Research Brief

Productivity Impact of Health Care Reform In California

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Introduction

Today, there are a number of efforts to increase health insurance coverage in the state of California. Initiatives include "pay or pay" policies that would increase work-based coverage, and "single payer" approaches that would entail a complete overhaul of the way health care in financed. Regardless of the specific vehicle of insuring the uninsured, a large increase in coverage has important benefits. The primary benefit is, of course, the increase in coverage itself, as the uninsured receive better care and are insured against large out-of-pocket expenditures. However, there are also other economic impacts which have important labor market implications. In this research brief, I provide estimates for two sources of productivity gains from an increase in coverage: reduction in "job lock" and increased labor-force participation due to improved health. Although I do not explicitly model this, such productivity gains can *partly* "pay for" any added costs that are incurred in extending coverage to the uninsured.

Overall, the fear of losing insurance traps a sizeable number of workers in less productive jobs. **In 2002, 2.3% of the workforce – or 179,000 workers – with employment based coverage would have made productivity-improving job changes absent job lock. Overall, the presence of job lock annually leads to $772 million in foregone productivity gains.**

Health insurance reduces the odds of a experiencing a debilitating health condition which can lead to an exit from the labor force. **Bad health outcomes caused by a lack of health insurance means 12,000 less people work each year. Extending coverage to working age adults might increase annual gross state product by $230 million annually.**

Productivity Gains From Reduced "Job Lock"

A key possible source of productivity gain from expanding coverage is increased beneficial mobility, or reduced "job lock." "Job lock" refers to workers staying at their current place of work and foregoing better job matches for the fear of losing health insurance coverage. Popular accounts of job lock are common – for a recent article interviewing job-locked California workers, see "Stuck on the Job" (*San Francisco Chronicle*, June 12, 2003). In a 2002 KFF survey, 24% of workers mentioned experiencing immobility due to fear of losing health coverage. Increasing the number of jobs that offer health insurance allows currently job-locked individuals to make productivity-improving changes in jobs, and the resulting "productivity dividend" could partly offset increases in labor costs resulting from the increased health coverage.

There is considerable academic research on estimating the magnitude of job lock. The seminal pieces are Madrian (1993) and Cooper and Monheit (1992) which both documented job lock using the 1987 NMES dataset. Using somewhat different approaches, both reached a similar conclusion: job lock reduced mobility of those in risk of losing coverage by between 23% and 38%. For a good survey of the entire literature, see Madrian and Currie pp. 3392-3400. Although the literature is not unanimous, authors typically find job lock to reduce mobility by between 20 and 40 percent depending on the study and the demographic group. Although this is substantial, the estimates of job locked individuals from the literature tend to be less than what workers self-report – as in the KFF survey mentioned above.

Whereas there is considerable evidence on the magnitude of job lock, less work exists in translating this into productivity loss. One of the few exceptions is Cooper and Monheit (1992), which performs calculations based on observed wage changes of job switchers, and finds job lock to reduce GDP by one-third of one percent.

Applying Cooper and Monheit's estimate would imply that in present day California, job lock is reducing productivity by an amount of $1.5 billion. (14.4 million workers earning $37,000 on average generates a wage bill $533 billion; 0.29% of this gives us $1.5 billion). However, in applying these findings to California in 2003, we face several issues. First of all, most of the job lock studies are based on old data; changes in the economy and law might have altered the relationship between health insurance and mobility. For instance, Health Insurance Portability Act and Accountability Act (HIPAA) was enacted in 1996, which ensures that someone with less than a "significant break" in coverage cannot be excluded from coverage at a new job due to pre-existing conditions. California law which predates HIPAA also reduces the incentives of smaller employers from not hiring an employee with a pre-existing condition (worrying that experience rating would raise costs substantially). Generally, one may wonder whether the estimated job lock was caused by an expected lack of insurance offers and eligibility in other jobs, or from pre-existing conditions. The more it is the latter, the less we would find evidence of job lock in 2003 California. (However, Monheit and Cooper find that pre-existing conditions do not drive the estimates in their study.)

