Modeling Health Care Reform in California

Jonathan Gruber, MIT
February 2, 2007

This report was prepared under the sponsorship of the California Endowment and the California Health Care Foundation. I am grateful to E. Richard Brown and the UCLA Center for Health Policy Research for providing CHIS data, to Jon Gabel, Jeremy Pickreign and the Center for Study Health Systems Change for providing data from their survey of California employers, to Rick Curtis, Ed Neuschler and the Institute for Health Policy Solutions for technical assistance, and to Richard Figueroa, Ruth Liu, John Ramey and colleagues in the Governor's office for helpful discussions.

In the wake of the failure of the Clinton Health Security Act and other

Congressional proposals in 1994, efforts to move towards universal health insurance

coverage at the federal level have been largely dormant. Major health reforms have started to percolate upwards from the states, however. Numerous states have introduced significant health reform proposals, and several have implemented them. These approaches range from large expansions in public insurance (such as in Illinois) to subsidies targeted to employers and employees (such as in Maine) to new insurance pools with large subsidies for low income populations and an individual mandate (Massachusetts). These efforts have shown that states can move forward on their own to provide the health insurance coverage so needed by their citizens.

As the largest state in the nation, with a high percentage of uninsured residents, California's efforts to move towards universal coverage will be not only critical for the state but particularly important for the nation as a whole. It is therefore very important to carefully understand the effects that such reforms will have on the health economy of the state, as well as on public sector revenues. In this report, I consider a reform proposed by the Governor's health care reform team, and provide estimates of its effects on California using a microsimulation model of the California health economy.

The proposed reform includes four key elements:

An expansion of public insurance programs (Medi-Cal or Healthy Families) for legal resident adults to 100% ($9,800 for an individual, $20,000 for a family of four) of the federal poverty line, and for all children to 300% ($60,000 for a family of four) of the federal poverty line, regardless of resident status;

The provision of comprehensive insurance through a central purchasing mechanism for legal resident adults between 100% ($9,800 for an individual, $20,000 for a family of four) and 250% ($24,500 for an individual, $50,000 for a

family of four) of the poverty line, with costs shared between the government, enrollees, and their employers;

A mandate on all California residents that they purchase or maintain at least a high deductible insurance product;

A payroll assessment of 4% on firms with 10 or more employees who do not offer health insurance to their employees.

Below I describe this model and how it was developed to apply to California, and discuss in more detail the results of this modeling effort. Some of the key findings are:

This policy provides health insurance to 4.1 of the 4.8 million uninsured residents of California (83%) and coverage for persons without green cards through the counties for the vast majority of other currently uninsured individuals.

There is little net change in direct employer provided insurance, representing the offsetting effects of more than 800,000 individuals gaining employer insurance (due to new employer offering and takeup of employer offers among those who previously declined), 300,000 individuals leaving direct employer insurance for public insurance, and 600,000 individuals leaving employer insurance for the new purchasing pool but taking their employer contribution with them.

The new pooling mechanism attracts 1.9 million adults between 100% ($9,800 for an individual, $20,000 for a family of four) and 250% ($24,500 for an individual, $50,000 for a family of four) of poverty at a total public cost of $2.4 billion. Total costs of the pool are calculated to be $5.1 billion (1.9 million persons x $224 pmpm x 12 months), government contributions are $2.4 billion, individual contributions $1.4 billion and employer contributions $1.3 billion.

Medi-Cal and Healthy Families programs increase by 1.5 million persons, at a total cost of $2.45 billion.

The state collects almost $1 billion in fees from the non-offering employers (1.2 million non-offered employees with an average earnings of $20,000 each, assessed at 4%, equals $1 billion). This assessment is levied on about 7.5% of California businesses (representing 5.7% of workers).

Background: The Gruber Microsimulation Model

The Gruber microsimulation model allows the user to input a set of policy parameters, and output the impact of that policy on public sector costs and the distribution of insurance coverage. The modeling approach used here is the type of "microsimulation" modeling used by the Treasury Department, CBO, and other government entities. This approach consists of drawing on the best evidence available in the health economics literature to model how individuals will respond to the changes in the insurance environment induced by changes in government policy.

