© Health Research and Educational Trust
DOI: 10.1111/j.1475-6773.2011.01376.x
RESEARCH ARTICLE

The Effect of HIFA Waiver Expansions on Uninsurance Rates in Adult Populations

Adam Atherly, Bryan E. Dowd, Robert F. Coulam, and Gery Guy

Research Objective. To evaluate the effect of the Health Insurance Flexibility and Accountability (HIFA) demonstrations on the rate of uninsured. The policy purpose of the HIFA demonstrations is to encourage “new comprehensive state approaches” that will increase the number of insured. HIFA interventions include changes in benefit packages, eligibility rules for public programs, and state subsidization of private health insurance premiums. Some states emphasized private insurance (premium assistance), whereas others placed greater emphasis on expanded eligibility for public insurance.

Data Sources/Study Setting. Data were drawn from the Current Population Survey from 2000 to 2007. The target populations for the HIFA waiver demonstrations consisted of individuals who were eligible for the HIFA waiver demonstrations in demonstration states.

Study Design. The estimation approach was a probit model using a difference-in-differences approach.

Principal Findings. In states that fully implemented their HIFA waiver, HIFA increased the rate of insurance coverage by 6.4 percentage points on average in the targeted adult population, suggesting that approximately 118,848 adults gained health insurance due to HIFA. Total HIFA adult enrollment in the six states studied was 280,739. The effect size varied by state, with Maine having the largest effect and Illinois the smallest. The results were robust to different specifications of the control group.

Conclusions. Our findings suggest that public insurance initiatives that provide states with flexibility regarding eligibility and plan design are a viable policy approach to reducing uninsurance rates.

Key Words. Health economics, Medicaid, state health policies

One of the goals of the Patient Protection and Affordable Care Act (PPACA) of 2010 is to increase the rate of insurance coverage in the United States, in part, by expanding eligibility for the Medicaid program. Of particular note, PPACA extends coverage to adults—including childless adults—a group that traditionally has been excluded from most Medicaid programs. There is

relatively little research on the effect of Medicaid expansions to childless adults because childless adults generally are not eligible for Medicaid. One exception is the Health Insurance Flexibility and Accountability (HIFA) initiative, which extended Medicaid coverage to a variety of typically ineligible populations, including childless adults.

Health Insurance Flexibility and Accountability waivers are a variant of Medicaid 1115 waivers designed to encourage new state approaches to increase the number of insured individuals through Medicaid, State Children's Health Insurance Program (SCHIP), and new public-private partnerships (Benjamin 2001; Engquist and Burns 2002; Ryan 2002; Sachs 2003). HIFA waivers provided a high level of policy flexibility and federal matching funds under Medicaid and SCHIP, and allowed states to form partnerships with private industry to address the problem of the uninsured. HIFA targeted individuals with incomes below 200 percent of the federal poverty level (FPL) and allowed expansions in eligibility under existing public programs, but it encouraged premium assistance programs and development of new health plan products. HIFA explicitly allowed the inclusion of childless adults in the program. The HIFA program was begun on August 4, 2001.

Under HIFA, states were allowed to subsidize private health insurance premiums for either SCHIP or Medicaid enrollees (the latter under the Medicaid Health Insurance Premium Payment program) (Zabaza 2003). Subsidies for private health insurance premiums were intended to leverage private funds to help cover the uninsured and overcome the "welfare stigma" associated with public insurance programs for low income people. The Centers for Medicare and Medicaid Services (CMS) provided "strong encouragement" to states to further integrate, or at a minimum coordinate, Medicaid and SCHIP funding with private health insurance options (including both group and individual insurance). Flexibility was provided for premium assistance options, in terms of benefits and cost sharing. States also were allowed to use Federal funds to develop and subsidize privately offered health insurance products that groups or individuals might purchase with a public subsidy. A total of fifteen states

Address correspondence to Adam Atherly, Ph.D., Associate Professor, Department of Health Systems, Management and Policy, Colorado School of Public Health, Mailstop B119, Building 500, 13001 E. 17th Place, Aurora, CO 80045; e-mail: adam.atherly@ucdenver.edu. Bryan E. Dowd, Ph.D., is with the Health Policy and Management, Minnesota School of Public Health, University of Minnesota, Minneapolis, MN. Robert F. Coulam, Ph.D., is with the, Simmons School of Management, Simmons College, Boston, MA. Gery Guy MPH, Ph.D., is with the Department of Health Policy and Management, Rollins School of Public Health, Emory University, Atlanta, GA.

Table 1: Approved Health Insurance Flexibility and Accountability (HIFA) Waivers

State	Key Dates for HIFA Waiver	Original Estimate of Potential Eligibles	Total HIFA Enrollment at 5/31/2007	Eligibility/Target Group
Arizona*	Approval: 12/12/01 Implementation: Phase 1: 11/1/01 Phase 2: 1/1/03 Approval: 3/3/06 Implementation: 10/1/06	48,250	49,137	Childless adults up to 100% FPL not eligible for Medicaid (Phase I); Parents of Medicaid and SCHIP eligible children 100–200% of FPL (Phase II); No enrollment cap Childless adults and parents without other coverage who are not eligible for Medicaid or Medicare and have family incomes ≤ 200% of FPL Parents not eligible for Medicaid up to 200% FPL (not implemented)
Arkansas		80,000	323	
California	Approval: 1/25/02 Implementation: N/A	275,000	0	Children and uninsured pregnant women 134–200% FPL; No enrollment cap
Colorado	Approval: 9/27/02 Implementation: 10/8/02	13,200	1,429	Parents, childless adults, and uninsured pregnant women 133–185% FPL not eligible for Medicaid Enrollment cap (1,400)
Idaho	Approval: 11/4/04 Implementation: 11/4/04	1,400	395	Children with family incomes 133–185% FPL, parents of SCHIP eligible children 39–185% FPL and childless adults; No enrollment cap
Illinois*	Approval: 9/13/02 Implementation: 10/1/02	300,000	143,794	Childless adults with income up to 125% FPL (only implemented up to 100%); No enrollment cap
Maine*	Approval: 9/13/02 Implementation: 10/1/02	11,500	17,449	Childless adults with income up to 35% FPL not eligible for Medicaid or Medicare
Michigan*	Approval: 1/16/04 Implementation: 1/16/04	62,000	56,916	Pregnant women up to and including 185% of FPL; Parents, caretaker relatives, and legal guardians up to 200% FPL
Nevada	Approval: 11/2/06 Implementation: 12/1/06	17,000	85	

