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The Economic Impact of Proposition 72 on California Employers

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Executive Summary

Overview

On January 1, 2006, California businesses will be subjected to one of the most costly and inefficient pieces of labor law legislation ever created. California's Senate Bill 2 (referred to in this study interchangeably as SB 2, the Health Insurance Act of 2003, HIA, and Proposition 72) requires all employers in California with more than 20 employees to provide full medical insurance for their employees. This study estimates the costs—both in terms of dollars and jobs—of this devastating legislation. Overall, Dr. Yelowitz estimates that SB 2 will cost California employers between $12.4 billion and $12.9 billion a year. In addition, SB 2 will destroy between 67,000 and 150,000 jobs.

There is currently a ballot initiative (Proposition 72) before the voters that will decide the ultimate fate of this legislation. This study provides California residents and policymakers with the most complete and up-to-date accounting of the costs while evaluating the divergent cost estimates of this legislation. The range of these estimates stems primarily from the incomplete and inaccurate attempts (of other authors) to determine the far-reaching coverage of SB 2.

Many supporters of SB 2 claim that the legislation affects primarily the uninsured, but this group actually makes up only a small portion of the spending under SB 2. The largest group of employees who are affected already have employer-provided insurance; the cost is created by firms having to meet the rich mandated benefit package established under SB 2. As employers react to these dramatically higher costs by decreasing employment, many of these employees who have insurance will face decreased employment opportunities.

The poor targeting and high cost of SB 2 means that it will cost over $6,600 per newly insured individual, significantly more than the cost of coverage. The majority of spending will not benefit the uninsured, and the majority of the uninsured will remain without coverage. As this study shows, SB 2 will do little to address the problem of the uninsured while doing a lot to hurt California's least-skilled employees.

SB 2 Details

The California legislature passed SB 2 on September 12, 2003. The bill was signed into law by Governor Gray Davis on October 5, 2003. SB 2 creates a "pay-or-play" system whereby employers can either "pay" a fee to the government (which will operate an insurance system for the working uninsured) or they can "play" by offering a minimum level of health coverage. All employees who work over 100 hours a month (approximately 23 hours

per week) for three months qualify for coverage. SB 2 mandates different levels of coverage based on firm size. Employers with more than 200 employees are required to offer family coverage to their employees. Firms with 50–199 employees are required to offer individual coverage. Those with 20–49 employees will be required to offer single coverage, contingent upon the legislature passing a tax credit covering 20 percent of the employer's increased costs. Businesses with fewer than 20 employees are currently exempted from the mandate. This law will go into effect in 2006 for firms with more than 200 employees and in 2007 for all other firms.

In addition to requiring certain levels of coverage, SB 2 explicitly mandates the minimum employer premium contribution. Employers are required to pay 80 percent of either the fee to the government or the cost of the health insurance plan they offer (regardless of the cost of the plan). Employees are required to pay 20 percent of the cost of the mandate. This premium-sharing mandate is responsible for more of the cost of SB 2 than any other provision. Under SB 2, employees are required to take up coverage and employers are authorized to deduct the employee portion of the fee from wages.

Data

This study utilizes a series of data sets to estimate the cost of SB 2. The primary data set utilized is the Current Population Survey (CPS) Annual Social and Economic Survey. This widely used data set is produced by the joint efforts of the United States Census Bureau and the Bureau of Labor Statistics. Data from the CPS is augmented by data from the County Business Patterns (CBP), an annual series of data put out by the Census Bureau that provides economic data by industry at various levels of geographic aggregation. In addition, this study uses premium and cost-sharing information from the Kaiser Family Foundation California Employer Health Benefits Survey (CEHBS). The CEHBS is a commonly used source for premium information by health economists.

SB 2 Coverage

According to Census data, there are over 35 million people living in California. Over 18 million of these residents have health insurance through their employer, 5.8 million have insurance solely through government programs, and 6.4 million are uninsured. This study estimates that 17.8 million California residents meet the firm-size and work-effort requirements to be covered by the Health Insurance Act.[1]

Of the 17.8 million residents affected, 13.5 million have insurance through their employer. Only 1.9 million affected residents covered by SB 2 are uninsured. This makes up a minority of the uninsured population in California, leaving 69 percent of the uninsured without any new coverage. Over 1 million of the affected residents currently have government-provided health insurance. As these estimates clearly show, the primary individuals affected by SB 2 are not the uninsured.

Cost of SB 2

The degree to which employers bear the cost of SB 2 ultimately depends on their behavioral response to the mandate. Accounting for expected employer responses (which will be discussed later) this study estimates the cost of SB 2 to be between $12.4 billion and $12.9 billion.[2] This cost is higher than the estimate in Yelowitz (2003), primarily due to the increased cost of insurance premiums since his original analysis.[3]

The vast majority of the costs under SB 2 are not spent on the uninsured. In fact, only one-third of the total cost of the mandate actually goes toward providing new insurance to California residents. The largest cost increase for a group is for those who already have employer-provided insurance. Because SB 2 requires employers to pay 80 percent of the cost of coverage, many employers already covering their employees will see significant increased costs. The premium-sharing and dependent requirements under SB 2 entail costs of between $5.8 billion and $6.0 billion for employers. This is approximately 45 percent of the total cost of SB 2.

Another significant portion of the cost is created by employees who currently receive government health coverage. The cost of covering these employees will be shifted from public spending to private businesses. In total, between $1.4 billion and $1.7 billion of the increased costs of SB 2 will be caused by this shift.

Differing Cost Estimates

There have been several studies attempting to estimate the actual cost of SB 2. These studies have produced estimates ranging from $1.3 billion to the $12.9 billion estimate in this study. While there are several reasons for this disparity, the most significant difference relates to the estimates of mandated coverage and not the cost of insurance. This study is the only currently released report that accounts for all affected employee groups and not simply the cost resulting from the uninsured. Ignoring the costs associated with currently insured employees unrealistically decreases the estimated cost of the bill.

The two largest groups ignored by the majority of studies analyzing SB 2 are:

1. **Individuals with employer-provided insurance:** SB 2 requires not only insurance for the uninsured but also a minimum premium-sharing level (80 percent paid by the employer and 20 percent paid by the employee). This study reveals that 25 percent of businesses in California offering insurance do not pay 80 percent of the cost of coverage for an individual, and, more significantly, 50 percent of California businesses do not pay 80 percent of the cost of family coverage. As a result, companies already paying for health insurance for their employees are responsible for approximately $6 billion in new costs under SB 2.
2. **Government insurance:** Nearly 2 million of the affected employees under SB 2 already have government-provided insurance through Medicaid, Medicare, and/or Champus/Tricare. Between $1.4 billion and $1.7 billion of the costs generated by

SB 2 come from the transfer of the costs for these individuals from government to private businesses. Even more troubling, since SB 2 does not consider supplemental insurance to be "playing," many of these individuals may see a reduced level of coverage as a result of the mandate.

The actual cost projections for the *uninsured* in this study are not significantly different from many other cost estimates of SB 2. The difference between the estimates results from the fact that the solitary focus on the costs generated by the uninsured ignores the majority of net new costs created by SB 2.

Labor Market Consequences

In addition to estimating the cost to employers from SB 2, this study examines the potential labor market consequences of this costly mandate. The literature on mandated benefits suggests that—in the long run and when possible—employers will shift 100 percent of the cost of the mandate to employees. It is less clear that employers will be able to shift the cost to employees in the short term, when decreasing real wages is more difficult.

For low-wage employees, the California minimum wage creates a limit on how much employers can transfer the cost to their employees. In the case of a binding minimum wage, employers will respond to the increased costs by decreasing employment. If employers are able to fully shift the cost to wages—an unlikely scenario in the short term—this study estimates that SB 2 will destroy 67,000 jobs. In addition, employees who keep their jobs under this scenario will see significant decreases in wages and salaries as a result of the shifted cost. In the event of full wage shifting, the California government would also receive between $665 million and $860 million less in income tax revenues.

In the short term it is unlikely that this full wage shifting can occur. In the case of no wage shifting, SB 2 will destroy approximately 150,000 jobs. In either scenario, the labor market consequences of SB 2 are severe. The legislation will cause either significantly lower salaries for all employees and over 67,000 fewer jobs for low-wage employees, or over 150,000 fewer jobs throughout the entire economy.

The employees who lose their jobs as a result of SB 2 will tend to be younger, poorer, less educated, and disproportionately minorities. For example, while high school dropouts make up only 17 percent of the California workforce, they make up 27 percent of the job loss in the case of no wage shifting (and 40 percent in the case of full wage shifting). And, while Hispanics make up 30 percent of the workforce, they account for 44 percent of the job loss resulting from SB 2 (53 percent in the case of full wage shifting).

More than 60,000 (32,000 in the case of full wage shifting) of the Californians who will lose their jobs as a result of SB 2 were uninsured before the mandate. This means that SB 2 cost these individuals their jobs without granting them new insurance coverage. Even more troubling, over 32,000 (6,700 in the case of full wage shifting) displaced employees had employer-provided insurance before SB 2 and

would now have neither insurance nor a job.

Overall, the labor market consequences of SB 2 are severe, and they appear to concentrate their negative effects on the low-skilled and uninsured workers this legislation intended to assist.

Implications for the Uninsured

While SB 2 is an extremely costly mandate, some may argue that this cost is appropriate if it solves the problem of the uninsured in California. This study clearly demonstrates, however, that SB 2 will do little to address the problem of the uninsured. Only 31 percent of uninsured Californians would receive new coverage as a result of SB 2. This poor targeting creates a situation where the cost of SB 2 per newly insured individual exceeds $6,600, significantly more than the cost of coverage.

Overall, only 30 to 35 cents of every dollar spent under SB 2 goes toward covering the uninsured. This is less than the amount that will be spent on individuals who already have insurance through their employer.

Conclusion

When evaluating legislation such as SB 2, it is important to heed the words of the former Clinton administration Treasury Secretary and the current president of Harvard University, Larry Summers, who stated, "There is no sense in which benefits become 'free' just because the government mandates that employers offer them to workers." This study fully documents the significant costs created by SB 2. In total, SB 2 is expected to cost between $12.4 billion and $12.9 billion per year. In addition, it is expected that SB 2 will destroy between 67,000 and 150,000 jobs, with the range depending on the amount of wage shifting employers will be able to accomplish. Even the lower bound of the job-loss number will result in billions of dollars in lost income to California employees.

While providing insurance to the uninsured is a laudable goal for government, it is clear that attempting to reach that goal by mandated employer-paid coverage in this manner is a poor public finance decision that dramatically increases costs while hurting the very employees the legislation is intended to help. Policymakers who are truly interested in addressing the problem of the uninsured should examine the efficiency of alternative plans such as Medicaid expansion and/or individual tax credits.

— Craig Garthwaite
Director of research

1. This number assumes that firms with 20 or more employees are covered and includes 11 million employees and 6.8 million dependents. If only firms with 50 or more employees are covered, 16.7 million residents are affected.

2. This cost accounts for the "savings" that result from the laid-off employees discussed later in this report. Ignoring these savings, SB 2 would cost between $12.8 billion and $13.2 billion. If SB 2 covers only firms with 50 or more employees, the cost would be between $11.3 billion and $11.9 billion, again ignoring the savings resulting from any layoffs.

3. Yelowitz (2003) utilized 2001 premium data—the most recent available at the time. This study utilizes 2002 data, the most recent currently available from the CPS. Between 2001 and 2002, the Kaiser Family Foundation estimates an increase in the cost of health insurance premiums in California of 10 percent. In addition, the composition of the insurance market in California changed. These factors primarily accounted for the increased cost estimate in this study.

Abstract

This study provides a comprehensive evaluation of the economic impact of the 2003 Health Insurance Act (HIA), using the most recent data available. A number of important results emerge. This "pay-or-play" mandate results in 1.98 million previously uninsured Californians receiving employer-provided health insurance, nearly double the number cited by most advocates. This represents 31 percent of the uninsured in California. Despite its modest impact on reducing the number of uninsured, the HIA is nonetheless much more expensive than previous studies have indicated. The cost for employers is between $12.8 billion and $13.2 billion. The cost for the uninsured, approximately $4.4 billion, represents about one-third of the total employer cost. Between $1.5 billion and $1.7 billion represents a cost shift from government health insurance to employer-provided health insurance. By far the largest single group cost is for those who already have employer-provided health insurance. The premium-sharing and dependent requirements of HIA entail costs of between $5.8 billion and $6.0 billion for employers.

The degree to which employers bear these costs ultimately depends on the types of behavioral responses that may occur, on which the existing literature on HIA is largely silent. One likely possibility is that employers will attempt to shift the cost of the HIA onto employees in the form of lower wages. If employers can shift the entire cost of the HIA onto employees in the form of lower wages, tax revenue will fall substantially. The loss in tax revenue could be as high as $4.9 billion from such wage shifting. Between $665 million and $860 million of this loss is from reduced income tax collections for California. For many low-wage workers, it will prove impossible for employers to shift wages, because of the California minimum wage. This study finds that there are more than 680,000 California workers earning less than $9.31 per hour for large employers who are either uninsured or on government insurance. The HIA could cause a substantial number of these workers to lose their jobs, since employers cannot fully shift the cost of the mandate through wages. This study estimates that more than 67,000 employees are expected to lose their jobs when wage shifting is possible, and more than 151,000 employees are expected to lose their jobs when wage shifting is not possible as a result of the HIA.

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1. Introduction[1]

The Health Insurance Act (HIA) of 2003, or Senate Bill 2 (SB 2), is a "pay-or-play" mandate that requires California employers to pay a fee to the state to provide health insurance unless the employer provides health insurance coverage directly, in which case the fee is waived. The bill was passed by the legislature on September 12, 2003, and signed by then-Governor Gray Davis on October 5, 2003. A referendum on the November ballot, Proposition 72, will allow voters to decide whether the legislation he signed will stand, where a "yes" vote on Proposition 72 will approve HIA, while a "no" vote will repeal it.

In the event that an employer chooses to "play" (and offer health insurance), it must offer the minimum benefit as specified by the Knox-Keene act of 1975 or a variety of other regulations. All Knox-Keene licensed plans must provide a set of basic minimum benefits: inpatient and outpatient care, physician services, preventive services, lab and radiology, home health, hospice, and emergency services. This coverage must also include a prescription drug benefit plan.[2] In the event that an employer chooses to "pay," the employer is responsible for paying 80 percent of an undetermined fee established by the Managed Risk Medical Insurance Board (MRMIB).[3]

The mandate imposes different requirements based on firm size. For employers with 200 or more California employees, the mandate begins January 1, 2006, and requires coverage for both the worker and his or her dependents (including spouses and same-sex domestic partners). For employers with 50 to 199 California employees, the mandate begins January 1, 2007, and requires coverage for workers but not dependents. Employers with 20 to 49 employees are exempt unless the state of California provides a tax credit equal to 20 percent of the employer's net cost of the fee, in which case they face the same requirements as those with 50 to 199 employees. Smaller employers are entirely exempt.

HIA is more than a mandate to cover uninsured workers. It also introduces a new "premium-sharing" mandate for currently covered workers. Employers are required to contribute at least 80 percent of premium costs for all eligible workers.[4] This provision was presumably intended to minimize the financial impact of HIA on newly covered employees, many of whom may have difficulty paying for a substantial share of their own health premiums. One estimate from 2002 reveals that 58 percent of employees who turned down cover-

age (and did not have health insurance coverage elsewhere) could not afford their share of the premiums.[5] The provision also reflects political sentiment to "level the playing field" between employers who provide and pay for a significant amount of health premiums and those who do not.[6] For low-wage workers, the employer cost is even higher. In firms required to pay for individual (family) care, enrollee contributions for workers whose wages are less than 200 percent of the poverty line for a household of one (three) are capped at 5 percent of wages, further raising the employer's cost. As it is written, HIA counts only individual earnings, as opposed to family income, for this poverty determination.[7]

The mandate specifies that employees qualify if they work 100 hours a month for three months. Those who meet this work requirement, and are employed at firms of an appropriate size, are required to pay (at most) 20 percent of the cost of coverage. HIA allows employers to deduct this payment from their employees' paychecks.

In addition to providing new coverage to some uninsured workers and imposing a premium-sharing mandate, HIA also entails substantial shifting of costs onto employers because it "crowds out" other forms of health insurance.[8] In addition to the costs of the uninsured, which has been the main focus of almost all existing studies, there is a substantial shifting of responsibility for paying for health insurance from the government to employers (akin to a tax increase), from currently covered employees to employers, and across employers (although this cost is often not counted as a new one to employers since it is an inter-employer transfer).[9,10]

HIA mandates that employers provide coverage for workers already receiving benefits through government-sponsored insurance programs such as Medicaid, Medicare, and Champus/Tricare, programs targeted to the poor, elderly, and those in the Armed Forces. In doing so, the bill vastly expands its reach to the more than 1 million individuals in California who currently receive coverage through only these programs. In addition, the bill creates a massive cost shift from these government programs to private businesses. This is particularly damaging due to the fact that these programs are at least partially, and often fully, funded by federal dollars.[11] Currently, many employers offer only a supplement to employees who qualify for government insurance. Under HIA, the provision of this supplement does not count as "playing," and employers must provide full health coverage to recipients regardless of their current insurance status or employee desire.[12]

Employees who qualify for full medical insurance through government programs and are currently working at least 100 hours per month are classified as enrollees and are mandated to pay for coverage under HIA. Enrollees may voluntarily provide to MRMIB the information necessary to determine eligibility for Medi-Cal (the name of Medicaid in California) or the Healthy Families Program. In the event that an enrollee is determined to be eligible for these benefits, or is currently

receiving the benefit, the enrollee contribution is refunded. The employer's contribution, however, is not refunded and is used to pay the state's contribution under the matching funds portion of Medicaid. In the event that the enrollee is receiving Medicare or Champus/Tricare coverage, the enrollee is also provided coverage through either the employer's private plan or a contribution to the state fund. Any wrap-around plan to supplement the government insurance programs would have to be offered in addition to this mandated coverage.

It is difficult to arrive at a precise calculation of the impact of HIA because a number of key, unknown variables will come into play if the law takes effect. Some of the provisions of the law leave a great deal of room for interpretation or are simply unknown. Perhaps most important, it is not known what the annual "fee" per employee will be from the "pay" part of the mandate. Moreover, the legislation gives the state the power to determine what is covered by the state plan against which private coverage is measured. If employers provide "inadequate" health coverage, they will be forced to find other coverage or have their workers covered by the state plan.

Despite these difficulties, the goal of this study is to evaluate the economic impact of HIA on employers in California. It is clear that the uninsured present a real problem for policymakers to try to solve, but the key question is whether HIA is a good way to solve it relative to other policy options. The key reason this study focuses on employers is that passing the health care obligation to them has the potential for many labor market distortions, including job loss and wage shifting. These sorts of rational employer reactions to the HIA mandate create economic inefficiency (known as "deadweight loss") for three critical reasons. First, some low-skilled and less experienced workers who would otherwise be able to find jobs and add value to the economy instead become unemployed. Second, HIA has far reaching effects on many insured workers by placing greater regulation on premium cost sharing and benefits offered. To the extent that employers and employees already have agreed on an acceptable compensation package, this sort of intervention makes both parties worse off. Third, by reinforcing the link between employment and health insurance, HIA potentially exacerbates issues like "job lock."[13]

In the current analysis of employer costs, I assume that the generosity of the state's plan (and the fee) is equivalent to the expense of the median health insurance plan. With the current ambiguity in the law, many researchers have taken an approach like this. With that in mind, a number of important results emerge from this study. The fully phased in mandate (covering employers with 20 or more employees) results in 1,983,420 previously uninsured Californians receiving employer-provided health insurance. This represents 31 percent of the 6.4 million uninsured in California. Despite its modest impact on reducing the number of uninsured individuals, HIA is nonetheless much more expensive than previous studies have indicated.

The cost for employers from the full mandate is between $12.8 billion and $13.2 billion.[14] The cost for the uninsured, approximately $4.4 billion, represents about one-third of the total employer cost. Between $1.5 billion and $1.7 billion represents a cost shift from government health insurance to employer-provided health insurance. By far the largest single-group cost is for those who currently have employer-provided insurance. The premium-sharing and dependent requirements of HIA entail costs of between $5.8 billion and $6.0 billion for employers.

The degree to which employers bear these costs ultimately depends on the behavioral responses that may occur, on which the existing literature is largely silent. Based on existing economic studies, one likely possibility is that employers will attempt to shift the cost of the mandate to employees in the form of lower wages (Gruber, 1994). When employers can shift the entire cost of the mandate to employees in the form of lower wages, tax revenue falls substantially. The overall loss in tax revenue could be as high as $4.9 billion. Between $665 million and $860 million of this loss is from reduced income tax collections on the part of California. For many low-wage workers, it will prove impossible for employers to shift wages, because the California minimum wage is $6.75 per hour. This study finds, for example, that there are more than 680,000 workers earning less than $9.31 per hour in large employers who are either uninsured or on government insurance. The family mandate could cause a substantial number of these workers to lose their jobs since employers cannot fully shift the cost of the mandate to them. Using reputable employment-elasticity estimates from the economics literature, 67,521 employees are expected to lose their jobs when wage shifting is possible, and 151,482 employees are expected to lose their jobs when wage shifting is not possible, as a result of HIA.[15]

The remainder of the paper is arranged as follows. Section 2 reviews previous cost estimates for HIA and explains why such divergent results emerge from the different studies. Section 3 reviews the three microdata sets used in the economic analysis. The first two, the Current Population Survey (CPS) and County Business Patterns (CBP) are both published by the Census Bureau. The third, the California Employer Health Benefits Survey (CEHBS) is published by the Kaiser Family Foundation and Health Research and Educational Trust (KFF/HRET). This section also contrasts features of the CPS with the California Health Interview Survey (CHIS), a data set promoted by some researchers. Sections 4 and 5 analyze the coverage and cost effects of the legislation, assuming no behavioral responses on the part of the employers. Section 6 then presents evidence on two likely avenues through which employers will adjust their behavior—wage shifting and layoffs. Because layoffs result in fewer workers being covered under HIA, this section also revises the cost estimates in light of these responses. Finally, it studies the impact of HIA on different socioeconomic groups. Section 7 concludes with remaining open questions and policy alternatives to HIA.

2. Why Are the Proposition 72 Cost Estimates So Divergent?

2a. Existing estimates

Broadly, there are five groups that have produced widely cited and wildly different estimates of the impact of SB 2 on employers in various reports or "fact sheets." These groups include the Employment Policies Institute, California Chamber of Commerce, UCLA Center for Health Policy Research, Institute for Industrial Relations, and California Medical Association (CMA).[16]

The range of costs to employers varies by an order of magnitude. The estimates from the California Chamber of Commerce (and to a lesser extent the Employment Policies Institute) are often used by opponents of Proposition 72. This current study is the second report I have written for the Employment Policies Institute. In Yelowitz (2003), I found that the cost to employers for the fully phased in mandate was $11.4 billion, based on data from 2001 (and expressed in 2001 nominal dollars). In this current study, which uses newer cost data, the cost to employers of the full mandate is between $12.8 billion and $13.2 billion (and expressed in 2003 nominal dollars).[17]

Two reports have been produced by the Los Angeles County Economic Development Corporation (LAEDC) and are associated with the California Chamber of Commerce. In Kyser et al. (2003), the authors find that the HIA mandate would cost employers $5.7 billion (expressed in 2003 nominal dollars). In a more recent paper, Baker et al. (2004) find a sharply lower bottom-line cost to employers of $3.4 billion (again, expressed in 2003 nominal dollars). By inflating the cost estimate to nominal 2007 dollars using double-digit growth rates, their employer cost of $5.3 billion appears similar to the previous Kyser et al. (2003) study.

The figures from the UCLA Center for Health Policy Research, Institute for Industrial Relations at Berkeley, and the CMA are often used by advocates of Proposition 72. It is important to note that of these groups, only the CMA has a widely published cost estimate for employers. The researchers associated with the UCLA Center for Health Policy Research have not published a total cost estimate to employers, but they have published a sheet estimating that 1,070,000 uninsured people will be covered by SB 2 (Brown et al., 2003). Nonetheless, several researchers affiliated with the UCLA group apparently believe the cost of HIA will be much lower. In a recent court filing criticizing the Kyser et al. (2003) study, E. Richard Brown stated, "A better estimate of the cost of extending coverage to currently uninsured employees under Proposition 72 would be no higher than $2.7 billion, and likely far lower than that" (Brown, 2004). Another researcher affiliated with the center, Gerald F. Kominski, also stated in a court filing that using the UCLA study's estimates on the number of uninsured, the total after-tax cost to employers and employees would be $1.8 billion, and with the Kyser et al. (2003)

estimates of the uninsured, no more than $2.7 billion (Kominski, 2004).[18] Kominski believes that it is a "near impossibility" that Proposition 72 will cost $7 billion to employers and employees.

Three reports have been produced by the researchers affiliated with the Institute for Industrial Relations at Berkeley. As with the UCLA group, the Berkeley affiliates have not published a bottom-line estimate on the cost to employers. In Dube and Reich (2003), the authors estimate that the median covered California business will see annual increases in costs of $1,343 per worker it newly insures, after deducting corporate income tax deductions and expressed in 2002 dollars. In Dube (2003b), the author finds that 1.56 million people (1.16 million workers) would be covered by SB 2, based on 2001 data. Presumably, using the numbers from these two studies would produce an estimated employer cost for the uninsured of roughly the same magnitude as the UCLA researchers, perhaps $1.6 billion (the product of $1,343 per worker and 1.16 million workers, and expressed in nominal 2002 dollars). In a final study, which is no longer posted on the Berkeley web site, Dube (2003a) finds that 650,000 Medicaid recipients are eligible for SB 2, and that by shifting the responsibility for their coverage from the federal government and state government to employers, California would save $620 million annually. As the author notes, however, "Since the employer's plan will become the primary insurer, the bulk of this cost will be shifted from the taxpayers to the employers" (Dube, 2003a, p. 3). Since the state pays only half of the Medicaid cost (the federal match rate is 50 percent), an implication of the Medicaid shifting would be that the pretax cost to employers is in the range of an additional $1.24 billion beyond the cost of covering the uninsured.

Finally, the CMA has published a widely cited estimate that is usually thought of as the "lower bound" for the costs of HIA.[19] In a one-page fact sheet (CMA, undated), the CMA estimates that the cost for extending the mandate to employers with 50 or more employees is $1.3 billion. It also estimates that the fully phased in mandate for the uninsured would cost employers $1.7 billion.[20] In announcing these estimates, the CMA also stated that "This legislation is also expected to provide $700 million in savings to the state's Medi-Cal system and reduce inappropriate use of emergency rooms and the workers' comp system by workers who lack health insurance" (CMA, 2003c). As in the Dube (2003a) study, this Medi-Cal savings comes at the expense of employers, but the CMA neglects to include this in the employer's cost. Their estimate implies that the pretax cost of Medi-Cal shifting is in the range of an additional $1.4 billion to employers.

2b. How are costs counted?

There are several key reasons why the published estimates of the cost to employers of SB 2 vary so much. First, the treatment of currently covered employees in firms that pay less than 80 percent of premiums varies. Related to this, the treatment of the "poverty subsidy"

varies. Second, the treatment of insured workers who are not covered by their own employer plan varies, where "insured" can mean coverage through government insurance, private insurance, or a spouse's plan. Third, the count of the number of uninsured workers (and dependents) varies. Fourth, the treatment of corporate tax deductions varies. Finally, the treatment of health care inflation varies.