For this reason, I estimate job lock using more recent data, and test for differences in California. I use matched March CPS data from 1998 to 2002, which allows us to observe each individual twice – exactly one year apart. Although the CPS does not ask whether the worker changed her job in the last year, I deduce voluntary job switches by changes in industry and firm size categories, and whether she experienced any duration of unemployment over the past year. Job lock is calculated in a manner similar to Madrian (1992), which uses availability of non-job-based-insurance to estimate how employment-based insurance inhibits mobility, controlling for demographic, health, occupational, and industrial factors. The details of the estimation can be found in the Appendix; here I review the primary findings.

Table 1: Job Lock Impact on Mobility in California: Workers with Only Employment-Based Health Coverage

Current Mobility Rate	*Predicted Mobility Rate*	*Job Lock Impact on Mobility*	***Number of Workers Not Obtaining Better Matches Due to Job Lock (Annually)***
12.0%	14.3%	2.3%	**179,000**

Job lock is found to reduce mobility nationally by about 32% for workers with only employment based insurance. This implies that 2.4% of all workers who only have access to job based insurance would have switched to better matches absent worries of coverage loss. The estimates are very much in line with previous findings. **In California, however, the extent of job lock is smaller – it diminishes mobility by 17%**. However, given the generally more mobile Californian workforce, we still find that **2.3% of the workforce – or 179,000 workers – with employment based coverage would have made productivity-improving job changes absent job lock.**

As in Cooper and Monheit, I estimate the productivity gains by calculating jumps in wages associated with job switches. The wage gain from switching is net of the counterfactual "within job" wage increase as predicted by demographic and geographic factors and job characteristics. There are reasons to believe that the wage gains may not fully capture the increases in marginal productivity from eliminating job lock in the economy, especially because of skill-complementarities as discussed in Kremer(1993). For this reason, I would argue this really represents a lower bound estimate of productivity changes. Again, the details of the estimation are in Appendix 2.

Overall, in present day California, the presence of job lock annually leads to $772 million in foregone productivity gains. This is substantial, but is less than what we would have arrived at if we merely used Cooper and Monheit's estimate. Again, the enactment of pre-existing conditions laws (nationally and in California) imply that this impact is likely due to *general lack of employer coverage and restrictive eligibility rules*.

How exactly would such increased productivity affect employers? Since job lock prevents mobility precisely to employers who are currently not offering health care to a part of their labor force, the productivity gains most directly affect employers who would increase coverage. Even when employers cannot reduce wages in response to the added health costs, the productivity premium will likely enable them to partly recoup the costs of any mandate. In practical terms, these employers will find it easier to recruit better qualified workers especially from the pool of workers who were previously unable to work for them due to inadequate health care coverage.

HEALTH INSURANCE, HEALTH, AND LABOR FORCE PARTICPATION

There is, by now, a large body of evidence that lack of health insurance has significant negative effect on health. Hadley (2003) surveys this literature, and finds that most studies find significant impact of health insurance on both mortality and morbidity. Although there are limitations to each study – particularly because they are based on observational and not experimental data – the collection of methodologically diverse studies points to a fairly robust (if unsurprising) conclusion: health insurance has important impact on a range of health outcomes.

Researchers have also investigated how health outcomes might impact labor market outcomes – on wages and on labor force participation. Reviewing this literature, Hadley concludes: "Overall, these studies suggest that "fair or poor" health, due to either a disability, a serious chronic condition, or general self-assessment, is associated with a 15% to 20%

reduction in annual earnings. Most of the reduction appears to come from lower labor force participation and work effort."

However, there is little work connecting health insurance, health and wages or hours of work. In his *Comments* to Hadley's piece, Richard Kronick sums up the issue in this way: "We have evidence (and common sense) to think that good health will lead to greater labor force participation and increases in productivity and earnings. We think that insurance improves health, but we have no way of connecting the magnitudes of the estimates of the effects of insurance on health with the estimates of the effects of health on wages and labor force participation."