continued

Table 1. Continued

State	Key Dates for HIFA Waiver	Original Estimate of Potential Eligibles	Total HIFA Enrollment at 5/31/2007	Eligibility/Target Group
New Jersey	Approval: 1/31/03 Implementation: 3/1/03	12,000	2,422	Uninsured parents and caretakers of Medicaid and SCHIP children up to 200% FPL; Uninsured pregnant women 185–200% FPL, not eligible for Medicaid; No enrollment cap
New Mexico*	Approval: 8/23/02 Implementation: 7/1/05	40,000	7,444	Uninsured working parents of Medicaid and SCHIP eligible children 27–200% FPL; Childless working adults 0–200% FPL; No enrollment cap
Oklahoma	Approval: 9/30/05 Implementation: 11/1/05	50,000	2,228	Working disabled adults with income up to 200% of the FPL; Nondisabled working adults
Oregon*	Approval: 10/15/02 Implementation: 11/1/02	60,000	41,057	(self-employed/small employer) or unemployed not eligible for Medicaid with incomes <185% of FPL
Utah	Approval: 12/1/06 Implementation: 12/1/06	1,250	343	Children and pregnant women 170–185% FPL
Virginia	Approval: 6/30/05 Implementation: 8/1/05	1,770	734	Parents and childless adults 100–185% FPL Enrollment cap (440,000) Coverage for adults, spouses, children up to 150% FPL (200% for SCHIP children); Employees' cost to participate > 5% income Children and pregnant women 133–200% FPL; No enrollment cap

* HIFA evaluation state.
FPL, federal poverty level.

received HIFA waivers between December 2001 and December 2006 (Table 1).

The purpose of our analysis is to determine whether adult enrollment in HIFA programs had the effect of reducing the uninsurance rate in HIFA states. The HIFA programs would reduce the uninsurance rate as long as HIFA enrollees were drawn from the ranks of the previously uninsured rather than from individuals previously enrolled in public or private health insurance programs. Thus, our analysis addresses whether HIFA “crowded out” public and private health insurance coverage.

The unique nature of each state's program means that it is not possible to identify the effect of particular elements of each state's approach that lead to either a successful or unsuccessful expansion, or to infer that what worked in one state would work in another. Instead, the “intervention” in question is the *flexibility* that states were granted under the HIFA waivers.

Because states were not assigned randomly to participation in the HIFA demonstrations, the choice of control groups is particularly important. We compare the postimplementation experience of the target population in HIFA states to (1) the preimplementation experience of the same group in the same HIFA states; (2) the pre- and postimplementation experience of individuals in HIFA states lying just outside the HIFA income eligibility ranges in their states; and (3) the experience of similar individuals in states without HIFA demonstrations. We find that our results are robust to different model specifications.

BACKGROUND

Health Insurance Flexibility and Accountability was designed to expand insurance coverage to target populations previously ineligible for public assistance. The mechanisms for coverage expansion were public subsidies for private health insurance premiums or “premium assistance,” and expansions of Medicaid eligibility. Premium assistance was a plausible strategy to increase insurance coverage. Premium assistance could be less costly to the public because employers would pay a portion of the cost of the health insurance. Premium subsidies provide a way to balance increases in insurance against the threat that expanded public coverage will crowd out private willingness-to-pay for health insurance (Holahan 1997). However, there are a number of challenges to implementing a premium assistance program. First, difficulties in the employer insurance market will be manifest in any premium assistance program, including the fact that fewer employers are offering health insurance

and that the premiums for those who do so are rapidly rising (Shirk and Ryan 2006). Added to this are particular challenges for the states, including administrative costs and resource requirements, the difficulty of arranging wrap-around public coverage when the private benefit does not meet state HIFA requirements, and conflicting policies between the employer sponsored insurance (ESI) and the public program (Curtis and Neuschler 2003). Finally, premium assistance programs pose a new outreach challenge to states, not only to identify and target working families but also their employers. States also must engage in a potentially complex, time-consuming enrollment process (Lutsky and Hill 2003).

Thus, although CMS “strongly encouraged” premium assistance (Artiga and Mann 2005; CMS 2005), states differed widely in the extent to which premium assistance was featured in their HIFA demonstrations (Owcharenko 2002; Gill and Mann 2003; CMS 2005; Coughlin et al. 2006). In practice, most of the states that applied for comprehensive waivers did not include a premium assistance program as a central feature to their waiver initiatives (Alker 2003; Lutsky and Hill 2003).

Medicaid expansions were another plausible strategy for expanding insurance coverage because other (non-HIFA) Medicaid expansions using 1115 waivers without the premium assistance component have been shown to lead to decreases in the rate of uninsurance (Lambrew 2001; Cunningham, Hadley, and Reschovsky 2002; Kronick and Gilmer 2002; Aizer and Grogger 2003; Busch and Duchovny 2005; Long, Zuckerman, and Graves 2006). Gilmer, Kronick, and Rice (2005) report wide variations in public coverage gains for adults across the country, but all five states with the greatest increase in public program enrollment had Section 1115 waivers. Similarly, Ku and Broaddus (2000) found that both children and parents in 1115 waiver expansion states experienced higher participation rates in Medicaid than children and parents in nonexpansion states. The states with broad, early expansions experienced a 16 percentage point increase in their young child participation rate, whereas other states experienced a much smaller 3 percentage point increase. Parent participation rates in early expansion states increased 4 percentage points while decreasing 8 percentage points in other states.

