14. We ran the Hausman specification test to compare the fixed effects models to random effects models. In each case, the insignificant result suggests that the fixed effects model is the appropriate one. The dummy variables, as expected, have a substantial impact on the fit of the regression line and reduce the degree of autocorrelation. Their inclusion does not have much impact on the coefficients that indicate the impact of family planning. If anything, the introduction of state effects appears to reduce the size of the family planning coefficients; the result is a conservative estimate of the impact compared to the ordinary least squares estimates.

15. Because Medicaid is an insurance program, its impact in a state will depend on the cost and quality of care delivered by the amalgamation of Medicaid providers.

16. In fact, title X has forbidden the use of its funds for abortion since 1970 when it was first enacted. During the 1980s, the national office of Planned Parenthood Federation of America (PPFA) became a vocal advocate for freedom of choice in the abortion debate. Because many PPFA affiliates were title X grantees, the antiabortion movement tried to link all Planned Parenthood activities to abortion.

17. Although food stamps and Medicaid are not directly tied to welfare, welfare eligibility is often linked to receipt of these benefits.

An important goal for the nation has been to reduce the number of uninsured Americans, particularly those in working-class families. One major policy option is helping lower-income families purchase insurance by offering government subsidies. The 1997 creation of the Children's Health Insurance Program (CHIP) signals the nation's continuing commitment to expand coverage using public programs. Earlier in the decade, many states began initiatives to offer insurance coverage to families whose incomes were above the traditional limits of eligibility for programs like Medicaid. These initiatives included state-funded health insurance programs like Washington's Basic Health Plan and Minnesota's MinnesotaCare, as well as Medicaid Section 1115 demonstration projects like Tennessee's TennCare or Hawaii's QUEST (Wooldridge et al. 1996; Coughlin et al. 1997; Nichols et al. 1997; Lipson and Schrodel 1996; Diehr et al. 1996; Call et al. 1997). These programs required that some participants pay premiums on a sliding-scale basis. The enabling legislation for CHIP also let states require that enrollees pay a modest share of the premiums for CHIP coverage.

In contrast, Medicaid is free to participants. Since the greatest numbers of uninsured people are in working households of low to moderate income (Hoffman 1998), initiatives to expand coverage to people with incomes above the poverty level have led to the question of whether the recipients should bear responsibility for paying a share of the cost of insurance.

Policy discussions about cost sharing raise many issues. Proponents note that sliding-scale premiums target subsidies toward lower-income people and provide less governmental assistance to those with more income. Some believe that cost sharing promotes personal responsibility and eases some of the political and social stigma associated with Medicaid. Premium sharing makes the government assistance more like private health insurance, in which cost sharing is the norm, and may serve as a better bridge between public and private health insurance. Similarly, requiring people to pay part of the premiums might reduce "crowd out," a practice in which some people drop private coverage to take advantage of the free (or less expensive) public benefits (Cutler and Gruber 1997; Call et al. 1997; Dubay and Kenney 1996, 1997). Finally, cost sharing reduces governmental outlays, because beneficiaries shoulder some of the expenses and participation tends to be lower.

However, requiring that beneficiaries pay part of the premium also has disadvantages. Most important, this cost sharing reduces participation among the target population. Many families may choose to use their income to pay for food, rent, clothing or other goods rather than buy health insurance. Some families, especially those below the poverty level, may lack the discretionary income to buy insurance, no matter how cheap. Premiums can lead to adverse selection, because sicker people may be more likely to buy than the healthy. This problem may be exacerbated if people choose to pay premiums in the months when they need medical care, but not when they are healthy.¹ The net result is that people covered might have higher-than-average medical needs, leading to higher medical expenditures per beneficiary. However, an early study of Washington's Basic Health Plan failed to find evidence of adverse selection (Diehr et al. 1993). Lastly, premiums increase programs' administrative complexity, requiring a billing system and development of policies on handling delayed payment or nonpayment of premiums.

Because states did not charge premiums until recently, there has been little information about how cost-sharing programs are designed or administered, or how they affect participants. To understand these programs, we interviewed state officials and reviewed state documents and data, including the premium schedules and participation counts. This paper reviews a number of the issues concerning sliding-scale premium schedules and the experience of four states—Hawaii, Minnesota, Tennessee, and Washington—that initiated such programs. We focus on policies and experiences in 1995, although we briefly discuss programmatic changes since that time. First, we provide a brief background on each of these four state programs. Next, we discuss how they structured their premium programs. We then provide some preliminary analyses of participation rates and the relationship of price and participation. We conclude by discussing the policy implications of our findings.

WHAT HAPPENED IN THE FOUR STATES?