This model grew out of years of my research work on the questions of health economics. Through this work, I was able to answer a number of the questions that are critical for modeling the effect of government interventions in health insurance markets, such as: how does tax subsidizing insurance for employers affect their decision to offer insurance? To what extent does offering public insurance to the privately insured cause them to leave their private coverage for public coverage? To what extent will lower health insurance costs for firms lead to higher wages for workers in those firms?

I developed my microsimulation model as a means of translating this research into useful lessons for policy-makers and brought to bear the same high academic standards on my modeling that are used in my published research. The result is the first microsimulation model that rigorously incorporates the lessons that we have learned from two decades of empirical research in health economics.

This model was first developed in 1999 for use in estimating the impact of tax credits on health insurance coverage, with funding from the Kaiser Family Foundation. Conveniently, the model was being constructed as then-candidate George W. Bush was pushing tax credits for non-group health insurance to the forefront of the national

coverage debate. My model was used and cited extensively during the 2000 campaign in reference to Bush's plan. Over the subsequent four years, the model has continued to be cited as the leading source of information on tax-related approaches to health insurance.

Over the past several years, I have expanded the model's capability to consider the full variety of possible health interventions, including public insurance expansions, employer or individual mandates, purchasing pools for insurance, and more. The model is now fully capable of estimating the impact on insurance coverage and public/private sector costs of a wide range of health insurance interventions that might be considered in California. This model is now widely used for a variety of health insurance modeling tasks; a partial list of my sponsors over the past several years includes: The Kaiser Family Foundation; The Commonwealth Fund; The California HealthCare Foundation; The AFL-CIO; The Blue Cross/Blue Shield Association; and The Robert Wood Johnson Foundation.

I have recently been working with a number of states to model state-specific health insurance reforms of the type contemplated in California. I have done extensive modeling for the Commonwealth of Massachusetts that was a basis for recent health insurance reform proposals in that state (as well as a primary reason for my being named to the administrative board in charge of implementing health care reform) and have also worked with the states of Kansas, Minnesota, and Connecticut.

In addition, I have worked closely over this period with the Congressional Budget Office in their development of a microsimulation model similar to my own. I have also provided consultation on policy options to a number of Presidential candidates, as well as a wide variety of House and Senate members.

Strengths of the Modeling Approach

The primary strengths of my model for the current exercise is its comprehensive approach and solid grounding in health economics. Consider, for example, the effect of introducing a new tax credit for the purchase of non-group health insurance for those with incomes below $100,000 per year. A simple means of estimating the impact of this policy would be to (a) compute the number of individuals who are uninsured with incomes below $100,000 per year, (b) assume some takeup rate, and then (c) to multiply (a) by (b) to get a rise in insurance coverage. But such an approach would miss a number of other responses that matter for the ultimate impact of this policy change on the insurance market. Most simply, many individuals now holding non-group insurance will enroll in this tax credit program, significantly raising costs without changing insurance coverage. Moreover, some individuals who had group coverage in a setting where they were contributing much of the cost of coverage might decide to drop that group coverage and move to the subsidized non-group setting; this will offset the reduction in the uninsured from the policy. In addition, some firms where most employees are newly eligible for the tax credit might raise their employee contributions, or even stop offering insurance altogether, leading to additional reductions in insurance coverage. These firms could pay higher wages as a result, leading to increased tax revenues for both the state and the federal government.

Many models of health insurance changes don't incorporate these types of reactions, assuming that they are small for incremental health reforms. This assumption is wrong, however, because of the enormous size of the existing private insurance market. The number of individuals with private insurance is four times the number of uninsured in the state. As a result, even a small percentage change in the amount of private

insurance can have major effects on the distribution of insurance coverage - as well as a significant effect on the level of wages (and tax collections).