The first issue is how the studies deal with the premium-sharing part of the SB 2 mandate. HIA mandates that employers with 50 to 199 employees provide health insurance for single workers and pay for at least 80 percent of the premium cost. It also mandates that employers with 200 or more employees provide and pay for at least 80 percent of the cost of a single or family plan (as applicable for the employee). If a tax credit were implemented for employers with 20 to 49 employees, employers would be responsible for 64 percent of the premium cost of a single plan. This premium-sharing part of the mandate is ignored by all of the studies on employer costs except the Employment Policies Institute studies. If the employer provides health insurance but pays less than the mandated percentage, the legislation entails redistribution from the employer to the employee and is a true cost to the business.[21] Even though California employers nearly meet the premium-sharing part of the mandate requirements on average, there is a great deal of dispersion, with some employers paying more than 80 percent and others paying far less. KFF/HRET used the CEHBS to estimate that in 2002, 20 percent of small or medium employers and 21 percent of large employers did not cover 80 percent of the premium costs of a single plan, and approximately 50 percent of large employers did not cover 80 percent of the premiums for a family plan.[22] The results in Section 4 of my current study reveal that nearly 500,000 Californians who qualify for HIA are covered by employer insurance where the employer pays for none of the costs. From the employer's viewpoint, the additional cost of paying for these individuals is the same as for uninsured individuals under the mandate.

In addition to this premium-sharing mandate for all eligible employees, HIA also mandates that low-wage employees pay no more than 5 percent of wages toward the cost of their health insurance. In this case, the employer would be responsible for more than 80 percent of the premium costs.[23] In firms required to pay individual health care, enrollee contributions for individuals whose wages are less than 200 percent of the poverty line, or $18,620 in 2004, are capped at 5 percent of wages. For employers that are required to offer family coverage, enrollee contributions are capped at 5 percent of wages for employees earning less than 200 percent of the poverty line for a family of three, $31,340 in 2004.[24] For a full-time, full-year worker, these limits correspond to hourly wage rates of $8.95 and $15.06, respectively. As it is written, HIA counts only individual earnings, as opposed to family income or full-time equivalent earnings at various wage rates toward this poverty determination. In Yelowitz (2003, Table 7), I found that based on this narrow "individual earnings" measure, as many as 2.8 million Californians would

qualify for the poverty subsidy and cost employers even more. Despite the potential for this poverty subsidy to raise costs, I have not included this factor in my cost estimates because of its ambiguity. Ignoring it yields underestimates of the true cost to employers.

The second factor for the widely varying employer costs is the treatment of people who are covered through Medicaid, Medicare, Champus/Tricare, privately purchased health insurance, or a spouse's plan. Crowding out Medicaid, Medicare, and Champus/Tricare in favor of employer insurance represents a shifting of costs from the state and federal government to employers. Crowding out privately purchased health insurance represents a shifting of costs from the employee to the employer. The last group, crowding out a spouse's plan for a worker's own plan, is a shifting of costs from one employer to another, and thus is not viewed as a new cost to employers as a whole (though the logic is not as simple as this).[25] From the summary above, it appears that many researchers are aware of these sorts of crowding out, but only the EPI studies count this as a legitimate cost to business.[26]

Third, all researchers agree that uninsured workers and dependents who are covered by SB 2 are a cost to the employer. But there is disagreement on the count of uninsured workers (and dependents) covered by SB 2. Some studies have used insurance counts from the CHIS (for example, Brown et al., 2003). Others (Dube 2003a, 2003b; Yelowitz, 2003, 2004) have primarily used the CPS. Finally, others (Dube and Reich, 2003; Baker et al., 2004; Kyser et al., 2003) have relied primarily on aggregate employment data or firm-level data, supplemented with auxiliary data sources. The key difference here is that the CHIS data gives substantially lower estimates of the number of the uninsured than the CPS, and some researchers seem to believe the CHIS is a better data set.[27] A discussion of the merits of the data sources is postponed until Section 3. For all its discussion, however, the debate about the correct number of uninsured people covered by SB 2 is a relatively minor factor in the total employer costs. For example, in my current study, if the costs of the uninsured were cut in half, the cost to employers would still be between $10.6 billion and $11.1 billion, rather than the estimated $12.8 billion to $13.2 billion.[28]

Fourth, the treatment of federal and state corporate income tax deductions varies. Every cost estimate touted by advocates of SB 2 discounts the cost of the mandate by the presumed "tax savings" from reduced corporate income tax payments. One recent study promoted by opponents of SB 2 (Baker et al., 2004) also discounts employer costs for the corporate income tax, but several others do not (Yelowitz 2003, 2004; Kyser et al., 2003). The studies that do include this tax savings often use a tax rate in the range of 40 percent, which inevitably leads to a substantial discount of employer costs.[29] For example, in one study touted by opponents, the estimate of the employer's cost falls from $5.775 billion to $3.423 billion by including this tax savings (Baker et al., 2004, Table 8).

It is important to understand that the corporate income tax is a tax on corporate profits. Thus, even some large corporations with many assets holdings and high market valuations will face low corporate tax rates because accounting profits can be volatile from year to year. Joel Friedman of the Center on Budget and Policy Priorities recently published an informative paper that illustrates the true reach (or lack of reach) of the corporate income tax.[30] Friedman (2003) states that of the 27 million businesses that filed tax returns in 2000, only 2.2 million (or about 8 percent) were subject to the corporate income tax (Friedman, 2003, p. 4). He also clears up the perception that the statutory federal rate of 35 percent is the most appropriate number. He reports that

> "The corporate income tax rate is typically thought to be 35 percent. The reality is more complicated. The 35 percent rate is the highest statutory corporate rate; lower levels of corporate income are taxed at lower rates. The first $50,000 of taxable corporate income faces a 15 percent tax rate, and the next $25,000 is subject to a 25 percent rate. From $75,000 to $10 million of taxable profits, corporations pay a 34 percent rate. For taxable income above $10 million, the rate is 35 percent. These lower graduated rates phase out for corporations with larger incomes" (Friedman, 2003, p. 6).

Friedman (2003) cites a Congressional Research Service (CRS) study that shows the corporate income tax rate has averaged 26.3 percent for nonfinancial, domestic corporations, or about one-quarter lower than the 35 percent statutory rate. Finally, the Friedman (2003) study notes that "C" corporations are subject to the corporate income tax, but the profits of businesses other than "C" corporations are subject to the individual rather than the corporate income tax. The number of "C" corporations peaked at 2.6 million in 1986 and has declined since then. At the same time, there has been rapid growth in another type of corporation, known as "S" corporations. "S" corporations do not pay corporate income tax but rather pass through profits to their shareholders, who in turn include this business income on their individual income tax returns.[31]

Finally, a recent, revealing study by the Government Accountability Office (GAO, 2004), covering the "boom years" of 1996 to 2000, offers other insights on the corporate income tax. The GAO compared tax liabilities of foreign and U.S.-controlled corporations from 1996 to 2000 by examining the Internal Revenue Service's Statistics of Income (SOI) samples of corporate tax returns and found that a majority of all corporations reported no tax liability during these years.[32] Overall, 71.3 percent of foreign-controlled corporations (FCCs) and 61.3 percent of U.S.-controlled corporations (USCCs) paid no tax (GAO, 2004, p. 15, Table 4). In addition, 94 percent of USCCs and 89 percent of FCCs reported

tax liabilities of less than 5 percent of their total income (GAO, 2004, p. 7). Even among large corporations–those with assets of at least $250 million or gross receipts of at least $50 million in constant 2000 dollars–an estimated 82 percent of USCCs and 76 percent of FCCs reported a tax liability of less than 5 percent of their income (GAO, 2004, pp. 16–17, Tables 5 and 6).

These tax return findings from the GAO show the efforts of corporations to minimize their tax liabilities.[33] Corporations that pay zero federal corporate income tax clearly do not face a marginal federal income tax rate of 35 percent on average, but one that is much lower. Thus, the tax savings by assuming the highest marginal rate is overstated. The GAO report shows that an overwhelming percentage of corporations face an average tax rate of less than 5 percent, again indicating that they are not close to this part of the tax schedule.

Based on the Friedman (2003) report, the CRS survey, and the GAO findings, one can reasonably conclude that the importance of discounting the mandate's cost for the corporate income tax has been overstated and misapplied by the studies touted by advocates of SB 2. Given these findings, the burden of proof should be to demonstrate that businesses affected by SB 2 do, in fact, face the kinds of marginal tax rates that are assumed in some studies. To date, not one of those studies has cited any evidence on the effective tax rates that businesses really face.[34]

Finally, the treatment of health care inflation varies across studies. Most of the studies use outdated premium data, which tends to understate the true impact of the law on businesses. For example, Yelowitz (2003) relies on health coverage and health premium data from 2001.[35] It is widely recognized that premiums have increased dramatically over the past three years and will likely increase even more prior to the implementation date of the SB 2 mandate in 2006. According to the KFF/HRET, health insurance premiums in California grew by 15.8 percent in 2003, 13.4 percent in 2002, and 10 percent in 2001.[36] Even advocates of Proposition 72 concede that premiums have grown dramatically.[37] Most of the widely available current studies do not account for the dramatic premium increases in recent years and therefore provide outdated underestimates of the cost impact of SB 2 to employers.

2c. Review of existing research on HIA

With this background in mind, this subsection will review how each of the widely cited studies on HIA accounts for the various cost issues. It will follow the ordering of the studies from Section 2a. Table 1 summarizes the key assumptions used by various studies that compute employer costs from HIA. Excluded from the table are studies that do not provide explicit cost estimates.

First, Yelowitz (2003) analyzed data from a number of sources, the most important being the March 2002 CPS Annual Demographic Survey. The CPS is administered by the Bureau of Labor Statistics and the Census Bureau.[38] This survey provides health insurance estimates for the 2001 calendar year. The study

Table 1 Assumptions used in bottom-line cost estimates of previous studies

Modeling Assumption	CMA (undated)	Kyser et al. (2003)	Baker et al. (2004)	Yelowitz (2003)	Yelowitz (2004)
1. Counts uninsured as a cost to employers?	■	■	■	■	■
2. Counts shift from government health insurance as cost to employers?				■	■
3. Counts shift from private health insurance as cost to employers?				■	■
4. Counts "premium mandate" as cost to employers?				■	■
5. Discounts cost for corporate income tax?	■		■		
6. Uses up-to-date health premium information?			■		■
7. Correctly accounts for additional costs from inter-employer transfers?					■
8. Provides cost estimates accounting for employer behavioral responses?					■
9. Computes additional cost to employers from "poverty subsidy"?			■		

Notes: Shaded areas indicate authors included corresponding modeling assumption.

also relied on data from California's Employment Development Department (EDD) and the 1977 National Medical Care Expenditure Survey (NMCES).

The study revealed that the total cost to employers of the SB 2 mandate is $9.96 billion if it covers only employers with 50 or more employees, and it is $11.36 billion if it covers employers with 20 or more employees (Yelowitz, 2003, Table 5, p. 6). For the larger mandate, $4.56 billion is spent on the uninsured. This represents approximately 40 percent of the newly mandated cost. An additional $4.39 billion is spent on raising the employer's premium-sharing percentage to 80 percent threshold for those with more modest employer coverage or covering dependents. The study also found that there are significant costs to employers from the state of California shifting those with government health insurance onto the employers, as intended by HIA. The newly mandated cost for employers from those with government insurance (Medicaid, Medicare, or Champus) exceeded $1 billion.

The estimates of coverage and costs contained in Yelowitz (2003) were significantly higher than other publicly released estimates because other estimates ignored several categories of individuals. These groups include employees currently receiving government insurance (such as Medicaid, Medicare, or Champus) or choosing to pay for their own private coverage–groups specifically covered under HIA. Moreover, HIA requires employers to pay for at least 80 percent of the premiums for a single or family plan (depending on firm size). Many employers pay far less than this percentage, and their costs will go up as a result of the mandate. Excluding these large categories of people, and assuming that all

employer-provided insurance will meet the rich mandated benefits of the "play" portion of HIA significantly understates the true cost and impact of this mandate.

The cost estimates from Yelowitz (2003) ignored several issues that would modestly affect the conclusions. First, although the number of workers who would receive the "poverty subsidy" was computed, the increased cost from such workers to the employer was not calculated. Second, the cost estimates use information from 2001, while premiums have increased dramatically since that time. Third, the analysis relied solely on health insurance premium data contained in the CPS, even though the KFF/HRET publications generally suggested higher premium costs. Fourth, the costs did not include any discount for corporate tax savings. As discussed in the previous section, my reading of the literature is that the importance of the corporate income tax, with regard to cost savings, has been massively overstated, and if the decision boils down to ignoring corporate income taxes or assuming the highest marginal tax rate, the evidence strongly suggests the first option is more realistic.[39] Fifth, the study counted as an employer cost the crowding out of a spouse's plan for a worker's own plan. As discussed earlier, although the inter-employer transfer is not neutral in terms of employer costs, there are admittedly some cost savings to small and medium employers. The current study correctly accounts for this issue, but the substantive conclusions remain unchanged.[40]

In Kyser et al. (2003), the authors find that the HIA mandate would cost employers $5.7 billion (expressed in 2003 nominal dollars) and that the total cost would be $7.2 billion (Table 6, p. 14). The authors relied on publicly available aggregate employment data from Report 524 of the California EDD for the third quarter of 2001, as well as aggregate health insurance information from the 2002 CEHBS publication produced by the KFF/HRET.[41] The authors compute the number of workers not offered health insurance by firm size (using information from Chart 2 in the KFF/HRET publication) and find 1,031,858 such workers in firms with 20 or more employees (Table 4). They also find that 1,068,052 workers were offered coverage but refused, using a take-up rate of offered insurance of 90 percent (Table 5). Thus, they find that 2,099,910 workers would be eligible for the full HIA mandate, in various firm-size groupings. They compute an employer cost of approximately $3.7 billion for workers in medium employers (using 80 percent of the single premium from the KFF/HRET publication), and a cost of approximately $2.1 billion for workers in large employers (using 80 percent of a weighted average of the premiums for single and family plans).[42] They argue that because of the poverty subsidy, their estimates of SB 2 costs to businesses are conservative.

The Kyser et al. (2003) study has received a great deal of attention and was prominently promoted by the California Chamber of Commerce. It also received a fair amount of criticism. One of the most germane is the

number of uninsured workers covered by SB 2.[43] In a recent court filing, Brown (2004) questions the "LAEDC estimate of 2,099,910 employees not currently receiving health care coverage at work and presumably eligible for Proposition 72 coverage. That estimate is almost *double* what it should be." Brown et al. (2003) find that 1,070,000 uninsured workers and dependents are covered by SB 2. A more careful reading reveals that these authors estimate only 698,000 *workers* eligible for SB 2, so the gap between their estimates is even larger. Based on my own work, and that of Dube (2003b), I believe that both the LAEDC and UCLA estimates of the number of covered workers are wrong. Dube (2003b) reports that 1.2 million workers are eligible through their own employer in 2001, and in unpublished tabulations of my own work, I found that 1.7 million uninsured workers were eligible. Both of these findings come from the March 2002 CPS. In my current study, using March 2003 data, I find that 1.5 million uninsured workers would be covered by their own employer.

One valid criticism that Brown (2004) offered is that a substantial number of workers who turn down coverage from their employer may have insurance from a spouse; he argues that nearly three-quarters of those who turn down coverage are, in fact, insured. To the extent that these workers are covered by a working spouse whose employer meets the mandate's requirements, then the costs generated by these workers do represent a neutral inter-employer transfer. To the extent that those workers are covered by a spouse's plan that does not meet all of the mandate's requirements, or to the extent they are covered by government or privately purchased health insurance, then some or all of the costs generated by these workers are indeed a new cost to employers.

Baker et al. (2004) provide revised estimates from the earlier study by many of the same authors. Although these authors continue to use the same California EDD data from 2001, they use an updated chartbook from the 2002 CEHBS produced by KFF/HRET that was prepared to shed light on the SB 2 mandate; the new chartbook grouped employers according to the mandate's provisions.[44] In addition, premium information was taken from 2003 rather than 2002. In the new study, the authors found that 1,773,394 uninsured workers (from 2001) would be eligible for the SB 2 mandate, a number much closer to my own tabulations for the 2001 calendar year from the March 2002 CPS.

The authors use updated premium information (and then convert their estimates into nominal 2007 dollars), incorporate a rough measure of the impact of the poverty subsidy, and adjust their cost estimate downward by assuming that the aggregate federal and state corporate marginal income tax rate is 40.72 percent. In doing so, they find a cost to employers of $3.4 billion in 2003 dollars and $5.3 billion in 2007 dollars.[45]

Although one can debate about the precise costs to employers for uninsured workers from the two studies produced by the California Chamber of Commerce (and legitimate concerns about overestimating the number of the

uninsured), my fundamental criticism is that they miss the costs from workers who already have insurance. Their bottom-line estimates for the cost to employers make no adjustment for workers and dependents on government insurance, although this group is discussed in Baker et al. (2004, Section VI). More surprisingly, they do not account for the effects of premium mandates on employers even though KFF/HRET has published estimates of the distribution of premiums. Although my own work would suggest lower employer costs for uninsured workers than either of the two reports (when taking the most similar comparisons), because the LAEDC/Chamber reports ignore these other legitimate employer costs, my results remain much higher. Because of these methodological concerns, the cost estimates in Kyser et al. (2003) and Baker et al. (2004) should be viewed with considerable skepticism.

Another study that has received a great deal of attention is a fact sheet of Brown et al. (2003). Although this fact sheet does not provide any estimates of costs, Brown (2004, p. 3) states that he believes it is "the one relied upon by the Legislative Analyst's Office in its Fiscal Impact Statement for Proposition 72." The authors find that 1,070,000 uninsured would be covered by full SB 2 mandate. They also estimate that 698,000 workers are eligible for SB 2. Virtually all advocates for Proposition 72 use the Brown et al. (2003) estimate of the number of uninsured.

The authors use the CHIS in conjunction with the March 2001 and 2002 CPS to provide estimates for relevant factors not included in CHIS. Their CHIS sample included uninsured people who were aged 18 to 64, worked for an employer for wages, worked at least 23 hours per week and had been employed in the same position for at least three months. They excluded workers with any insurance coverage. The CPS is used to impute dependent coverage for these uninsured workers.

There are many serious criticisms of this approach. First, the authors provide no cost estimates for employers, so it is far less ambitious than some other studies. Second, the focus on uninsured workers misses many of the costs to employers, even for the uninsured. With this focus, the authors cannot assess the impact of HIA on those with government and privately purchased health insurance. Moreover, by excluding workers with insurance, they understate the number of uninsured dependents. Their method implies that an insured worker with single coverage at a large employer whose children have no insurance would not be included in counts of the uninsured or employer costs. Thus, even if one agrees with their use of the CHIS, the number of uninsured eligible for SB 2 must be understated. Brown et al. (2003) also estimate far fewer workers eligible for SB 2 than other sources, including Dube (2003b), who is a coauthor of this study. Third, by focusing on the uninsured, the authors ignore the impact of workers who received employer-provided health insurance that pays for less than 80 percent of the premiums. Fourth, by screening exclusively on workers under the age of 65, Brown et al. (2003) ignore the wasteful,

redundant mandated employer costs for older workers who already have Medicare coverage.

Another study that has received a great deal of attention is Dube and Reich (2003). They analyze the 2003 California Establishment Survey (CES), which surveyed business and nonprofit establishments with five or more employees (except for the agricultural industry). The CES was designed by Reich, funded by the University of California Institute for Labor and Employment, and conducted during the summer of 2003 by the UC Berkeley Survey Research Center.[46] The response rate is not reported in their study, but they construct weights that they claim solve any nonresponse issues.

The CES finds that 64 percent of all "businesses respondents" support the health insurance mandate, as do 59 percent of "business respondents" at employers that do not offer health coverage.[47] It is important to note that according to the authors, the overwhelming majority–91 percent–of "business respondents" were not the owners whose profits would be lowered but rather hired employees such as personnel department officials who very well could personally benefit from the mandate even if profitability falls. There is no explanation by these authors whether such employee responses are the official positions of the businesses or the respondents' own personal positions.

Interestingly, one of the CES findings is that 90 percent of the employers that currently do not offer health benefits are in markets where their competitors do not provide such benefits either. This finding seems to invalidate one of the arguments put forth by advocates for Proposition 72, namely that the mandate levels the playing field for "responsible" companies. The argument–that companies that do not provide affordable health care to their employees have an advantage over companies that do–appears to not be terribly important, because the "race to the bottom" has already occurred.[48]

The most widely cited and used finding from Dube and Reich (2003), however, is their cost per newly covered worker. While many advocates for Proposition 72 use the Brown et al. (2003) study for their estimate of the affected uninsured, they often use the Dube and Reich (2003) study for the per-employee cost. This study finds that the median covered California business will see annual increases in costs of $1,343 per worker it newly insures (after deducting corporate income tax deductions). To arrive at this number, they use average health premium costs from the 2002 CEHBS published by the KFF/HRET. The total premium was $2,845 for a single plan and $7,471 for a family plan from the 2002 survey. They also estimate a marginal cost per dependent of $2,085, using the aggregate number of dependents in family plans in the CPS.[49] The employer is responsible for 80 percent of these costs, or $2,276 for a single plan, $5,976.80 for a family plan, and $1,668 per newly covered dependent. For employers with 20 to 49 workers, the mandated cost from the single plan would be even lower, $1820.80, because of the state tax credit. From there, they assume a combined federal/state marginal

corporate income tax rate of 40 percent, which is very close to the maximum possible rate for most businesses once the federal deduction for taxes paid to the state is taken into account. After taking into account this tax savings, the annual per-employee cost for a newly insured worker would be $1,092.48 for employers with between 20 and 49 employees, $1,365.60 for employers with between 50 and 199 employees, $3,586.08 for family coverage in firms with 200 or more employees, and $1,000.80 per dependent.

To arrive at their estimate of $1,343 per newly insured worker, they adjust these single plan baseline values for the fact that "some of these workers who are not insured through their own employer are dependents of spouses. These individuals do not represent added costs to employers but rather shifts in costs between employers." For large employers, they also add the expected number of dependents per insured worker and the cost per dependent to the calculation.

Their estimate of $1,343 fails to account for at least some of the issues discussed in Section 2b. First, through no fault of the authors, the findings use outdated premium information. Analogous premium data for 2003 would be $3,102 for a single plan and $8,504 for a family plan (rather than $2,845 for a single plan and $7,471 for a family plan). Second, without presenting additional evidence on the marginal tax rates that corporations face in reality, it is not compelling to discount the cost estimates by the maximum rate. Third, and importantly, their number does not account for the premium increases to the employer for already covered employees. Fourth, they are not clear on how they treated workers and dependents with government health insurance or privately purchased health insurance. All that we can be sure about is they downweighted the cost numbers for inter-employer transfers, which they assume to be neutral. Fifth, and most important, their finding is for the *median* business, yet the distribution of mandated costs across covered employers is clearly bimodal. HIA creates relatively low costs for uninsured workers at employers with 20 to 199 employees and a distinctly higher set of costs for uninsured workers at employers with 200 or more employees. Rather than computing the median cost for each distinct group, Dube and Reich group all of these firms together in coming up with their estimate. They state, "The median California covered business (i.e. with 20 or more employees) will see an annual increase in costs of $1,343 per worker it newly insures." The key issue here is that the median business is not informative about the cost of the family mandate. Based on third-quarter 2001 California EDD data, there were 1,075,523 businesses in California, of which 133,957 had 20 or more employees and a mere 6,664 had more than 250 employees.[50] Clearly, the median covered business does not face the family mandate, only the single mandate. If Dube and Reich (2003) had presented the median cost for newly insured workers at medium and large employers separately, those figures would have been more informative (but still subject to the other criticisms).

Dube (2003a, 2003b) has also written two

papers that have received relatively less attention. In fact, one of them (Dube 2003a) is no longer available on the Institute of Industrial Relations' web site. In one paper (Dube, 2003b), he uses the March 2002 CPS to estimate the impact of SB 2 on health insurance coverage. He estimates that there were 6.72 million uninsured Californians in 2001, and that by applying the provisions of the SB 2 legislation for employers with 20 or more employees, 1.56 million uninsured Californians and 1.16 million uninsured workers would be covered by the law. The total number of uninsured people who are covered, which is based on the same data as in my earlier study, is somewhat lower than my estimate of 1.95 million uninsured in firms with 50 or more employees, and much lower than my estimate of 2.29 million uninsured Californians, using firms with 20 or more employees (Yelowitz, 2003, Table 4). It is also 45 percent higher than the Brown et al. (2003) estimate of 1.07 million, however, and is only infrequently cited in public policy discussions.

In a second piece, (Dube, 2003a), he again uses the March 2002 CPS, this time to estimate the impact of SB 2 on Medi-Cal costs. He finds that 650,000 Medi-Cal enrollees are SB 2-eligible working family members in firms with 20 or more employees. This figure is virtually identical to the count of 641,239 newly mandated Medicaid enrollees that I found (Yelowitz, 2003, Table 4) for employers with 50 or more employees, but it is considerably lower than the 693,160 enrollees I found in firms with 20 or more employees. His cost savings to the state is estimated to be $620 million annually, while the estimated cost to employers in Yelowitz (2003, Table 5) is $675 million. Overall, the differences in findings between this study and my own are relatively modest.

Dube (2003a) also raises the interesting point that federal Medicaid matching dollars could be lost if employers decide to "play" rather than "pay." If the employer provides health insurance for the current Medi-Cal enrollee (and dependents), then "Medi-Cal will become at most a supplementary insurer" (Dube, 2003a, p. 2). In this situation, Medicaid will provide wraparound coverage, covering benefits like vision or dental care that may not be provided by the employer. Because Medicaid enrollment falls, both state and federal expenditure fall at the expense of employers. If the employer "pays," then the worker would still receive Medicaid, but the statewide employers' pool would compensate the Department of Health and Human Services for the state's portion of covering Medicaid enrollees. Thus, the federal match is not lost for these recipients in this situation. Finally, Dube is candid about the shifting of costs to employers in this situation: "Since the employer's plan will become the primary insurer, the bulk of this cost will be shifted from the taxpayers to the employers" (Dube, 2003a, p. 3).

Overall, Dube (2003a, 2003b) provides only fragments of the information needed to assess the costs to employers. Nonetheless, his use of the CPS for health insurance statistics supports the notion that it is an appropriate data set to

use for evaluations like these. Moreover, although Dube's methodology for imputing SB 2 coverage clearly differs from my own, his numbers are only modestly smaller than my own.

Finally, the CMA has produced a widely cited one-page sheet that estimates the cost of SB 2 to employers at $1.341 billion for employers with 50 or more employees and $1.689 billion for employers with 20 or more employees (CMA, undated). It uses a count of the uninsured (1.56 million) from the Dube (2003b) study. It assumes an annual gross cost of $2,400 per worker or adult dependent and $1,100 per dependent minor. The actual marginal cost per dependent in its study is $1,616.40. Thus, the CMA is assuming that 60.3 percent of dependents in large employers are children and 39.7 percent are adults. It also assumes a corporate tax rate of 40 percent but acknowledges that it "may be less for some employers."

The CMA estimate is a straightforward, but naive, estimate of the costs to employers. First, it provides only weak justification for its premium numbers, and those numbers are considerably smaller than those from other sources. Second, it ignores the impact of the premium-sharing part of the HIA mandate, as well as the additional poverty subsidy for low-wage workers. Third, it ignores the costs to employers from workers who currently receive government health insurance or privately purchased health insurance. Fourth, although it concedes that some employers face lower marginal tax rates, it provides no evidence on the percentage of employers that do face such high tax rates. Fifth, its calculations do not account for the dramatic increase in health care premiums in the last three years. Because of these problems, the CMA numbers have very little credibility.

