 ***	0.031	1.11	-0.010	-0.39
Excellent/very good health, worse than last year	0.181	1.24	0.079	2.64 **	0.243	3.89 ***	-0.071	-0.64	0.130	2.22 **
Good health, better than last year	0.051	1.14	0.030	2.55 **	0.007	0.21	0.039	1.12	-0.050	-1.70 *
Good health, worse than last year	0.062	0.77	0.047	3.23 ***	0.009	0.17	0.077	1.64	0.023	0.64
Fair/poor health, better than last year	0.078	1.43	0.041	4.47 ***	0.143	3.62 ***	0.050	1.28	0.017	0.69
Fair/poor health, worse than last year	0.032	0.70	0.037	4.03 ***	0.167	4.85 ***	0.022	0.64	0.040	2.01 **
Safety Net Variables - Main Effects										
Uninsured rate moderate	-0.016	-0.33	0.004	0.34	-0.005	-0.17	-0.033	-0.71	0.027	0.82
Uninsured rate high	-0.021	-0.47	0.004	0.34	-0.016	-0.54	-0.009	-0.18	0.094	2.73 ***
Mandatory Medicaid HMO	0.018	0.63	-0.011	-1.59	-0.030	-1.46	-0.004	-0.12	0.002	0.10
Private HMO penetration moderate	0.007	0.15	0.016	1.59	-0.038	-1.23	-0.009	-0.22	-0.011	-0.25
Private HMO penetration high	-0.033	-0.61	0.005	0.39	-0.009	-0.28	-0.030	-0.66	-0.038	-0.95
Medicaid revenue/cost moderate	-0.028	-0.83	-0.015	-1.77 *	-0.055	-2.18 **	-0.013	-0.36	0.004	0.19
Medicaid revenue/cost high	-0.088	-2.04 **	-0.011	-0.93	-0.001	-0.04	-0.042	-1.04	-0.005	-0.18
Any FQHCs in MSA	0.019	0.62	-0.003	-0.44	0.006	0.23	0.020	0.62	-0.050	-2.14 **
Any public hospital beds	-0.022	-0.68	-0.002	-0.25	-0.018	-0.80	-0.054	-1.81 *	0.028	1.45
Short-term general hospital beds per 1,000 population	0.00001	0.00	0.007	2.24 **	0.007	0.54	-0.030	-2.52 **	-0.034	-3.48 ***
Primary care physicians per 1,000 population	0.052	1.40	-0.012	-1.38	0.022	0.81	0.070	2.16 **	0.039	1.79 *
Health provider shortage area in county	-0.007	-0.18	0.013	1.55	0.017	0.55	-0.037	-0.94	0.004	0.17
Safety Net Variables Interacted with Full-year Uninsured										
Uninsured rate moderate	0.077	0.99	-0.014	-0.62	0.064	1.22	-0.016	-0.26	-0.066	-1.46
Uninsured rate high	0.137	1.81 *	-0.037	-1.55	-0.003	-0.06	-0.043	-0.67	-0.105	-2.32 **
Mandatory Medicaid HMO	-0.101	-2.15 **	0.052	3.28 ***	0.069	1.44	-0.043	-1.13	0.013	0.51
Private HMO penetration moderate	0.023	0.36	-0.026	-1.24	0.099	1.77 *	0.034	0.62	0.031	0.68
Private HMO penetration high	0.022	0.28	-0.034	-1.51	-0.008	-0.14	0.050	0.83	0.078	1.57
Medicaid revenue/cost moderate	0.070	1.27	0.023	1.12	0.078	1.62	0.030	0.59	-0.006	-0.19
Medicaid revenue/cost high	0.129	1.86 *	0.039	1.68 *	0.029	0.53	0.086	1.56	0.013	0.43
Any FQHCs in county	-0.066	-1.21	0.008	0.35	-0.092	-1.98 *	-0.094	-2.24 **	0.049	1.56
Any public hospital beds	-0.066	-1.32	-0.013	-0.69	0.010	0.23	0.051	1.47	-0.031	-1.02
Short-term general hospital beds per 1,000 population	-0.013	-0.61	0.007	1.08	-0.003	-0.15	0.020	1.22	0.033	2.12 **
Primary care physicians per 1,000 population	-0.020	-0.34	-0.019	-0.97	-0.027	-0.50	-0.015	-0.31	-0.003	-0.09
Health provider shortage area in county	-0.015	-0.23	-0.022	-0.84	-0.049	-0.92	0.053	0.89	-0.007	-0.18
Constant	0.285	2.52 **	-0.155	-4.72 ***	0.038	0.40	0.496	4.31 ***	-0.600	-6.54 ***
Pseudo R ²	0.162		0.196		0.103		0.147		0.132	

Note: We used Balanced Repeated Replicate methodology to adjust standard errors for the complex survey design. This reduces the effective degrees of freedom to 60, which slightly increases the t-statistic value associated with each significance level. The adjusted values are 2.66 for the 1% level of significance in a two-tailed test (***), 2.0 for the 5% level of significance (**), and 1.671 for the 10 percent level of significance (*).