The primary strength of my model is a careful consideration of the full range of effects of health policy changes: I consider the effect of insurance market interventions on *all* individuals and firms in the state. This is done in two steps. First, I translate any policy change into its impact on the prices of the insurance options faced by individuals and firms. Individuals typically have several options for their insurance coverage: employer-based coverage; coverage purchased in the non-group market; public insurance coverage (for low income groups); or no insurance. Their decisions on which of these routes to take to insurance coverage will be a function of the prices they face for each route (where lack of eligibility is equivalent to an infinite price). A new tax credit, for example, is a reduction in the price of the non-group insurance route for some segment of the population. The reduction in price will be a function of the prices faced through the current insurance arrangement, as well as the characteristics of the tax credit (e.g. income restrictions, refundability, etc.)

The second step is to then model how individuals and firms react to those price changes. A reduction in the price of non-group insurance will lead some of those who are now uninsured to purchase non-group insurance, as well as some of those with other forms of insurance to switch to non-group insurance. By lowering the average price of non-group insurance for workers, it will also cause some firms to lower their contributions to or stop offering insurance. I model these behavioral reactions by drawing on the best available evidence from health economics. This approach follows that used by the Congressional Budget Office, the Joint Tax Committee, and other government scoring organizations.

This approach is particularly strong relative to the "knife-edge" modeling of policy effects used in most other models, under which a policy either has no effect, or a large effect: for example, price subsidies might have no effect until they are large enough, and then they have a large effect. The problem with this approach is that the results are very sensitive to the definition of "large enough", which is typically based on modeler introspection and not hard evidence.

Another strength of this modeling approach is that I can easily consider multiple, integrated policy approaches. I can simultaneously model public insurance changes, tax credits, new purchasing pools, mandates, and other policy interventions. This is feasible because of the framework described above: I can convert all of these policy interventions into price changes, and then evaluate their overall effect. Many other models artificially "stack" the effects of different reforms, first considering one policy change, then another, then another. But policy doesn't work in such a "stacked" manner in practice; in practice, changes happen simultaneously, and they must be modeled simultaneously. My price-based approach allows simultaneous consideration of the effects of reforms on prices, and the corresponding reactions of individuals and firms to those net price changes.

A final strength of the model is the approach to modeling firm behavior. A key aspect of modeling health insurance policy is appropriately reflecting the decisions of firms, since 90% of private health insurance is provided by employers. Many models simply impose arbitrary rules about how firms will respond to a given insurance market change, or even assume no firm response at all. This is inappropriate and can lead to misleading inferences about the effect of insurance policy, since even small changes in firm behavior can have large implications for the insurance market.

Economists tend to model firm responses to insurance market changes as the

aggregation of the impacts on the workers within the firm. Consider an expansion of public insurance. If a firm is very high wage, with all workers above 300% of poverty, then an expansion of insurance for children to 300% of poverty will have no effect on the firm. If a firm has many employees with incomes around 200-300% of poverty, however, such an expansion can have large effects on the firm's decision to offer insurance. Thus, the ideal approach to modeling firm reactions is to consider the impact of any policy on the set of workers within the firm, and then to aggregate those impacts to the firm level to determine how the firm will respond.

The problem with implementing this ideal approach in the past, however, has been that individual-based micro-data such as the CPS has information on a given worker but not the co-workers in her firm, so that it is impossible to compute firm aggregates. I address this problem by building "synthetic firms" in the CPS, assigning each worker a set of co-workers selected to represent the likely true set of co-workers in their firm. I do this by using unique data tabulated for me by the Bureau of Labor Statistics that show, for workers of any given earnings level, the earnings distribution of their co-workers (separately by firm size, region of the country, and health insurance offering status). Using these data, I can statistically replicate the nature of the co-workers for any individual, allowing me to "build up" the individual's firm around her, to assess the impact of policies on the worker and her (statistical) co-workers, and to model the firm's reaction.