3. Data Description

3a. 2003 March Current Population Survey, Annual Social and Economic Survey

The primary data set used in the analysis is the 2003 March CPS Annual Social and Economic Survey (U.S. Department of Commerce, Bureau of the Census, 2003). The March CPS Annual Social and Economic Survey (ASEC) was formerly called the Annual Demographic Survey.

The CPS is recognized as a credible and widely respected survey. It currently surveys nearly 80,000 households for the March supplement and asks questions that specifically address issues of health coverage and health insurance. It is administered by the Bureau of the Census for the Bureau of Labor Statistics and has been conducted for more than 50 years.[51] The response rate for the March survey is exceptionally high for a voluntary, household-based survey.[52] The sample is scientifically selected to represent the civilian noninstitutional population. The Census Bureau states that the CPS sample provides estimates for the nation as a whole and serves as part of model-based estimates for individual states and other geographic areas. The CPS is conducted by telephone and in person (and thus includes residences without telephones).

The March 2003 CPS ASEC surveyed

216,424 people across the nation (78,310 households) and 16,779 people in California (5,600 households).[53] When appropriately weighted, I derived a population count of 285,934,600 for the United States and a population count for California of 35,159,001. The count for California exactly matches published Census tabulations, while the count for the United States appears to be subject to a trivial amount of rounding error.[54] Unless otherwise noted, all estimates in the paper are based on the weighted data.

The ASEC identifies only 32 of 58 counties in California (either individually or within an MSA). The other 26 counties are not identified in the ASEC. These counties are Alpine, Amador, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Imperial, Inyo, Kings, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, San Benito, Santa Cruz, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Tuolumne. Fortunately, these unidentified counties are sparsely populated; the 32 sampled counties contain roughly 95 percent of California's population. In total, the 26 unsampled counties had a population of 1,540,112 in the 2000 Census, out of 33,871,648 in the state as a whole.[55]

In general, using the CPS would be problematic for constructing state-level estimates. Fortunately, the California sample is sufficiently large to overcome these concerns. State-level estimates of the uninsured in the annual March CPS are typically unreliable due to small state sample sizes. Between 2,000 and 3,000 unweighted households are needed in a state sample to generate reliable estimates of subpopulations (such as uninsured children below 200 percent of the poverty line).[56]

The ASEC asks detailed questions about health insurance and work behavior for the entire previous calendar year.[57] Health insurance status is asked for all household members; the survey includes questions about employer-provided health insurance, private health insurance, and government insurance. The CPS does not directly ask people whether they are uninsured. The survey asks about specific types of insurance, and respondents who answer "no" to all of the categories are considered uninsured. The March 2003 CPS asks about health insurance coverage in 2002. It asked respondents about coverage at any time during the preceding calendar year, so being uninsured reflected lack of health insurance throughout the calendar year. It is thought that the CPS misclassifies insurance status for some people.[58] In the analysis that follows, I use health insurance definitions identical to those of the Census Bureau.[59]

The CPS is useful as a source of estimates of the insured and uninsured populations at the state level. According to the Census Bureau, the March CPS is perhaps the most widely used source of data on health insurance coverage in the United States.[60] It is the official source of estimates used to allocate federal funding to states for the State Children's Health Insurance Program (SCHIP), which amounted to $3.7 billion in federal fiscal year 2002. The March CPS provides reliable estimates of the net change in the number of unin-

sured people from one year to the next. Even critics of the CPS concede, "Despite its limitations, the CPS provides a useful measure of changes over time in health insurance coverage and uninsurance" (Brown et al., 2002, p. 61).

Employment information is elicited for all household members over the age of 15. The survey includes questions on usual hours worked per week, annual earnings, weeks worked per year, industry, and firm size for all adults. In contrast, almost all of the labor market information in the CHIS refers to the sample respondent only.[61] Typically, a single CPS respondent reports for everyone in the household, although telephone call-backs to obtain particular items of information known only by someone else in the household are fairly common.[62] Even researchers who have found "modest" effects of SB 2 have used the CPS labor market questions in their research to construct estimates of the mandate's impact (Dube and Reich 2003; Brown et al., 2003).

The CPS also provides state- and county-level geographic identifiers, as well as demographic information for all respondents on age, education, race, ethnicity, gender, marital status, and immigrant status. It also provides sufficient information to identify family relationships across household members, which is critical in forming the "health insurance units" defined by HIA.

The Census Bureau also provides imputations for a number of variables that are of policy interest, including the fungible value of Medicare and Medicaid, the employer's contribution for health insurance, and state and federal income tax liabilities. The subsequent analysis will make use of the employer contribution imputations as well as the tax imputations.[63]

3b. 2003 California Employer Health Benefits Survey[64]

The CEHBS is a joint product of KFF/HRET.[65] The survey was designed and analyzed by researchers at the KFF and HRET, and administered by National Research LLC (NR). The findings are based on a random sample of 864 interviews with employee benefits managers of private employers in California. NR conducted interviews from May to August 2003. The sample of employers was drawn from the Dun & Bradstreet list of private employers with three or more workers. The survey is based on a national employer survey conducted annually by KFF/HRET.

The survey asked questions about the following types of health plans: conventional (fee-for-service) plans, health maintenance organizations (HMOs), preferred provider organizations (PPOs), and point-of-service (POS) plans. Conventional plans comprise a very small share of the California market.

The CEHBS is the source of health premium information in numerous studies, including Dube and Reich (2003), Kyser et al. (2003), Baker et al. (2004), and the current study. The CEHBS will be used to merge premium-and cost-sharing information for single and family plans by industry and firm size to individual CPS respondents. By merging this CEHBS data to the CPS, I am able to derive an alter-

native set of cost estimates that do not rely on the CPS employer contribution imputations provided by the Census Bureau. I work with the 2003 CEHBS data rather than that of earlier years for several reasons. First, and most important, the premium information for 2003 better reflects current conditions in the health care market. Second, in years prior to 2003, the CEHBS sample of employers was post-stratified using frequency distributions from Dun & Bradstreet. Concerns about the volatility of counts in recent years led KFF/HRET to use the Statistics of U.S. Businesses conducted by the U.S. Census as the basis for the post-stratification adjustment in 2003. Due to this change, KFF/HRET recalculated the weights for survey years 2000 to 2002. This change in weighting has little impact on worker-based estimates, but it did have an impact on estimates expressed as a percentage of employers.

Two different samples are drawn from the CEHBS. One sample consists of all 3,222 firms that provided answers about their firm size. The other sample consists of 864 completed interviews that provided detailed answers about their health plans; of these firms, 760 offered health insurance plans and, when appropriately weighted, represent 7,863,192 covered employees at these firms.

3c. 2001 County Business Patterns[66]

While the CPS data provides a reasonable estimate of firm size in six intervals, I augment these responses with information from the 2001 CBP, the most recent year available. As will be shown in Section 4, one can make more accurate imputations of SB 2 eligibility by exploiting the fact that the CPS respondent reports firm size, county of residence, and industry.

The CBP is an annual series that provides economic data by industry at various levels of geographic aggregation. The series is useful for studying the economic activity of small areas and analyzing economic changes over time, and as a benchmark for statistical series, surveys, and databases between economic censuses.

The CBP covers most of the country's economic activity. The series excludes data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. Beginning in 1998, data is tabulated by industry as defined in the North American Industry Classification System (NAICS). This series has been published annually since 1964 and at irregular intervals dating back to 1946.

The CBP provides data on the total number of establishments, mid-March employment, first quarter and annual payroll, and number of establishments by nine firm-size groups by detailed industry for all counties in the United States and the District of Columbia.

Most geographic codes are derived from the physical location address reported in Census Bureau programs. The Internal Revenue Service provides supplemental address information. Those employers without a fixed location within a state (or of unknown county location) are included under a "statewide" classification at the end of the county tables. This incomplete detail causes only slight understate-

ment of county employment.

An establishment in the CBP is a single physical location at which business is conducted or services or industrial operations are performed. It is not necessarily identical with a company or enterprise, which may consist of one or more establishments. When two or more activities are carried on at a single location under a single ownership, all activities generally are grouped together as a single establishment. The entire establishment is classified on the basis of its major activity and all data is included in that classification. Establishment-size designations are determined by paid employment in the mid-March pay period. The firm-size group "1 to 4 employees" includes establishments that did not report any paid employees in the mid-March pay period but paid wages to at least one employee at some time during the year.

Establishment counts represent the number of locations with paid employees any time during the year. This series excludes government establishments except for wholesale liquor establishments, retail liquor stores, federally chartered savings institutions, federally chartered credit unions, and hospitals.

Paid employment consists of full- and part-time employees, including salaried officers and executives of corporations, who are on the payroll in the pay period including March 12. Included are employees on paid sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.

Some data in the CBP is withheld from publication because of risk of disclosure of the operations of an individual employer. The number of establishments in an industry classification and the distribution of these establishments by firm size group are not considered to be disclosures, so this information may be released even though other information is withheld from publication.

In total, 5,371 observations are available at various levels of aggregation in California; most of the analysis using the CBP will rely on the highest-quality, most disaggregated data, resulting in 1,991 industry-county observations.[67] In particular, the baseline models will rely on industries broken out by a three-digit NAICS code, focusing on the same geographic coverage as the CPS and including only observations with correctly coded employment data.

4. Coverage Effects

4a. Insurance coverage in California

According to data from the CPS, California had a population of 35.2 million in 2002, up from 34.5 million in 2001. Nearly 82 percent of this population had health insurance either through an employer, private coverage, government coverage, or some combination of the three. Table 2 shows a breakdown of insurance coverage by provider in California.

Over 57 percent of Californians had insurance solely through their employer or private coverage. The number of people with employer or private coverage increased by more than 615,000 between 2001 and 2002. Nearly 6 million Californians receive their medical insur-

Table 2	Population breakdown of insurance coverage in California based on the 2003 CPS	
Type of Coverage	# of Individuals	% of Population
Employer-based coverage only	18,020,439	51.25
Private nonemployer coverage only	2,038,819	5.8
Government coverage only	5,870,183	16.7
Employer-based coverage *and* government coverage	1,974,700	5.6
Private nonemployer coverage *and* government coverage	857,050	2.4
Uninsured	6,397,810	18.2
TOTAL	**35,159,001**	**100.00**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. The numbers here are identical to those published by the Census Bureau; see http://ferret.bls.census.gov/macro/032003/health/h05_000.htm for Census Bureau tabulations. Health insurance definitions derived from http://www.census.gov/hhes/hlthins/hlthinsvar.html.

ance coverage solely through Medicare, Medicaid or Champus, increasing by about 43,000 between 2001 and 2002. Even with no mandate in place, the number of uninsured fell by more than 320,000, from 6.7 million in 2001 to 6.4 million in 2002.

4b. Impact of SB 2 mandate on coverage

While advocates of Proposition 72 frequently state that its intent is to provide coverage to employees whose employers provide no insurance, a more careful reading of the legislation shows the actual coverage is significantly broader.[68]

Table 3 shows that, in total, nearly 18 million Californians are covered by HIA requirements, including nearly 11 million workers. As shown in the more detailed Appendix Tables 1 and 2, only 3.6 million Californians (and 2.3 million eligible workers) receive fully funded health insurance from their employers.[69] Assuming the employer is providing an acceptable level of coverage to be classified as "playing," it can be said with certainty that this category, and only this category, is entirely unaffected by the HIA mandate.

Over 10.6 million Californians (6.5 million eligible workers) currently receive health coverage from their employer but are forced to pay a portion of the premium, with over 488,000 people (over 316,000 eligible workers) paying the entire cost of coverage.[70] In terms of the employer's cost from HIA, these workers are just as expensive as uninsured workers. Many of the 6.5 million eligible workers will require additional coverage to meet the minimum standards under HIA in terms of both cost and quality of coverage.

Previously uninsured individuals make up a

Table 3	Population coverage effects of the HIA mandate, based on the 2003 CPS			
Type of Coverage	Firms with 50 or more employees		Firms with 20 or more employees	
	Workers & Dependents	Workers Only	Workers & Dependents	Workers Only
Employer-based coverage only	12,787,774	7,554,532	13,460,298	8,404,015
Private nonemployer coverage only	320,392	215,548	360,326	258,180
Government coverage only	1,029,879	350,676	1,087,792	415,051
Employer-based coverage *and* government coverage	833,420	365,406	853,124	396,996
Private nonemployer coverage *and* government coverage	58,935	18,673	61,323	21,061
Uninsured	1,643,479	1,115,586	1,983,420	1,472,089
TOTAL	**16,673,879**	**9,620,421**	**17,806,283**	**10,967,392**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. Firm size was imputed using CPS questionnaire supplemented with information from the CBP. Numbers above reflect no behavioral responses on the part of employees or firms.

minority of those employees who are affected by this legislation. Under HIA, only 1.98 million individuals who previously had no insurance receive new coverage.[71] This means that approximately 69 percent of currently uninsured Californians will still have no health coverage as a result of HIA. Even if one excludes employees and dependents who previously received limited benefits (employer coverage below the level acceptable to be considered "playing"), those without any insurance account for only 57 percent of those affected by the legislation.[72]

Over 1.5 million individuals (nearly 700,000 workers) who currently have nonemployer health insurance coverage will receive additional coverage as a result of the legislation.[73] These individuals include the more than 360,000 Californians who choose to purchase private coverage and over 1 million Californians (more than 415,000 workers) currently receiving coverage through government programs.[74]

5. Estimated Cost of Coverage

5a. Background on health insurance costs in California

Before assessing the impact of the HIA on employer costs, it is useful to examine the employer health insurance market in California. KFF/HRET has published annual surveys about California's health insurance market using the CEHBS from 1999 onward. These surveys form the basis for many of the cost estimates of SB 2 (Dube and Reich 2003; Kyser et al., 2003; Baker et al., 2004; Kominski, 2004).

The 2003 CEHBS completed interviews with benefits managers for each of 864 firms; 760 of the firms offered health insurance

Table 4	Health insurance premium costs from the California Employee Health Benefits Survey, 2003

		Mean	25th Percentile	50th Percentile	75th Percentile
All industries / firm sizes	Single Plan	$3,102	$2,565	$3,001	$3,496
	Family Plan	$8,504	$7,235	$8,345	$9,786
Mining	Single Plan	$2,615	$2,306	$2,513	$2,887
	Family Plan	$6,681	$6,035	$6,179	$7,689
Construction	Single Plan	$2,750	$2,306	$2,916	$3,111
	Family Plan	$8,386	$6,941	$8,235	$9,071
Manufacturing	Single Plan	$2,934	$2,372	$2,960	$3,224
	Family Plan	$8,387	$7,059	$8,345	$9,144
Transportation / Utilities / Communications	Single Plan	$3,193	$2,704	$3,022	$3,592
	Family Plan	$9,264	$7,562	$9,815	$9,929
Wholesale	Single Plan	$3,060	$2,501	$2,974	$3,168
	Family Plan	$8,460	$7,200	$8,806	$9,170
Retail	Single Plan	$2,838	$2,353	$2,791	$3,234
	Family Plan	$8,075	$6,882	$7,597	$9,328
Financial	Single Plan	$3,178	$2,759	$3,059	$3,600
	Family Plan	$8,683	$7,836	$8,356	$9,478
Service	Single Plan	$3,269	$2,669	$3,094	$3,534
	Family Plan	$8,601	$7,402	$8,435	$9,827
Health care	Single Plan	$3,061	$2,318	$2,941	$3,541
	Family Plan	$8,333	$6,947	$8,071	$9,368
Firm size 1–9	Single Plan	$2,932	$2,172	$2,724	$3,348
	Family Plan	$7,850	$6,468	$7,800	$9,368
Firm size 10–24	Single Plan	$3,185	$2,828	$3,048	$3,617
	Family Plan	$7,969	$6,960	$7,859	$8,824
Firm size 25–99	Single Plan	$2,911	$2,466	$2,796	$3,176
	Family Plan	$8,275	$6,976	$8,024	$9,706
Firm size 100–499	Single Plan	$3,090	$2,471	$3,024	$3,526
	Family Plan	$8,635	$7,119	$8,504	$9,890
Firm size 500–999	Single Plan	$3,216	$2,600	$2,999	$3,647
	Family Plan	$8,772	$7,042	$8,353	$9,989
Firm size 1000+	Single Plan	$3,166	$2,659	$3,026	$3,496
	Family Plan	$8,700	$7,562	$8,508	$9,815

Notes: Author's tabulation of 864 completed interviews from the 2003 CEHBS, produced by the Kaiser Family Foundation and the Health Research and Educational Trust. Of these firms, 760 offered health insurance plans; they represent 7,863,192 covered employees at these firms. The dollar amounts represent a composite for all types of health care plans, and family coverage is defined as health coverage for a family of four. The firm size categories correspond to those reported in the March CPS. When the sample is restricted to firms with 50 or more employees, the median premium is $3,022 for a single plan, and $8,482 for a family plan, slightly higher than the $3,001 and $8,345 figures reported here. Dollar amounts are rounded to nearest dollar.

plans. When these 760 firms are appropriately weighted, they represent 7,863,192 covered employees with health insurance at these firms.[75] Questions were asked about four types of health plans: conventional plans, HMOs, PPOs, and POS plans. The questionnaire specifically asked about premiums for each of the four health plans; the premiums used here are a weighted average based on actual participation rates in the plans. Premium questions were asked separately for single plans and family plans (covering a fam-

ily of four). The benefits manager at a firm with 20 or more employees was asked both about the employee's premium contribution to the most popular plan in each plan type and the employee's total payment for COBRA continuation coverage (which is then adjusted to reflect total premiums). In firms with 19 or fewer employees, similar questions were asked about the employee's contribution and the total payment (COBRA continuation coverage is not mandated for such firms). From these responses, the often-cited premium numbers emerge.

Table 4 shows the results on total health premiums. The averages in the first two cells of the first column of data, $3,102 and $8,504, exactly replicate the widely cited results used in other studies and are identical to figures produced in Chart 10 of KFF/HRET (2004). The remaining numbers in the table have not been previously disseminated. As expected, the median cost is modestly lower than the mean because of some outliers; the median cost of a single plan was $3,001 and the median cost of a family plan was $8,345.[76] The lower median cost will be used as a benchmark throughout the cost analysis. The first two rows, based on all industries and firm sizes, also show substantial variation across plans–the 75/25 percentile range is more than $900 for a single plan and more than $2,500 for a family plan.

These averages mask variation across industry and firm size. The remaining rows show the results from the CEHBS data. There is substantial variation in total health premiums across industry. For single plans, the median cost for a plan varies from $2,513 in mining to $3,094 in the service sector. When grouped by firm size (according to the CPS categories, e.g., "1 to 9 employees," "10 to 24 employees," "25 to 99 employees," "100 to 499 employees," "500 to 999 employees," and "1,000 or more employees"), it is interesting to note that the premium costs for employees in the largest firms are only trivially smaller than covered employees in firms with 10 to 24 workers, and they are much more expensive than for employees in firms with 1 to 9 workers. This could call into question whether the firm-size cutoffs in HIA are justified on equity grounds. For family plans, the median cost for a plan again varies substantially across industry–from $6,179 in mining to $9,815 in transportation/utilities/communications. A fairly clear pattern emerges with family premiums by firm size: premiums tend to increase with firm size. The lowest family premiums are for employees in firms with 1 to 9 workers (at $7,800) and highest for employees in firms with 1,000 or more workers (at $8,508).

This table also reveals a potential problem in the cost estimates of others who have relied on the aggregated premium costs for all firms. Based on the CEHBS data, the mean cost of a family plan is higher in large firms ("100 to 499 employees," "500 to 999 employees," and "1,000 or more employees") than the published aggregate estimate would indicate. For larger firms, the cost estimates used in other studies may be understated by as much as 3.2 percent (for firms with 500 to 999 employees).

Finally, Table 4 could provide guidance on the industries that are most likely to "pay"

rather than "play" in response to the HIA mandate. Employees in the transportation/utilities/communications, financial, and service industries have the highest health insurance premiums for both single and family plans. If the MRMIB sets one fee for the single plan for all participants and one fee for the family plan for all participants, then the employees in these industries could see their employers opt in to government-run health care if the fee is

Table 5 Employee cost sharing from the California Employee Health Benefits Survey, 2003

		Mean	25th Percentile	50th Percentile	75th Percentile
All industries / firm sizes	Single Plan	14%	0%	13%	20%
	Family Plan	30%	13%	25%	44%
Mining	Single Plan	12%	0%	20%	20%
	Family Plan	25%	3%	20%	31%
Construction	Single Plan	16%	2%	14%	24%
	Family Plan	38%	8%	37%	66%
Manufacturing	Single Plan	17%	7%	16%	25%
	Family Plan	27%	17%	25%	33%
Transportation / Utilities / Communications	Single Plan	11%	5%	14%	15%
	Family Plan	16%	8%	12%	17%
Wholesale	Single Plan	16%	10%	13%	19%
	Family Plan	35%	13%	34%	50%
Retail	Single Plan	17%	0%	18%	19%
	Family Plan	34%	20%	32%	55%
Financial	Single Plan	13%	0%	8%	23%
	Family Plan	34%	20%	28%	48%
Service	Single Plan	13%	0%	10%	21%
	Family Plan	30%	9%	27%	46%
Health care	Single Plan	10%	0%	8%	16%
	Family Plan	34%	13%	29%	58%
Firm size 1–9	Single Plan	10%	0%	0%	12%
	Family Plan	34%	9%	31%	56%
Firm size 10–24	Single Plan	9%	0%	0%	18%
	Family Plan	43%	27%	45%	55%
Firm size 25–99	Single Plan	13%	0%	9%	20%
	Family Plan	40%	16%	42%	67%
Firm size 100–499	Single Plan	15%	0%	14%	25%
	Family Plan	34%	17%	31%	53%
Firm size 500–999	Single Plan	15%	7%	15%	21%
	Family Plan	27%	14%	21%	34%
Firm size 1,000+	Single Plan	15%	3%	14%	20%
	Family Plan	21%	11%	17%	30%

Notes: Author's tabulation of 864 completed interviews from the 2003 CEHBS, produced by the Kaiser Family Foundation and the Health Research and Educational Trust. Of these firms, 760 offered health insurance plans; they represent 7,863,192 covered employees at these firms. The percentages represent a composite for all types of health care plans, and family coverage is defined as health coverage for a family of four. The firm-size categories correspond to those reported in the March CPS. When the sample is restricted to firms with 50 or more employees, the median employee cost sharing is 14 percent for a single plan and 21 percent for a family plan, compared with the 13 percent and 25 percent figures reported here. Percentages are rounded to nearest whole number.

lower than their premiums.

Table 5 shows the percentage of premiums that employees pay for; recall that one important aspect of HIA is the premium-sharing mandate that limits employee contributions to 20 percent. The percentages in the first two cells of the first column of data, 14 percent for single plans and 30 percent for family plans, exactly replicate the results produced in Chart 12 of KFF/HRET (2004). The most striking finding from the aggregate numbers is that many currently covered employees in firms that already provide health insurance to families will be affected by the HIA provisions. The employee's share of premiums for a family plan for the median employee is 25 percent; under HIA, this would fall to 20 percent. Indeed, at least one-quarter of all covered employees pay at least 44 percent of the family plan premiums. Those covered employees affected by the HIA mandate would have their contributions reduced by more than 50 percent; the employees would have to absorb these additional costs under HIA. Table 5 shows that because of the premium sharing mandate, HIA has a far more expansive reach than advocates often claim.[77]

The disaggregated results again call into question the justifications for the firm-size cutoffs in the HIA. For single plans, the median employee cost share percentage is the lowest for small firms, and even the 75th percentile is under the HIA requirement. With several exceptions, it appears that the premium-sharing part of the HIA single mandate is not terribly binding. The table makes clear, however, that the premium-sharing part of the family mandate is extremely important for costs. With the exception of employees in transportation/utilities/communications, the premium-sharing part of the family mandate would be binding for at least one-quarter of the covered employees in all other industries. Employees in construction, retail, and wholesale industries would be most affected by the premium-sharing part of the family mandate. In construction, for example, nearly half of the covered employees would see their contribution for family plans fall by approximately 50 percent; the employer would be responsible for the additional cost.

5b. Estimated costs of the HIA mandate

Two different methods are used to estimate the costs of HIA; one relies on imputed CPS employer contributions and the other relies on the CEHBS premium and cost-sharing information. The technical discussion of how the costs are calculated is postponed to Appendix 2.

Table 6 presents the results using these different methods. It is estimated that the fully phased-in HIA will cost employers between $12.8 billion and $13.2 billion. The difference between these two figures is based on the assumptions about how health insurance premiums are assigned to CPS respondents. In the event that the mandate was restricted only to firms with 50 or more employees, the costs are estimated to be between $11.3 billion and $11.9 billion. By comparing across columns, the estimated cost for businesses with 20 to 49 employees is approximately $1.3 billion to $1.5

Table 6	Cost of the HIA mandate

Estimate 1: CPS premium data				
Type of Coverage	Firms with 50 or More Employees	% of Total	Firms with 20 or More Employees	% of Total
Employer-based coverage only	$5,385,303,679	47.6	$5,807,186,701	45.2
Private nonemployer coverage only	$692,800,091	6.1	$791,597,189	6.2
Government coverage only	$1,313,235,168	11.6	$1,462,420,361	11.4
Employer-based coverage *and* government coverage	$278,522,368	2.5	$303,974,939	2.4
Private nonemployer coverage *and* government coverage	$57,302,147	0.5	$62,836,193	0.5
Uninsured	$3,591,488,005	31.7	$4,417,662,282	34.4
TOTAL	**$11,318,651,459**	**100.0**	**$12,845,677,666**	**100.0**

Estimate 2: CEHBS premium data				
Type of Coverage	Firms with 50 or More Employees	% of Total	Firms with 20 or More Employees	% of Total
Employer-based coverage only	$5,641,932,438	47.3	$6,025,173,436	45.5
Private nonemployer coverage only	$696,648,463	5.8	$778,529,188	5.9
Government coverage only	$1,605,333,960	13.4	$1,728,975,160	13.1
Employer-based coverage *and* government coverage	$262,173,849	2.2	$281,994,950	2.1
Private nonemployer coverage *and* government coverage	$52,311,739	0.4	$56,898,227	0.4
Uninsured	$3,681,179,558	30.8	$4,365,893,480	33.0
TOTAL	**$11,939,580,006**	**100.0**	**$13,237,464,440**	**100.0**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. Firm size was imputed using CPS questionnaire supplemented with information from the CBP. Numbers above reflect no behavioral responses on the part of employees or firms. In particular, there is no wage shifting or disemployment. Estimate 1 uses a total "fee" for family coverage of $5,914 per year and single coverage of $3,621, both from the median CPS estimates of premiums for the calendar year 2002. Estimate 2 uses the 2003 CEHBS premium data and is based on 864 completed employer interviews, which, when weighted, are representative of employers in California. Premiums were imputed to CPS data using firm size and industry code; premiums were drawn from the empirical distribution within firm size-industry cell in the CEHBS data. This estimate uses a total "fee" for family coverage of $8,345 per year and single coverage of $3,001, both from the median CEHBS estimates for 2003. Dollar amounts are rounded to nearest dollar and percentages are rounded to one decimal place (thus, percentages may not add up to 100 percent).

billion. This cost already nets out the savings from the 20 percent tax credit that these employers would receive.

In the case when the largest number of uninsured receive new coverage (when firms with 20 or more employees are included), this coverage breaks down to nearly $6,500 per newly covered individual. As the percentages show, the reason for this relatively high cost is that nearly two-thirds of the costs associated with this bill involve providing insurance to individuals who already have it. This cost

number recognizes the full impact of the mandate on the currently insured, which is neglected by other authors. For every dollar spent under HIA, only 30 to 35 cents benefit the previously uninsured.

