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The Uninsured ‘Access Gap’ And The Cost Of Universal Coverage
by Stephen H. Long and M. Susan Marquis

Abstract: This study estimates the effect of universal coverage on the use and cost of health services by the uninsured. Adults lacking insurance for a full year have about 60 percent as many ambulatory contacts and about 70 percent of the inpatient hospital days they would have if they were covered by insurance. This “access gap” is only slightly smaller for children. Providing universal coverage would increase ambulatory contacts and inpatient days by less than 4 percent a year. The dollar cost of these new services is estimated to be $19.9 billion–a 2 percent increase in total health spending.

In the coming months Congress will consider a number of proposals for health care reform, including President Bill Clinton’s Health Security Act. The proposals differ on many points. But there is general agreement among many of the various plans on some principles. For example, many of them call for guaranteed insurance coverage for all Americans.

Universal coverage is likely to increase the use of health care services by the previously uninsured. The difference between current health care use by the uninsured and the amount of care that they would be expected to consume with insurance is often called the “access gap,” because advocates of universal coverage believe that the difference is evidence of poor access to health care services and that it results in reduced health status and productivity. The greater the gap, then, the greater the expected benefits of universal coverage in improved health and increased output. However, increased use of health services by previously uninsured persons would require additional resources. The greater the gap, then, the greater the expected costs of universal coverage. Thus, measuring the benefits and social costs of universal coverage requires precise estimates of the access gap. This DataWatch presents estimates of the gap and its implications for the cost of national health reform.

Methods

Measuring the access gap. Our measure of the access gap is based on estimated current use of hospital and physician services by the uninsured...
population and a predicted value of what each uninsured person would use if he or she were covered by a plan now typical of those covering people with employer-group coverage. Use is predicted from a four-part multivariate model: (1) a probit for the probability of an ambulatory care contact; (2) a regression model for the logarithm of the number of contacts for those who have some contact; (3) a probit model for the probability of a hospital admission; and (4) a regression for the logarithm of the number of hospital days for those with an admission. We fit the models to data from three surveys: the 1987 National Medical Expenditure Survey (NMES), the Survey of Income and Program Participation (SIPP) for 1984–1988, and the Health Interview Survey (HIS) for 1980, 1983, 1984, 1986, and 1989. Explanatory variables in each model include indicators for health insurance status and covariates for age, sex, race and ethnicity, income as a percentage of poverty, urban versus rural area, education, marital status, health status, time, and interactions between insurance status and time and between insurance status and health status. We fit separate models for adults and children.

We use the fitted model from each data set to estimate annual health care use by uninsured people and to simulate their use if they were insured for a full year by the mix and type of plans now held by those covered under employer-group plans. We use the NMES sample of uninsured people as the sample for making the predictions, so that predictions from each model are for a standard population. The difference between predicted use when insured and when uninsured averaged over all people in the prediction sample is our measure of the access gap. It is a measure of the full access gap—that is, the difference in use if uninsured for a full year and if insured for a full year. Below we present the average access gap based on data from the surveys.

**Measuring aggregate increases in demand and cost.** To measure the aggregate volume of increased service use under universal coverage, we adjust our predictions of the access gap in two ways. First, we adjust for part-year periods of uninsurance. Second, we multiply the predicted gap for each uninsured person in our prediction sample by the NMES population weight, adjusted to account for changes in the size and mix of the uninsured population since 1987.

Our adjustment for part-year uninsurance is based on the SIPP data, which showed that those with a partial year of uninsurance are uninsured for an average of 43 percent of the year; therefore, we multiply the predicted annual uninsured use and the predicted annual increased demand by 0.43 for each person in our simulation sample who had less than a full year of uninsurance. This procedure assumes that the access gap for the part-year uninsured is in proportion to the length of their period of uninsurance.
Other research has suggested that this is the case; people who move from being uninsured to being insured use health care in each state at the rate they would if continuously in that state.\(^3\)

We adjust the NMES population weights by the rate of growth between 1990 and 1992 in the number of uninsured persons to 1992 as measured by the March Current Population Survey (CPS). We also adjust the NMES population weights to reflect the age and sex composition of the uninsured population in the 1992 CPS. Our adjusted estimates yield 57.1 million persons with a period of uninsurance annually, of whom 21.4 million are uninsured for the full year.\(^4\)