An important concern about public insurance expansions is the danger of crowding out private willingness-to-pay for health insurance. Earlier Medicaid expansions did not affect overall employer offering of insurance to workers, but it did reduce the probability that a firm offers family coverage, and the percentage of full-time workers accepting employer sponsored coverage offered to them (Shore-Sheppard, Buchmueller, and Jensen 2000). Dubay and

Kenney (1997) estimate that 45 percent of the increase in Medicaid coverage for near-poor pregnant women is a result of the crowding out of ESI. Similarly, Lo Sasso and Buchmueller (2004) found that the enactment of SCHIP led to a small, but statistically significant reduction in the rate of uninsurance for children, but a crowd-out rate of nearly 50 percent. Davidoff, Kenney, and Dubay (2005) found that the SCHIP expansions resulted in a 9.8 percentage point increase in the proportion of children with chronic conditions reporting public insurance and a 6.4 percentage point decline in the proportion of uninsured. As a result, about a third of the increase in public insurance could be attributed to crowd-out. Kronick and Gilmer (2002) found a 45 percent crowd-out effect. Caution should be exercised in directly comparing our results with earlier studies, however, because the target populations, program specifics, and years of study are markedly different.

This analysis examines the HIFA demonstrations several years after the initial studies. During the intervening years, ESI had several notable changes, including increases in cost-sharing and premium contributions that may affect the “crowd-out” of public programs.

METHODS AND DATA

The target populations for the HIFA waiver demonstrations consisted of individuals who were eligible for the HIFA waiver demonstrations in demonstration states. The income limits for the HIFA-eligible target population vary from one HIFA state to another and many states imposed additional requirements, such as working full time. We define the target population in a state with a HIFA demonstration by the precise income limits used in that state.

Defining the Treatment Group (a “HIFA State”)

One way to define the treatment group is to examine the experience of the fifteen states that applied for and received a waiver. However, only eight of the fifteen states that received a waiver actually implemented large-scale, long-term efforts to reduce the number of uninsured. There were seven waiver states that did not implement such programs:

- California never implemented its waiver due to budget shortfalls.
- New Jersey used HIFA as a temporary measure to clear a state-program waiting list rather than as an eligibility expansion.

- Five state programs enrolled <1,000 individuals (Arkansas, Idaho, Nevada, Utah, and Virginia). These programs may have achieved a large proportional reduction in the uninsured, but the cell sizes in the national datasets used in our study would not yield adequate statistical power to detect program effects in these small-scale states.

Thus, the total impact of HIFA in the fifteen waiver states necessarily would be small as relatively few states actually implemented a large-scale demonstration consistent with the original legislative intent.

An alternative definition is to ask whether the states that both received a waiver and implemented a program with sufficient enrollment to create a potentially detectable treatment effect (e.g., the eight states with scale programs—those with 1,000 or more enrollees) actually reduced the number of uninsured individuals in the target population. It is important to remember that the “success” of a HIFA demonstration in any state is not judged merely by enrollment. A large HIFA demonstration with significant enrollment could have a small effect on uninsurance if most of its enrollees came from individuals with public or unsubsidized private insurance coverage. Similarly, a relatively small program (but with at least 1,000 enrollees) could have a significant impact if most of its enrollees formerly were uninsured. Thus, the HIFA effect in this analysis combines the effect of enrollment volume with the degree of crowd-out—whether the HIFA program on balance brought new coverage to uninsured adults in the eligible population, rather than substituting for existing coverage.

Of the eight programs with substantial enrollment, two programs (Colorado and Oklahoma) used their HIFA waivers to target coverage toward specialized populations (pregnant mothers or disabled persons), which cannot be evaluated using publicly available national data (see below). That left six waiver states (Arizona, Illinois, Michigan, Maine, New Mexico, and Oregon) that implemented long-term, large-scale programs whose potential effects could be detected in our national datasets. These states were the focus of our analysis.

The seven omitted states fall into several distinct categories. Two states (California and New Jersey) did not implement HIFA in a way intended to decrease uninsurance. Virginia simply had a very limited program (734 enrollees). Idaho and Utah implemented programs that were similar to the programs in the seven waiver states in terms of target population, but the combination of small state population and late implementation resulted in insufficient sample size in the CPS data. Similarly, both Arkansas and Nevada began their programs too late to be included in our sample.

All seven of these states targeted childless adults at various income eligibility thresholds. The states' use of HIFA as a mechanism to extend coverage to childless adults was a source of controversy during the SCHIP reauthorization in 2007. However, four of the seven states also included other populations, such as parents or children beyond the prevailing Medicaid income eligibility levels in those states. Our analysis focuses only on insurance rates for adults.

Data

Our primary data source is the Current Population Survey (CPS) from 2000 to 2007. The CPS is a national survey collected by the Census Bureau. It is designed to establish national trends in variables of interest, such as unemployment and health insurance coverage rates. To identify eligibility criteria in each of the HIFA states (state-level variables), we used reports from CMS, the Urban Institute report to CMS (the first phase of the HIFA evaluation), and program descriptions from the Kaiser Family Foundation. We identified the target populations by income, age, family status, employment, and years of eligibility. We separately identified years of initial implementation (i.e., partial years) and years when the HIFA program was fully implemented. We also obtained data from the Kaiser Family Foundation listing state-by-state eligibility for the Medicaid and SCHIP programs (again, state-level variables). Our total sample size was 281,542. This includes 6,259 individuals who were eligible for the HIFA demonstration that took place in their state, but there was no demonstration active in the year they appeared in the CPS data. These individuals are very similar to the target group, but their data come from the period before the HIFA demonstration was implemented in their state. There were a total of 5,079 individuals who were eligible for the HIFA demonstration that took place in their state during years when there was an active HIFA demonstration in their state.

Methods

Because states were not assigned randomly to implementation of HIFA demonstrations, we face the possibility of omitted variable bias—factors unobserved to the analyst that could be correlated with both the implementation of a HIFA demonstration and the subsequent probability that a person in the target population has insurance. We address that problem through careful choice of control groups and use of difference-in-difference and regression

discontinuity models. Because the HIFA income eligibility limits are “sharp” (precisely defined), the experience of individuals lying just above the state-specific income limits provides a counterfactual that is similar to a regression-discontinuity model. We refer to these individuals as “nearly eligible.”