The estimates of coverage above are significantly higher than other publicly released estimates. The costs for the uninsured, approximately $4.4 billion, represent about one-third of the total employer cost. This pre-tax estimate for the uninsured is substantially lower than Kyser et al., (2003) and moderately lower than Baker et al. (2004), but it is also substantially higher than CMA (undated). Neglected in these studies, however, and by far the largest single-group cost, for those who currently have employer-provided insurance. The premium-sharing and dependent requirements of HIA entail costs of between $5.8 billion and $6.0 billion for employers. Those with employer-based coverage only and employer-based coverage and government coverage represent roughly one-half of the cost of the mandate.

Between $1.5 billion and $1.7 billion represents a cost shift from government health insurance to employer-provided health insurance. This is roughly consistent with the claims of Dube (2003b) and CMA (2003c), who emphasize the flip side—the savings to the state of California. Currently, more than 8.7 million Californians receive insurance through Medicare, Medicaid, and Champus/Tricare. Of these, over 2 million are affected by the HIA mandate due to their work effort, tenure, or the size of the firm where they work.

Enrollees are given the option of providing the necessary information to MRMIB in order to determine eligibility for either Medi-Cal or HFP. Eligible enrollees will be enrolled in these Medicaid wraparound coverage and refunded their enrollee contribution. Employer contributions will be used to pay the state's portion of the matching funds for Medicaid. In this way, HIA amounts to a tax of at least $791 million (using CPS premiums) on employers to fund Medicaid, or the tax could be as high as $887 million (using CEHBS premiums).

In addition to Medicaid recipients, enrollees who qualify for Medicare and Champus/Tricare will now receive additional, possibly redundant, coverage from their employer. The reason the coverage is redundant is that HIA prohibits employers from providing wraparound coverage for these people—rather they must receive the full menu of health benefits, even though many of those benefits were already provided by government insurance. Currently, many of these employees receive supplemental coverage that provides vital benefits such as vision care, dental services, and prescription drugs. Under HIA, the provision of the supplemental benefits will not qualify an employer as "playing." Instead, employers will be forced to provide upwards of $800 million of coverage to individuals who already have basic insurance. As a result, few employers will retain the incentive to continue to provide this supplemental coverage. Due to the fact that Medicare and Champus/Tricare are funded solely through federal dollars, the state government will see no cost savings. Private businesses, however, will supplement Medicare and

Champus/Tricare with $643 million (using CPS premiums) or $812 million (using CEHBS), with around 85 percent of this cost going to Champus/Tricare.

There are several issues in estimating the HIA costs that were ignored. First, there is no adjustment for the poverty subsidy. This would increase the employer's cost. The key problem in incorporating the poverty subsidy is that it is unclear how far-reaching it actually is. The provisions of HIA note that the subsidy is based on individual earnings, not family income. But the provisions do not state clearly whether the subsidy is triggered by actual annual earnings or full-time, full-year equivalent earnings. It is possible for a part-time worker earning a higher wage to be eligible for the poverty subsidy, while a full-time worker earning a lower wage to be ineligible. It is highly unlikely that this is the intent of HIA, but rather poor wording on the part of the bill's sponsors. Thus, I am reluctant to include the "poverty subsidy" until there is additional clarification about this. Second, I do not account for the corporate income tax deduction, for the reasons explained in Section 2. Third, I use an hours cutoff of 25 hours per week (rather than 23, which is closer to the mandate's actual provision). This higher cutoff will tend to understate costs. Fourth, even though HIA intends to extend its reach to seasonal workers and those with multiple jobs, I do not explicitly try to classify them as eligible for HIA. HIA (2003, p. 4) states "It is the further intent of the Legislature that workers who work on a seasonal basis, for multiple employers, or who work multiple jobs for the same employer should be afforded the opportunity to have health coverage in the same manner as those who work full-time for a single employer." Fifth, even though the data is as up-to-date as possible, the latest premium data comes from 2003. Even within the past year, there has been a substantial increase in health care costs for employers and employees.

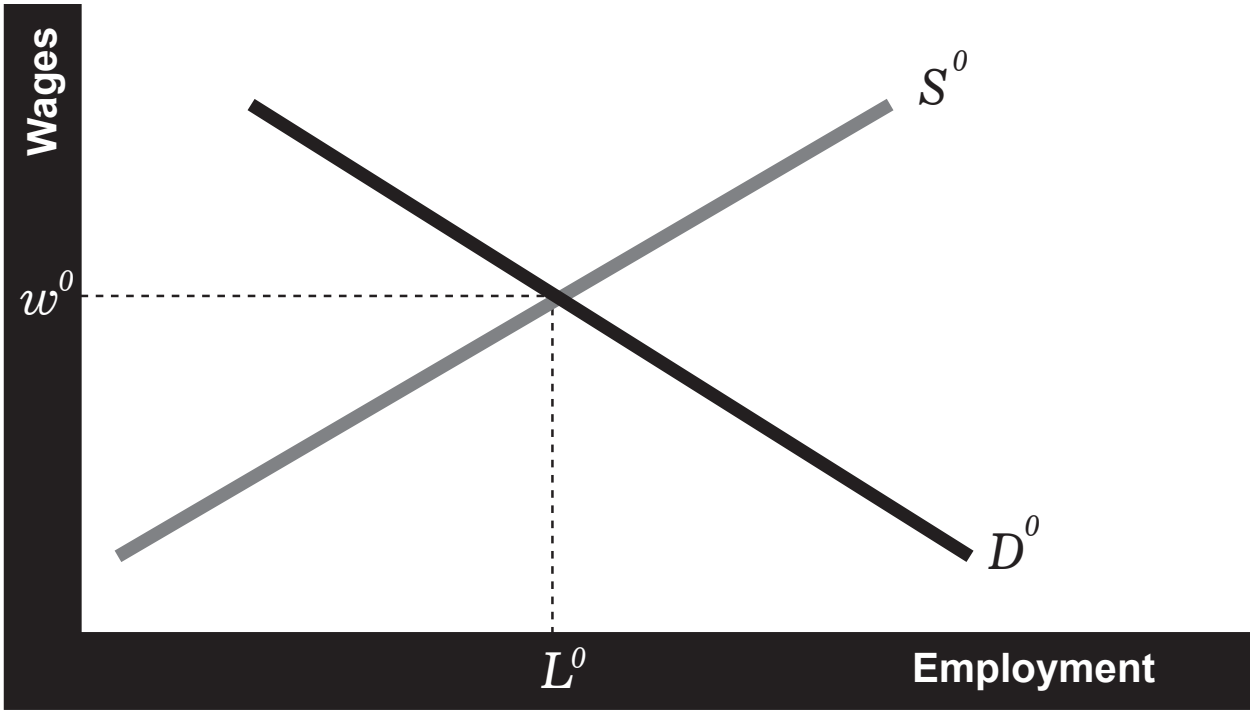
6. Labor Market Responses

My reading of the literature indicates that none of the existing studies account for potential behavioral responses on the part of employers in a serious fashion. Whenever possible, profit-maximizing employers will react to HIA by shifting costs onto employees in the form of lower wages, and a number of credible, peer-reviewed studies suggest this is likely. In this case, the employee rather than the employer bears the cost of the mandate. In the case of the least-skilled workers, however, wage shifting is simply not an option. In my study, the CPS data shows that employers will be unable to shift the cost of the mandate onto a substantial number of employees. These employees are at risk of losing their jobs, either through labor-force cuts or competition from more-experienced workers attracted by the new benefits.

6a. Theory and evidence on mandated benefits

Because the HIA mandate has not yet been implemented, there are no studies of the actual effects of the law. In addition, there are very

Figure 1 No government intervention



few states (and certainly none comparable to California) that have enacted such a sweeping mandate, so there is little direct evidence on the mandate's potential impact.[78]

Summers (1989) presents theoretical arguments for mandated benefits relative to public provision of a good. He notes that "if employers and employees can negotiate freely over the terms of the compensation package, they will reach a mutually efficient outcome." Yet Summers argues that there are potential market failures that could lead to the case for public provision or mandated benefits. These market failures include "merit goods," irrational consumers, externalities, and adverse selection.

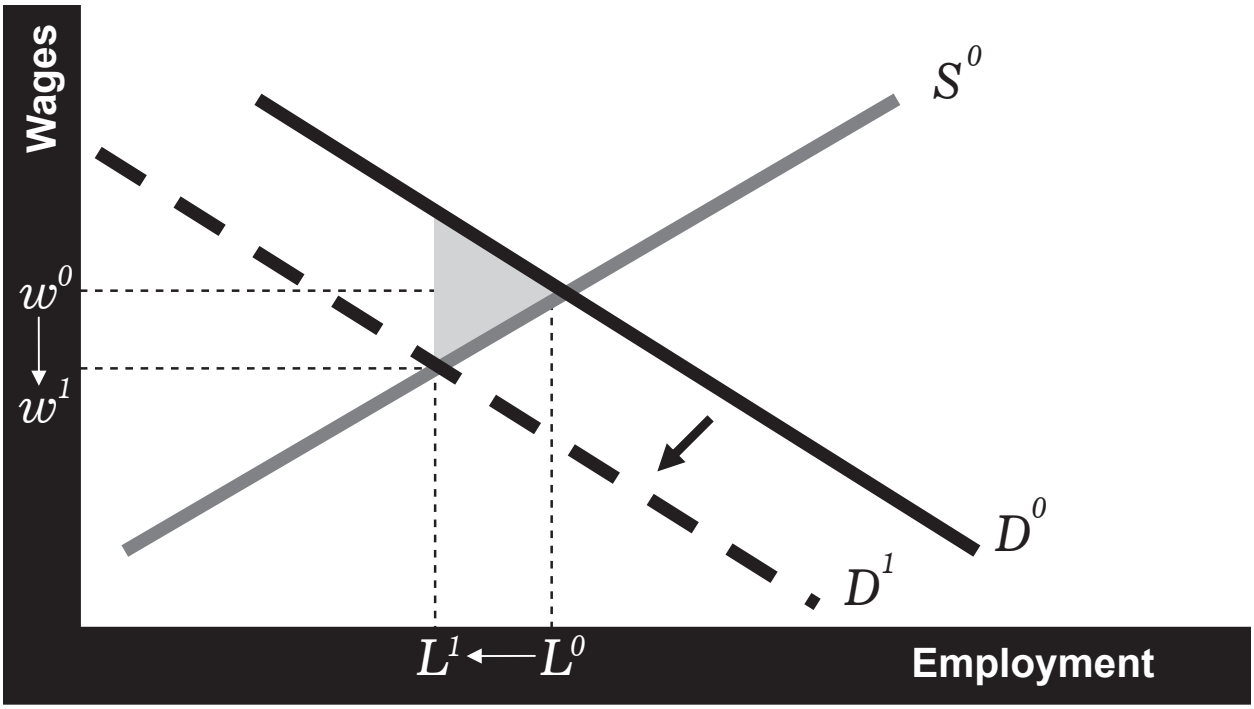
Figure 1 shows the typical supply and demand framework used to analyze a tax or mandated benefit. Ignoring the presence of the minimum wage, efficient labor market equilibrium occurs at the intersection of the worker's labor supply (S^0) and employer's labor demand curves (D^0). This give the equilibrium quantity of labor (L^0) and equilibrium wage rate (w^0). Assuming that the labor market is competitive and there are no market failures or government distortions, the employment level and wage rate are economically efficient.

Under a typical tax imposed on employers (the demanders of labor), the demand curve shifts down to D^1, and the new labor market equilibrium is (L^1,w^1). This is shown in Figure 2.

The tax imposes economic inefficiency, known as deadweight loss, represented by the gray triangle. Government intervention lowers the employment level and wage rate.

As Summers (1989, p. 180) notes,

Figure 2 Tax on employers



"Mandated benefits do not give rise to deadweight losses as large as those that arise from government tax corrections." The reason is that because the mandated benefit is potentially valuable to the employee, the labor supply curve shifts downward as well. The new employment level is given in Figure 3 by the intersection of the new labor demand curve, D^1, and the new labor supply curve, S^1.

This equilibrium represents a situation with lower employment than without any government interference but higher employment than with tax-financed provision of a benefit. The new labor market allocation (L^2,w^2) also has lower wages for workers than either tax-financed provision or no government intervention. The inefficiency from such a mandated benefit is given by the smaller gray triangle. The allocation with mandated benefits could therefore involve substantial wage reductions for employees.

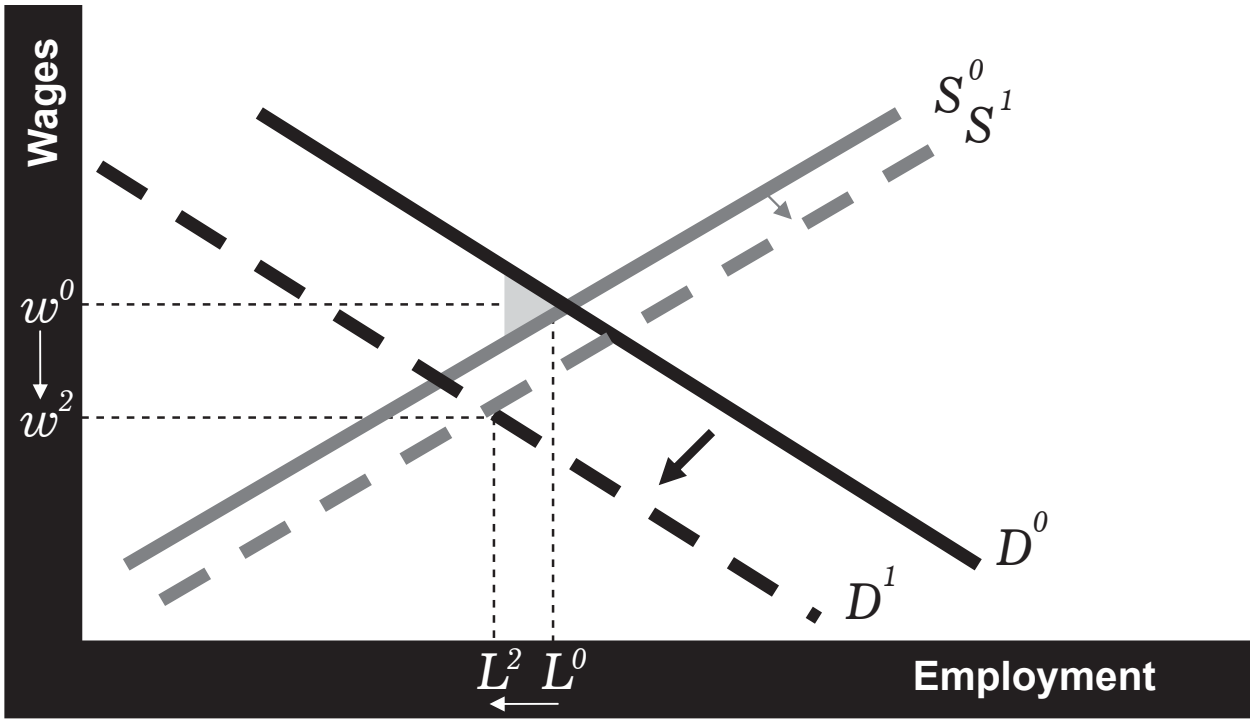
This straightforward framework ignores several important features, however. First, as Summers (1989, p. 180) points out, the "mandated benefits represent a tax at a rate equal to the *difference* between the employer's cost of providing the benefit and the employee's valuation of it, *not* a rate equal to the cost of the employer of providing the benefit." One critical issue then becomes the employee's valuation of the benefit. Under HIA, more than 1.08 million current recipients of government health care will have that insurance crowded out by employer-provided health insurance. For these enrollees, the additional value of the benefits from the HIA mandate are surely

quite small, so the economic inefficiency and employment losses look more like Figure 2. The same is also probably true for the uninsured who are eligible for, but not participating in, Medicaid. Brown et al., (2002, p. 48) estimate that 1.12 million adults and children are eligible for Medi-Cal or HFP but not participating. With modest steps, these people could receive free government health care. It is also likely that some of the uninsured— especially younger, healthier adults—do not put a very large valuation on health insurance.

Second, as Summers (1989, p. 181) notes, if there is a binding minimum wage, then "wages cannot fall to offset employers' cost of providing a mandated benefit, so it is likely to create unemployment." As will be shown below, there are 4.3 million Californian workers with wages below $9.31 per hour, including more than 680,000 workers in large firms who are either uninsured or on government insurance. It is likely that wages would not be able to fully adjust downward for such workers. More generally, when wages are rigid and do not move downward in response to the mandate (which is especially likely in the short run), then the larger inefficiencies illustrated in Figure 2 become more likely.

Finally, the framework above shows that mandated benefits are still a government tax, even if they are not explicitly called a tax. Summers (1989, p. 182) cautions about the government's use of mandated benefits. He says, "There is no sense in which benefits become 'free' just because the government mandates that employers offer them to workers." Reinhardt (1987, p. 124) notes that "the fiscal flows triggered by mandate would not

Figure 3 Mandated benefit



flow directly through the public budgets does not detract from the measure's status of a *bona fide* tax."

Although there are a number of empirical studies that examine the impact of employer mandates for family leave and workers' compensation, the study that provides the closest (albeit not that close) analog to the HIA mandate is Gruber (1994). Gruber (1994) studied several state and federal mandates that mandated comprehensive childbirth benefits in health insurance policies and therefore substantially raised the cost of insuring women of childbearing age. Between 1975 and 1978, some states passed laws that prohibited treating pregnancy differently from "comparable illnesses." In October 1978, the federal government passed the Pregnancy Discrimination Act, which prohibited any differential treatment of pregnancy in the employment relationship. Using the CPS, Gruber finds shifting of the costs of the mandates from the employer to the employee in the form of lower wages on the order of 100 percent. In fact, some of his specifications suggest overshifting of wages.

Thus, Gruber (1994) provides strong evidence that firms will lower wages (when possible) to "pay" for the mandate. Even those who have higher wages are affected by the mandate if their employer does not provide coverage. The 1.08 million current recipients of government health care who will have that insurance crowded out by employer-provided health insurance will likely see lower wages but no commensurate increase in health benefits.

6b. Employer responses to HIA

In the context of HIA, there are a number of responses that the simple supply and demand framework captures, and other responses for which it is less suited. The "pay-or-play" mandate should lead to wage shifting and employment losses, similar to Figure 2 or Figure 3 (depending on the additional valuation from employer-coverage).[79] But HIA also creates "employment notches" by dramatically raising the cost of hiring the 20^{th}, 50^{th}, or 200^{th} worker.[80] The cutoffs in the law mean that for a firm that was not previously providing health insurance, it would have to provide and/or pay more for health insurance for all of the inframarginal employees by hiring the marginal 20^{th}, 50^{th}, or 200^{th} worker. Thus, in addition to the typical disemployment effect from the tax, the employment notches of HIA present important barriers to growth for certain firms and also create incentives for firms to downsize or consolidate part-time jobs. HIA also creates "hours notches" by defining eligible employees as those who work 100 or more hours per month for three months. This potentially creates incentives for employers to limit weekly hours to 23 or fewer per month and to increase turnover for short-term employees.

In principle, HIA tries to legislate away economic responses. HIA (2003, p. 11) states, "It shall be unlawful for an employer to designate an employee as an independent contractor or temporary employee, reduce an employee's hours of work, or terminate and rehire an employee if a purpose of which is to avoid the employer's obligations under this part." To the

extent that employers are unable to minimize HIA's cost impact by limiting hours, the likelihood of other economic adjustments (like wage shifting and job loss) becomes more likely.[81]

6c. Wage shifting and unemployment

As shown in Table 7, the California labor market consisted of 17,883,738 workers during the 2002 calendar year. This includes CPS respondents who answered affirmatively to the following questions: "Did ... work at a job or business at any time during 2002?" or "Did ... do any temporary, part-time, or seasonal work even for a few days during 2002?" Slightly more than two-thirds of these workers had employer health insurance. Approximately 9 percent of workers had some form of government insurance. Overall, nearly 3.6 million workers, or 20 percent, were uninsured in 2002. This estimate is slightly higher than the Baker et al. (2004) estimate, which finds 3.4 million workers were uninsured (based on 2001 California EDD data).

The final two columns of Table 7 show insurance characteristics for low-wage workers.[82] Two cutoffs are used: $9.31 per hour and $10.36 per hour.[83] For the first group, nearly 38 percent are uninsured, and nearly 16 percent have government insurance. Only 41 percent currently have some form of employer health insurance. For the second group, the results are fairly similar—nearly 36 percent of workers lack insurance, nearly 15 percent have government insurance, and nearly 45 percent have employer coverage.

Table 8 explores these low-wage groups further. Even though there are 4.3 million work-

Table 7 Gauging the employment losses: Insurance coverage for California workers based on the 2003 CPS

Type of Coverage	Population	All Employees	Employees under $9.31 per Hour	Employees under $10.36 per Hour
Employer-based coverage only	18,020,439	11,477,030	1,673,628	2,243,086
Private nonemployer coverage only	2,038,819	1,128,779	344,347	394,991
Government coverage only	5,870,183	945,238	513,875	573,678
Employer-based coverage *and* government coverage	1,974,700	599,843	128,322	154,621
Private nonemployer coverage *and* government coverage	857,050	140,279	50,969	68,319
Uninsured	6,397,810	3,592,569	1,633,738	1,930,443
TOTAL	**35,159,001**	**17,883,738**	**4,344,879**	**5,365,138**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. The hourly wage rate is imputed by dividing annual wage and salary earnings by the product of usual hours worked per week and number of weeks worked per year. The figures above include individuals with imputed wages under the California minimum wage in the CPS data. The hourly wage cutoffs for the "at-risk" group were arrived at by computing the full-time, full-year earnings for a worker at the California minimum wage (e.g., $6.75*2080 hours) and adding to that the CPS or CEHBS family premium cost ($5,914 and $8,345), with the assumption that the firm is responsible for 90 percent of the premium costs (instead of 80 percent) because of the additional poverty subsidy. Employment is based on any work in the 2002 calendar year.

Table 8 Insurance coverage and additional costs for California employees

Type of Coverage	Under $9.31 per hour				
	All Employees	In Firms with 200 or More Employees	In Firms with 50–199 Employees	In Firms with 20–49 Employees	In Firms with 19 or Fewer Employees
Employer-based coverage only	1,673,628 $801	781,029 $1,272	245,558 $992	180,253 $572	466,788 $0
Private nonemployer coverage only	344,347 $1,142	168,016 $2,015	20,696 $1,205	13,897 $2,144	141,738 $0
Government coverage only	513,875 $1,531	199,814 $2,637	79,006 $2,131	52,129 $1,750	182,926 $0
Employer-based coverage *and* government coverage	128,322 $479	71,097 $730	4,233 $511	9,151 $814	43,841 $0
Private nonemployer coverage *and* government coverage	50,969 $841	22,401 $1,616	4,726 $1,411	1,763 $0	22,079 $0
Uninsured	1,633,738 $1,339	479,543 $2,438	232,421 $2,505	202,897 $2,149	718,877 $0

Type of Coverage	Under $10.36 per hour				
	All Employees	In Firms with 200 or More Employees	In Firms with 50–199 Employees	In Firms with 20–49 Employees	In Firms with 19 or Fewer Employees
Employer-based coverage only	2,243,086 $666	1,049,310 $1,122	341,061 $637	239,478 $410	613,237 $0
Private nonemployer coverage only	394,991 $1,087	178,907 $2,044	37,311 $1,042	19,382 $1,274	159,391 $0
Government coverage only	573,678 $1,916	229,240 $3,765	85,033 $1,707	60,070 $1,512	199,335 $0
Employer-based coverage *and* government coverage	154,621 $286	89,416 $405	8,420 $286	9,151 $612	47,634 $0
Private nonemployer coverage *and* government coverage	68,319 $690	23,995 $1,611	7,902 $1,075	3,704 $0	32,718 $0
Uninsured	1,930,443 $1,321	567,130 $2,805	262,521 $2,006	244,120 $1,772	856,672 $0

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. In each case, the number of employees in the group is in the first cell, and the marginal cost per employee from the HIA mandate is in the second cell. Costs use the CPS premium imputations for workers under $9.31 per hour and use CEHBS premium imputations for workers under $10.36 per hour. Dollar amounts are rounded to nearest dollar.

ers under $9.31 per hour (and 5.4 million under $10.36 per hour), many will not work at large or medium-size firms, and others do have some sort of employer coverage. For workers earning under $9.31 per hour, more than 1.6 million are uninsured, and more than 500,000 have government coverage. A significant number of these workers are employed in large firms that would be potentially responsible for paying for 80 percent (or more) of the costs of a family plan. Nearly 480,000 uninsured workers earning under $9.31 per hour work at large

firms, and more than 567,000 uninsured workers earn under $10.36 per hour at such firms. Approximately 200,000 additional workers under $9.31 per hour have government health insurance at such firms, as do nearly 230,000 workers under $10.36 per hour.

The additional cost to employers to provide the mandated coverage to these workers is likely to be high. Below each raw count of low-wage workers is the average mandated cost per worker (the employer cost presented here assumes the employer's share is 80 percent of the total mandated cost). As can be seen by these figures, the employer cost per low-wage worker of the mandate is highest for large firms. One pattern that clearly emerges from these numbers is that uninsured workers and government-insured workers entail the highest cost to business. In large firms, the average cost of providing coverage to low-wage uninsured workers is between $2,438 and $2,805. The cost to a worker who currently has government insurance is between $2,637 and $3,765. Workers covered by private coverage can be quite expensive, too, with costs greater than $2,000 in large firms. One other finding that comes out of this table is that workers with current employer-provided health insurance coverage are not "free"—the average cost at a large firm for such a worker is in the range of $1,200, while the average cost from HIA in a medium firm is in the range of $600 to $1,000. These costs suggest that both the premium-sharing provisions and the dependent provisions in the HIA mandate are quite costly.

As suggested by the theoretical framework and existing empirical evidence, one strong possibility is that employers will try to pass the HIA costs onto employees in the form of lower wages. Table 9 examines the implications for tax revenue from such wage shifting, assuming that wages fully adjust for all workers (which is unrealistic, especially in the short run).[84]

As in previous tables, results are presented using both the CPS health insurance premiums and the CEHBS premiums. Under these assumptions, between $4.6 billion and $4.9 billion of tax revenue is lost to the federal and state government.[85] Of this, around half is a loss in federal tax revenue. The loss to the state of California is between $800 million and $860 million per year from these wage reductions. The loss in payroll tax collections is more than $1 billion. The effects on the earned income tax credit (EITC) are a more modest $136 million to $147 million, but these losses mask the subsidy/tax nature of the credit. To the extent that EITC recipients have their wages reduced in the phase-out range, government tax revenue goes down. But to the extent that the recipients have their wages reduced in the phase-in range, the government pays less in subsidy, so government revenue goes up. The negative numbers in the last column for some groups reflect this second effect being stronger.