Our estimates of resource costs are the product of this estimate of increased aggregate demand by the uninsured and unit costs of each service calculated from the Health Care Financing Administration’s (HCFA’s) estimates of national health expenditures and the Health Interview Survey estimates of aggregate use.\(^5\) From these sources we estimate costs per unit of $1,320 in inpatient hospital spending per inpatient day and $153 in spending for ambulatory care and inpatient physician services per ambulatory contact in 1991.\(^6\) We have allocated some share of the cost of each inpatient physician service that is billed to patients to the ambulatory contacts that they have during the year. This procedure is necessitated by lack of aggregate expenditure data to allow us to separate these costs. When we multiply this unit cost by the increased number of ambulatory contacts that the uninsured will make once insured, we implicitly assume that inpatient physician contacts increase proportionately to ambulatory contacts. As our results below show, however, the access gap in inpatient care (measured in length-of-stay) is slightly less than the gap in ambulatory contacts. Therefore, our methods for estimating costs may somewhat overstate the increased resource costs of covering the uninsured. Our unit cost estimates were inflated to 1993 dollars using annual rates of growth for per capita hospital and physician spending.

**Assumptions.** Our estimates represent a partial analysis of the cost of extending health insurance coverage to the currently uninsured, in several ways. First, they assume that other aspects of the existing health care financing and delivery system remain unchanged. We assume that the policies covering the newly insured under universal coverage would contain the same mix of health maintenance organization (HMO) and fee-for-service benefits, scope of services, and cost-sharing provisions as those held by the currently insured. However, health reform has a second objective: to reduce the growth in health care spending and the use of inappropriate services by promoting managed care, prudent purchasing, and competition among providers and insurers. If these efforts lower the insured norms for use and spending, then our partial estimates overstate the cost of insuring
Another dimension on which our estimates are limited is the types of services considered. Our estimates of the access gap and of additional resource costs are limited to inpatient hospital care and care delivered by physicians. These services represent a large portion of spending under health insurance plans but may understate the incremental cost of reform plans that extend insurance for other services or that provide broader benefits than do current employer-sponsored plans. We illustrate the magnitude of this omission by estimating the costs required to add prescription drugs and other professional services to the services we consider.

Our estimates also assume that prices for care do not change in response to either the increased demand for services from implementing universal coverage or the decreased demand for services resulting from cost containment efforts. Finally, we estimate only the cost of providing insurance to those who now lack insurance; we do not include the cost of improving coverage for persons who are underinsured.

There is some uncertainty surrounding the estimates that we report. First, they rely on assumptions that cannot always be tested with existing data. We assume that the currently uninsured, once insured, would use care at the same rate as currently insured persons with similar, and observed, economic and demographic characteristics. This assumption can only be tested through a controlled experiment. Our cost estimates rest even more heavily on assumptions than do our estimates of the increased quantity of use because of data limitations. We have had to rely on estimates of the average costs of different services, and we assume that this average applies across all individuals and does not vary with quantity. We have tested some of these assumptions where ancillary data exist. The evidence that we have found suggests that our estimates are not so sensitive to the assumptions as to negate our qualitative conclusion about the effect of universal access on health care costs.

The Gap In Use Between The Uninsured And The Insured

Adults lacking health insurance coverage for a full year have about 60 percent as many ambulatory health services contacts and about 70 percent of the inpatient hospital days in the year as they would have if they had health care coverage. Exhibit 1 contains our estimates of the annual number of ambulatory contacts and inpatient hospital days for the uninsured and of the quantity of care that they would demand if insured for the year.

Under universal coverage, those who now lack insurance would average about 1.7 additional ambulatory care contacts per person per year. Our examination of the data underlying Exhibit 1 suggests that part of this total
increase would stem from an increase in the number of people obtaining some care during the year. With insurance, about 70 percent of those now uninsured would obtain some ambulatory treatment, up from the current rate of 52 percent. The other part of the total increase would be an increase in the number of contacts by those quarterly uninsured who already receive some care; we estimate that the number of contacts among those who already receive care would increase by about 20 percent, to about 5.9 visits per user per year.

Currently uninsured adults would average sixty-four hospital days per hundred persons under universal health coverage, up from forty-three days per hundred. This is because of a large increase in the number of admissions, which we estimate would rise by about 50 percent among the uninsured (up about three percentage points from the current rate of about 6 percent being admitted during a year).