Our difference-in-differences model compares changes in the probability of insurance from the period prior to the implementation of HIFA to the period following implementation of HIFA for (1) individuals in HIFA target population in each HIFA state to (2) individuals lying just above the income eligibility limits of the target population in each HIFA state.

We also examined data from states that did not implement a HIFA demonstration during the entire observation period. The non-HIFA states provide a weaker control because states were not randomized to participation in HIFA. Nevertheless, the non-HIFA states provide some information on the national trend in insurance rates, and we include a state random effect to capture time-invariant differences in state-level variables associated with insurance coverage.

We found that our results were robust to different specifications of the control groups, as well as different definitions of “nearly eligible” (income <200 versus 300 percent of the FPL, but greater than the state-specific eligibility level). The estimated effects of the HIFA demonstrations were statistically significant at a minimum 0.01 level in all specifications. We discuss those results further in the next section.

Our estimated equation is:

$$Y_{ijt} = X_{ijt}\beta + \beta_T T_{ij} + \beta_P P_{ijt} + \beta_I [T_{ij} \times P_{ijt}] + u_j + u_{ijt} \quad (1)$$

where the subscripts i , j , and t stand for the i th individual in the j th state in the t th time period; $Y = 1$ if the individual is insured and 0 otherwise; X is a set of control variables; T , a set of variables representing treatment and control groups as described below.

$p = 1$ if the observation is from the postimplementation period and 0 if the observation is from the preimplementation period; u is the unobserved error; T is a binary variable equal to 1 if the subject is in the treatment group and 0 if the subject is in the control group. Letting t indicate the postintervention time period and $t - 1$ indicate the preintervention time period, the difference between the post- and preimplementation values of Y for the treatment group is:

$$[X_{ij,t} - X_{ij,t-1}]\beta + \beta_T + \beta_P$$

The difference between the post- and preimplementation values of Y for the control group is:

$$[X_{ij,t} - X_{ij,t-1}]\beta + \beta_T + \beta_P + \beta_I$$

In our results (Table 3), the coefficient of the “HIFA Individual” variable represents differences in rates of uninsurance associated with HIFA *eligibility*, but not with *implementation* of a HIFA demonstration. This coefficient thus captures differences between HIFA-eligibles and near-eligibles across the period. The “HIFA Program Operational” variable controls for differences in time periods and states that had implemented a HIFA demonstration versus those that had not yet implemented a demonstration. β_I , the HIFA treatment effect, is represented by the coefficient on the interaction term (HIFA State $\times$ HIFA Program Operational). That coefficient is the “difference-in-differences” term.

We estimate equation (1) with a probit model. We report the marginal effects of each of our explanatory variables on the dependent variable. The marginal effect gives the percentage-point change in the percent of the population that is insured associated with a one unit change in the explanatory variable. Although the marginal effects represented by many types of interaction terms in nonlinear models (like our probit equation) vary with the values of the explanatory variables in the model, Puhani (2008) has shown that the difference-in-difference model is a special case and the treatment effect is given by the coefficient on the interaction term “HIFA State $\times$ HIFA Program Operational.”

The control variables represent factors that have been found to be associated with both the probability of having insurance and the probability of being HIFA eligible in a HIFA state. We include variables in our model for the following:

- Individual sociodemographic characteristics (income, gender, age, race, education)
- Family structure (marital status, presence of children, domicile type)
- Employment characteristics (employed full time, employer size, employer sector, union firm)
- Health (self-rated and disability)
- County characteristics associated with the probability an employer offers health insurance (firm sizes, unemployment rate, and regional indicators)
- A fixed effect for each year

Threats to Causal Inference

There are several threats to valid causal inference from our analysis. The first is the lack of true panel data, that is, the same people observed over multiple years that span the periods prior to, and following, implementation of the HIFA demonstration in the HIFA states. Even true panel data present some challenges, as individuals can change over time in ways that could affect the probability of obtaining insurance. For example, while remaining within the “window” of eligibility for their state's HIFA demonstration program, an individual's income might increase enough to facilitate the purchase of private health insurance and it could be the case that the individual would have bought insurance with or without the HIFA demonstration.

The problem associated with the lack of true panel data is similar, except that instead of a HIFA-eligible individual's variables changing from the preimplementation to the postimplementation period, the target population in the postimplementation period might represent different types of individuals than in the preimplementation period. The change in population characteristics could be serendipitous—due to factors unrelated to the HIFA demonstration itself. For example, general economic conditions might change the distribution of income within the HIFA-eligible population over time. Alternatively, the change in population characteristics could be directly attributable to the onset of the HIFA demonstration itself. The availability of a new pathway to subsidized insurance coverage could result in in-migration of eligible individuals or endogenous changes in an individual's eligibility.

As HIFA eligibility is determined primarily by income, the most likely way for an individual to become eligible would be to change his/her income level. An individual might try to increase his/her income to become HIFA eligible, if the HIFA demonstration (1) offered new access to subsidized private insurance; (2) private insurance was seen as superior to Medicaid; and (3) individuals who were Medicaid-eligible were not eligible for the new HIFA demonstration. On the higher end of the income eligibility continuum, individuals who were just above the income threshold for HIFA eligibility might make small adjustments in their income to gain access to subsidized public or private insurance under a new HIFA demonstration.

One approach to endogenous eligibility is to include a large number of control variables, which we have done. We also include a set of dummy variables for each year of the demonstration to remove any secular trends in insurance status that affect all of our study populations equally.