In this piece, I attempt to answer this question by looking at (1) how transitions to poor health outcomes vary by insurance status; and (2) how a transition to a different health outcome is associated with transitions in and out of the labor force. Moreover, I use a methodology that limits the role that unobserved factors and reverse causality can play in confounding the "true" impact of insurance on health and labor market participation. There are two parts in this estimation: (1) impact of health insurance on health, and (2) impact of health on labor force participation.

As in estimating the job-lock impact, I use matched March Current Population Survey data from 1998 to 2002, which allows us to observe each individual twice – exactly one year apart. The March annual demographic supplement to the CPS asks individuals to rate their general health as "excellent," "very good," "good," "fair" or "poor." I construct a binary health outcome variable by consolidating "excellent" and "very good" responses on the one hand (I refer to this category as "healthy"), and "good," "fair," or "poor" on the other (I refer to this category as "not healthy"). I then estimate the probability of moving from the "healthy" to "not healthy" categories as a function of demographics (age, gender, race, family structure), work-related variables (work status, firm size, industry and occupation), year effects, and insurance status. On the latter, I allow for different impacts based on own-employment based insurance, spousal insurance, or insurance from other sources.

This methodology addresses several issues that arise in cross-sectional correlations between health and insurance. First is the issue of "reverse causality," whereby a sick person might sign up for insurance because she is sick. I look at *changes* in health outcomes for people with insurance versus people without it, and this limits reverse causality. Of course, health insurance probably acts over a long time horizon – ideally we would track individuals for longer period of time. However, this is not possible give the data where we observe individuals only twice (a year apart). Nevertheless, since health insurance status is highly correlated over time, a person without health insurance today is likely to have experienced spells of uninsurance over their lifetime. As a result, if there is a "true" impact of health insurance on health, we should find an impact using this methodology.

The second issue addressed here is "unobserved job characteristics." I estimate the impact of insurance on health using spousal insurance (and compare it to an estimate based on own-employment based insurance). This allows us to assess the possibility that a person with access to a job based insurance might be at a job which is also conducive to better health outcomes *independent of the health insurance provision.* For instance, even controlling for occupation and industry, jobs with health insurance might also be better work environments, less stressful, etc. – which might have an independent impact on health.

I estimate a probit regression of the binary health status on the regressors described above. From the regression I calculate the following "transition probabilities" for the California population.

Table 2: Health Transition Probabilities by Insurance Status

Not Insured (in year 1)		*Year 2*	
		Healthy	Unhealthy
Year 1	Healthy	71.2%	28.8%
	Not Healthy	34.0%	66.0%
Insured through Spousal Coverage (in year 1)		*Year 2*	
		Healthy	Unhealthy
Year 1	Healthy	79.2%	20.8%
	Not Healthy	35.9%	64.1%

If a person is healthy in year 1, being insured (through spousal coverage) increases the probability of staying healthy from 71.2% to 79.2%, and this difference is statistically significant at the 5% level. If a person is not healthy, being insured increases the probability of becoming healthy from 34% to 35.9%, and this difference, too, is statistically significant at the 5% level. These transition probabilities imply that in steady state, 54.1% of uninsured and 63.3% of insured would be healthy (i.e., report "excellent" or "very good" health.) This difference of 9.2 percent points is large, but smaller than estimates derived from a cross sectional regression. **To sum up, insurance coverage would increase probability of staying healthy by 11%** ((79.2%-71.2%)/71.2%) **and increase the probability of getting healthy by 6%** ((35.9%-34.0%)/34.0%)**.** Although the coefficients are not reported here, the source of insurance (own job or spousal coverage) does not make a difference in the transition probabilities: this is re-assuring, and indicates that unobserved job quality does not seem to be biasing the estimated impact of insurance on health.