These synthetic firms then face three decisions about insurance: offering (whether to offer if now not offering, or whether to drop if now offering); the division of costs between employer and employees; and the level of insurance spending. I model each of these decisions as a function of how government policy changes the prices of the

insurance options to workers in the firm. For example, an expansion in public insurance or a subsidy to non-group insurance will lower the price advantage of employer-provided insurance, and lead some firms to stop offering insurance or to raise the contributions that employees make to the costs of that insurance. Likewise, subsidies to employer-provided insurance will raise the price advantage of employer-provided insurance and cause some firms to begin offering insurance or to lower employee contributions to insurance. By incorporating all of these price changes into firm decision-making, I can simultaneously consider the impact of many different policies on a given firm.

Creating a California-Specific Model

The base data set for my analysis is the California-only sample of the matched February-March 2001 Current Population Survey (CPS). These are the most recent CPS data which contain all the requisite information for the model, but they are clearly out of date for current analysis. As a result, the model is completely updated to reflect the current situation in California.

Population size and composition has been updated using data from the 2005 California Health Insurance Survey (CHIS). Using data kindly provided by E. Richard Brown and his colleagues at the UCLA Center for Health Policy research, I recalibrated the CPS population to match these 2005 totals by age (child vs. adult), income (ten income brackets), and insurance category (public, employer, nongroup, uninsured). The Center also kindly provided for me an estimated breakdown of these populations into documented and undocumented individuals which was important for the analysis. But it is important to note that the number of undocumented individuals is somewhat overstated

since their data technically measure the number of non-green card holding residents, regardless of legal status.

Data on employer insurance premiums, employer/employee sharing of premiums, and employer offering rates were updated using data from the Medical Expenditure Panel Survey Insurance Component (MEPS-IC), which provides this information by firm size. From previous modeling efforts I had obtained from the MEPS not only the mean premiums and contribution percentages, but also the distribution across firms (for a national sample). I use the California-specific MEPS data to update the entire distribution by using the ratio of the California to national mean premiums and contribution rates. These MEPS-IC data are for 2004. To update them to 2007 dollars, I use data on employer premium inflation from the CHCF-HRET survey of employers in California for 2004-2006; I assume inflation from 2006-2007 is the same as 2005-2006.

Modeling the cost of non-group insurance is very difficult since there is such a wide disparity in the non-group policies purchased in that market. I assume that the typical non-group policy holder who is a 40-44 year old male pays $300/month. I then adjust that upwards and downwards by age, gender and health status.

Details of the Policy Option

The policy option modeled for this report has several key features. Unless otherwise stated, the policy changes below apply only to the documented population.

Public Insurance Expansion: California's Medi-Cal program is expanded to cover adults up to 100% ($9,800 for an individual, $20,000 for a family of four) of the federal poverty line; Medi-Cal and Healthy Families are expanded to cover all children to 300% ($60,000

for a family of four), of the federal poverty line whether or not documented. I assume that the cost of this expansion is the projected new per-member, per-month (pmpm) cost of Medi-Cal, $177 for adults and $103 for children. The $177 rate for adults was calculated by multiplying the $110 Medi-Cal blended (child and adult) rate by a 1.3 factor for adults and then applying a 1.237 Medi-Cal rate increase. The $103 child rate is equivalent to a weighted, blended (infant and child) 2006 Healthy Families rate.

New Pool: A new central purchasing mechanism is established for adults between 100% ($9,800 for an individual, $20,000 for a family of four) and 250% ($24,500 for an individual, $50,000 for a family of four) of the poverty line. The cost of the policy in this purchasing mechanism is $224/month, which roughly corresponds to a $500 deductible policy at 2007 Medicare reimbursement rates. Individuals share in the cost of this coverage as follows:

100-150% of poverty ($9,800/individual- $14,400/individual): 3% of gross family income;

150-200% of poverty ($14,400/individual- $19,600/individual): 4% of gross family income;

200-250% of poverty ($19,600 individual - $24,500/individual): 6% of gross family income.