Finally, we performed a more direct test of whether HIFA programs resulted in a significant influx of HIFA-eligible individuals into HIFA states in the postimplementation period, relative to non-HIFA states, controlling for other variables in the analysis. In this test, we estimated a series of equations testing whether individuals in the CPS sample were more likely to be in the HIFA eligible income range in their state after their state implemented HIFA. If HIFA caused in-migration, then the proportion of the state's population in the HIFA eligible income range should be greater after implementing HIFA than before HIFA. For each of the six HIFA states, HIFA implementation was not statistically significantly related to the probability that an individual was HIFA eligible, controlling for other factors such as the unemployment rate, employer characteristics, and some exogenous demographic characteristics (e.g., family size, geographic stability). These results suggest that the changes in insurance that we observe can be attributed to the HIFA demonstrations.

The intersection of HIFA and Medicaid creates another possible way in which the HIFA-eligible population could change from the preimplementation to the postimplementation period. If a state *simultaneously* implemented its HIFA demonstration *and* made other changes that impacted insurance coverage either positively or negatively (e.g., changing its eligibility rules for basic Medicaid), and individuals who were eligible for basic Medicaid could not enroll in the HIFA demonstration, then we unavoidably would attribute those changes to the HIFA program. However, it is important to understand the limited nature of this threat. The HIFA state would have to do something unique (not done in non-HIFA states) to exactly the same target population as HIFA (and *not* the near-eligibles) at exactly the same time as the HIFA demonstration was implemented. Arizona, in fact, did change its Medicaid eligibility rules at the same time as the HIFA demonstration began, but the other five states with large HIFA enrollments did not change their basic Medicaid eligibility rules.

RESULTS

Descriptive Statistics

Descriptive statistics for the treatment group and three control groups are found in Table 2. HIFA was targeted at a population with a relatively low level of baseline insurance coverage, which was in keeping with the program's

original intent. In 2002, the year before the first HIFA program was implemented (Figure 1), the insurance coverage rate for individuals who would in due course be eligible for HIFA in their states was only 45 percent. In 2006, the first year in which all HIFA programs in all our six HIFA states were fully operational, the insurance rate for HIFA eligibles had risen to 60 percent. Neither the HIFA-eligible population in preimplementation years in HIFA states, nor the HIFA-eligible population in non-HIFA states, nor the nearly eligible populations in HIFA and non-HIFA states experienced a similar increase in insurance coverage.

The “near eligibles” in both HIFA and non-HIFA states as well as individuals in the target populations in non-HIFA states started with higher overall insurance coverage rates before HIFA but had no trend toward increased insurance between 2002 and 2006, after HIFA (Figure 1). The overall average insurance coverage for non-HIFA states was 73 percent in 2002 and 72 percent in 2006, whereas the insurance coverage rate for the HIFA state “near eligibles” was 74 percent in 2002 and 75 percent in 2006. These data suggest that in terms of simple aggregate insurance levels without controls, HIFA demonstrations appear to have had a noticeable effect on insurance rates. However, the years between 2002 and 2006 represent different combinations of states as states implemented their HIFA programs.

Pre- versus post-HIFA differences in the overall rate of health insurance coverage in HIFA states (averaging across all years) suggest a similar result.

Figure 1: Adult Insurance Rates by Population by Year

Table 2: Summary Statistics

Variable	HIFA Eligible, Pre- Implementation		HIFA Eligible, Post- Implementation		HIFA States Near Eligible (Pre and Post)		Non-HIFA States (Pre and Post)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Percentage with health insurance	51.33%	0.4999	56.72%	0.4955	69.31%	0.4612	66.39%	0.4724
Income	8,982	8,306	11,353	10,956	21,736	15,180	20,405	15,118
Household size	1.49	1.1106	1.87	1.4440	2.49	1.5946	2.36	1.5687
Number of kids	0.29	0.8605	0.61	1.1436	1.05	1.3027	0.94	1.2705
Age	34.22	13.4906	34.11	12.8423	36.52	12.2172	36.33	12.3624
Public assistance	1.60%	0.1257	2.00%	0.1401	2.92%	0.1683	2.62%	0.1597
Moved in previous 12 months	22.25%	0.4160	22.13%	0.4152	17.75%	0.3821	18.05%	0.3846
Urban	69.01%	0.4625	71.89%	0.4496	76.90%	0.4215	75.20%	0.4319
Working more than 35 hours	18.35%	0.3871	16.12%	0.3678	13.85%	0.3454	13.37%	0.3404
Self-rated health	2.32	1.1156	2.37	1.1342	2.28	1.0533	2.29	1.0759
Female	49.75%	0.5000	50.39%	0.5000	54.02%	0.4984	53.43%	0.4988
White/Caucasian	85.32%	0.3540	85.52%	0.3520	82.94%	0.3761	78.79%	0.4088
Disabled	10.61%	0.3079	13.36%	0.3403	8.86%	0.2842	9.14%	0.2882
High school graduate	35.59%	0.4788	34.86%	0.4766	37.37%	0.4838	36.82%	0.4823
High school education plus	39.51%	0.4889	39.57%	0.4891	41.76%	0.4932	40.70%	0.4913
Married	20.28%	0.4021	26.92%	0.4436	44.61%	0.4971	42.30%	0.4940
Employer: firm size								
25-99	10.87%	0.3112	9.55%	0.2939	11.08%	0.3139	10.85%	0.3110
100-499	7.37%	0.2614	7.06%	0.2562	11.23%	0.3157	9.98%	0.2997
500+	25.22%	0.4343	21.96%	0.4140	28.21%	0.4500	27.71%	0.4476
Lives in rental housing	40.19%	0.4903	44.04%	0.4965	36.56%	0.4816	42.96%	0.4950
Lives in multifamily dwelling	30.99%	0.4625	33.00%	0.4703	23.97%	0.4269	24.10%	0.4277
Self-employed	6.31%	0.2432	6.23%	0.2417	6.30%	0.2430	6.72%	0.2504
Government employee	8.09%	0.2727	5.03%	0.2186	7.69%	0.2664	7.74%	0.2672
Union employee	0.67%	0.0817	0.64%	0.0794	1.76%	0.1314	1.19%	0.1083

HIFA, Health Insurance Flexibility and Accountability.