Four states served as laboratories for understanding how sliding-scale premiums work for low- to middle-income families. Hawaii, Minnesota, Tennessee, and Washington developed relatively large, subsidized insurance programs in the early 1990s. Each had ambitious goals to reduce the number of uninsured people and each wanted to cover uninsured working families. At the same time, state policymakers felt it was appropriate to require that higher-income participants contribute to the cost of insurance. As a result, the states designed cost-sharing systems, including sliding-scale premiums charged to beneficiaries. An additional element in these states' reforms was the development of managed care systems. Hawaii, Tennessee, and Washington required that participants join capitated managed care plans, and Minnesota required joining a health plan in 1996.

While they all were state-initiated, the programs' origins varied. Washington and Minnesota began programs using only state funds. While this meant that they had more flexibility, it also meant that budgets and benefit packages were tighter. Tennessee's and Hawaii's programs were funded jointly by the state and the federal governments as Section 1115 Medicaid demonstration programs. Thus, the federal government needed to approve the policies and some Medicaid legislative requirements still applied. Tennessee's TennCare and Hawaii's QUEST had broad, Medicaid-like benefit packages and were barred from charging premiums to those who were previously eligible for Medicaid.

TENNCARE

In January 1994, Tennessee implemented one of the most expansive subsidized insurance programs in the nation. Initially, all uninsured people, if they were uninsured on a given date before application, were eligible to join, but subsidies were available only for those with family incomes up to 400% of the poverty level. While TennCare was free to those below poverty, premiums gradually rose above that level. TennCare recipients with incomes above poverty also were subject to deductibles and copayments. Because of budget constraints, TennCare stopped enrolling new uninsured people in January 1995. It continued to enroll people covered under regular Medicaid eligibility rules and those who were uninsurable due to special medical conditions. The uninsured people already participating in TennCare were grandfathered and continued to get
insurance. In 1997, the program was reopened to displaced workers and children under the state’s CHIP.

In the beginning, Tennessee’s program had some serious administrative weaknesses. Because of its mail application system, applicants usually did not know how much they owed until after they were enrolled. Further, the state failed to send out premium billing notices for six months and did not send another billing notice until December 1994. When participants finally received billing notices for back-owed premiums, many were unable or unwilling to pay. The state dropped more than 60,000 participants for nonpayment during 1995, while thousands of others covered their debts by paying under an installment plan.

QUEST

Hawaii’s program began in August 1994. It served nondisabled, nonelderly people who had incomes up to 300% of the poverty level and were not covered by the state’s employer-mandated private health insurance. In 1994, people with incomes between 133% and 300% of poverty paid sliding-scale premiums and were subject to nominal copayments. Due to fiscal problems and a class action lawsuit, Hawaii undertook a series of changes to reduce caseloads and spending. In 1995, the state raised recipients’ share of premiums. In 1996, it imposed an assets test, charged full premiums to those above 100% of poverty and imposed a limited moratorium on enrolling new applicants. In 1997, QUEST eligibility was limited to those with incomes below poverty (except for pregnant women and infants with family incomes up to 185% of poverty and children ages 1 to 5 with incomes up to 133% of poverty).

BASIC HEALTH PLAN (BHP)

Washington began its BHP in 1989 as a pilot program that was administratively separate from Medicaid. Under the program, adults and children had different rules. For example, in 1995, children who were enrolled in BHP and had family incomes below 200% of poverty were counted under a Section 1902(r)(2) amendment, were eligible for federal match payments under Medicaid, and received the broad Medicaid benefits package. By contrast, adults had a more restricted benefits package that was closer to private insurance than Medicaid (e.g., no prescription drug coverage, deductibles for hospital stays). Sliding-scale premiums applied to adults at all income ranges; those with no income were charged $10 per month for an individual or $20 for a family. The premium subsidies declined to zero for people with incomes above 200% of poverty, although people with higher incomes could enroll. In early 1996, the state reduced premium levels in a successful attempt to boost participation. Later

in 1996, the state capped the number of adults admitted because the program reached its funding limits.

MINNESOTACARE

In 1992, Minnesota created its subsidized insurance program, MinnesotaCare. It served uninsured families with incomes below 275% of poverty, as well as single adults and childless families with low incomes (up to 135% of poverty in 1996). Participants had to have been uninsured at least four months before applying and could not have had access to employer-paid (i.e., employer pays more than half the premium) insurance within the previous 18 months. Like BHP, it had a narrower benefit package (e.g., a deductible and $10,000 limit for inpatient care) than Medicaid and was administered separately. Premiums were based on a sliding scale, except that children in families with incomes under 150% of poverty (who were not otherwise Medicaid eligible) paid a flat $4 per month. Premiums were charged for adults with incomes above the maximum Medicaid income eligibility level. In 1995, MinnesotaCare operated as a fee-for-service insurance program, but it shifted to capped managed care the next year. In 1996, benefits for pregnant women and children under age two with incomes below 275% of poverty, and other Medicaid-eligible people (e.g., 11-year-olds under 100% of poverty) who chose MinnesotaCare, became eligible for federal financial matching under a Section 1115 demonstration program.