Individuals can purchase directly from the pool <u>if</u> they are not offered employer-provided insurance. If they are offered employer-provided insurance, they can still purchase from the pool, but <u>only</u> through a waiver option where they bring to the pool a "voucher" equal to the value of their employer's contribution to their health insurance.

Mandate: The minimum health insurance benefit that must be maintained by all individuals, documented or undocumented, is a $5,000 high deductible plan with maximum out-of-pocket limits of $7,500/individual/$10,000/family. This product is estimated to cost on average $100/month. I assume that this mandate is very effective for documented individuals, with 95% of those who would otherwise remain voluntarily uninsured instead taking up insurance. I assume it is less effective for undocumented adults, however, partly because they are less centrally involved in the system and partly because they don't receive any subsidies so they are unlikely to be able to afford to comply on their own with the mandate. I assume that the mandate is only 10% effective for those undocumented adults below the poverty line, 25% effective between once and twice the poverty line, and 50% effective above 200% of the poverty line. The remaining individuals will be relying on local (county) coverage with the funds identified in the proposal.

Non-offering Assessment: As a source of revenues, and to combat any erosion of employer provision through this reform, the state would impose an assessment equal to 4% of the payroll at firms of 10 or more employees that do not offer health insurance (where payroll for these purposes is capped at the Social Security Taxable Maximum of $94,000). Roughly 1.2 million employees in 7.5% of California firms pay this assessment representing 5.7% of workers.

Population Movements

The results of this analysis are presented in a series of attached tables. In this section I walk the reader through the first two tables, concerning population movements.

TABLE 1 shows the population flows across insurance categories for all children, and for documented adults, in millions of persons. The table presents a matrix which shows movements in and out of five sources of insurance, from before to after the policy change: employer-provided insurance; non-group insurance; public insurance (mostly Medi-Cal); the new pool; and uninsured. The rows correspond to the new source of insurance; the columns correspond to the previous source. For some cells, the numbers were not zero, but were close enough to zero that they could not be reported with precision; in those cells I report an asterisk (*). The numbers may not add up in this table due both to these small cells and to rounding.

For example, of the 6.1 million persons on public insurance before the reform, 5.9 million stay on public insurance, a small number move to employer-provided insurance, and 0.2 million move to the new pool. In addition, of the 3.8 million uninsured legal residents before the reform, 1.2 million move to public insurance, 0.8 million move to employer-provided insurance, 0.8 million move to non-group insurance, 1 million move to the new pool, and a very small number remain uninsured (through non-compliance with the mandate).

Of particular interest is employer-provided insurance, where the outflows and the inflows roughly cancel each other. In terms of outflows, I find that there is traditional "crowd-out" of 0.3 million persons who leave employer-provided insurance and move to public insurance. The predominant group that is crowded out is children of parents who leave employer-provided insurance to move to the new pool. I also find "horizontal equity" crowd-out, or movement from employer-provided insurance to the new pool, is 0.6 million persons. These are adults who are taking their employer funds with them to join the new pool in order to take advantage of the subsidy for the employee share.

(Thus, these employer contributions are not "crowded out.") At the same time, 0.8 million previously uninsured persons are moving into employer-insurance. This consists of about 0.1 million persons who are newly offered insurance due to the employer assessment (which puts financial pressure on firms to offer insurance) and about 0.7 million persons who were previously offered yet remained uninsured, but who now enroll in their employer insurance because they are now mandated to do so (and employer-provided insurance is the most cost-effective avenue for doing so).

TABLE 2 shows the summary for the net population movements that we see as a result of this policy, incorporating both documented and undocumented individuals. The table shows the number of persons in the five categories from Table 1, before and after reform, and the change. On net, the number of persons with public insurance rises by 1.5 million; the number of persons with employer-provided insurance is unchanged; the number of persons with non-group insurance rises by 0.7 million; 1.9 million persons join the new pool; and the number of uninsured falls by 4.1 million. The remainder, primarily undocumented adults, would receive coverage at the county level.