Although the previous literature on mandated benefits does provide guidance on the possibility of wage shifting, such wage shifting is unlikely for those near the minimum wage. Table 10 recalculates the tax-loss num-

Table 9 Tax losses due to wage shifting for all California workers based on the 2003 CPS

CPS premium data

Type of Coverage	All Employees	Cumulative	California	Federal	Social Security and Medicare	EITC
Employer-based coverage only	11,477,030	$2,430,349,476	**$468,638,123**	$1,378,748,468	$533,152,873	$49,810,011
Private nonemployer coverage only	1,128,779	$274,012,412	**$46,387,533**	$155,685,128	$71,434,186	$505,566
Government coverage only	945,238	$386,140,149	**$57,118,860**	$181,689,158	$136,410,878	$10,921,251
Employer-based coverage *and* government coverage	599,843	$123,749,806	**$23,209,636**	$69,032,104	$28,265,682	$3,242,381
Private nonemployer coverage *and* government coverage	140,279	$11,940,988	**$1,889,206**	$7,009,749	$6,008,711	–$2,966,678
Uninsured	3,592,569	$1,377,657,236	**$203,716,948**	$683,649,175	$415,970,523	$74,320,589
TOTAL	**17,883,738**	**$4,603,850,066**	**$800,960,306**	**$2,475,813,783**	**$1,191,242,854**	**$135,833,120**

CEHBS premium data

Type of Coverage	All Employees	Cumulative	California	Federal	Social Security and Medicare	EITC
Employer-based coverage only	11,477,030	$2,650,337,514	**$527,490,485**	$1,568,226,773	$522,289,933	$32,330,264
Private nonemployer coverage only	1,128,779	$268,925,592	**$45,305,140**	$153,120,192	$70,433,126	$67,133
Government coverage only	945,238	$466,738,637	**$66,267,948**	$214,477,366	$160,968,076	$25,025,251
Employer-based coverage *and* government coverage	599,843	$117,375,761	**$21,491,653**	$65,867,476	$26,044,137	$3,972,496
Private nonemployer coverage *and* government coverage	140,279	$8,007,158	**$1,625,993**	$5,809,516	$5,440,893	–$4,869,243
Uninsured	3,592,569	$1,366,287,402	**$198,648,301**	$666,481,007	$411,130,435	$90,027,724
TOTAL	**17,883,738**	**$4,877,672,062**	**$860,829,519**	**$2,673,982,330**	**$1,196,306,601**	**$146,553,624**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. The cost figures assume that the state, federal, Social Security and Medicare, and EITC marginal tax rates remain unchanged (e.g., the household does not move into another tax bracket) 100 percent wage shifting; and no disemployment for low-wage workers. Revenue losses include *both* the employer's and employee's contributions for health insurance. Marginal tax rates imputed using CPS tax questions and information from the California Franchise Tax Board (http://www.ftb.ca.gov/forms/02_forms/02_rate.pdf), the Social Security Administration (http://www.ssa.gov/pubs/10003.html), and the Internal Revenue Service (http://www.unclefed.com/IRS-Forms/2002/p596.pdf). Household is assumed to be a nonitemizer. Costs use the CPS or CEHBS premium imputations. Dollar amounts are rounded to nearest dollar.

bers, excluding approximately 1.4 million workers for whom full wage shifting is not possible.[86] These workers have actual mandated costs from HIA that would preclude such shifting. The results from Table 10 suggest much the same story in terms of revenue loss, with the state of California losing anywhere between $665 million and $696 million in tax revenue, while the total tax revenue loss is around $3.6 billion.

Employers of low-wage workers, however, will be unable to shift the full burden of HIA costs to their employees. The estimates above show that wage shifting is constrained for approximately 1.4 million employees due to the current

California minimum wage of $6.75 per hour. Operating under this constraint, employers are faced with a similar situation to an increase in the wage floor. They must accept lower profits, raise prices, or alter employment levels and skill levels to respond to the increased costs.

In studying the effect on increases in mandated wage levels, Neumark (1995) found that current employees were often displaced by higher-skilled individuals attracted by higher wages. Lang (1995) found wage hikes shift "employment towards teenagers and students... [T]he competition from [these] higher quality workers makes low-skill workers worse

Table 10 Tax losses due to wage shifting for nondisplaced California workers based on the 2003 CPS

CPS premium data						
Type of Coverage	High-Wage Employees	Cumulative	California	Federal	Social Security and Medicare	EITC
Employer-based coverage only	11,052,713	$2,089,653,883	**$414,197,668**	$1,210,084,619	$427,263,676	$38,107,869
Private nonemployer coverage only	1,013,749	$176,043,292	**$33,758,304**	$103,859,974	$35,977,088	$2,447,923
Government coverage only	743,993	$284,865,159	**$45,319,726**	$145,325,254	$66,668,878	$27,551,303
Employer-based coverage *and* government coverage	579,057	$113,972,772	**$22,047,652**	$64,452,466	$25,129,946	$2,342,704
Private nonemployer coverage *and* government coverage	126,585	$6,629,265	**$1,202,476**	$3,518,381	$1,908,409	$0
Uninsured	2,922,820	$899,957,731	**$148,943,531**	$472,918,355	$220,751,969	$57,343,890
TOTAL	**16,438,917**	**$3,571,122,103**	**$665,469,357**	**$2,000,159,050**	**$777,699,966**	**$127,793,688**

CEHBS premium data						
Type of Coverage	High-Wage Employees	Cumulative	California	Federal	Social Security and Medicare	EITC
Employer-based coverage only	11,129,918	$2,246,327,421	**$458,084,586**	$1,354,934,403	$402,087,910	$31,220,471
Private nonemployer coverage only	1,013,266	$167,023,961	**$31,508,372**	$98,236,095	$33,825,331	$3,454,162
Government coverage only	725,780	$275,921,800	**$45,314,413**	$144,216,492	$64,749,119	$21,641,779
Employer-based coverage and government coverage	591,793	$111,354,570	**$20,698,934**	$62,531,358	$24,151,785	$3,972,496
Private nonemployer coverage and government coverage	126,585	$5,494,180	**$996,584**	$2,915,952	$1,581,644	$0
Uninsured	2,911,932	$831,473,471	**$139,759,280**	$445,326,682	$204,478,072	$41,909,422
TOTAL	**16,499,274**	**$3,637,595,403**	**$696,362,168**	**$2,108,160,981**	**$730,873,861**	**$102,198,330**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. The cost figures assume that the state, federal, Social Security and Medicare, and EITC marginal tax rates remain unchanged (e.g., the household does not move into another tax bracket) and 100 percent wage shifting. Calculations ignore workers who might lose their jobs as a result of the legislation. Marginal tax rates imputed using CPS tax questions and information from the California Franchise Tax Board (http://www.ftb.ca.gov/forms/02_forms/02_rate.pdf), the Social Security Administration (http://www.ssa.gov/pubs/10003.html), and the Internal Revenue Service (http://www.unclefed.com/IRS-Forms/2002/p596.pdf). Costs use the CPS or CEHBS premium imputations. Household is assumed to be a nonitemizer. Dollar amounts are rounded to nearest dollar.

off." Neumark and Wascher (2000) convincingly reevaluate Card and Krueger's (1994) study of minimum wages in New Jersey and, using payroll data, find an employment elasticity of –0.22. In a prominent survey of labor economists, Fuchs, Krueger, and Poterba (1998) find that the mean estimate of employment elasticity for teenagers is –0.21 and the median is –0.10. All of these findings suggest that in the absence of full wage shifting, there is a strong possibility of layoffs as a result of HIA, especially for low-skilled workers.

I next examine the possibility of job loss, using the Neumark and Wascher (2000) elasticity estimate of –0.22. To compute the employment loss, I considered several different scenarios. The first scenario assumes no wage shifting for any worker, while the second assumes full wage shifting until the minimum wage and disemployment effects thereafter. That is, the second scenario shifts as much of HIA to the worker as possible in the form of lower wages, and only to the extent that wages would have to be shifted below the California minimum wage of $6.75 would employment losses ensue. For example, if the total mandated HIA cost were $2,080 for a worker, then this would translate into a $1.00 per hour shift in wages. If the worker earned $7.50 per hour, only 75 cents of this mandate could be passed along in the form of lower wage; the remaining 25 cents is analogous to a minimum-wage increase (where the percentage change in wages is 25 cents divided by $6.75, or 3.7 percent). In the second scenario, I apply the Neumark and Wascher (2000) employment elasticity to this percentage to compute the employment losses. In all cases, the HIA mandate was converted into an hourly wage rate increase based on full-time/full-year work, which leads to the smallest possible disemployment effect. In other words, the percentage increase in the wage floor would be larger using actual hours of work.

Focusing on the 1.4 million workers where the wage floor would increase after wage shifting occurred, the wage floor increase for the mean (and median) worker is approximately 21 percent using CPS premiums. Ten percent of workers would experience an increase in the wage floor of 42 percent or more. The results are similar using CEHBS premiums.

Table 11 shows the disemployment results, using both sets of health premium data. When wage shifting is possible, approximately 70,000 workers will lose their jobs as a result of HIA, nearly 25 percent of whom already had employer-provided health insurance. More than 32,000 of these workers were uninsured, meaning that in addition to not receiving health insurance, now they also lose their jobs. Around 11,500 workers with government insurance lose their jobs, meaning they continue to keep this insurance instead of being transferred to employer insurance. When wage shifting is not possible (as is likely in the short run), the results are even more dramatic. Around 150,000 workers lose their jobs, with roughly equal numbers coming from the uninsured and covered by employers.

6d. Other labor market adjustments

The employment loss analysis using the supply and demand framework above likely understates

Table 11	Employment losses for California workers, based on the 2003 CPS			
Type of Coverage	**CPS Premiums**		**CEHBS Premiums**	
	No Wage Shifting	**100% Wage Shifting When Possible**	**No Wage Shifting**	**100% Wage Shifting When Possible**
Employer-based coverage only	59,071	16,852	54,138	17,578
Private nonemployer coverage only	10,019	5,352	9,824	5,491
Government coverage only	20,367	11,570	24,179	15,134
Employer-based coverage *and* government coverage	2,808	360	2,461	262
Private nonemployer coverage *and* government coverage	1,032	732	939	684
Uninsured	60,785	32,655	59,941	33,199
TOTAL	**154,082**	**67,521**	**151,482**	**72,348**
Wage Category	**CPS Premiums**		**CEHBS Premiums**	
	No Wage Shifting	**100% Wage Shifting When Possible**	**No Wage Shifting**	**100% Wage Shifting When Possible**
Wage under $7.00	53,714	53,379	52,976	52,652
Wage between $7.00 and $7.50	10,554	8,063	11,262	9,227
Wage between $7.50 and $8.00	8,499	3,779	7,331	3,619
Wage between $8.00 and $8.50	5,363	1,148	4,513	1,130
Wage between $8.50 and $9.00	5,790	890	5,805	2,091
Wage between $9.00 and $9.50	4,996	260	4,878	1,212
Wage between $9.50 and $10.00	8,897	2	8,947	1,899
Wage between $10.00 and $10.50	4,080	0	3,837	471
Wage over $11.00	52,189	0	51,933	47
TOTAL	**154,082**	**67,521**	**151,482**	**72,348**

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. Costs use the CPS and CEHBS premium imputations. Number in each cell is the number of job losses in absolute terms.

the job loss. HIA creates employment notches for hiring the 20th, 50th, and 200th employee. Using the median CEHBS premiums for 2003, for example, a firm that was previously offering single coverage could face a marginal cost to its health care bill of approximately $850,000 for hiring the 200th employee, because it would have to offer all of its employees family coverage if they qualified. Similarly, hiring the 20th employee entails a marginal cost to its health care bill of nearly $40,000, while hiring the 50th employee entails a marginal cost of nearly $26,000 due to the loss of the tax credit. Understanding how employers respond to such notches is clearly important in gauging the employment losses, but there is no convincing evidence on this.[87] HIA

also creates the potential for an hours notch, where employers limit workers to fewer than 23 hours per week. Although the legislation specifically outlaws reducing hours, it is likely that through attrition and new hiring, the same sort of outcome could be achieved. Evidence from Thurston (1997) finds that a similar hours notch in Hawaii did affect the work patterns of employees. The legal uncertainty that surrounds such adjustments potentially raises the marginal cost of doing such actions, shifting employer behavior to the legal wage-shifting and layoff behavior discussed earlier.

6e. Revised cost estimates and characteristics of workers

The disemployment effects computed in Table 11 potentially lead to the worker being worse off but saving the employer money. This cost savings is substantial but affects only the overall employer costs by a modest amount. For example, when the largest number of workers lose their jobs (when wage shifting is not possible) the cost savings varies between $483,634,933 and $649,412,060; thus, the range of HIA costs varies between $12.4 billion and $12.6 billion.

One question that arises in light of these employer responses relates to what kinds of characteristics these newly unemployed workers possess. Table 12 compares the laid-off workers with all workers in California.

First, these workers have much lower family income than the typical worker. Average family income for a California worker in 2002 was approximately $73,000; for workers displaced when there is no wage shifting, family income is around $50,000. For the smaller group of workers who lose their jobs when wage shifting is possible, family income is much lower, approximately $38,000. This group of roughly 70,000 displaced workers has much lower wages and is considerably younger than the typical California worker. They are modestly less likely to be married, male, or a veteran. In terms of educational attainment, members of this group are far more likely to be high school dropouts or high school graduates. They are also much more likely to be of Hispanic origin. The basic conclusion is that those who suffer the most under HIA—workers who lose their jobs—are already extremely disadvantaged in the labor market.

7. Conclusions and Extensions

This study finds a much larger cost estimate than other existing studies, including studies touted by opponents of Proposition 72. All of these studies have failed to take account of the full extent of HIA on employers' costs. The cost to employers of the legislation is expected to be in the neighborhood of $13 billion; much of this represents shifting of responsibility of paying for health care from other groups to employers. The cost of HIA is nearly $6,500 per newly insured individual, because nearly two-thirds of the costs associated with this bill involve individuals who already have health insurance. The likely employer responses include wage shifting and layoffs.

A number of factors were not addressed in this study, in part because of the considerable ambiguity still surrounding the implementation

Table 12 Average characteristics of displaced workers

	All Workers	CPS Premiums		CEHBS Premiums	
		No Wage Shifting	100% Wage Shifting When Possible	No Wage Shifting	100% Wage Shifting When Possible
Total family income	$73,419.70	$49,944.52	$37,257.70	$52,157.57	$39,042.76
Wage rate	$21.36	$10.88	$6.94	$11.40	$7.10
Age	39.6	35.1	33.0	35.3	33.2
Married	55%	50%	43%	59%	52%
Male	55%	52%	50%	51%	48%
Veteran	7%	4%	3%	5%	3%
High school dropout	17%	27%	40%	29%	41%
High school diploma	23%	28%	27%	28%	28%
Non-white	21%	23%	20%	24%	22%
Hispanic	30%	44%	53%	46%	54%
Homeowner	60%	46%	40%	48%	41%
Telephone available	98%	97%	97%	97%	97%
Uninsured	20%	39%	48%	40%	46%
Private insurance	75%	47%	35%	44%	33%
Any employer insurance	68%	40%	25%	37%	25%
Employer insurance, own name	53%	21%	10%	15%	6%
Direct purchase of insurance	8%	7%	8%	7%	9%
Any government insurance	9%	16%	19%	18%	22%
Medicaid	4%	10%	15%	11%	17%
Medicare	3%	1%	1%	1%	1%
Champus	3%	5%	3%	6%	5%
Weighted sample size	*17,883,738*	*154,082*	*67,521*	*151,482*	*72,348*
Unweighted sample size	*8,155*	*2,713*	*709*	*2,432*	*685*

Notes: Author's tabulation of the March 2003 CPS, Annual Social and Economic Survey. All summary statistics are based on weighted data.

of HIA. The most important is the question of whether firms will "pay or play." Baker et al. (2004) provide an interesting discussion about some of the issues surrounding this decision. One key issue is the extent to which firms with higher expected health costs (e.g., those with older or unhealthier workers) opt in to the state's plan, and whether the fees associated with participation in the plan are experience rated, as are taxes for various social insurance

programs. Ultimately, the decision to opt in to state-run health care would boil down to comparing the difference in costs and benefits of the state-run and private health care plans, along with any other adjustments to the employee's compensation package. In cases when the firm's profitability and employees' total compensation could both be increased (e.g., for firms with high expected health care costs), then the decision to "pay" rather than "play" seems quite likely.

A final question is this: If HIA is the wrong direction for health care reform, what is the right direction? The goal of any health care reform should be to reduce the number of uninsured people in a cost-effective way. One possibility, though certainly not the only one, is an aggressive Medi-Cal outreach program in California. In Yelowitz (2003), I estimated, using CPS data, that virtually all uninsured children in California were eligible for some sort of government health insurance program. Along the same lines, Brown et al., 2002 (p. 48) estimate, using CHIS data, that 355,000 uninsured children are eligible but not participating in Medi-Cal, and another 301,000 are eligible for Healthy Families. In addition, they find that 413,000 uninsured parents are eligible but not participating in Medi-Cal, and another 52,000 nonelderly adults are eligible for Medi-Cal. Thus, more than 1.1 million Californians would be eligible for these government programs. The number of nonparticipating eligibles for government programs in Brown et al. (2002) is larger than the number of Californians that Brown et al. (2003) estimate would gain coverage under the fully phased in HIA. If the state of California had an aggressive outreach campaign, this campaign could produce much more bang per buck than HIA, because the federal government would absorb half of the Medicaid costs through the match rate, and the employment loss that would take place would be minimal.[88]

Appendix

Appendix Table 1 Groupings used in detailed CPS cost analysis

Code	Label	Population
1	Employer-based coverage in own name, Not-in-universe (NIU) Plan	167,167
2	Employer-based coverage in own name, Employer Pays All	2,509,289
3	Employer-based coverage in own name, Employer Pays Some	6,289,498
4	Employer-based coverage in own name, Employer Pays None	435,074
5	Employer-based coverage in other's name, Covered under 0 plans, NIU	259,764
6	Employer-based coverage in other's name, Covered under 1 plan, NIU Plan	187,241
7	Employer-based coverage in other's name, Covered under 1 plan, Employer Pays All	1,833,584
8	Employer-based coverage in other's name, Covered under 1 plan, Employer Pays Some	5,634,015
9	Employer-based coverage in other's name, Covered under 1 plan, Employer Pays None	259,476
10	Employer-based coverage in other's name, Covered under 2 plans, NIU Plan	17,882
11	Employer-based coverage in other's name, Covered under 2 plans, Employer Pays All	162,189
12	Employer-based coverage in other's name, Covered under 2 plans, Employer Pays Some	260,895
13	Employer-based coverage in other's name, Covered under 2 plans, Employer Pays None	4,365
14	Private nonemployer coverage	2,038,819
15	Medicaid only	3,413,518
16	Medicare only	1,179,981
17	Champus only	406,217
18	Medicaid/Medicare	734,378
19	Champus/Medicare	106,470
20	Champus/Medicaid	17,126
21	Champus/Medicaid/Medicare	12,493
22	Employer-based coverage in own name, Medicare, Employer Pays All	242,018
23	Employer-based coverage in own name, Medicare, Employer Pays Some	396,789
24	Employer-based coverage in own name, Medicare, Employer Pays None	66,676
25	Employer-based coverage in own name, Medicaid, Employer Pays All	33,636
26	Employer-based coverage in own name, Medicaid, Employer Pays Some	72,229
27	Employer-based coverage in own name, Medicaid, Employer Pays None	7,422
28	Employer-based coverage in own name, Champus, Employer Pays All	86,203
29	Employer-based coverage in own name, Champus, Employer Pays Some	99,299
30	Employer-based coverage in own name, Champus, Employer Pays None	15,134
31	Employer-based coverage in own name, Medicare, Medicaid, Employer Pays All	19,497
32	Employer-based coverage in own name, Medicare, Medicaid, Employer Pays Some	20,925
33	Employer-based coverage in own name, Medicare, Medicaid, Employer Pays None	1,774
34	Employer-based coverage in own name, Champus, Medicaid, Employer Pays All	2,377
35	Employer-based coverage in own name, Champus, Medicaid, Employer Pays Some	4,721
36	Employer-based coverage in own name, Champus, Medicaid, Employer Pays None	0
37	Employer-based coverage in own name, Champus, Medicare, Employer Pays All	8,796
38	Employer-based coverage in own name, Champus, Medicare, Employer Pays Some	19,322
39	Employer-based coverage in own name, Champus, Medicare, Employer Pays None	1,064
40	Employer-based coverage in own name, Medicare, Medicaid, Champus, Employer Pays All	3,465
41	Employer-based coverage in own name, Medicare, Medicaid, Champus, Employer Pays Some	0
42	Employer-based coverage in own name, Medicare, Medicaid, Champus, Employer Pays None	0
43	Employer-based coverage in other's name, Medicare, Covered under 0 plans, NIU	8,973
44	Employer-based coverage in other's name, Medicare, Covered under 1 plan, NIU Plan	0
45	Employer-based coverage in other's name, Medicare, Covered under 1 plan, Employer Pays All	77,398
46	Employer-based coverage in other's name, Medicare, Covered under 1 plan, Employer Pays Some	118,545
47	Employer-based coverage in other's name, Medicare, Covered under 1 plan, Employer Pays None	17,898
48	Employer-based coverage in other's name, Medicare, Covered under 2 plans, NIU Plan	0
49	Employer-based coverage in other's name, Medicare, Covered under 2 plans, Employer Pays All	0
50	Employer-based coverage in other's name, Medicare, Covered under 2 plans, Employer Pays Some	0
51	Employer-based coverage in other's name, Medicare, Covered under 2 plans, Employer Pays None	0
52	Employer-based coverage in other's name, Medicaid, Covered under 0 plans, NIU	39,573
53	Employer-based coverage in other's name, Medicaid, Covered under 1 plan, NIU Plan	10,773
54	Employer-based coverage in other's name, Medicaid, Covered under 1 plan, Employer Pays All	86,299
55	Employer-based coverage in other's name, Medicaid, Covered under 1 plan, Employer Pays Some	250,168
56	Employer-based coverage in other's name, Medicaid, Covered under 1 plan, Employer Pays None	15,226
57	Employer-based coverage in other's name, Medicaid, Covered under 2 plans, NIU Plan	2,735

Continued on next page

Appendix Table 1, cont. Groupings used in detailed CPS cost analysis

Code	Label	Population
58	Employer-based coverage in other's name, Medicaid, Covered under 2 plans, Employer Pays All	2,981
59	Employer-based coverage in other's name, Medicaid, Covered under 2 plans, Employer Pays Some	16,709
60	Employer-based coverage in other's name, Medicaid, Covered under 2 plans, Employer Pays None	0
61	Employer-based coverage in other's name, Champus, Covered under 0 plans, NIU	0
62	Employer-based coverage in other's name, Champus, Covered under 1 plan, NIU Plan	1,525
63	Employer-based coverage in other's name, Champus, Covered under 1 plan, Employer Pays All	55,393
64	Employer-based coverage in other's name, Champus, Covered under 1 plan, Employer Pays Some	83,336
65	Employer-based coverage in other's name, Champus, Covered under 1 plan, Employer Pays None	6,847
66	Employer-based coverage in other's name, Champus, Covered under 2 plans, NIU Plan	0
67	Employer-based coverage in other's name, Champus, Covered under 2 plans, Employer Pays All	9,440
68	Employer-based coverage in other's name, Champus, Covered under 2 plans, Employer Pays Some	10,271
69	Employer-based coverage in other's name, Champus, Covered under 2 plans, Employer Pays None	0
70	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 0 plans, NIU	0
71	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 1 plan, NIU Plan	0
72	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 1 plan, Employer Pays All	2,219
73	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 1 plan, Employer Pays Some	21,616
74	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 1 plan, Employer Pays None	0
75	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 2 plans, NIU Plan	0
76	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 2 plans, Employer Pays All	0
77	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 2 plans, Employer Pays Some	1,563
78	Employer-based coverage in other's name, Medicare, Medicaid, Covered under 2 plans, Employer Pays None	0
79	Employer-based coverage in other's name, Champus, Medicaid, Covered under 0 plans, NIU	0
80	Employer-based coverage in other's name, Champus, Medicaid, Covered under 1 plan, NIU Plan	0
81	Employer-based coverage in other's name, Champus, Medicaid, Covered under 1 plan, Employer Pays All	12,456
82	Employer-based coverage in other's name, Champus, Medicaid, Covered under 1 plan, Employer Pays Some	6,290
83	Employer-based coverage in other's name, Champus, Medicaid, Covered under 1 plan, Employer Pays None	0
84	Employer-based coverage in other's name, Champus, Medicaid, Covered under 2 plans, NIU Plan	0
85	Employer-based coverage in other's name, Champus, Medicaid, Covered under 2 plans, Employer Pays All	0
86	Employer-based coverage in other's name, Champus, Medicaid, Covered under 2 plans, Employer Pays Some	0
87	Employer-based coverage in other's name, Champus, Medicaid, Covered under 2 plans, Employer Pays None	0
88	Employer-based coverage in other's name, Champus, Medicare, Covered under 0 plans, NIU	0
89	Employer-based coverage in other's name, Champus, Medicare, Covered under 1 plan, NIU Plan	0
90	Employer-based coverage in other's name, Champus, Medicare, Covered under 1 plan, Employer Pays All	0
91	Employer-based coverage in other's name, Champus, Medicare, Covered under 1 plan, Employer Pays Some	11,994
92	Employer-based coverage in other's name, Champus, Medicare, Covered under 1 plan, Employer Pays None	0
93	Employer-based coverage in other's name, Champus, Medicare, Covered under 2 plans, NIU Plan	0
94	Employer-based coverage in other's name, Champus, Medicare, Covered under 2 plans, Employer Pays All	0
95	Employer-based coverage in other's name, Champus, Medicare, Covered under 2 plans, Employer Pays Some	0
96	Employer-based coverage in other's name, Champus, Medicare, Covered under 2 plans, Employer Pays None	0
97	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 0 plans, NIU	0
98	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 1 plan, NIU Plan	0
99	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 1 plan, Employer Pays All	3,125
100	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 1 plan, Employer Pays Some	0
101	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 1 plan, Employer Pays None	0
102	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 2 plans, NIU Plan	0
103	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 2 plans, Employer Pays All	0
104	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 2 plans, Employer Pays Some	0
105	Employer-based coverage in other's name, Medicare, Medicaid, Champus, Covered under 2 plans, Employer Pays None	0
106	Private nonemployer coverage/Medicare	635,537
107	Private nonemployer coverage/Medicaid	122,782
108	Private nonemployer coverage/Champus	24,911
109	Private nonemployer coverage/Medicare/Medicaid	35,738
110	Private nonemployer coverage/Champus/Medicaid	8,973
111	Private nonemployer coverage/Champus/Medicare	27,181
112	Private nonemployer coverage/Medicare/Medicaid/Champus	1,928
113	Uninsured	6,397,810

Appendix Table 2 Groupings used in detailed CPS cost analysis

Code	Population	Firms with 50 or more employees		Firms with 20 or more employees	
		Workers & Dependents	Workers Only	Workers & Dependents	Workers Only
1	167,167	100,901	93,406	112,909	109,915
2	2,509,289	1,695,946	1,569,128	1,883,684	1,778,975
3	6,289,498	4,919,148	4,716,260	5,324,870	5,179,813
4	435,074	278,575	242,604	289,471	257,361
5	259,764	97,385	22,434	97,385	22,434
6	187,241	64,219	27,013	66,797	29,591
7	1,833,584	1,020,050	208,304	1,043,185	250,265
8	5,634,015	4,101,004	621,857	4,129,337	720,021
9	259,476	156,644	36,247	158,758	38,361
10	17,882	13,613	0	13,613	0
11	162,189	135,036	4,111	135,036	4,111
12	260,895	203,334	13,168	203,334	13,168
13	4,365	1,919	0	1,919	0
14	2,038,819	320,392	215,548	360,326	258,180
15	3,413,518	645,826	184,188	700,201	240,580
16	1,179,981	63,523	25,721	67,061	29,259
17	406,217	290,518	129,762	290,518	134,207
18	734,378	19,710	7,928	19,710	7,928
19	106,470	7,834	3,077	7,834	3,077
20	17,126	2,468	0	2,468	0
21	12,493	0	0	0	0
22	242,018	31,964	21,834	34,367	24,237
23	396,789	69,135	57,572	74,330	62,767
24	66,676	6,014	3,873	6,014	3,873
25	33,636	21,209	18,527	25,133	22,451
26	72,229	57,348	50,838	58,610	53,242
27	7,422	1,763	0	1,763	0
28	86,203	67,007	60,766	69,792	63,551
29	99,299	71,211	68,950	71,211	68,950
30	15,134	8,245	8,245	10,636	10,636
31	19,497	0	0	0	0
32	20,925	5,442	5,442	5,442	5,442
33	1,774	0	0	0	0
34	2,377	2,377	2,377	2,377	2,377
35	4,721	4,721	4,721	4,721	4,721
36	0	0	0	0	0
37	8,796	1,680	1,680	1,680	1,680
38	19,322	4,337	4,337	4,337	4,337
39	1,064	0	0	0	0
40	3,465	0	0	0	0
41	0	0	0	0	0
42	0	0	0	0	0
43	8,973	0	0	0	0
44	0	0	0	0	0
45	77,398	15,371	0	15,371	0
46	118,545	46,005	2,379	46,005	2,379
47	17,898	8,358	2,141	8,358	2,141
48	0	0	0	0	0
49	0	0	0	0	0
50	0	0	0	0	0
51	0	0	0	0	0
52	39,573	17,414	0	17,414	0
53	10,773	0	0	0	0
54	86,299	50,542	5,009	50,542	5,009
55	250,168	147,828	8,074	149,572	12,986
56	15,226	6,714	0	6,714	0
57	2,735	2,735	0	2,735	0