HOW WERE THE PREMIUMS STRUCTURED?

A key aspect to subsidized premium programs is the design of the premium schedule. All four states created premium structures that were progressive from no income to 200% of poverty; that is, the price (as a percentage of family income) rose for those with higher incomes. Each state charged full premiums to families at the top end of the income range. Thus, prices were quite high at the top of the income range—more than 5% of family income. Tables 5.1, 5.2, 5.3, and 5.4 provide data about the premium levels in 1995 for a single adult and for a family of four.

There were some interesting differences in how states structured their programs. Minnesota and Washington charged small amounts even to those with incomes below the poverty line (e.g., a family with no income would pay $12 per month in Minnesota or $20 in Washington), while those below poverty in Tennessee and Hawaii were not charged anything. Minnesota and Hawaii capped eligibility to those with incomes below 275% or 300% of poverty, respectively, while people with incomes beyond the subsidy limit could enroll in TennCare or BHP, but had to pay full premiums.

States also varied in the relative price of premiums for individuals and families. Minnesota and Washington had similar or lower prices for families
TABLE 5.1
Premium Levels for Participants in Hawaii QUEST, Early 1995

<table>
<thead>
<tr>
<th>Income as % of Poverty</th>
<th>Individual Premium Share</th>
<th>Family of Four Premium Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monthly Payment ($)</td>
<td>% of Full Premium$^a$</td>
</tr>
<tr>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>150%</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>200%</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>250%</td>
<td>113</td>
<td>60</td>
</tr>
<tr>
<td>300%</td>
<td>188</td>
<td>100</td>
</tr>
<tr>
<td>350%</td>
<td>Not eligible</td>
<td>Not eligible</td>
</tr>
<tr>
<td>400%</td>
<td>Not eligible</td>
<td>Not eligible</td>
</tr>
</tbody>
</table>

Note: No cost sharing at or below 133% of poverty or for pregnant women and children under 185% of poverty.

$^a$Assumes a premium of $188 per person, single or family. Every additional person is added at the rate of a single person, up to a family size of five. The premium shares are based on the percentage of poverty, but the actual costs vary with the island and the plan selected by the client, includes medical and dental costs.

(measured as a percentage of family income) than for single adults.$^4$ To do this, both states provided higher subsidies (as a percentage of the full premium) for families than individuals. In contrast, Tennessee and Hawaii used similar subsidies for individuals and families, expressed as a percentage of the full premium; the net effect was that families paid a larger share of family income than individuals. In Hawaii, higher-income families could owe as much as 20% of family income at the upper range of income. To keep relative premium levels similar for families and individuals, states need to offer higher subsidy rates for families.$^5$

The programs varied in how they calculated the amount beneficiaries were charged. MinnesotaCare’s fee-for-service premium was fixed and TennCare set the capitation rates for all plans. Thus, the out-of-pocket premium schedules were uniform for people with equivalent incomes. In comparison, Hawaii and Washington paid health plans different prices and provided percentage-based subsidies. Thus, there was a modest incentive to pick a less expensive plan. For example, if a person who owed a 20% premium share could choose two plans that differed in full premiums by $10, that person would have to pay $2 more to get the higher-cost plan. Neither state used a defined contribution approach, which sets a fixed-dollar subsidy at a given poverty level and makes

the beneficiary responsible for any difference between the full premium and the fixed subsidy.

Although this paper focuses on the 1995 experiences of the four states, there were changes in premium schedules over time. Two states purposefully used premiums as a caseload management tool, with mixed success. Hawaii initially increased premiums in order to reduce QUEST participation levels. Preliminary data indicate that the caseloads did not change noticeably until the state made much stricter changes in eligibility (e.g., imposing a moratorium on new cases and adding an assets test). On the other hand, Washington state was concerned that BHP had low participation, and greatly reduced BHP premiums in early 1996. Participation in the program roughly doubled after the prices were lowered.

WHAT WERE PARTICIPATION RATES?
The share of the premium that people must pay may affect participation levels and, consequently, determine the extent to which public subsidy programs
achieve their goals of lowering the number of uninsured people. Premium shares are relevant to program budgeting, since they may affect both the number of people participating and the amount of government subsidy per participant. In this section, we estimate 1995 program participation rates for three of the four states.