About one-fifth of uninsured adults report that their health is fair or poor, and the gap between use of health care by these individuals and otherwise similar insured adults is greater than the access gap for healthier individuals (those who report that their health is excellent or good). As a result, universal coverage is estimated to lead to greater-than-average gains in health service use for the less healthy among the uninsured. We estimate that their use of ambulatory care services would increase by an average of about three contacts per year, and that their inpatient hospital use would increase by an average of about two-thirds of a day per year.

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**Exhibit 1**

Predicted Rates Of Use Of Services For Uninsured Adults And Children With Or Without Universal Health Coverage

<table>
<thead>
<tr>
<th>Insurance status</th>
<th>Ambulatory contacts per person</th>
<th>Hospital days per person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adults in fair or poor health</td>
<td>Adults in excellent or good health</td>
</tr>
<tr>
<td>Uninsured</td>
<td>4.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Insured</td>
<td>8.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Access gap</td>
<td>-3.2</td>
<td>-1.2</td>
</tr>
<tr>
<td>Relative use</td>
<td>60%</td>
<td>65%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Children in fair or poor health</th>
<th>Children in excellent or good health</th>
<th>All children</th>
<th>Children in fair or poor health</th>
<th>Children in excellent or good health</th>
<th>All children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninsured</td>
<td>3.5</td>
<td>2.1</td>
<td>2.3</td>
<td>0.41</td>
<td>0.19</td>
<td>0.21</td>
</tr>
<tr>
<td>Insured</td>
<td>6.4</td>
<td>3.1</td>
<td>3.3</td>
<td>0.84</td>
<td>0.21</td>
<td>0.26</td>
</tr>
<tr>
<td>Access gap</td>
<td>-2.9</td>
<td>-1.0</td>
<td>-1.0</td>
<td>-0.43</td>
<td>-0.02</td>
<td>-0.05</td>
</tr>
<tr>
<td>Relative use</td>
<td>55%</td>
<td>68%</td>
<td>70%</td>
<td>49%</td>
<td>90%</td>
<td>81%</td>
</tr>
</tbody>
</table>

Source: Authors' estimates based on NMES, SIPP, and the HIS.
Note: These estimates reflect expected use per person, that is, the effect of changes in the probability of use and the quantity of use by users.
Based on our research, the greater access gap for the uninsured in fair or poor health compared with healthier adults who lack insurance appears to be due to a greater gap in the number of ambulatory contacts among persons receiving some care and to a greater gap in the likelihood of a hospital admission. That is, the effect of a lack of insurance on a patient’s decision to initiate care does not vary by health status. Instead, lack of insurance appears to have a greater effect on the intensity of care—as measured by the number of ambulatory contacts and referrals for hospitalization—delivered to less healthy patients who have contact with a medical provider than to healthier adults. This may reflect differences in the way physicians adjust their practice styles to the insurance status of healthy and sick patients, or it may reflect less follow-up of prescribed regimens by the uninsured in poor health who cannot afford to pay for their care.

The access gaps for uninsured children are only slightly smaller than those for adults, as reflected by the somewhat higher relative use rates shown in Exhibit 1. Uninsured children have about 70 percent of the ambulatory contact that they would be expected to have if insured for the year. On average, uninsured children would have about one more ambulatory contact per year if insured. This reflects both an increase in the number of children who would receive ambulatory treatment and an increase in the number of contacts by those who already receive some treatment. Under universal coverage, about 73 percent of currently uninsured children would receive medical treatment in the year, up from the current rate of 60 percent. The number of ambulatory contacts for those already receiving treatment would also increase by about 20 percent, to 4.3 contacts per year.

As with adults, lack of insurance has somewhat less effect on relative use of hospital care by children than on use of ambulatory care; the uninsured now have about 80 percent of the inpatient days that they would have if insured. Uninsured children would average an additional five days of inpatient hospital care per hundred children under universal coverage. As with adults, this additional care would come from an increase in admissions, which we predict would rise by about 33 percent for the uninsured. The average length-of-stay for the currently uninsured would actually fall under universal coverage, presumably because the incremental admissions would be for the treatment of less critical problems.