Continued on next page

Appendix Table 2, cont. Groupings used in detailed CPS cost analysis

Code	Population	Firms with 50 or more employees		Firms with 20 or more employees	
		Workers & Dependents	Workers Only	Workers & Dependents	Workers Only
58	2,981	2,981	0	2,981	0
59	16,709	11,829	0	11,829	0
60	0	0	0	0	0
61	0	0	0	0	0
62	1,525	1,525	0	1,525	0
63	55,393	46,499	6,932	46,499	12,325
64	83,336	69,398	24,420	69,398	24,420
65	6,847	4,510	2,327	4,510	4,510
66	0	0	0	0	0
67	9,440	9,440	0	9,440	0
68	10,271	2,171	2,171	2,171	2,171
69	0	0	0	0	0
70	0	0	0	0	0
71	0	0	0	0	0
72	2,219	0	0	0	0
73	21,616	16,524	0	16,524	0
74	0	0	0	0	0
75	0	0	0	0	0
76	0	0	0	0	0
77	1,563	1,563	0	1,563	0
78	0	0	0	0	0
79	0	0	0	0	0
80	0	0	0	0	0
81	12,456	8,762	0	8,762	0
82	6,290	6,290	0	6,290	0
83	0	0	0	0	0
84	0	0	0	0	0
85	0	0	0	0	0
86	0	0	0	0	0
87	0	0	0	0	0
88	0	0	0	0	0
89	0	0	0	0	0
90	0	0	0	0	0
91	11,994	2,791	2,791	2,791	2,791
92	0	0	0	0	0
93	0	0	0	0	0
94	0	0	0	0	0
95	0	0	0	0	0
96	0	0	0	0	0
97	0	0	0	0	0
98	0	0	0	0	0
99	3,125	1,717	0	1,717	0
100	0	0	0	0	0
101	0	0	0	0	0
102	0	0	0	0	0
103	0	0	0	0	0
104	0	0	0	0	0
105	0	0	0	0	0
106	635,537	12,416	6,313	12,416	6,313
107	122,782	28,340	10,766	28,340	10,766
108	24,911	18,179	1,594	20,567	3,982
109	35,738	0	0	0	0
110	8,973	0	0	0	0
111	27,181	0	0	0	0
112	1,928	0	0	0	0
113	6,397,810	1,643,479	1,115,586	1,983,420	1,472,089

Appendices

Appendix 1: Technical assumptions used to impute HIA eligibility

HIA clearly delineates different requirements based on whether a firm has 20 to 49 California employees, 50 to 199 employees, or 200 or more California employees. The CPS, like most household surveys, asks respondents about firm size only in ranges, not the exact firm size. The CPS question is worded as, "Counting all locations where this employer operates, what is the total number of persons who work for ...'s employer?" where firm size can range from 1 to 9 employees, 10 to 24 employees, 25 to 99 employees, 100 to 499 employees, 500 to 999 employees, and 1,000 or more employees.[89] These groupings are shown in the first column of Appendix Table 3.

It is clear that workers who answer "1 to 9" can be classified as ineligible for HIA, and that those who answer "500 to 999" or "1,000 or more" can be classified as eligible for the HIA family mandate. The other three groups include a mix of workers who qual-

Appendix Table 3 Imputing the HIA mandate to the CPS using respondents' answers to questions on firm size, industry, and county of residence

(1) CPS Firm Size	(2) Initial HIA Imputation	(3) Imputation Assumption	(4) County Business Pattern Relevant Cutoffs	(5) Will CBP Change the Imputation?	(6) Additional CPS Information Needed	(7) Imputation Assumption
0. Not in universe	None	None	N/A	No	None	None
1. Under 10	None	None	# firms 1–4 employees, # firms 5–9 employees	No	None	None
2. 10–24	None, or taxpayer subsidized	Uniform in firms or employment	# firms 10–19 employees, # firms 20–49 employees	Yes	*INDUSTRY, GECO, HG-MSAC*	See equations 1a and 1b below
3. 25–99	Taxpayer subsidized or single	Uniform in firms or employment	# firms 20–49 employees, # firms 50–99 employees	Yes	*INDUSTRY, GECO, HG-MSAC*	See equations 2a and 2b below
4. 100–499	Single or family	Uniform in firms or employment	# firms 100–249 employees, # firms 250–499 employees	Yes	*INDUSTRY, GECO, HG-MSAC*	See equations 3a and 3b below
5. 500–999	Family	None	# firms 500–999 employees	No	None	None
6. 1,000+	Family	None	# firms 1,000+ employees	No	None	None

Notes: The CPS firm-size question, *NOEMP*, is worded as, "Counting all locations where this employer operates, what is the total number of persons who work for ...'s employer?" The six categories are given in column (1). The CPS industry question, *INDUSTRY*, gives the industry of the longest job at a four-digit level that is then converted into a NAICS code.

ify for different entitlements under HIA. Some in the "10 to 24" category will qualify for the single mandate if the state of California offers a 20 percent tax credit to businesses with between 20 and 49 employees. The same is true for some of the workers in the "25 to 99" category, while other workers in this group will qualify for the HIA single mandate. In the "100 to 499" grouping, some workers will qualify for the HIA single mandate and others for the family mandate. These classifications are shown in the second column of Appendix Table 3.

Without any additional information, a researcher would have several options for these other three groupings. One option would be to be extremely conservative (liberal) by assuming that all firms in a certain grouping, such as the 25 to 99 group, are at the lowest (highest) end of the scale, but this would clearly understate (overstate) the costs of HIA. This conservative (liberal) assumption would say, for example, that all firms had 25 (99) employees, and the employees were therefore eligible for the single coverage with a state tax credit (single coverage alone), and would systematically understate (overstate) the cost of the mandate. A second option would be to assume that either firms or employees are distributed uniformly across the distribution within a firm-size grouping, an assumption listed in the third column of Appendix Table 3. For example, there are 75 separate groupings in the "25 to 99" category. If *firms* are distributed uniformly across this category, then the likelihood of an *employee* falling into the 25 to 49 group (and thus, eligible for single coverage with the state tax credit) would be only 19.9 percent.[90] This is because large firms have more employees and therefore contribute more to the probability. If *employees* are distributed uniformly across this category, then the likelihood of an employee falling into the 25 to 49 group would be much higher, 33.3 percent. For the distribution to be uniform in employment, there must be, for example, three times as many 25-employee firms as there are 75-employee firms.

The options listed above appear to be the most relevant ones without additional data sources. The intuition for using the 2001 CBP data is to avoid ad-hoc assumptions about the distribution of employers or employees. The CBP, for example, provides information by county and industry for the *number* of firms with 1 to 4 employees, 5 to 9 employees, 10 to 19 employees, 20 to 49 employees, 50 to 99 employees, 100 to 249 employees, 250 to 499 employees, 500 to 999 employees, and 1,000 or more employees. Assume that a CPS respondent reports working at a firm with "25 to 99" workers, living in Los Angeles County, and being employed in the "Food Services and Drinking Places" industry (NAICS code 722). In this case, the CBP groupings of "20 to 49 employees" and "50 to 99 employees" can shed additional light on the HIA mandate. For purposes of illustration, assume that the CBP reported *zero* firms in Los Angeles County in this industry in the "20 to 49" group,

and a positive number in the "50 to 99" group. In this case, using the CBP data in conjunction with the CPS data would generate a 100 percent probability of being affected by the HIA mandate with "single coverage" and a 0 percent probability of being affected by "single coverage with subsidy." On the other extreme (again, for purposes of illustration), assume that the CBP reported *zero* firms in the "50 to 99 employees" category and a positive number in the "20 to 49 employees" category. Now, using the CBP in conjunction with the CPS data would generate a 100 percent probability of "single coverage with credit" and a 0 percent probability of "single coverage."

Clearly, both of those extremes are not likely to occur very often in the CBP data, so how does one incorporate the CBP data with the CPS data in other situations? The probability will depend on the *number of firms* in the CBP categories (e.g., "20 to 49 employees" and "50 to 99 employees") and *average firm size* for firms in each of the two categories. These numbers are used to compute covered employment and total employment. In addition, because the CBP actually groups firms into "20 to 49" employees rather than using the CPS cutoff of 25 employees, another adjustment will need to be made. Otherwise, some smaller firms with between 20 and 24 employees will inappropriately downweight the probability of single coverage from HIA.

The goal is to use this information to figure out the expected number of employees in the "50 to 99" grouping and the expected number of employees in the "25 to 49" grouping. By doing so, dividing the employment count in the "50 to 99" grouping by the total employment count in the "25 to 99" grouping gives us the probability that a CPS respondent will receive single coverage from HIA. This expression is computed as follows:

$$\Pr(SING_{25\text{-}99,c,i}) = \frac{EMP_{50\text{-}99} * FIRM_{50\text{-}99,c,i}}{(EMP_{50\text{-}99} * FIRM_{50\text{-}99,c,i}) + (PR_{25\text{-}49|20\text{-}49} * EMP_{20\text{-}49} * FIRM_{20\text{-}49,c,i})},$$

where $Pr(SING_{25\text{-}99,c,i})$ is the estimated probability that a CPS respondent who reports being employed in a firm with 25 to 99 employees in county c and industry i is actually in a firm large enough to receive single coverage under the HIA mandate (as opposed to single coverage with the tax credit). The variables $FIRM_{20\text{-}49,c,i}$ and $FIRM_{50\text{-}99,c,i}$ are the number of firms in each grouping ("20 to 49" and "50 to 99") in county c and industry i and come directly from the CBP data. The variables $EMP_{20\text{-}49}$ and $EMP_{50\text{-}99}$ are estimates of firm size within each grouping (based on all industries and counties; the computation is discussed below). Finally, the product ($EMP_{20\text{-}49}$*$FIRM_{20\text{-}49,c,i}$) gives the total employment in firms with 20 to 49 employees, but the denominator needs employment in

firms with 25 to 49 employees. The variable $PR_{25-49|20-49}$ (also discussed below) is the probability that an employee who works in a firm with a firm size of 20 to 49 employees is actually working in a firm with 25 to 49 employees.

Return to the example of a CPS respondent who reports working at a firm with "25 to 99" workers, living in Los Angeles county, and being employed in the "Food Services and Drinking Places" industry. The 2001 CBP for Los Angeles County reveals a total of 15,187 "Food Services and Drinking Places." Of those, 3,000 establishments have between 20 and 49 employees, and 883 have between 50 and 99 employees. Moreover, for purposes of illustration, assume that the average firm size is 30 employees for firms with 20 to 49 employees and is 70 employees for firms with 50 and 99 employees. Finally, assume that the probability of an employee being in a firm with 25 to 49 employees, conditional on being in a firm with 20 to 49 employees, is 88 percent. The total number of people employed in firms with 50 to 99 employees is therefore 61,810 workers (883 establishments*70 employees). The total number employed in firms with 20 to 49 employees is 90,000 workers (3,000 establishments*30 employees). We derive the number who work in firms with 25 to 49 employees as 79,200 workers (88 percent*3,000 establishments*30 employees). As a consequence, 10,800 workers are in firms size 20 to 24. The total number of workers in firms size 25 to 99 is therefore 141,010 (61,810 + 79,200). The probability of receiving single coverage for the CPS respondent is therefore 43.8 percent (61,810/141,010). Thus, the probability of such a CPS respondent receiving single coverage with a credit is 56.2 percent.

The above illustration provides general guidance on how HIA coverage was imputed to CPS workers, but there are many additional details of the calculations that will be filled in below. Before filling in those details, I first show the methodology used to compute HIA eligibility for all of the groups in the analysis. Returning to Appendix Table 3, only three groups offer any sort of ambiguity in the CPS.

The following probabilities (analogous to the equation above) are used in the analysis. For CPS respondents reporting a firm size of "10 to 24 employees," the following expressions are used to compute the probability of receiving no coverage under HIA or single credit coverage:

$$\text{(1a)}\quad \Pr\left(NONE_{10-24,c,i}\right)=\frac{EMP_{10-19}*FIRM_{10-19,c,i}}{\left(EMP_{10-19}*FIRM_{10-19,c,i}\right)+\left(\left(1-PR_{25-49|20-49}\right)*EMP_{20-49}*FIRM_{20-49,c,i}\right)}$$

$$\text{(1b)}\quad \Pr\left(CREDIT_{10-24,c,i}\right)=1-\Pr\left(NONE_{10-24,c,i}\right)$$

For CPS respondents reporting a firm size of "25 to 99 employees," the following expressions are used to compute the probability of receiving single-credit coverage or single coverage under HIA:

$$(2a)\quad \Pr\left(SINGLE_{25\text{-}99,c,i}\right)=\frac{EMP_{50\text{-}99}*FIRM_{50\text{-}99,i,c}}{\left(EMP_{50\text{-}99}*FIRM_{50\text{-}99,i,c}\right)+\left(PR_{25\text{-}49|20\text{-}49}*EMP_{20\text{-}49}*FIRM_{20\text{-}49,i,c}\right)}$$

$$(2b)\quad \Pr\left(CREDIT_{25\text{-}99,c,i}\right)=1-\Pr\left(SINGLE_{25\text{-}99,c,i}\right)$$

Finally, for CPS respondents reporting a firm size of "100 to 499 employees," the following expressions are used to compute the probability of receiving family coverage or single coverage under HIA:

$$(3a)\quad \Pr\left(FAMILY_{100\text{-}499,c,i}\right)=\frac{\left(EMP_{250\text{-}499}*FIRM_{250\text{-}499,c,i}\right)+\left(PR_{200\text{-}249|100\text{-}249}*EMP_{100\text{-}249}*FIRM_{100\text{-}249,c,i}\right)}{\left(EMP_{250\text{-}499}*FIRM_{250\text{-}499,c,i}\right)+\left(EMP_{100\text{-}249}*FIRM_{100\text{-}249,c,i}\right)}$$

$$(3b)\quad \Pr\left(SINGLE_{100\text{-}499,c,i}\right)=1-\Pr\left(FAMILY_{100\text{-}499,c,i}\right)$$

In equations (1a), (2a), and (3a), $EMP_{10\text{-}19}$, $EMP_{20\text{-}49}$, $EMP_{50\text{-}99}$, $EMP_{100\text{-}249}$, and $EMP_{250\text{-}499}$ are the median estimates of employment size within that category, based on a model derived from the 2001 CBP and discussed later. The variables $FIRM_{10\text{-}19}$, $FIRM_{20\text{-}49}$, $FIRM_{50\text{-}99}$, $FIRM_{100\text{-}249}$, and $FIRM_{250\text{-}499}$ are raw CBP counts of the number of firms in each employee-size grouping, based on the CPS respondent's county *c* and industry *i*. Finally, $PR_{25\text{-}49|20\text{-}49}$ and $PR_{200\text{-}249|100\text{-}249}$ are the estimated probabilities that an *employee* in the 20 to 49 (100 to 249) grouping is actually in the 25 to 49 (200 to 249) category. Note that in equation (1a), by using $1\text{-}PR_{25\text{-}49|20\text{-}49}=PR_{20\text{-}24|20\text{-}49}$, we are computing the number of employees in the CBP firms size 20 to 49 who are actually in firms size 20 to 24 employees. As discussed later, $PR_{25\text{-}49|20\text{-}49}$ and $PR_{200\text{-}249|100\text{-}249}$ are weighted by employment.

The general idea of all of the above equations is, within each CPS firm size category, to compute the expected employment above and below the HIA cutoff, in order to assign accurate eligibility to CPS respondents. The two remaining details are related to $EMP_{10\text{-}19}$, $EMP_{20\text{-}49}$, $EMP_{50\text{-}99}$, $EMP_{100\text{-}249}$, and $EMP_{250\text{-}499}$—the estimated employment within a firm-size grouping, and

Appendix Table 4	Median regression of total industry employment on the number of firms in each employment category, based on the 2001 CBP						
	(1) *Baseline*	(2)	(3)	(4)	(5)	(6)	(7)
# firms with 1–4 employees	1.502	1.497	1.477	1.476	1.466	1.497	1.455
	(0.005)	(0.002)	(0.006)	(0.002)	(0.005)	(0.003)	(0.000)
# firms with 5–9 employees	7.162	7.138	7.431	7.413	7.232	7.246	7.275
	(0.033)	(0.017)	(0.039)	(0.017)	(0.036)	(0.023)	(0.000)
# firms with 10–19 employees	12.504	12.664	12.309	12.440	12.593	12.316	12.601
	(0.075)	(0.038)	(0.085)	(0.036)	(0.079)	(0.050)	(0.000)
# firms with 20–49 employees	30.022	29.935	29.942	29.859	30.008	30.081	29.905
	(0.066)	(0.033)	(0.072)	(0.031)	(0.067)	(0.042)	(0.000)
# firms with 50–99 employees	70.429	70.320	70.599	70.477	70.130	70.502	70.262
	(0.147)	(0.074)	(0.149)	(0.064)	(0.138)	(0.082)	(0.000)
# firms with 100–249 employees	146.934	147.102	146.689	147.029	146.831	147.748	147.748
	(0.244)	(0.122)	(0.278)	(0.118)	(0.258)	(0.156)	(0.000)
# firms with 250–499 employees	349.580	349.420	350.305	349.776	349.489	346.615	346.769
	(0.586)	(0.294)	(0.663)	(0.282)	(0.616)	(0.379)	(0.000)
# firms with 500–999 employees	664.557	664.145	683.725	684.439	656.161	661.243	663.924
	(1.250)	(0.629)	(1.415)	(0.599)	(1.313)	(0.804)	(0.000)
# firms with 1,000 employees	2,046.562	2,047.201	1,940.220	1,928.989	2,059.105	2,054.622	2,052.870
	(1.151)	(0.580)	(1.263)	(0.543)	(1.230)	(0.739)	(0.000)
Constant term	1.669	0.365	–6.427	–7.413	5.032	–2.070	9.904
	(1.248)	(0.524)	(1.257)	(0.413)	(9.457)	(15.514)	(0.000)
Observations	1,991	2,774	2,519	4,089	1,991	1,991	1,991
Number of California counties	32 of 58	58 of 58	32 of 58	58 of 58	32 of 58	32 of 58	32 of 58
Include employment miscodes?	No	No	Yes	Yes	No	No	No
NAICS aggregation level	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit
County fixed effects?	No	No	No	No	Yes	No	Yes
Industry fixed effects?	No	No	No	No	No	Yes	Yes

Notes: The CBP for California in 2001 was obtained from the public web site, http://www.census.gov/epcd/cbp/download/01_data/cbp01ca.txt. In total, 5,371 observations are available at various levels of NAICS aggregation; only the three-digit codes were used in the above models for uniquely identified counties. Each column represents a separate regression model. The CBP includes 26 counties that are not identified/represented in the March CPS (CPS). These counties are: Alpine, Amador, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Imperial, Inyo, Kings, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, San Benito, Santa Cruz, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Tuolumne. Columns (2) and (4) show the results by including these counties; the other columns have the same geographic representation as the 2003 March CPS. In total, these 26 counties had a population of 1,540,112 in the 2000 Census, out of 33,871,648 in the state of California as a whole, and represent less than 5 percent of California's population. See http://eire.census.gov/popest/data/counties.php for further information. A CBP observation is considered a "miscode" if the total employment is smaller than the minimum that could conceivably exist based on the number of firms in each category. For example, if there was one firm in the 5–9 category for a given county-industry observation, the observation would be considered a miscode if employment was reported as fewer than five employees. Columns (3) and (4) show the results by including these employment miscodes. In all specifications, one can reject the hypothesis that the coefficients equal the midpoint values within that range (e.g., 2.5 for the 1–4 category, 7 employees for the 5–9 category). Numbers are rounded to three decimal places.

$PR_{25\text{-}49|20\text{-}49}$ and $PR_{200\text{-}249|100\text{-}249}$—the estimated probabilities of falling into certain groupings in the CBP data.

First, in order to impute HIA eligibility to CPS respondents, equations (1a)-(3b) need estimates of firm size. One naive, but simple, assumption, would be to take the midpoint of each firm size interval and use that as the estimate. In the previous example, this would imply assuming that all firms in the "20 to 49" category had a firm size of 34.5, while all firms in the "50 to 99" category had a firm size of 74.5. This is problematic,

however, because within any given category, firms tend to be more concentrated on the small end of the interval. Fortunately, the CBP data offers a way to estimate firm size in each category. For each county/industry observation in the CBP, the CBP gives total industry employment as well as number of firms in each category. I estimate the following median regression model:

$$(4)\quad TOTEMP_{c,i} = \beta_0 + \sum_f \beta_f FIRM_{f,c,i} + \varepsilon,$$

where $TOTEMP_{c,i}$ is the total industry employment in the 2001 CBP in a county/industry cell, and $FIRM_{f,c,i}$ are the nine firm-size groupings (f) in the CBP ("1 to 4 employees," "5 to 9 employees," "10 to 19 employees," "20 to 49 employees," "50 to 99 employees," "100 to 249 employees," "250 to 499 employees," "500 to 999 employees",

Appendix Table 5 Robust regression of total industry employment on the number of firms in each employment category, based on the 2001 CBP

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# firms with 1–4 employees	1.551	1.496	1.551	1.576	1.533	1.518	1.531
	(0.011)	(0.007)	(0.010)	(0.006)	(0.011)	(0.011)	(0.012)
# firms with 5–9 employees	6.730	6.619	6.865	6.681	6.998	7.263	7.108
	(0.069)	(0.040)	(0.064)	(0.035)	(0.063)	(0.069)	(0.071)
# firms with 10–19 employees	13.167	14.156	13.578	14.032	12.713	12.082	12.260
	(0.132)	(0.076)	(0.122)	(0.066)	(0.128)	(0.144)	(0.150)
# firms with 20–49 employees	30.367	30.022	29.843	29.708	30.411	30.329	30.062
	(0.119)	(0.069)	(0.104)	(0.059)	(0.114)	(0.128)	(0.133)
# firms with 50–99 employees	68.505	67.234	68.455	66.830	69.104	70.141	71.020
	(0.283)	(0.163)	(0.227)	(0.141)	(0.250)	(0.266)	(0.274)
# firms with 100–249 employees	143.848	143.825	143.785	149.385	142.910	147.912	145.554
	(0.421)	(0.242)	(0.384)	(0.208)	(0.431)	(0.459)	(0.480)
# firms with 250–499 employees	353.571	369.848	368.217	358.427	358.740	338.140	350.221
	(1.008)	(0.582)	(0.909)	(0.493)	(1.015)	(1.109)	(1.143)
# firms with 500–999 employees	690.639	675.761	692.311	714.163	701.791	681.049	695.061
	(2.157)	(1.248)	(1.939)	(1.051)	(2.185)	(2.347)	(2.423)
# firms with 1,000 employees	1,971.589	1,890.994	1,632.176	1,620.351	1,879.470	1,999.288	1,880.949
	(2.634)	(1.524)	(2.187)	(1.184)	(2.685)	(2.884)	(2.996)
Constant term	5.458	–0.546	–9.839	–11.437	6.951	0.023	–18.261
	(2.077)	(1.000)	(1.682)	(0.701)	(15.140)	(61.990)	(65.727)
Observations	1,991	2,774	2,519	4,089	1,991	1,991	1,991
Number of California counties	32 of 58	58 of 58	32 of 58	58 of 58	32 of 58	32 of 58	32 of 58
Include employment miscodes?	No	No	Yes	Yes	No	No	No
NAICS aggregation level	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit
County fixed effects?	No	No	No	No	Yes	No	Yes
Industry fixed effects?	No	No	No	No	No	Yes	Yes

Note: See Appendix D.

Appendix Table 6	OLS regression of total industry employment on the number of firms in each employment category, based on the 2001 CBP						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# firms with 1–4 employees	6.773	6.775	7.179	7.209	6.696	7.295	7.114
	(0.244)	(0.206)	(0.265)	(0.207)	(0.248)	(0.273)	(0.279)
# firms with 5–9 employees	–11.210	–11.104	–11.796	–11.713	–11.210	–12.394	–12.136
	(1.668)	(1.407)	(1.810)	(1.417)	(1.679)	(1.861)	(1.873)
# firms with 10–19 employees	28.698	28.359	28.746	28.106	29.551	28.918	30.635
	(3.691)	(3.107)	(3.994)	(3.118)	(3.731)	(4.045)	(4.093)
# firms with 20–49 employees	19.865	20.052	19.272	19.690	19.233	18.132	16.680
	(3.300)	(2.778)	(3.573)	(2.789)	(3.340)	(3.593)	(3.641)
# firms with 50–99 employees	71.757	71.993	74.489	74.698	71.459	75.773	75.825
	(7.290)	(6.145)	(7.899)	(6.176)	(7.359)	(7.522)	(7.583)
# firms with 100–249 employees	185.209	183.946	173.549	171.538	189.022	188.399	196.058
	(12.302)	(10.350)	(13.262)	(10.336)	(12.510)	(12.907)	(13.170)
# firms with 250–499 employees	197.223	198.939	202.646	204.750	194.453	162.980	159.908
	(29.094)	(24.530)	(31.187)	(24.342)	(29.329)	(30.742)	(30.955)
# firms with 500–999 employees	226.790	228.992	474.470	477.519	224.336	241.547	235.108
	(62.464)	(52.770)	(66.720)	(52.160)	(63.052)	(65.302)	(65.887)
# firms with 1,000 employees	3,086.265	3,082.180	2,638.113	2,629.530	3,095.404	3,152.136	3,163.450
	(57.278)	(48.448)	(59.129)	(46.333)	(57.908)	(60.596)	(61.233)
Constant term	–146.886	–110.744	–279.714	–187.658	–22.289	–108.901	761.386
	(61.184)	(43.113)	(58.421)	(35.287)	(447.731)	(2,481.64)	(2,546.16)
Observations	1,991	2,774	2,519	4,089	1,991	1,991	1,991
Number of California counties	32 of 58	58 of 58	32 of 58	58 of 58	32 of 58	32 of 58	32 of 58
Include employment miscodes?	No	No	Yes	Yes	No	No	No
NAICS aggregation level	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit	3-digit
County fixed effects?	No	No	No	No	Yes	No	Yes
Industry fixed effects?	No	No	No	No	No	Yes	Yes

Note: See Appendix D.

and "1,000 or more employees"). The estimated coefficients from this model minimize the sum of the absolute value of the residuals. The baseline results are presented in Appendix Table 4, column 1.