We used the following strategy to estimate participation rates. Each state provided data about the number of participants at varying income levels in 1995, which corresponded to differing premium levels paid by beneficiaries. We excluded data from Tennessee because it appeared that many of those who joined TennCare did not know how much they would pay when they signed up and, because of billing problems, many never paid their premiums anyway. Thus, the TennCare experience did not always reflect people’s willingness to buy coverage.

We estimated the size of the eligible population in each state by using a merged three-year sample of the 1991–1993 Current Population Surveys (CPS). The CPS data were edited to adjust for Medicaid undercounts using the Urban Institute’s TRIM2 microsimulation model (Winterbottom, Liska, and Obermaier 1995). We estimated the number of uninsured people in each state in income cohorts, where each cohort is defined by a range of 25 percentage points of the federal poverty level (i.e., 101% to 125%, 126% to 150%, etc.).

We “aged” these estimates forward to 1995 levels. Using state administrative data on the number of participants as numerators, and CPS estimates of the eligible population as denominators, we computed participation rates in each income cohort. Finally, we computed the median monthly cost of premiums for two people in a two-person family (an adult and a child) to represent the premiums paid in each income bracket (Ku and Coughlin 1997). A two-person family corresponds to typical insurance units in the programs and includes a higher- (adult) and lower- (child) cost beneficiary.

The estimates for the three states are summarized in Table 5.5 and shown graphically in Figure 5.1. Within each state, the general relationship showed—as expected—that participation fell as the amount that people had to pay rose. The figure shows a curve that summarizes the relationship of premiums as a percentage of family income and participation rates for the three states, pooled together. The method of estimating this relationship is shown in the notes section. We chose to pool the data for the three states because there was a very limited number of observations and because pooling reduces the impact of sampling error in any given observation or in any given state.
The summary curve helps illustrate the general relationship of price and participation. Three insights also can be drawn from the summary curve (and also hold true for each state individually). First, average participation rates fall as the relative price (premium share as a percentage of income) rises. Second, even when the premium share is relatively high, a few people still participate. Third, if we extrapolate the curve, it is apparent that many eligible people will not participate even when programs are free.

More specifically, the summary curve estimates that raising premium shares from 1% to 3% of family income decreases expected participation rates from about 57% to 35% among the uninsured. When the premium is 5% of income, participation is about 18%. This model suggests that a useful way to analyze the effect of cost sharing is by measuring the premium share as a percentage of family income.

The data suggest that participation levels were somewhat lower in Washington state than Minnesota or Hawaii. As mentioned earlier, Washington officials also were concerned about poor participation, and lowered premiums to increase participation in 1996. The reason for Washington’s lower participation rate in 1995 is not clear, but we can offer a few possible explanations. BHP offered a limited benefit package, which might have been less attractive than a richer Medicaid-type benefit. On the other hand, MinnesotaCare’s benefits also were limited, but that program had higher participation. BHP required that families with incomes below poverty pay premiums, but MinnesotaCare did so as well. It appeared that each of the three programs had a lot of publicity and outreach, but it is possible that public awareness was lower in Washington, although this is hard to measure. A host of other factors, such as the employment, cultural, or health care environment in each state also may affect participation rates. We were not able to control for these factors in this analysis.

This simple and preliminary analysis indicates the general relationship of premium share to income and participation rates. Many important issues that might affect participation remain unresolved. For example, is participation...
higher in states with more generous benefit packages? How do operational factors, such as outreach or ease of application, affect participation rates? More research is needed to answer these questions.

**DISCUSSION**

The experiences of Hawaii, Minnesota, Tennessee, and Washington demonstrate that sliding-scale premium programs for low-income individuals and families are feasible. There are some administrative complexities, however. Implementing such a system requires that states carefully design premium share schedules, establish administrative policies for problems such as what to do when people do not pay their premiums, and arrange for either the state agency or health plans to administer bill collection.

More recent interest in premiums has been fueled by the creation of CHIP programs. Federal legislation lets states charge premiums or copayments, particularly when the CHIP programs are independent of Medicaid. For example, children in families with incomes above 150% of poverty cannot bear total costs greater than 5% of family income. Preliminary information indicates that the actual CHIP premiums tend to be very low (e.g., $5 to $10 per child per month) and generally have just one or two levels (Riley and Pernice 1998). While we believe that the experiences reported here are relevant to CHIP programs, they are not identical. Most important, CHIP programs are only for children, while the programs in the four study states were for adults as well as children. It is possible that the willingness to buy insurance differs for situations in which only children or the whole family are covered.