Next, I look at how a transition from "healthy" to "not healthy" (and vice versa) affects labor force participation *for the currently uninsured working age (18-55) population*. I run four separate probit regressions of working in year 2 conditional year 1 work and health status; each also controls for demographics (age, gender, race, family structure), work-related variables if working in year 1 (firm size, industry and occupation), and year effects. Below, I report the percent point differences in labor force participation in the second year by second year health status: [probability($working_{yr2}$ | $healthy_{yr2}$, $health\ status_{yr1}$, $work\ status_{yr1}$, $controls$) – probability($working_{yr2}$ | $not\ healthy_{yr2}$, $health\ status_{yr1}$, $work\ status_{yr1}$, $controls$)]

Table 3: Differential Probability of Working in Year 2 from Changes in Health Status

	Year 1 Work Status	
Year 1 Health	*Working*	*Not Working*

Status		
Healthy	*5.2*	2.0
Not Healthy	5.6	5.6

For the currently uninsured working population, a transition from "healthy" to "not healthy" is associated with a 5.2 percent point difference in second year's labor force participation rate. For those who are not working in the first year, the percent point difference in second year's labor force participation rate is 2.0. Finally, a transition from "not healthy" to "healthy" increases labor force participation rate by 5.6 percent points. All of these differentials are statistically significant at the 5% level. **To summarize, adjusting for personal characteristics, a change in health status is associate with a 2 to 5.6 percent point difference in labor force participation rate for currently uninsured working age adults.**

Finally, we put the two pieces together to estimate how insurance coverage affects labor force participation through impacts on health by utilizing the estimates from both steps. In California, there are currently 5.3 million working age adults, out of which 4.2 million are currently working. Using table 2 and 3, I compute the number of additional individuals who would be working because of insurance-induced improvements in health – by current work and health status. As an example, let us take currently healthy and working individuals. Without insurance, 71.2% of them stay healthy in the second year. With insurance, however, 79.2% will remain healthy. Multiplying this difference in probability by the number of currently healthy workers in California, we get 7,000. In other words, if all working age adults were insured, in a given year, 7,000 more individuals who are healthy and working would stay working in the following year. Below I report the additional number of workers by current health and work status (rounded to the nearest thousand).

Table 4: Additional Individuals Working Due to Insurance-Induced Health

	Working	Not Working
Healthy	7,000	2,000
Not Healthy	2,000	1,000

To summarize, 12,000 more individuals would be working each year from better health if insurance were extended to all working age Californians. Of course, as I mentioned, insurance likely affects health over the long term: as a result, these numbers refer to "steady state" estimates which may take some time to reach. To get an estimate of the dollar value of such increased labor force participation, note that the average uninsured worker in California currently earns $19,000. Let us further assume that this increase in labor supply would be absorbed in the labor market. Clearly, this would be relevant in a tight labor market scenario: although that is not the case today, the estimates here are "long run" in nature, and hence it is not unreasonable to assume that labor supply constraints are binding. **Increased labor force participation from better health would be valued at $230 million annually if all working age Californians were insured.**

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APPENDIX 1: ESTIMATING COST OF JOB LOCK

To estimate the cost of job lock, I match consequent March CPS datasets along the lines suggested by Madrian and Lefgren (1999). This allows us to observe each individual twice – exactly one year apart. I use a strict criteria for matching, requiring positive matches by race, sex, age, and marital status. This allows us to match a little over 60% of all individuals in the March CPS.

Although the CPS does not ask whether the worker changed her job in the past year, I deduce voluntary job switches by changes in industry and firm size categories, and whether she experienced any duration of unemployment over the past year. Using this definition, I find that 14.5% of workers switch jobs voluntarily each year – which is in line with what Madrian (1993) found in her study.

The strategy for estimating job lock is the same as employed in Madrian (1993). I make use of the fact that some workers are covered by both own-job based insurance as well as other insurance. I compare the impact of having non-employment based health coverage (e.g., through a spouse) – on those with own-job based insurance, and those without.