The results in the first column are estimated on the "cleanest" CBP sample–1,991 county/industry observations, where industry is defined at the three-digit NAICS level. These are the results that will be used to construct EMP_{10-19}, EMP_{20-49}, EMP_{50-99}, $EMP_{100-249}$, and $EMP_{250-499}$ in equations (1a)-(3b). In order to maintain as much comparability to the CPS as possible, the geographic coverage is restricted to the 32 identified counties in the CPS. The sample in the first column removes observations with miscoded employment. A CBP observation is considered a "miscode" if the total employment is smaller than the minimum that could conceivably exist based on the number of firms in each category. For example, if there was one firm in the "5 to 9 employee" category for a given county-industry observation, the observation would be consid-

ered a miscode if employment was reported as fewer than five employees. The coefficient estimates, β, reveal an employment level of 1.5 employees in firms with "1 to 4 employees," a level of 7.2 for firms with "5 to 9 employees," a level of 12.5 for firms with "10 to 19 employees," a level of 30.0 for firms with "20 to 49 employees," a level of 70.4 for firms with "50 to 99 employees," a level of 146.9 for firms with "100 to 249 employees," a level of 349.6 for firms with "250 to 499 employees," a level of 664.6 for firms with "500 to 999 employees," and a level of 2,046.6 for firms with "1,000 or more employees." All of the coefficient estimates are very precisely estimated and each falls within the correct employment range. One can strongly reject the hypothesis that the coefficient estimates equal the midpoint value of the range. Instead, what clearly emerges is that in virtually every case, the employment level is below the midpoint value. By using the midpoint, we would tend to overstate the cost of HIA, because we would be more likely to assign CPS respondents to larger firms.

The final six columns of Appendix Table 4 demonstrate the robustness of these results. Column (2) reestimates the sample with 2,774 observations in all 58 California counties. Columns (3) and (4) show the results by including employment miscodes, both using the CPS geographic coverage and using the entire state. Columns (5) through (7)

Appendix Table 7 Model estimating the relationship between the number of establishments and the number of employees, based on the 2001 CBP

	(1) *Baseline*	(2)	(3)	(4)
Number of employees/100	–0.95	–0.26	–0.96	–1.91
	(0.15)	(0.08)	(0.13)	(0.39)
(Number of employees/100)^2	—	—	—	0.26
	—	—	—	(0.10)
Constant term	11.24	10.83	11.45	11.64
	(0.25)	(0.57)	(0.39)	(0.22)
Restrict to firms with 10–499 employees?	Yes	No	Yes	Yes
Number of observations	5	9	5	5
Estimation procedure	OLS	OLS	Median	OLS
Adjusted / Pseudo R^2	0.91	0.56	0.74	0.98
Probability(25–49|20–49 employees)	87.8%	89.0%	87.8%	86.4%
Probability(200–249|100–249 employees)	27.2%	38.4%	27.1%	26.9%

Notes: The number of employees comes from the model estimated in Appendix Table 4, column (1), for each of the nine firm-size groupings. The aggregate number of establishments in each category comes from the CBP. In each of the models above, the logarithm of the number of establishments is used in the estimation. In California, there were 394,771 establishments with 1–4 employees, 138,517 with 5–9 employees, 95,576 with 10–19 employees, 70,768 with 20–49 employees, 25,126 with 50–99 employees, 13,898 with 100–249 employees, 3,306 with 250–499 employees, 1,201 with 500–999 employees, and 647 with 1,000 or more employees. These aggregates are based on the same screens as in the model estimated in Appendix Table 4, column (1), that is, data available at the three-digit NAICS level, without miscodes for employment, and in the counties covered by the March 2003 CPS. Numbers are rounded to two decimal places.

return to the original sample but successively include county fixed effects, industry fixed effects, and county and industry fixed effects. The most striking finding in these robustness checks is that they are all extremely similar to the baseline estimate.

Appendix Tables 5 and 6 show the results from estimating equation (4) using robust regression and ordinary least squares (OLS). Robust regression uses iteratively reweighted least squares to estimate both the regression coefficients and the standard errors. The procedure assigns weights to each of the observations. Those observations with high leverage or influence receive lower weights. As with median regression, this procedure reduces the impact of outlier observations. Appendix Table 5 reveals very similar (and sensible) findings using robust regression. The conclusions are not substantively changed in any way compared with using median regression. Appendix Table 6 estimates the models using OLS, and the results show the influence of outlier observations. The OLS results reveal an employment level of 6.8 employees in firms with "1 to 4 employees," a level of –11.2 for firms with "5 to 9 employees," a level of 28.7 for firms with "10 to 19 employees," a level of 19.9 for firms with "20 to 49 employees," a level of 71.8 for firms with "50 to 99 employees," a level of 185.2 for firms with "100 to 249 employees," a level of 197.2 for firms with "250 to 499 employees," a level of 226.8 for firms with "500 to 999 employees," and a level of 3,086.3 for firms with "1,000 or more employees." Clearly, these estimates, which include a negative value, are uninformative for imputing firm size.

The estimates from the baseline median regression will be used to impute firm size. It is reassuring to know that these coefficient estimates from this model using the 2001 CBP are nearly identical to averages published by the state of California's EDD for the third quarter of 2001.[91] The average employment in the EDD report was 1.3 for firms size "0 to 4 employees," 6.6 for firms size "5 to 9 employees," 13.6 for firms size "10 to 19 employees," 30.6 for firms size "20 to 49 employees," 69.0 for firms size "50 to 99 employees," 148.8 for firms size "100 to 249 employees," 341.0 for firms size "250 to 499 employees," 679.9 for firms size "500 to 999 employees," and 2,377.3 for firms with "1,000 or employees."

The final step in estimating the probabilities in equations (1a)–(3b) is computing $PR_{25\text{–}49|20\text{–}49}$ and $PR_{200\text{–}249|100\text{–}249}$. These are the probabilities that an employee in the 20 to 49 (100 to 249) grouping is actually in the 25 to 49 (200 to 249) category. To do this, Appendix Table 7 regresses the logarithm of the number of employers on firm size.

Firm size comes from the model estimated in Appendix Table 4, column (1), for five firm-size groupings ("10 to 19 employees," "20 to 49 employees," "50 to 99 employees,"

Appendix Table 8	Model estimating the relationship between the number of establishments and the number of employees, based on the 2003 CEHBS			
	(1) *Baseline*	(2)	(3)	(4)
Number of employees/100	–1.07	–0.0044	–1.02	–2.76
	(0.06)	(0.0010)	(0.07)	(0.19)
(Number of employees/100)^2	—	—	—	0.004
	—	—	—	(0.00039)
Constant term	6.58	3.64	6.35	7.77
	(0.14)	(0.08)	(0.19)	(0.18)
Restrict to firms with 10–499 employees?	Yes	No	Yes	Yes
Number of observations	251	555	251	251
Estimation procedure	OLS	OLS	Median	OLS
Adjusted / Pseudo R^2	0.59	0.03	0.40	0.69
Probability(25–49|20–49 employees)	87.6%	89.4%	87.7%	85.0%
Probability(200–249|100–249 employees)	25.4%	42.8%	26.2%	20.2%

Notes: The CEHBS was generously provided by the Kaiser Family Foundation and the Health Research and Educational Trust. The exact number of California employees is directly reported for each firm in the CEHBS. In total, there were 3,222 establishments in the CEHBS data, which includes firms that did not answer the auxiliary health insurance questions. The aggregate number of establishments is derived by adding up the employer weights for each employee size. Thus, each observation in the models may represent multiple firms of a given size from the CEHBS. In each of the models above, the logarithm of the number of establishments is used in the estimation. Numbers are rounded to two decimal places.

"100 to 249 employees", and "250 to 499 employees"). The aggregate number of establishments in each category comes from the 2001 CBP. According to the CBP, in California, there were 394,771 establishments with "1 to 4 employees," 138,517 with "5 to 9 employees," 95,576 with "10 to 19 employees," 70,768 with "20 to 49 employees," 25,126 with "50 to 99 employees," 13,898 with "100 to 249 employees," 3,306 with "250 to 499 employees," 1,201 with "500 to 999 employees," and 647 with "1,000 or more employees." These aggregates are based on the same screens as in the model estimated in Appendix Table 4, column (1), that is, data available at the three-digit NAICS level, without miscodes for employment, and in the counties covered by the 2003 March CPS.

From the model estimated in Appendix Table 7, column (1), we obtain the predicted values and form a density function for all firms with 20 to 249 employees. From this density function, which tells us the probability of *firms* being in different firm-size intervals, we compute the employee-weighted probability of being in firms of different sizes (using firm size as the weight). The results of this exercise are shown toward the bottom of Appendix Table 7. Unsurprisingly, the probability of being in a firm with 25 to 49 workers, conditional on being in a firm with 20 to 49 workers, is quite high, 87.8 percent.

Being in a firm with 200 to 249 workers, conditional on being in a firm with 100 to 249 workers, is estimated to be 27.2 percent. These estimates form the basis for $PR_{25\text{-}49|20\text{-}49}$ and $PR_{200\text{-}249|100\text{-}249}$ in assigning HIA eligibility.

The final three columns of Appendix Table 7 show the results from various other specifications. Column (2) estimates the model for all nine firm-size groupings (e.g., "1 to 4 employees," "5 to 9 employees," "10 to 19 employees," "20 to 49 employees," "50 to 99 employees," "100 to 249 employees," "250 to 499 employees," "500 to 999 employees," and "1,000 or more employees") and obtains a similar estimated probability for $PR_{25\text{-}49|20\text{-}49}$ but a considerably higher one for $PR_{200\text{-}249|100\text{-}249}$ (38.4 percent instead of 27.2 percent). Using these probabilities would lead to a higher estimate from HIA than the baseline specification. The final two columns estimate the model using median regression and including the square of firm size. Both lead to extremely similar estimates of the probability as the baseline estimate.

Appendix Table 8 replicates this exercise using the CEHBS. One advantage of the CEHBS over the CBP is that the exact number of California employees is directly reported for each firm in the CEHBS. In total, there were 3,222 establishments in the CEHBS data, which includes firms that did not answer the health insurance questions. These 3,222 firms are grouped by firm size, and the aggregate number of establishments is derived by adding up the employer weights for each firm size. Thus, each observation in the models in Appendix Table 8 may represent multiple firms of a given size from the CEHBS. As with the models in Appendix Table 7, the logarithm of the number of establishments is used in the estimation. The baseline estimate follows the same restrictions as in Appendix Table 7 (e.g., restricts the sample groups with firm sizes between 10 and 499) and uses 251 observations. Both the coefficient estimates and the derived probabilities are similar to the CBP results. The probability of being in a firm with 25 to 49 employees, conditional on being in a firm with 20 to 49 employers, is estimated at 87.6 percent rather than 87.8 percent. The probability of being in a firm with 200 to 249 employees, conditional on being in one with 100 to 249 employees, is estimated at 25.4 percent rather than 27.2 percent. Thus, the results using the CEHBS are quantitatively similar to those of the CBP. The final three columns of Appendix Table 8, using different samples and estimation techniques, show similar patterns to Appendix Table 7.

With the information on average firm size from the CBP, as well as the probability of being in firms of different sizes, one can effectively use equations (1a)-(3b) to arrive at more accurate estimates of HIA eligibility. This information was applied to all CBP observations in California—the 5,371 observations for all counties and all levels of industry aggregation (zero-digit, two-digit, and three-digit). In instances when the CBP data

was missing or miscoded (e.g., because of confidentiality concerns), then the following steps were taken to impute the probability by looking "upstream." First, for industry/county observations that were missing the number of employers or total employment at the three-digit NAICS level, I substituted the probability from the two-digit industry code at the county level. Second, if that was not possible, I substituted the probability from the three-digit code at the state level. Third, if neither of those was possible, the next step was to substitute the probability from the two-digit code at the state level. Fourth, if none of those steps worked, the next step was to substitute the probability for all industries at the county level. Finally, for any remaining observations, I substituted the probability for all industries at the state level.

A similar procedure was done at other industry levels. For industry/county observations that were missing data at the two-digit NAICS level, I first substituted the probability from the two-digit industry code at the state level. If that proved impossible, I substituted the probability for all industries at the county level. Finally, for any remaining observations, I substituted the probability for all industries at the state level. For county level observations that were miscoded, I substituted the probability derived from the state level.

The final step in assigning HIA coverage for individuals is merging these probabilities of coverage from the CBP to the CPS. The key issue in doing this is that the March 2003 CPS does not directly provide NAICS code, but rather the Census coding of industry. Of the 16,779 CPS respondents in the unweighted sample, 8,155 (or 48.6 percent) with work in the previous calendar year had an assigned industry code. Of those 8,155 respondents with a Census industry code, 7,157 respondents (87.8 percent) could be matched to a three-digit NAICS code using a "road map" in the appendix of the CPS users' manual. Another 8,068 (98.9 percent) could be matched to a two-digit NAICS code, and 8,106 (99.4 percent) could be matched to a one-digit NAICS code.[92] Of the 8,155 respondents, 6,316 (77.4 percent) could be matched by county (or MSA) and two- or three-digit NAICS code for imputing the probability of HIA coverage. The remaining 1,839 respondents could not be matched by both geography and industry, so the county-level probability was used instead. There were 63 individuals who did not have a county (or MSA) code; they were assigned the state-level probability. Overall, 99.2 percent of the working respondents could be matched in one way or another to the CBP data.

For workers, a probability was assigned using equations (1a)–(3b) using their response to the firm-size question, as well as their county of residence and industry.[93] Using the geographic and industry variation leads to large variations in the probabilities for different workers in the same firm-size category. For example, the likelihood that a CPS

worker in the "100 to 499" firm-size group is eligible for family coverage is 51.4 percent, with a standard deviation of 11.9 percent. The probability of a CPS worker in the "25 to 99" group being eligible for single coverage is 48.6 percent, with a standard deviation of 10.3 percent. Finally, the probability of a CPS worker in the "10 to 24" group being eligible for single coverage with a tax credit is 19.4 percent, with a standard deviation of 7.3 percent. Actual HIA eligibility was computed for each worker by drawing from the uniform distribution and using the probability cutoffs generated by equations (1a)-(3b) to assign groupings, when appropriate.

It is also necessary to create health insurance units (HIUs) to assign dependent coverage for workers in large firms. I define HIUs in the conventional way—by including the head of household, spouse, minor children under 18, unmarried children between 19 and 22 who are full time students, and disabled children. The HIU definition does not include the head's parents, grandchildren, foster children, or unrelated individuals. Within a household, separate HIUs are created for related and unrelated subfamilies. The analysis does not create HIUs for domestic partners, so the impact of HIA is potentially understated.

Appendix 2: Technical assumptions used in forming cost estimates of HIA

The previous cost analysis relied on two different sources of premium- and cost-sharing information: the imputed employer contributions provided in the CPS and the premium- and cost-sharing information from the CEHBS. Both sets of data revealed largely the same story in terms of costs.

First, the imputed value of employer contributions, contained in the March 2003 CPS, was utilized to estimate the cost of providing coverage in California. The median contribution, for employers paying the entire premium amount in 2002, was $5,914 for family coverage and $3,621 for individual coverage. The 2003 CPS figures for family coverage are substantially lower than the median cost in the CEHBS ($5,914 versus $8,345), while the cost for single coverage is somewhat higher ($3,621 versus $3,001). For one set of cost estimates, these medians are taken as the "full cost" of an acceptable plan and the total "fee" charged by MRMIB. Of this amount, the employer would be responsible for 80 percent, or $4,731.20 for a family plan or $2,896.8 for a single plan.[94]

These CPS imputations appear very reasonable in light of other estimates. Brown et al. (2002, footnote 7) find that in the private market the least expensive HMO that would provide comprehensive benefits and minimal cost sharing would cost a 26-year-old single person $1,456 annually. For a family of three, the least expensive HMO providing comprehensive benefits would cost $5,486 annually. Since the CPS estimate is for the median cost across many types of plans and many types of individuals or families (rather than for the minimum

cost for healthy young individuals in HMOs), the numbers are quite consistent.

Analogous figures from the March 2002 CPS show that the median contribution was $5,101 for family coverage and $3,154 for individual coverage (Yelowitz, 2003). Thus, the total costs increased by 15.9 percent for a family plan in the CPS data and 14.8 percent for a single plan. The premium increase from the 2002 to 2003 March CPS is very similar to the 15.8 percent increase in health insurance premiums published in KFF/HRET (2004, Chart 7).[95]

In the case where employees currently receive employer-based coverage and pay none of the premium, the estimated change in cost is $0 with the CPS premiums. In the case, however, where employees pay a portion of their premium, it would be unrealistic to assume that the employer pays at least 80 percent of the cost. Doing so dramatically underestimates the actual cost of meeting the "play" portion of the HIA mandate. To determine the cost of coverage when employers pay only a portion of the premium, the difference between the CPS imputed value of the employer contribution and 80 percent of the estimated cost of the median plan was calculated (in cases where the imputed value of the employer contribution was higher than the 80 percent fee, the estimated increased cost was $0).[96] In cases where eligible workers were provided no current employer-based coverage (either uninsured or government insurance only) or cases where the employer does not contribute to their employees' premiums, 80 percent of the cost of the plan is used to estimate the cost of these employers either "paying" or "playing" under the HIA mandate.

Finally, these HIA costs were lowered to account for the possibility of shifting payment responsibilities across workers in a family. In cases where the HIA family mandate binds, the greater of the worker's or spouse's employer contribution was used for the employer's contribution, thus lowering the additional cost of HIA. For example, if a spouse who worked at a small firm had a health plan with an employer contribution of $4,000 toward family coverage, and the worker declined coverage from a large firm, then the cost of the HIA mandate is computed as the difference between the $4,731.20 "fee" and the $4,000 contribution, or $731.20. If both spouses worked at firms with 200 or more employees, the mandated cost counts family coverage at one of the two firms only.

The motivation for using a second source of data, namely the CEHBS, is that the CPS imputation for the employer's contribution might be viewed as unsatisfactory because the health care market has changed greatly since the 1977 NMCES. The CEHBS provides timely, detailed data about both single and family health insurance plans for California employers. In addition to this health insurance data, it also provides information about firm size in California and industry (broken out into mining, construction, manufacturing,

transportation/utilities/communications, wholesale, retail, financial, service, and health care).[97] The CEHBS provides sample weights for covered California employees that allowed me to construct the empirical distribution of health care premiums and cost sharing in each relevant firm-size/industry grouping for workers. For example, if there were two firms in the 100 to 499 grouping for retail, and one firm represented 1,000 covered California workers (when weighted) and the other represented 9,000 covered California workers, a CPS respondent in that firm-size/industry grouping would have a 10 percent chance of being assigned the health insurance characteristics from the first firm and a 90 percent chance of being assigned health insurance characteristics from the second firm.

One of the primary reasons for drawing from the empirical distribution in the CEHBS, rather than using the mean cost-sharing information, is that the premium-sharing part of the mandate provides a floor on the costs to the employer; even if the mean or median cost sharing is close to satisfying the "premium-sharing" HIA requirements (which is largely true for single coverage but not family coverage), there are still distributional issues that will tend to understate costs. For example, if there were three employers of the same size, one who paid 95 percent of premiums, the second who paid 80 percent, and the third who paid 65 percent, then both the mean and median employer cost sharing would be 80 percent. Yet, both measures understate the cost of HIA since the third employer must increase the cost-sharing percentage.

Once the CEHBS premiums and cost-sharing information was assigned to the CPS worker, the cost of the mandate was computed. Because the CEHBS data is in many respects better, the calculation was somewhat different. First, there was no need to extrapolate from a single plan to a family plan (or vice versa)—both are provided in the CEHBS. Second, some firms may pay for more (less) than 80 percent of the premium costs but offer less (more) generous benefits. I assume that if HIA mandates more (less) generous benefits than the employer currently provides, it could decrease (increase) its cost sharing to 80 percent and increase (decrease) its benefits with no increase in costs. Thus, from the cost-sharing percentage and the total cost, I compute the employer's current contribution and compare that with 80 percent of the median CEHBS premium. The employer's part of the fee for a family plan in the CEHBS would be $6,676 and either $1,920.64 or $2,400.80 for a single plan (depending on whether the firm was in the 20 to 49 employee range or above it). From these fees, the employer's actual contribution was subtracted to compute the marginal cost of HIA.

Finally, as with the CPS premium imputations, these HIA costs were lowered to account for the possibility of shifting payment responsibilities across workers in a family. The procedure was identical to the one used on the CPS premium imputations.

Endnotes

1. Much of this information comes from the California Healthcare Foundation (2003).
2. Pharmacy coverage is not required under Knox-Keene, but plans that offer drug coverage are subject to a series of statutory and regulatory requirements specifying what must be covered, such as pain medicine for terminally ill patients and prescription contraceptive methods. See *http://www.dmhc.ca.gov/library/regulations/default.asp* and *http://www.chcf.org/documents/insurance/HIMURegulatoryOversight.pdf* for more discussion of the Knox-Keene requirements.
3. HIA (2003, p. 7): "2140. Except as otherwise provided in this part, every large employer and every medium employer shall pay a fee as specified in this chapter. 2140.1 The board shall establish the level of the fee by determining the total amount necessary to pay for health care for all enrollees, and if applicable, their dependents eligible for the program."
4. The HIA also regulates copayments and deductibles by requiring the responsible agencies to review copayments and deductibles for affordability for workers and employers (Health Access California, 2004a). HIA (p. 9): "2150.1 (a) The board shall establish the required enrollee and dependent deductibles, coinsurance or copayment levels for specific benefits, including total annual out-of-pocket cost."
5. KFF/HRET, October 5, 2003, "The Health Insurance Act of 2003 (SB 2): Updated Findings from the 2002 California Employer Health Benefits Survey," accessed from *http://www.kff.org/statepolicy/3376.cfm*, Chart 6.
6. In an early version of the bill, the authors of HIA wrote, "The Legislature finds and declares that employers who do not provide health benefits to their workers have an unfair competitive advantage over those employers who provide health benefits." See page 2 of *http://www.leginfo.ca.gov/pub/bill/sen/sb_0001-0050/sb_2_bill_20030623_amended_asm.pdf*. This language was taken out of the final version of HIA.
7. HIA (2003, p. 9): "For enrollees making a contribution for family coverage and whose wages are less than 200 percent of the federal poverty guidelines for a family of three, as specified annually by the United States Department of Health and Human Services, the applicable enrollee contribution shall not exceed 5 percent of wages. For enrollees making a contribution for individual coverage and whose wages are less than 200 percent of the federal poverty guidelines for an individual, the applicable enrollee contribution shall not exceed 5 percent of wages."
8. Crowd out of health insurance is often associated with individual consumers dropping private health insurance in favor of free Medicaid insurance. See Cutler and Gruber (1996) and Yelowitz (2000) for evidence from the 1980s and 1990s.
9. One could argue that because government responsibility for providing health care will fall, government expenditures will fall and the taxes used to finance these expenditures may fall as well. This is likely to be true for Medicaid recipients, whose current insurance would be crowded out by private health insurance. It is less clear that Medicare or Champus/Tricare recipients would drop their coverage, however. To a first approximation, HIA might be better described as shifting who pays the tax to provide health care for this group of workers.
10. One implication of the inter-employer transfer that is rarely discussed is that coordination of health care coverage becomes more disjointed for married couples. If both spouses are working, each is potentially covered under a different health plan, as would teenage children who work and meet eligibility requirements. HIA (2003, p. 5) " 'Dependent' means the spouse, domestic partner, minor child, or child 18 years of age and over who is dependent on the enrollee, as specified by the board. 'Dependent' does not include a dependent who is provided coverage by another employer or who an eligible enrollee as a consequence of that dependent's employment status." Since many health insurance plans have a "family-wide" deductible level (regardless of family size), it is possible that splitting family members across health plans results in higher out-of-pocket costs.

11. For example, the California Medical Association recently published a paper arguing against cutting Medi-Cal. In their first talking point on why cutting Medi-Cal will hurt the California economy, the CMA stated, "For every dollar cut from the General Fund related to Medi-Cal, California loses one federal matching dollar. California not only loses one matching dollar but also business activity, which has an enormous impact on California's economy" (CMA, 2003a, p. 3).
12. HIA (2003, p. 10): "A group health insurance policy shall not include Medicare supplement, vision-only, dental-only, and Champus-supplement insurance."
13. See Madrian (1994) for empirical evidence on job lock arising from the link between employment and health insurance. The Kennedy-Kassebaum Act (known as HIPAA) was designed to ease the problem of job lock—the reluctance to move from one company to another for fear of losing health benefits. Yet the fact that HIA creates certain labor market groups that are uncovered (e.g., small employers and part-time workers) exacerbates some kinds of job lock while at the same ameliorating other kinds.
14. Throughout this report, the term "cost" will reflect the increased costs to employers (unless explicitly noted otherwise). This is the most sensible way to look at the effects of HIA, because ultimately the "pay-or-play" mandate is a redistribution from employers to currently insured employees through lower premium sharing, to the state and federal government through crowd out of government health insurance, to people who directly purchase health coverage through the employer mandate, and to hospitals and physicians by covering the uncompensated costs of the uninsured.
15. The disemployment effects are calculated using the Neumark and Wascher (2000) employment elasticity estimate of –0.22.
16. For more information on these groups, see *http://www.epionline.org/, http://www.calchamber.com/, http://www.healthpolicy.ucla.edu/, http://www.iir.berkeley.edu/,* and *http://www.calphys.org/html/bb395.asp*
17. The difference in cost estimates arises mainly because of health care inflation.
18. See Yelowitz (2004) for a rebuttal to the arguments of Brown (2004) and Kominski (2004).
19. See, for example, *http://www.chcf.org/topics/sb2/index.cfm?itemID=21732.*
20. The same fact sheet also asserts that all health insurance premiums will fall as a consequence of HIA, resulting in a savings of $1.2 billion for employers, because of a 3 percent reverse cost shift on the premium base from reductions in uncompensated care. Taking all of these facts together, the estimate would therefore be in the range of $500 million from the fully phased in mandate.
21. Although lost in the general discussion of Proposition 72 in the popular media, some researchers are extremely careful to word their estimates in ways to minimize this cost. For example, Kominski (2004) says, "Proposition 72, if fully implemented, would result in no more than $2,699,023,514 in total after-tax premium costs for employers and employees." By grouping employers and employees together, he can legitimately ignore the increased premium-sharing costs that employers face, because of the commensurate reductions in costs for employees.
22. KFF/HRET, October 5, 2003, "The Health Insurance Act of 2003 (SB2): Updated Findings from the 2002 California Employer Health Benefits Survey," accessed from *http://www.kff.org/statepolicy/3376.cfm*, Charts 9–11.
23. For example, a full-time, full-year worker earning the minimum wage in California would be responsible for $702 in premiums, which represents 8.4 percent of the total cost the median family plan, based on 2003 California Employer Health Benefits Survey.
24. See *http://aspe.hhs.gov/poverty/04poverty.shtml.*
25. Note, however, that shifting the responsibility for paying for dependent coverage across employers (across spouses) is not necessarily neutral in terms of employer costs, even though some studies treat it this way. For example, Dube and Reich (2003, p. 8) adjust the number of CPS dependents downward because "some of these workers who are not insured through their own employer are dependents of spouses. These individuals do not represent added costs to employers but rather shifts in costs

between employers." Dube and Reich's contention about employer's cost is correct only when the first spouse's employer was paying 80 percent of the premium costs before the mandate. In this case, the mandate would be neutral. It is possible for employer costs to rise, however. For example, assume that one spouse works for a small employer that provides family coverage, and the other spouse works for a large employer and turns down coverage. Based on 2003 estimates from the California Employer Health Benefits Survey, the median family plan costs $8,345, and the large employer would be responsible for $6,676 (80 percent) of this cost. If the small employer were contributing less than $6,676 to the cost of the plan, then there is a new net cost to employers as a whole. For example, if the small employer made an annual contribution of $5,000, then $1,676 would be a new cost for employers as a whole for this family.