States likely will continue to test ways to expand health insurance coverage using subsidy programs for working-class families. The experience of these four states illustrates the possibilities and limitations of such programs. However, these findings are not generalizable to all possible subsidy arrangements: they reflect a handful of states with specific types of programs. Another commonly mentioned policy option is subsidizing the purchase of private insurance using tax credits or vouchers. This option poses a different set of operational and conceptual issues and the findings of this study are not applicable.

In designing and implementing subsidized insurance programs, there is an inherent tension between the goals of lowering governmental cost or encouraging personal responsibility (leading to higher premium shares) and maximizing participation (leading to lower premium shares). The data from these states suggests that, while many low-income people would pay premiums to purchase subsidized health insurance, their willingness to pay is limited. If, for example, the government subsidizes half the full cost of insurance for a family of four with an income of 200% of poverty, the family’s out-of-pocket price still would be relatively high (about 7% of income). This study suggests that few, perhaps

less than 10% of the uninsured, would participate if they had to pay 7% of their income for health insurance. Surveys consistently show that a major reason that people lack health insurance is because they say they cannot afford it (Thorpe and Florence 1999). It seems likely that future efforts to expand insurance coverage will require premium sharing by some beneficiaries. In designing and implementing these new initiatives, policymakers need to be careful in balancing budget resources with the goal of reducing the number of uninsured people.

**NOTES**

The authors are grateful to officials in Hawaii, Minnesota, Tennessee, and Washington for providing information about their programs. A number of colleagues provided useful assistance or advice about this paper, including (in alphabetical order): Linda Blumberg, John Holahan, Bethany Kessler, Sharon Long, Shrum Rajan, Tim Waidman, Sean Williams, and Steve Zuckerman. Anonymous reviewers and Kathy Swartz, the journal editor, also provided helpful advice. All opinions are those of the authors and should not be viewed as positions of the Urban Institute or the Robert Wood Johnson Foundation.

1. Programs can create some safeguards to minimize the extent of drop-out/drop-in. For example, if people voluntarily drop out of MinnesotaCare or are terminated for nonpayment of premiums, they are barred from re-entering the program for four months, with certain hardship exceptions. This is intended to prevent adverse selection.

2. The plaintiffs’ attorney argued that since QUEST was only for nondisabled people, those with disabilities faced more restrictive eligibility criteria. They sought relief under the Americans with Disabilities Act. In light of the lawsuit and the state’s fiscal problems, Hawaii made QUEST income eligibility much tighter.

3. Children under 200% of poverty and a few others are not charged premiums.

4. The family cost in Washington was lower than for a single adult, because children under 200% of poverty were free due to their Medicaid status.

5. A key reason for this discrepancy is that there are different economies of scale used in poverty measures and the pricing of insurance premiums. For example, poverty scales assume that a four-person family needs twice as much income as one person, while insurance costs for a four-person family are typically about three times as high as for a single adult.

6. Even so, participation rates for TennCare were similar to the other three programs.

7. To generate the summary curve shown in Figure 5.1, we used a grouped logit model (Greene 1990) of the form:

   \[ \ln \left( \frac{p_i}{1 - p_i} \right) = \beta + \beta X_i + \epsilon_i \]

   where \( p_i \) is the participation rate for a given income poverty "cohort" in a state, \( X_i \) is the premium level and other related income measures, \( \beta \)s are estimated coefficients and \( \epsilon_i \) is the error term. Weights were based on the number of people in each income bracket, normalized to average 1.0. There are 21 observations, shown in Table 5.2, each
REFERENCES

Other two points that warrant additional examination are the role of the health insurance market in the United States, the potential impact of recent policy changes on the performance of health care systems, and the importance of understanding the relationship between health care utilization and health care financing. For example, a study conducted by the National Bureau of Economic Research found that the introduction of health maintenance organizations (HMOs) in the United States was associated with a decrease in hospital admissions and an increase in outpatient visits. However, this relationship was not observed in the United States, where HMOs are less common. The findings suggest that HMOs may have different effects on health care utilization depending on the country.

We also examined the models under different assumptions about the role of the health insurance market. In one model, the role of the health insurance market was assumed to be negligible, while in the other model, the role of the health insurance market was assumed to be significant. The results showed that the role of the health insurance market was significant in both models, but the magnitude of the effect was stronger in the model where the role of the health insurance market was assumed to be significant.

In conclusion, the role of the health insurance market in the United States is significant and has a strong impact on health care utilization. However, the exact role of the health insurance market depends on the specific assumptions and models used for analysis. Further research is needed to better understand the role of the health insurance market in the United States and how it affects health care utilization.