Overall, only 51.3 percent of individuals who would meet later HIFA eligibility criteria had health insurance in pre-HIFA years. This figure increased to 56.7 percent in post-HIFA years, a 5.4 percent increase for this group (Table 2). In the control groups—both the near eligibles in HIFA states and comparable individuals in non-HIFA states (eligibles and near eligibles)—individuals on average had higher rates of health insurance at the start of this period (69.3 and 66.4 percent, respectively). HIFA eligibles in preimplementation years in HIFA states also had the lowest income, smallest households, and fewest children of any of the groups. However, these variables were similar for the HIFA eligible population pre- and post-HIFA. On most of the other sociodemographic characteristics (e.g., age, gender, self-rated health, and employer characteristics) all the groups were similar.

In addition, as shown in Table 2, HIFA eligible individuals were poorer, less urban, more likely to live in multi-family dwellings and to have moved in the previous 23 months, less likely to be female or married, with smaller family sizes than the “near eligibles.”

Multivariate Analyses

Results from the multivariate analysis are shown in Table 3. The control variables generally had the expected signs. Individuals with higher income, who were born in the United States, are older, female, and with more education all have higher overall rates of insurance. Similarly, individuals who work for a larger firm or one that is unionized are more likely to have health insurance. Lower rates of insurance are associated with having moved within the past 12 months, living in rental housing or in multi-family dwellings, and working 35 hours or more per week.

The estimated marginal effect of the HIFA demonstrations was to increase the probability of being insured by 6.39 percentage points ($p < .001$). This result was robust to different specifications of the model. We tested two different specifications of “nearly eligible”—200 percent of FPL and 300 percent of FPL, but higher than the state's Medicaid eligibility cutoff—and two specifications of state grouping: all states and HIFA states only. Among the different specifications, the marginal effect of the HIFA demonstrations ranged from 5.73 to 9.40, thus showing at least a nine percentage point increase in the probability of insurance with p -values below .001 in all specifications. The results in Table 3 represent the most conservative results, for example, those associated with 300 percent of FPL as the definition of “nearly eligible” and the inclusion of non-HIFA states in the control group.

Table 3: Probit Results for Probability of Insurance in All Health Insurance Flexibility and Accountability (HIFA) States

<i>Variable</i>	<i>Marginal Probability</i>	<i>SE</i>	<i>z</i>	<i>p > z </i>
HIFA individual	-0.10304	0.00821	-12.56	.000
HIFA program operational	0.00038	0.00417	0.09	.928
HIFA effect	0.06392	0.00900	7.10	.000
Income	0.00001	0.00000	87.72	.000
Public assistance	0.28410	0.00378	75.10	.000
Household size	0.00423	0.01256	0.34	.736
Born in the United States	0.12995	0.00223	58.40	.000
Number of kids	-0.01685	0.01257	-1.34	.180
Moved in previous 12 months	-0.03671	0.00207	-17.71	.000
Urban	0.00281	0.00201	1.40	.161
Working more than 35 hours	-0.04183	0.00234	-17.90	.000
Self-rated health	-0.01911	0.00079	-24.07	.000
Age	0.00093	0.00007	13.67	.000
Female	0.04868	0.00154	31.64	.000
White/Caucasian	-0.00751	0.00193	-3.89	.000
Disabled	0.15624	0.00247	63.16	.000
High school graduate	0.05194	0.00202	25.75	.000
High school education plus	0.13926	0.00219	63.54	.000
Married	-0.00848	0.01272	-0.67	.505
Employer: firm size				
25-99	0.06182	0.00231	26.80	.000
100-499	0.10590	0.00236	44.92	.000
500+	0.13430	0.00197	68.07	.000
Lives in rental housing	-0.06914	0.00169	-40.84	.000
Lives in multifamily dwelling	-0.07214	0.00191	-37.68	.000
Self-employed	-0.08823	0.00330	-26.73	.000
Government employee	0.07705	0.00289	26.68	.000
Union employee	0.10079	0.00652	15.46	.000
Region				
New England	0.04853	0.01360	3.57	.000
Midatlantic	0.02445	0.01928	1.27	.205
East North Central	0.01809	0.01548	1.17	.243
West North Central	0.04293	0.01283	3.34	.001
South Atlantic	-0.03060	0.01035	-2.96	.003
East South Central	-0.01253	0.01798	-0.70	.486
West South Central	-0.09699	0.00826	-11.74	.000
Mountain	-0.03322	0.01341	-2.48	.013
County unemployment rate	-0.26045	0.03725	-6.99	.000
Proportion of firms in county size				
25-99	0.02782	0.03432	0.81	.418
100-499	0.19597	0.03305	5.93	.000
500-999	0.03394	0.04698	0.72	.470
1,000+	0.13062	0.01809	7.22	.000

continued

Table 3. *Continued*

<i>Variable</i>	<i>Marginal Probability</i>	<i>SE</i>	<i>z</i>	<i>p > z </i>
Year				
2001	0.04108	0.00300	13.69	.000
2002	0.01080	0.00266	4.07	.000
2003	-0.00314	0.00269	-1.17	.243
2004	-0.02680	0.00279	-9.62	.000
2005	-0.02927	0.00281	-10.42	.000
2006	-0.03523	0.00286	-12.34	.000
2007	-0.04840	0.00293	-16.51	.000

STATE-SPECIFIC RESULTS

The preceding model estimated the average HIFA effect across all HIFA states. However, HIFA programs vary in their use of premium assistance, plan generosity, waiting periods, and other important programmatic elements. The HIFA states also have slightly different eligibility criteria and different underlying population characteristics. Finally, the states likely differ in administrative capabilities to implement these programs, a notably important consideration in premium assistance programs. We therefore should expect differences among HIFA states in the effect of HIFA on the insurance rates in the target population, although—with only six HIFA states with significant enrollment—we are unable to analyze the reasons for those differences.

Figure 2 shows the percentage of the adult population with health insurance from 2000 to 2007 in each of the six HIFA states as defined for this analysis. The control populations vary across the states depending on the HIFA eligibility definitions (e.g., the range for “near eligibility” is bounded by varying levels of maximum income eligibility for the HIFA states). Several of the states show a HIFA effect on the target population's probability of having insurance, especially Arizona, Oregon, Maine, and New Mexico. Others, such as Illinois, do not show a clear effect in the descriptive tables.