The pattern of differences between healthy and less healthy uninsured children is similar to that for adults. The gaps are larger for the less healthy children—who comprise about 8 percent of children who are uninsured for a full year—and are attributable to larger gaps in the number of ambulatory contacts among those receiving some medical treatment and in hospital admission rates, rather than to larger gaps in the probability of obtaining some ambulatory medical treatment.
Total Health Resource Use And Cost Under Universal Coverage

Here we answer two important questions that are often asked about proposals that would assure universal health insurance coverage: (1) Do we have sufficient health resource capacity to serve the added demands of the newly insured? (2) How much will it cost to cover all of the uninsured?

Increase in use and resource capacity. Under universal coverage, ambulatory contacts would increase by 45.1 million for adults and 9.8 million for children, Hospital days would increase by 5.6 million for adults and 0.5 million for children. This reflects most of the added demands that would be placed on our health resources under universal health insurance, because these services comprise most of the health care services that would be covered under a national health reform benefit package.

We estimate that total ambulatory contacts would rise by 54.9 million. To put this figure in perspective, it represents only 3.8 percent of all such contacts in 1991 (based on aggregate estimates from the HIS), and many plans would “phase in” the increased coverage over several years during the last half of this decade. To indicate the pressure this would put on physicians’ capacity for treatment, between 1990 and 2000 the total number of active physicians is expected to grow by about 20 percent. Because the total population is expected to grow by only 7 percent over this same period, there would be plenty of added capacity to absorb the added demand of the newly insured without cutting back on the access to physicians enjoyed at the beginning of the decade.

Turning to inpatient hospital care, 6.1 million added days of care would be sought by the newly insured, 3.6 percent more days of care than provided in 1991 to all patients. Certainly, on average, there is ample capacity in the system of short-stay hospitals in the United States to handle the added demand. To provide all 6.1 million days of care to the newly insured would have raised the 1991 national occupancy rate by only 1.6 percentage points, from 66.3 percent to 67.9 percent.

Of course, showing that the total added use is a small proportion of total capacity is no assurance that all of the added demand would be accommodated. It is entirely possible that there would be localized access problems for some of these newly insured persons.

Increase in costs. A relatively small aggregate incremental cost of serving the uninsured is consistent with the relatively small incremental use of health resources in the aggregate, at least when compared with aggregate health spending. Exhibit 2 shows the value of health resources (in 1993 dollars) that would be consumed by the formerly uninsured if universal health insurance were fully implemented. Of the $60.5 billion of total inpatient hospital and ambulatory care resources used by this group, $40.6
Exhibit 2
Resource Cost Of Covering The Uninsured, In Billions Of 1993 Dollars

<table>
<thead>
<tr>
<th>Type of health service</th>
<th>Current use</th>
<th>Increased demand</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory care</td>
<td>$18.1</td>
<td>$10.1</td>
<td>$28.2</td>
</tr>
<tr>
<td>Inpatient hospital care</td>
<td>22.5</td>
<td>9.8</td>
<td>32.3</td>
</tr>
<tr>
<td>Total</td>
<td>40.6</td>
<td>19.9</td>
<td>60.5</td>
</tr>
</tbody>
</table>

Source: Authors’ estimates. See text for details.
Note: Ambulatory care includes visits at all sites, including physicians’ offices, clinics, and hospital outpatient departments.

billion would have been consumed had they been uninsured, and only $19.9 billion of new resources would be required in response to the new insurance coverage. The incremental costs would be about evenly divided between ambulatory care ($10.1 billion) at all sites—including physicians’ offices, clinics, and hospital outpatient departments—and inpatient hospital care ($9.8 billion).

This $19.9 billion for increased demand represents merely a 2.2 percent increase in total national health spending. An intuitive explanation of why this proportion is so small follows. The uninsured represent about 15 percent of the total population. Hospital and physician services account for about 60 percent of national health spending on all services. Increased demand accounts for about 33 percent of total use. The product of these proportions suggests that increased demand is likely to be about 3 percent of total health spending, a figure consistent with our detailed estimate.

Our estimates of the uninsured access gap, and so of the demand that would be induced by universal coverage, assume that under universal coverage the currently uninsured would use health services at the same rate as currently insured persons with similar economic and demographic characteristics. Other work, however, suggests that the currently uninsured might continue to use services at lower rates—hence, our estimates may overstate induced demand by as much as 50 percent. If this were the case, added spending under universal coverage would still represent less than a 3 percent increase in total national health spending.