Financial Implications

There will be large public costs associated with this dramatic expansion in insurance coverage. These costs will come in two forms. First, public insurance costs will increase, reflecting the large rise in enrollment in that program. The impact of this enrollment rise on public costs, however, will depend on the nature of the enrollees. Child enrollees, for example, are less expensive than adult enrollees.

In **TABLE 3**, I present the cost implications of this expansion in public coverage. For children, I divide the increase in coverage into three groups; for each group, the cost

of public insurance is assumed to be $103 per member per month (PMPM). There are 0.25 million children under the poverty line who move to public insurance, for a total cost of $310 million/year. There are 0.55 million children between 100% ($9,800 for an individual, $20,000 for a family of four) and 250% ($24,500 for an individual, $50,000 for a family of four) of the federal poverty line who move to public insurance, with a total cost of $655 million/year. Finally, there are 0.1 million children joining between 250% ($50,000 family of four) and 300% ($60,000 family of four) of the poverty line, at a cost of $125 million/year.

The next two rows show that there were 0.65 million adults joining public insurance; these adults reside below the poverty line. Less than half, 0.25 million, of these adults were previously eligible for public insurance; the cost of this group, at a PMPM of $177/month, is $530 million/year. The remaining 0.4 million are newly eligible, and impose a cost of $830 million/year. The end result is a total public insurance expenditure increase of $2.45 billion/year.

In addition, government revenues will be required to bear a share of the cost of financing the new pool that enrolls 1.9 million adults between 100% ($9,800 for an individual, $20,000 for a family of four) and 250% ($24,500 for an individual, $50,000 for a family of four) of poverty. Total public costs of this new pool are $2.4 billion/year. In addition, individuals will pay $1.4 billion/year in pool premiums, and employers will contribute $1.3 million/year in employer premiums for their employees using the pool. In total, then, the pool will spend $5.1 billion, of which the government will bear slightly less than half.

Finally, I have also modeled the revenue generated by the assessment on employers who do not offer insurance and have 10 or more employees. I find that, after

the policy is in place, there are about 1.2 million employees in these firms, and that their average earnings (counting earnings only up to the Social Security taxable maximum of $94,000) is $20,000/year. This results in revenues from this assessment of about $1 billion. This assessment is levied on about 7.5% of California businesses representing 5.7% of workers.

Table 1: Population Flows for Children & Documented Adults					
	FROM: Old Source of Insurance				
TO: New Source of Insurance	Public Insurance	Employer-Provided Insurance	Non-Group Insurance	Uninsured	New Totals
Public Insurance	5.9	0.3	0.1	1.2	7.6
Employer-Provided Insurance	*	17.5	*	0.8	18.3
Non-Group Insurance	0	0	1.6	0.8	2.4
New Pool	0.2	0.6	0.1	1	1.9
Uninsured	0	0	0	*	*
Old Totals	6.1	18.3	1.9	3.8	30.1

Note: Population counts shown in millions. Totals may not sum due to rounding

Table 2: Net Changes in Population for Entire Population (Under Age 65)			
Insurance Source	Before	After	Change
Public Insurance	6.6	8.1	1.5
Employer-Provided Insurance	18.8	18.8	0
Non-Group Insurance	2	2.7	0.7
New Pool	0	1.9	1.9
Uninsured	4.9	0.8 *	-4.1
Total	32.2	32.2	0

Note: Population counts shown in millions. Totals may not sum due to rounding.

* These individuals will be covered by the counties.

Table 3: Effects on Public Insurance Spending			
Eligibility Category	Net Change in Public Enrollment (millions)	PMPM ($/month)	Total Cost ($ millions /year)
Children Under 100% FPL	0.25	103	310
Children 100-250% FPL	0.55	103	655
Children 250-300% FPL	0.1	103	125
Adults, Previously Eligible	0.25	177	530
Adults, Newly Eligible	0.4	177	830
Total	1.5		2450