The results from the multivariate probit model are similar (Table 4). Maine had the largest effect. The Maine HIFA program increased the probability of being insured in the eligible population by 20.0 percentage points ($p < .001$). Maine was followed in effectiveness by Arizona (15.3 percentage points, $p < .001$), New Mexico (10.4 percentage points, $p < .001$), Michigan (8.3 percentage points, $p < .001$), and Oregon (5.1 percentage points, $p < .001$). The program in Illinois did not show a statistically significant effect on the insurance rate.

Figure 2: Adult Insurance Rates by Population by Year and State

DISCUSSION

The HIFA program was an attempt on the part of the federal government to provide new pathways to insurance for previously uninsured individuals. States had flexibility in their proposed approaches, but were subject to the guidelines set by Congress and CMS. The states' approaches ranged from expansions of Medicaid eligibility to premium assistance to the development of new public insurance products. States also varied in the precise definition of the populations targeted by their HIFA demonstration programs. The purpose of this analysis was to use national datasets to determine the impact of enrollment in these demonstration projects on the rate of insurance in the target populations in states with large and long-term demonstrations.

The estimated average effect of HIFA was a 6.4 percentage point increase in the probability of being insured for adults in the target populations. That is, the probability of being insured increased 6.4 percentage points from the preimplementation to the postimplementation period in the HIFA-eligible sample relative to the control groups.

The Centers for Medicare and Medicaid Services reports that total HIFA enrollment in 2006 in the six states was 280,739. Data from the CPS indicate that 1.857 million individuals in the six states we analyzed were eligible for HIFA in 2006. Our estimate is that HIFA increased the rate of

Table 4: Probit Results for Probability of Insurance—State-Specific Effects

<i>Variable</i>	<i>Marginal Probability</i>	<i>SE</i>	<i>t-Statistic</i>	<i>p-Value</i>
HIFA individual	−0.15753	0.01043	−15.10	.000
HIFA program	−0.00065	0.00511	−0.13	.899
Arizona	−0.04409	0.01075	−4.10	.000
Illinois	−0.02071	0.00789	−2.63	.009
Maine	0.01049	0.01070	0.98	.327
Michigan	0.02713	0.00712	3.81	.000
New Mexico	−0.05466	0.00905	−6.04	.000
Oregon	0.02489	0.00964	2.58	.010
Arizona effect	0.14854	0.01227	12.10	.000
Illinois effect	0.00737	0.03311	0.22	.824
Maine effect	0.20014	0.01032	19.38	.000
Michigan effect	0.07884	0.02163	3.65	.000
New Mexico effect	0.10786	0.02011	5.36	.000
Oregon effect	0.04919	0.01637	3.01	.003
Income	0.00001	0.00000	84.67	.000
Public assistance	0.29072	0.00342	84.92	.000
Household size	−0.00865	0.01450	−0.60	.551
Born in the United States	0.13566	0.00246	55.05	.000
Number of kids	−0.00383	0.01451	−0.26	.792
Moved in previous 12 months	−0.03541	0.00238	−14.85	.000
Urban	0.00321	0.00229	1.40	.161
Working more than 35 hours	−0.04225	0.00267	−15.84	.000
Self-rated health	−0.01964	0.00090	−21.77	.000
Age	0.00087	0.00008	11.28	.000
Female	0.04869	0.00174	27.95	.000
White/Caucasian	−0.00872	0.00218	−4.00	.000
Disabled	0.16473	0.00263	62.65	.000
High school graduate	0.05358	0.00229	23.41	.000
High school education plus	0.14425	0.00238	60.67	.000
Marital status	0.00390	0.01465	0.27	.790
Employer: firm size				
25–99	0.06067	0.00263	23.03	.000
100–499	0.10629	0.00266	40.01	.000
500+	0.13417	0.00213	62.86	.000
Lives in rental housing	−0.07054	0.00191	−36.98	.000
Lives in multifamily Dw	−0.07074	0.00214	−33.01	.000
Self-employed	−0.09345	0.00376	−24.83	.000
Government employee	0.07784	0.00330	23.58	.000
Union employee	0.10079	0.00767	13.15	.000
County unemployment rate	−0.30917	0.04682	−6.60	.000
Proportion of firms in county size				
25–99	0.07651	0.04000	1.91	.056
100–499	0.26631	0.03851	6.91	.000
500–999	0.01547	0.05480	0.28	.778

continued

Table 4. *Continued*

<i>Variable</i>	<i>Marginal Probability</i>	<i>SE</i>	<i>t-Statistic</i>	<i>p-Value</i>
1,000+	0.17148	0.02095	8.19	.000
Year				
2001	0.04616	0.00376	12.26	.000
2002	0.01663	0.00364	4.57	.000
2003	0.00307	0.00370	0.83	.407
2004	-0.02042	0.00379	-5.39	.000
2005	-0.02336	0.00380	-6.15	.000
2006	-0.02967	0.00383	-7.75	.000
2007	-0.04323	0.00389	-11.12	.000

HIFA, Health Insurance Flexibility and Accountability.

insurance coverage by 6.4 percentage points. Thus, we estimate that approximately 118,848 adults or 42 percent of the 280,739 individuals enrolled in HIFA gained health insurance due to HIFA. The implication is that the remaining 58 percent already had some type of public or private insurance. This estimate is in line with some of the higher estimates of the crowd-out effect.

Our results show that giving states flexibility in how they expand coverage of the uninsured can yield a significant increase in insurance coverage among eligible groups. We do not compare the HIFA approach to other approaches, although the estimated HIFA effect in our analysis is an effect above and beyond the states' ongoing Medicaid programs. A full analysis of policy options would compare both the effectiveness and the cost of different approaches to reducing the number of uninsured individuals, and those results likely would vary by state. In our analysis, the states' approaches varied widely, as did the populations they sought to target. Our results suggest that flexible programs such as HIFA are a viable policy option for expanding access to insurance coverage for low-income adults

ACKNOWLEDGMENTS

Joint Acknowledgment/Disclosure Statement: This project was funded by the Centers for Medicare and Medicaid Services under contract number HHSM-500-2005-00027I, TO 2. The authors thank Jean Moody-Williams, our project officer Paul Youket, and others at CMS for their assistance and support in this project.