Rates of Voluntary Mobility for Workers with Alternative Sources of Health Coverage

	Without Own-Employment Based Coverage	With Own-Employment Based Coverage
Without Other Coverage	H_{00}	H_{01}
With Other Coverage	H_{10}	H_{11}

Here H_{01} represents the proportion of workers with own employment based coverage, and without any other coverage, who change jobs voluntarily each year. The simple difference estimator is (H_{11}- H_{01}). For workers with own-employment based coverage, this is the difference in mobility from having access to an additional source of coverage. However, those with other coverage may have attributes which may impact mobility decision quite apart from the job lock issue. Therefore, the difference-in-difference estimator nets out such effects: (H_{11}- H_{01})- (H_{10}- H_{00}).

Since the primary source of other coverage is through a spouse, I limit my sample to married individuals. I also estimate the coefficients separately for married men – the sample used by Madrian. I estimate a probit regression of mobility on dummies representing job-based coverage, other coverage, and the interaction term. Controls include demographics (race, sex, age, age squared, education, self reported health), initial job characteristics (industry, firm size, occupation, and income), and state and year dummies. Finally, I estimate the impact for the California subsample separately. Below are the simple difference, and the adjusted difference-in-difference estimates for various samples. Note that the difference-in-difference estimate is the "correct" one, and will be the one utilized for calculations below. My estimates are computed from the probit regression at sample means.

Reduction in Mobility from Job Lock

	Madrian (1993) (Married Men)	National Sample (Married Men)	National Sample (All Married Workers)	California Sample (All Married Workers)
Simple Difference	-26.1%	-14.5%*	-17.6%*	-16.1%*
Adjusted Difference in Difference	-29.6%	-33.9%*	-31.8%*	-17.2%*

*Statistically Significant at 10% level

The adjusted Difference-in-Difference estimate of job lock for married men is nearly identical to what Madrian estimated using a different dataset. For California, we find the reduction in mobility to be smaller (17.2% versus 31.8%), though substantial and statistically significant. Next, I estimate actual and counterfactual mobility rates for workers who *only* have employment based coverage (i.e., those who are susceptible to job lock.)

Current and Predicted Mobility for Workers With Only Employment Based Coverage

	Current Mobility	Predicted Mobility Without Job Lock	Proportion of Workers Not Switching Jobs due to Job Lock	Number of Workers not Switching Jobs due to Job Lock
National Sample	10.7%	13.1%	2.4%	1,242,000
California Subsample	12.0%	14.3%	2.3%	179,000

Although the percent reduction in mobility from job lock was found to be lower in California, the overall mobility levels are higher in this state. We find that 2.3% (or 179,000)of Californian workers with *only* employment based coverage forego productivity improving job changes each year due to job lock.

Similar to Cooper and Monheit, I estimate the productivity gains by calculating jumps in wages associated with voluntary job switches. The wage gain from switching is net of the counterfactual "within job" wage increase as predicted by demographic and geographic factors and job characteristics. I regress change in log of annual income on job change, demographics (race, sex, age, age squared, education), initial job characteristics (industry, occupation, firm size) and state and year variables. The coefficient on wage jump is found to be +0.045, and is statistically significant at the 5% level. However, since we are looking at changes in *annual* income, the second year's annual income is a mixture of the income from the new and the old job. Assuming that the job changes are distributed uniformly throughout the year, one can show that the true gains from the job change is exactly 2 times the estimated coefficient. In other words, it is 0.09 – meaning a voluntary job change is associated with a 9% jump in income. For worker in California with only employment based health coverage, this comes to $4320.

Finally, I estimate the foregone productivity gains by multiplying the number of workers who are unable to make productivity improving job switches (179,000) by the jump in earnings associated with such a switch ($4320) to obtain the annual cost of job loss, $773 million.