A concept related to cost is the added flow of insurance premiums that would be associated with moving to universal insurance. The magnitude of total premiums for the newly insured reflects both the transfer of costs for services that would have been consumed by the uninsured (but not financed by insurance) and the costs of increased demand under insurance. The estimated total resource cost of $60.5 billion in Exhibit 2 is approximately the same as the value of new premiums that would be paid. Part of the total value of resources, cost sharing paid by patients, would not appear in the premium, however. But the costs of insurance administration would have to be added to the health care resource costs to calculate a premium.
Based on national health expenditure data, these adjustments prove to be nearly offsetting, leaving the total unchanged at about $60 billion.\(^{15}\)

Finally, the premium estimate depends on details of the benefit package. Under most reform proposals, benefits would include prescription drugs and other professional services. Based on the national health expenditures, private insurance payments for other professional services and prescription drugs are about 13 percent of private payments for hospital and physician services. If payments for the newly insured for these services remained the same proportion as they are under current private insurance plans, including them in the benefit package would raise the $60 billion for ambulatory and inpatient hospital services shown in Exhibit 2 to about $70 billion.\(^{16}\)

This research was sponsored by the office of Technology Assessment, the Congressional Research Service, and The Robert Wood Johnson Foundation. Any views expressed herein should not necessarily be attributed to the sponsors or to RAND. The authors thank Roald Euller and Ellen Harrison for computer programming assistance, and Jeff Miller and Audrey Smolkin for research assistance.

NOTES

1. There is evidence of inappropriate and unnecessary use of health care. Eliminating the “access gap” likely would result in an increase in inappropriate services as well as in needed care by the currently uninsured. That is, raising use rates of the uninsured to the current use rates of the insured may not be the goal of reform. Indeed, a second objective of health system reform is to promote appropriate use of services and to contain costs.


3. Long and Rodgers, “Effects of Being Uninsured on Health Care Service Use;” and E.B. Keeler et al., The Demand for Episodes of Medical Treatment in the Health Insurance Experiment, R-3454-HHS (Santa Monica, Calif.: RAND, 1988).

4. If the part-year uninsured have 0.43 years of uninsurance on average, our figures imply
thirty-seven million person years of uninsurance annually; that is, thirty-seven million full-year-equivalent uninsured people. This figure is consistent with the most recent CPS data, which put the number of uninsured at any point in time at thirty-seven million. Since in any month there are thirty-seven million uninsured people, there will be thirty-seven million uninsured person years annually, even though some of the uninsured at one point in time will move into the insured state and others insured at that time will become uninsured over the year.


6. Some adjustments to the national health expenditure estimates for differences in that source’s definition of hospital care and the definition underlying the utilization estimates were made. See Long and Marquis, Universal Health insurance and the Uninsured.

7. Our estimates here refer to the full access gap, that is, the difference in the health care that a person would use if insured for a full year relative to use if uninsured for the full year. Some persons are uninsured for only part of a year, and we take partial-year insurance coverage into account when we convert these estimates into the costs of reform as described above.

8. For details on the access gap in both the probability of use and the number of visits by users, see Long and Marquis, Universal Health insurance and the Uninsured.


11. American Hospital Association, American Hospital Association Hospital Statistics, 1992-93 (Chicago: AHA, 1992), 8-9, Table 2A.

12. Most of the remaining services—including nursing home services, home health care, and dental and vision care—would not be covered by typical health reform benefit packages for the newly insured.


14. We also used other data to test the sensitivity of our results to the calculated unit costs of service and to the possibility that the uninsured would use a different intensity of services once they become insured as compared with the intensity of services for the currently insured. These tests suggest that the range of induced demand is between about $15 billion and $29 billion. Nonetheless, as a proportion of resource capacity and total spending, universal coverage would imply only a small increase.

15. See Long and Marquis, Universal Health Insurance and the Uninsured for elaboration and supporting evidence.

16. This estimate is consistent with an estimate based on premiums in the current employer-group insurance market. Based on data from the 1991 Health Insurance Association of America survey of employers (C.B. Sullivan et al., “Employer-Sponsored Health Insurance in 1991,” Health Affairs [Winter 1992]: 172-185) and preliminary data from a Robert Wood Johnson Foundation survey of employers, the per person premium for employer-sponsored coverage is about $2,000 in 1993 dollars. Multiplying this by the number of person years of uninsurance annually (that is, full-time-equivalent uninsured persons) of thirty-seven million yields an estimate of the aggregate premium cost of insuring the uninsured of $74.5 billion.