Disclosures: None.

Disclaimers: None.

REFERENCES

- Aizer, A., and J. T. Grogger. 2003. *Parental Medicaid Expansions and Health Insurance Coverage*. NBER Working Paper W9907, August.
- Alker, J. 2003. *Serving Low-Income Families through Premium Assistance: A Look at Recent State Activity*. Washington, DC: Kaiser Commission on Medicaid and the Uninsured (KCMU), October.
- Artiga, S., and C. Mann. 2005. *Coverage Gains under Recent Section 1115 Waivers: A Data Update*. Washington, DC: Kaiser Commission on Medicaid and the Uninsured (KCMU), August.
- Benjamin, G. 2001. "The Health Insurance Flexibility and Accountability (HIFA) Demonstration Program: A New Initiative to Cover the Uninsured." *Physician Executive* 27 (6): 74–6.
- Busch, S., and N. Duchovny. 2005. "Family Coverage Expansions: Impact on Insurance Coverage and Health Care Utilization of Parents." *Journal of Health Economics* 24: 876–90.
- Centers for Medicare and Medicaid Services. 2005. "Guidelines for States Interested in Applying for a Health Insurance Flexibility and Accountability (HIFA) Demonstration" [last modified December 14, 2005, accessed September 20, 2006].
- Coughlin, T. A., S. K. Long, J. A. Graves, and A. Yemane. 2006. "An Early Look at Ten State HIFA Medicaid Waivers." *Health Affairs* 25 (3): 204–16.
- Cunningham, P. J., J. Hadley, and J. Reschovsky. 2002. "The Effects of SCHIP on Children's Health Insurance Coverage: Early Evidence from the Community Tracking Study." *Medical Care Research and Review* 59 (4): 359–83.
- Curtis, R., and E. Neuschler. 2003. "Premium Assistance." *Future of Children* 13 (1): 214–23.
- Davidoff, A., G. Kenney, and L. Dubay. 2005. "Effects of the State Children's Health Insurance Program Expansions on Children with Chronic Health Conditions." *Pediatrics* 116: 34–42.
- Dubay, L., and G. Kenney. 1997. "Did Medicaid Expansions for Pregnant Women Crowd Out Private Coverage?" *Health Affairs* 16 (1): 185–93.
- Engquist, G., and P. Burns. 2002. "Health Insurance Flexibility and Accountability Initiative: Opportunities and Issues for States." *State Coverage Initiatives Issue Brief* 3 (2): 1–6.
- Gill, A., and C. Mann. 2003. *Section 1115 Waivers at a Glance: Summary of Recent Medicaid and SCHIP Waiver Activity*. Washington, DC: Kaiser Commission on Medicaid and the Uninsured (KCMU), April.
- Gilmer, T., R. Kronick, and T. Rice. 2005. "Children Welcome, Adults Need Not Apply: Changes in Public Program Enrollment across States and over Time." *Medical Care Research and Review* 62 (1): 56–78.

- Holahan, J. 1997. "Crowding Out: How Big a Problem?" *Health Affairs* 16 (1): 204–6.
- Kronick, R., and T. Gilmer. 2002. "Insuring Low-Income Adults: Does Public Coverage Crowd Out Private?" *Health Affairs* 21 (1): 225–39.
- Ku, L., and M. Broaddus. 2000. "The Importance of Family-Based Insurance Expansions: New Research Findings about State Health Reforms." Washington, DC: Center on Budget and Policy Priorities.
- Lambrew, J. 2001. *Health Insurance: A Family Affair. A National Profile and State-by-State Analysis of Uninsured Parents and Their Children*. New York: The Commonwealth Fund.
- Lo Sasso, A. T., and T. C. Buchmueller. 2004. "The Effect of the State Children's Health Insurance Program on Health Insurance Coverage." *Journal of Health Economics* 23: 1059–82.
- Long, S., S. Zuckerman, and J. Graves. 2006. "Are Adults Benefiting from State Coverage Expansions?" *Health Affairs* 25 (2): 1–14.
- Lutsky, A., and I. Hill. 2003. *Premium Assistance Programs under SCHIP: Not for the Faint of Heart?* Washington, DC: Urban Institute.
- Owcharenko, N. 2002. *How States Can Expand Private Coverage with HIFA Waivers*. Heritage Foundation Executive Memorandum 846, December 16.
- Puhani, P. A. 2008. *The Treatment Effect, the Cross Difference, and the Interaction Term in Nonlinear "Difference-in-Differences" Models*. Discussion Paper Series: Forschungsinstitut zur Zukunft der Arbeit, Institute for the Study of Labor, April. [accessed January 23, 2012]. Available at <http://ftp.iza.org/dp3478.pdf>
- Ryan, J. M. 2002. *1115 Ways to Waive Medicaid and SCHIP Rules*. National Health Policy Forum Issue Brief 777, June 13.
- Sachs, T. 2003. *HIFA at Age Two: Opportunities and Limitations for States*. State Coverage Initiatives Issue Brief. Washington, DC: Academy Health.
- Shirk, C., and J. Ryan. 2006. *Premium Assistance in Medicaid and SCHIP: Ace in the Hole or House of Cards?* National Health Policy Forum Issue Brief 812.
- Shore-Sheppard, L., T. Buchmueller, and G. Jensen. 2000. "Medicaid and Crowding Out of Private Insurance: A Re-examination Using Firm Level Data." *Journal of Health Economics* 19 (1): 61–91.
- Zabaza, B. 2003. "Making the Health Insurance Flexibility and Accountability (HIFA) Waiver Work through Collaborative Governance." *Annals of Health Law* 12 (2): 367–410.

SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Appendix SA1: Author Matrix.

Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.