26. For example, Health Access California (a statewide health care consumer advocacy coalition) repeatedly emphasizes the savings to the state government. The organization states in the SB 2 talking points: "SB 2 provides savings to the state budget, since taxpayers foot some of the cost for those whose employers don't provide coverage. Most on Medi-Cal and Healthy Families are in working families" (Health Access California, 2004a). It also repeats this thinking in the arguments against Proposition 72 "saves taxpayers money: Rather than requiring new public dollars drawn from other spending priorities or broad based taxes, SB 2 would actually save taxpayer money, including the costs of uninsured workers who now go onto state public insurance programs or into county emergency rooms" (Health Access California, 2004b). In its assessment of the economic impact, Health Access California finds that "if their employers pay into the fund, the fund will pay the state share of costs for any worker or dependent that voluntarily enrolls in Medi-Cal or Healthy Families. Since employers would serve as a 'gateway' to get already-eligible workers and their family member enrolled in public insurance programs, this will bring in Federal matching funds. This shift is estimated to save the state budget $620 million-$900 million" (Health Access California, 2003a). Finally, it states "SB 2 is part of the solution to the state budget crisis. This is projected to provide $620 million to $900 million in state budget savings, since many of those on Medi-Cal or Healthy Families are in working families" (Health Access California, 2003b). As discussed earlier, in CMA (2003c), the CMA stated that "this legislation is also expected to provide $700 million in savings to the state's Medi-Cal system and reduce inappropriate use of emergency rooms and the workers' comp system by workers who lack health insurance." The CMA web site also published the results of a recent voter survey. In describing the specific provisions of SB 2 to measure public opinion of 800 voters who participated in the 2002 gubernatorial election conducted September 9–11, 2003, the Feldman group said the following: "Q.21 Now taxpayers are paying most of the cost of health care for people whose employers fail to provide insurance. By requiring these employers to provide health coverage or pay into an employer pool, taxpayers will save almost a billion dollars at a time when the state is facing huge deficits" (CMA, 2003b). Dube (2003a) finds that 650,000 Medicaid recipients are eligible for SB 2, and that by shifting the responsibility for their coverage from the federal government and state government to employers, California would save $620 million annually.

27. For example, in a newspaper article that came out immediately after Yelowitz (2003) was released, E. Richard Brown claimed my report was flawed from the start because it was based on the CPS rather than the CHIS. The article neglected to mention that Brown is the principal investigator for the CHIS. See Tom Abate, "Health Bill Under Attack," *San Francisco Chronicle*, October 2, 2003 (*http://sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2003/10/02/BUG7122DCG1.DTL*). See also my response (*http://sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2003/10/26/BUGM72J2IB1.DTL*).

28. The estimate also assumes that all of these uninsured people are instead covered by employers who pay at least 80 percent of the premiums for the appropriately mandated health plan. If the unin-

sured were instead on government health insurance, privately purchased health insurance, or in a employer that paid less than 80 percent of the costs, then the revised cost estimate would fall between the estimates listed above.

29. Some researchers (such as Kominski, 2004) have discounted the cost estimates by as much as 44 percent, by assuming all employers face the highest corporate tax rate of 35 percent and a state corporate tax rate of 8.84 percent (43.84 percent). As Baker et al. (2004) point out, however, even assuming these statutory rates, such a discount ignores the fact that state corporate taxes are deductible from federal taxes. With this federal deduction, the correct cumulative marginal rate would be 40.746 percent (35 percent + 0.65*8.84 percent). The California corporate income tax is a flat 8.84 percent for most businesses and 10.84 percent for financial institutions.
30. See Friedman (2003).
31. This could lead to increased tax revenue from personal income tax returns.
32. The GAO examined the following types of corporate tax returns: 1120, U.S Corporation Income Tax Return; 1120A, U.S. Corporations Short-Form Income Tax Return; 1120L, U.S. Life Insurance Company Income Tax Return; 1120PC, U.S. Property and Casualty Company Income Tax Return; 1120REIT, U.S. Income Tax Return for Real Estate Investment Trusts; 1120-RIC, U.S. Income Tax Return for Regulated Investment Companies; and 1120F, U.S. Income Tax Return of a Foreign Corporation (GAO, 2004, p. 4, footnote 4). The GAO included "all types of corporations except for subchapter S corporations" (GAO, 2004, p. 4).
33. Part of the reason for low marginal tax rates is that corporate profits can be quite volatile from year to year.
34. Baker et al. (2004) raise the interesting point that SB 2 also affects schools and nonprofit organizations. Under no circumstances should the costs to these sectors be downweighted by the corporate income tax, because they are clearly not subject to it.
35. The current study uses data from 2002 instead of 2001 and finds substantially larger cost estimates. Kyser et al. (2003) use employment information from 2001 and premium data from 2002. Baker et al. (2004) use employment information from 2001 and premium data from 2003 to arrive at the $3.4 billion cost estimate for business. They then inflate their estimates by an annual inflation rate of 11.5 percent to arrive at the cost expressed in nominal 2007 dollars. Dube and Reich (2003) use premium data from 2002. The CMA estimate does not provide a baseline year for the premium data.
36. See *http://www.kff.org/statepolicy/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=32778*, Chart 7, p. 21.
37. The "Yes on 72" web site states that "the amount California families pay for premiums has increased 70% in the last three years," which is substantially more than the 44.4 percent growth rate implied by the CEHBS data. If both numbers are correct, then employer cost sharing must have fallen during these years. See *http://www.yesonprop72.com/site/pp.asp?c=efIOISMEG&b=47408*.
38. At the time I was conducting my study, the March 2002 data was the most recent available.
39. Assuming a zero marginal corporate income tax rate is obviously too low, but the true effective rate is likely to be much closer to this. If one believes that the approach taken in the current study, or Yelowitz (2003), is inappropriate, one could discount the "bottom-line" cost estimates by 40 percent. Even with such a discount, however, the costs to employers are still much higher than other existing estimates. The procedure by which some studies downweight employer costs must assume that all corporations are "C" corporations with more than $10 million in profits per year. If any corporations are either "S" corporations or have annual profits less than $10 million, then the benefits of corporate tax deductibility are overstated.
40. Returning to a previous example, assume that one spouse works for a small employer that provides family coverage and the other spouse works in a large employer and turns down coverage. The current study counts as the marginal cost the difference between the mandated cost and the spouse's employer's contribution, or $1,676. In Yelowitz (2003), the marginal cost for such a family was

modeled as $6,676. In terms of the total mandated cost, however, the conclusions are not substantively changed. The estimates of the full mandate ranged between $13.1 billion and $13.9 billion by counting the entire cost, versus the $12.8 million to $13.2 billion estimates here.

41. The sources of the data are *http://www.calmis.cahwnet.gov/htmlfile/county/coshtm.htm* and *http://www.kff.org/statepolicy/6070-index.cfm*.
42. Medium employers are defined in their study as employers with 20 to 249 employees. They may understate the true cost to employers since some of the workers in firms with 200 or more employees will receive family coverage, while they may overstate the true cost since the employers in firms with 20 to 49 employees receive a 20 percent credit.
43. Because there is no way with the California EDD data to separate out part-time and full-time workers, or those who have been on the job for three or more months, one expects that the number of uninsured workers must be overstated.
44. See *http://www.kff.org/statepolicy/3376.cfm*.
45. In my current study, I find the pretax cost of the HIA mandate to the uninsured to be approximately $4.4 billion. The most comparable estimate in Baker et al. (2004) paper to my own is the $5.485 billion estimate in their Table 8. Part of this difference must surely be attributed to the fact that my estimate of the number of eligible uninsured workers in the 2002 calendar year is nearly 300,000 lower than their estimate from 2001.
46. See *http://laborcenter.berkeley.edu/newsletter/fall03.pdf*, p. 5.
47. The question asked only about covering the uninsured worker, not the entire family as the SB 2 mandate requires for employers with 200 or more employees.
48. See *http://www.yesonprop72.com/site/pp.asp?c=efIOISMEG&b=47408*.
49. Although not stated explicitly in their appendix, I assume this means that there are 2.2 dependents per family plan, on average (2.2 dependents*$2,085 cost per dependent) = ($7,471 family cost-$2,845 single cost).
50. See *http://www.calmis.cahwnet.gov/FILE/INDSIZE/CAL$SF1.HTM*. The 2001 EDD data groups all employers with 100 to 249 employees, but only 23,270 of the 133,957 covered employers have more than 100 employees.
51. See *http://www.bls.census.gov/cps/overmain.htm*.
52. One important difference in survey quality between the CHIS and CPS is the response rate. The overall response rate for CHIS is a composite of the screener completion rate and the extended interview completion rate. Brown et al. (2002, p. 73) report that for the adult survey, the overall response rate was 37.7 percent in 2001. This is lower than the 2000 California Behavioral Risk Factor Surveillance System response rate of 43.4 percent and lower than the 1999 National Survey of America's Families response rate of 51.7 percent. In contrast, the CPS has a large percentage of in-person interviews, which improves coverage and reliability and leads to a very high response rate. Interviewers use laptop computers to administer the interviews, asking questions as they appear on the screen and directly entering the responses obtained. Households are interviewed eight times over the course of sixteen months. During the first and the fifth interviews, an interviewer usually visits the sample unit. Almost all of the remaining interviews are conducted by telephone. Even though the CPS is a voluntary survey, the March interview of recent years has between 92 and 93 percent of the eligible households providing basic labor force information and between 80 and 82 percent of the eligible households completing the Annual Demographic Survey supplement. For the March 2002 basic CPS, the nonresponse rate was 8.3 percent. The nonresponse rate for the March supplement was an additional 8.6 percent, for a total supplement nonresponse rate of 16.2 percent. Put differently, the response rate was 83.8 percent for the data used in Yelowitz (2003). See *http://www.bls.census.gov/cps/ads/1995/sdacodes.htm*,*http://www.bls.census.gov/cps/ads/1995/smethovr.htm*, and *http://www.bls.census.gov/cps/ads/2002/S&A_02.pdf* for additional discussion.
53. This accords exactly with the sample sizes given in *http://webapp.icpsr.umich.edu/cocoon/ICPSRSTUDY/03912.xml*. The CPS sample size of 16,679 (11,483 adults) is smaller than that of the CHIS for

California, but the CPS can be used to make comparisons with the nation as a whole, whereas the CHIS cannot. Westat conducted the CHIS 2001 data collection for the CHIS project. The staff interviewed one randomly selected adult in each household. Altogether, there were 55,428 adult interviews, plus an over sample of certain races to give 57,848 adults.

54. See *http://ferret.bls.census.gov/macro/032003/health/h05_000.htm*.
55. See *http://eire.census.gov/popest/data/counties.php* for further information. The following 24 counties were uniquely identified in the CPS: Alameda, Butte, Contra Costa, El Dorado, Kern, Los Angeles, Marin, Merced, Monterey, Orange, Placer, Sacramento, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Sonoma, Stanislaus, Tulare, Ventura, and Yolo. In addition, more than 99 percent of individuals were identified with a county code, MSA code, or PMSA code. For the 15 percent of CPS's where no county code was given, virtually all had an MSA or PMSA code. Each of these pairs of counties was identified within one MSA coding: Fresno/Madera, Riverside/San Bernardino, Napa/Solano, and Sutter/Yuba. Overall, then, 32 of 58 counties are identified in the CPS. For these MSA areas that are not uniquely identified by county, the CBP data was aggregated up to the MSA level before making computations.
56. Because of the expansion in the CPS in recent years, some of the concerns about sample size have diminished. See *http://www.ahrq.gov/chip/content/target_population/CPS_adv_and_limits.htm* for some concerns researchers had with earlier versions of the March supplement. Almost all states in the CPS currently have sample sizes in excess of 1,000 households.
57. While the health insurance questions in the CPS are asked at one point in time (March) about the entire previous year, the CHIS collected data over a 12-month period between November 2000 and October 2001. Thus, the annual health insurance estimates largely cover the year 2000, not 2001.
58. The number of uninsured in California in the CPS differs from CHIS by about 50 percent. Nonetheless, my analysis will reveal that even with the larger number of uninsured in the CPS, the uninsured are not the primary cost driver of the HIA mandate. Moreover, the "misclassified" uninsured in the CPS must have some other sort of insurance in the CHIS—either employer, private, or government. Only in the case when these misclassified people have employer-provided insurance that pays at least 80 percent of the premiums would they not contribute to the employer's increased cost. Not all misclassifications in the CPS lead to the HIA costs being overstated. As noted by Brown et al. (2003), "The CPS may underestimate the number of people on Medicaid. Based on studies conducted by the Urban Institute, HCFA (now CMS) administrative data show 20 to 30 percent more Medicaid enrollees than the CPS responses indicate. It has been speculated that respondents do not think of Medicaid as health insurance and that the data reflect this perception." Since shifting from Medicaid to employer insurance entails a cost to the employer, this undercount of Medicaid participation would inappropriately reduce the cost estimates. Brown et al. (2002) have an extensive discussion of the differences between the CPS and CHIS, and the interested reader is directed to their study for the case of using the CHIS instead of the CPS (see, especially, pages 67–75). In constructing CPS health insurance categories, I classified individuals into 113 different categories—for some of these individuals, the fact that they are in different categories may reflect transitions in health insurance status over the year, rather than dual coverage at a point-in-time. A data set like the Survey of Income and Program Participation could be fruitful for examining the dynamics of coverage over time.
59. The CPS explicitly asks about private insurance coverage, employer-based coverage, employer-based in one's own name, direct privately purchased insurance, Medicare, Medicaid, and Champus. It defines "uninsured" as not being in any of the other categories. The health insurance definitions can be found at *http://www.census.gov/hhes/hlthins/hlthinsvar.html*. If the CPS respondent has employer-provided insurance in his or her own name, an imputed employer contribution ranging from $0–$9,999 is given. In addition, information on

premium cost sharing is provided: "Did ...'s former or current employer or union pay for all, part, or none of the health insurance premium?" The CPS also asks explicitly whether the plan was a single or family plan and identifies which dependents in the household are covered under the family plan. From my review of the Adult CHIS survey, it does not specifically ask the adult respondent about family coverage and asks only about spousal coverage if the respondent does not have own coverage. While the CHIS asks about premium cost sharing, this information is not available in the public-use file. The public-use file does not contain all of the variables in the CHIS 2001 source dataset. There are two advantages of the CHIS, however. The CHIS asks the respondent whether the employer offered coverage and asks about uninsurance in three time frames (Brown et al., 2002, p. 2).

60. See *http://www.census.gov/hhes/hlthins/hlthinsintro.html*.
61. The labor market questions in the CPS are better suited to analyze the effects of HIA than are the labor market questions in the CHIS. Almost all of the labor market questions in the CHIS are asked of the sampled adult, not the spouse. The CHIS asks about usual hours worked, firm size, and monthly earnings for respondent (as well as health insurance coverage). The CHIS has five groupings for firm size: 1 to 9, 10 to 50, 51 to 99, 100 to 999, and 1,000 or more. In contrast, the CPS has six groupings: 1 to 9, 10 to 24, 25 to 99, 100 to 499, 500 to 999, and 1,000 or more. The CPS unambiguously provides finer groupings than the CHIS for firms with 100 to 999 employees (two groupings rather than one), which is critical for imputing the family mandate from HIA for firms with 200 or more employees. In addition, this firm-size question is not asked of the spouse in the CHIS. The CHIS asks only two relevant questions about the spouse's labor market experience and health coverage–whether s/he has coverage (if the respondent does not) and earnings last month. See California Health Interview Survey (2004).
62. See *http://www.bls.census.gov/cps/ads/1995/sdacodes.htm*.
63. The Census Bureau estimates employer contributions through a model developed from a statistical match of the March CPS and the 1977 NMCES. The March supplement collects information on the number of persons who were covered at any time during the previous calendar year by a health insurance plan obtained through an employer or union. The supplement also collects information on whether the employer paid for all, part, or none of the cost of the plan. The best data source available for measuring the amount employers contribute to health plans was the 1977 NMCES. The survey had a relatively large sample size and included data on contributions that were obtained by conducting interviews with the employers of persons who were in the household portion of the NMCES sample. The procedure for estimating the value of employer contributions for people and families on the March 1993 CPS data file involved several steps. First, an enhanced NMCES data file was prepared by adding two variables not on the original file. The two variables were total earnings during the year and usual hours worked per week. The variables were created by statistically matching NMCES and CPS using the appropriate demographic and economic variables that were available from both sources. The match made it possible to assign the earnings and full-time/part-time variables to the NMCES file. Second, the enhanced NMCES was used to estimate a model that related employer contributions to a set of explanatory variables. The variables chosen were ones that are also available on the CPS file. The list of variables included (1) type of plan (family or individual), (2) proportion of the cost paid for by the employer (part or all), (3) level of earnings, (4) type of worker (full time or part time), (5) industry, (6) occupation, (7) sector (private or government), (8) region, (9) residence, (10) personal characteristics, such as age, race, marital status, and education. Third, the model was run on the March 1993 CPS file to obtain estimates of the amount of employer contributions for each worker whose employer paid all or part of the cost of his or her health plan. The model was run after deflating 1992 earnings to 1977 dollars. The estimates produced by this model were then inflated to 1992 estimates by mul-

tiplying the 1977 level estimates by the 1977 to 1992 change in firm contributions per covered (U.S. Department of Commerce, Bureau of Census, 1993).

64. Much of this section follows the discussion in the Henry J. Kaiser Family Foundation and the Health Research and Educational Trust (2004). Information about the CEHBS can be obtained at *http://www.kff.org/statepolicy/cehbs-archives.cfm*.
65. The Kaiser Family Foundation is a nonprofit, private operating foundation dedicated to providing information and analysis on health care issues to policymakers, the media, the health care community, and the general public. The Foundation is not associated with Kaiser Permanente or Kaiser Industries. The Health Research and Educational Trust (HRET) is a private, not-for-profit organization involved in research, education, and demonstration programs addressing health management and policy issues. Founded in 1944, HRET collaborates with health care, government, academic, business, and community organizations across the United States to conduct research and disseminate findings that help shape the future of health care. I am indebted to Ben Finder for assistance with the CEHBS data.
66. This section follows closely the discussion in *http://www.census.gov/epcd/cbp/view/cbpview.html*.
67. The CBP for California in 2001 was obtained from the public web site *http://www.census.gov/epcd/cbp/download/01_data/cbp01ca.txt*.
68. Details on imputing HIA eligibility are discussed in detail in Appendix 1.
69. The columns in Appendix Table 2 for firms with "20 or more employees" are used to construct the estimates. These estimates use the following lines from that table: 1, 2, 5, 6, 7, 10, 11, 22, 25, 28, 31, 34, 37, 40, 43, 44, 45, 48, 49, 52, 53, 54, 57, 58, 61, 62, 63, 66, 67, 70, 71, 72, 75, 76, 79, 80, 81, 84, 85, 88, 89, 90, 93, 94, 97, 98, 99, 102, and 103.
70. The estimates for the number of workers/dependents whose employer pays for some or none of their coverage use the following lines from Appendix Table 2: 3, 4, 8, 9, 12, 13, 23, 24, 26, 27, 29, 30, 32, 33, 35, 36, 38, 39,41, 42, 46, 47, 50, 51, 55, 56, 59, 60, 64, 65, 68, 69, 73, 74, 77, 78, 82, 83, 86, 87, 91, 92, 95, 96, 100, 101, 104, and 105. The estimates for the number of workers/dependents whose employer pays for none of their coverage use the following lines: 4, 9, 13, 24, 27, 30, 33, 36, 39, 42, 47, 51, 56, 60, 65, 69, 74, 78, 83, 87, 92, 96, 101, and 105.
71. This estimate comes from line 113 of Appendix Table 2.
72. This estimate uses the following lines from Appendix Table 2: 14, 15, 16, 17, 18, 19, 20, 21, 106, 107, 108, 109, 110, 111, 112, and 113.
73. These estimates use the following lines from Appendix Table 2: 14, 15, 16, 17, 18, 19, 20, 21, 106, 107, 108, 109, 110, 111, and 112.
74. For privately purchased health insurance, the estimate uses line 14 from Appendix Table 2. For government health insurance, the estimate uses lines 15, 16, 17, 18, 19, 20, and 21.
75. The figures in Tables 4 and 5 below use the covered employee weights from the CEHBS. The March 2003 CPS reports that 10,502,375 Californians had employer coverage in their own name at some point in the 2002 calendar year.
76. When the sample is restricted to firms with 50 or more employees, the median premium is $3,022 for a single plan and $8,482 for a family plan, higher than the $3,001 and $8,345 figures reported here. By using the median premium costs for all firms, the cost estimates in this study likely understate the true cost of HIA.
77. Many advocates claim most businesses will not be affected, but many employees clearly will be. For example, Health Access California (2003b) claims, "Less than 2% of all employers would even be affected directly by the potential of a fee." Their estimates appear to count only affected business that do not offer insurance, not the businesses that pay less than 80 percent of premiums. The CMA (2003c) claims, "SB 2 is actually a moderate and reasonable step that would affect less than 5 percent of California employers."
78. Hawaii enacted an employer health insurance mandate in 1974, by requiring employers to provide health care coverage for all employees who work at least 20 hours per week. The state's "Prepaid Health Care Act" requires that workers pay no more than 1.5 percent of their wages for their share of the cost of

coverage. According to the National Center for Policy Analysis, since the law exempts people who work less than 20 hours per week, many companies employ only part-time workers, and unemployment is high. See *http://www.ncpa.org/iss/hea/2002/pd012302d.html* and *http://www.ncpa.org/iss/hea/* for a more general discussion of state health insurance mandates. Several other states have attempted to pass mandatory health-coverage bills that failed legal challenges under ERISA, including Massachusetts and Oregon.

79. Even advocates of Proposition 72 think of HIA in this type of framework. Health Access California (2003b) states, "The impact of SB 2 would be similar to an increase in the minimum wage, a broad-based requirement on all businesses, but that would only affect a small portion of actual businesses and jobs, on the low end of wages and benefits. SB2 would essentially set a 'minimum wage' for health benefits."
80. See Yelowitz (1995) for an example of this kind of "notch" in the context of Medicaid health insurance. Baker et al. (2004) discuss the employment notch from HIA at 20 employees.
81. The responses outlawed by HIA could also lead to expensive lawsuits for an employer. The "No on 72" web site says, "Employers face lawsuits and substantial penalties if they are accused of reducing hours or taking other measures to avoid covering employees. They also face a 200 percent penalty if the premium is not paid to the state for 'whatever' reason. There is no provision in the bill for employers to appeal any action taken against them by the state in disputes over payment." The web site also explains that "a business is prohibited from taking action to avoid the coverage requirements of Prop 72. This includes dividing a business into smaller entities to get under the employment thresholds. The authors of the bill included specific provisions to treat businesses with common ownership and control as a single entity subject to the requirements of Prop 72." Because of the penalties and restrictions on economic adjustment, some less costly economic responses are not possible. For example, the HIA provision on hours of work reduces the likelihood of "hours bunching," as seen with Hawaii's experience with the 1974 Pre-Paid Health Care Act. Thurston (1997) finds that the percentage of Hawaiian workers employed fewer than 20 hours per week (and thus exempt from the law) was significantly higher than the national average.
82. The hourly wage rate is imputed by dividing annual wage and salary earnings by the product of usual hours worked per week and number of weeks worked per year. The figures above include workers with imputed wage rates under the California minimum wage, which is due in part, to measurement error in hours of work, weeks worked, and earnings in the CPS data.
83. The hourly wage cutoffs for the "at-risk" group were arrived at by computing the full-time, full-year earnings for a worker at the California minimum wage (e.g., \$6.75*2,080 hours) and adding to that the CPS or CEHBS family premium cost (\$5,914 and \$8,345) with the assumption that the firm is responsible for 90 percent of the premium costs (instead of 80 percent) because of the poverty subsidy.
84. All tax revenue figures assume that the state, federal, Social Security and Medicare, and EITC marginal tax rates remain unchanged (meaning that the household does not move into another tax bracket). The figures also assume 100 percent wage shifting and no disemployment effects for low-wage workers. Recall that HIA imposes a mandate on both employers and employees. Newly insured workers automatically get a pay reduction since HIA allows employers to pay as little as 80 percent of the mandated cost (with employees paying the rest). Thus, the tax revenue figures compute the tax loss based on the total cost of the mandate, not the employer's cost. Marginal tax rates are assigned using CPS tax questions and information from the California Franchise Tax Board, the Social Security Administration, and the Internal Revenue Service. The information on tax liabilities and filing status in the CPS, along with these other sources, is used to infer the marginal tax rate for the EITC and state. In all cost calculations, the household is assumed to be a nonitemizer.
85. To the extent that different California counties have a local income tax, the revenue losses here are understated.

86. For workers with imputed wage rates under the California minimum wage, their wage rate was assumed to be at the California minimum. To determine the 1.4 million "at-risk" workers for whom employers could not fully wage shift, I divided the mandated cost by 2,080 hours (full-time/full-year work). If the worker's net wage after HIA was under the California minimum, this worker was "at risk."
87. Baker et al. (2004) provide a cursory look at this issue, but their analysis is not compelling.
88. As discussed in Yelowitz (1995), a means-tested program like Medicaid does entail some disincentive effects for work through the "Medicaid notch." Such an outreach program would not entail the sort of involuntary job loss that is likely to occur with HIA, however.
89. CPS respondents appear to modestly underestimate their firm size, perhaps because they do not know the true scope of a firm's operations. Based on all CPS workers, 21.6 percent of employees are in firms with 1 to 9 workers, 9.5 percent are in firms with 10 to 24 workers, 13.7 percent are in firms with 25 to 99 workers, 13.0 percent are in firms with 100 to 499 workers, 4.7 percent are in firms with 500 to 999 workers, and 37.4 percent are in firms with 1,000 or more workers. In an effort to assess the accuracy of the responses, I compared them with the more reliable CEHBS data, which surveyed benefits managers. These percentages are not directly comparable with the CEHBS, however. The CEHBS data does not survey employers in agriculture, forestry, fishing, hunting, public administration, or the armed forces. It also surveys only employers with three or more workers, which excludes very small employers and self-employed persons. When the CPS is restricted to non-self-employed workers in the industries common to the CEHBS sample, 16.0 percent of employees are in firms with 1 to 9 workers, 10.2 percent are in firms with 10 to 24 workers, 15.0 percent are in firms with 25 to 99 workers, 14.5 percent are in firms with 100 to 499 workers, 5.3 percent are in firms with 500 to 999 workers, and 39.1 percent are in firms with 1,000 or more workers. When the CEHBS responses are appropriately weighted, the following results emerge: approximately 8.8 percent of employees are in firms with 3 to 9 workers, 10.5 percent are in firms with 10 to 24 workers, 15.8 percent are in firms with 25 to 99 workers, 16.3 percent are in firms with 100 to 499 workers, 5.9 percent are in firms with 500 to 999 workers, and 42.6 percent are in firms with 1,000 or more workers. Thus, when compared across similar industries, the firm size differences between the CPS and CEHBS are fairly small. The most important differences are that the CPS respondents underreport being in firms with 1,000 or more workers by 3.5 percentage points compared with the CEHBS, and underreport being in firms with 100 to 499 workers by 1.8 percentage points. They overreport being in very small firms by 7.2 percentage points, but part of this may reflect the inability to exclude firms with one or two people in the CPS. If anything, the results suggest that the HIA imputation will understate the costs of SB 2 because CPS respondents report modestly smaller firm sizes compared with CEHBS.
90. To illustrate, imagine that *firms* are uniformly distributed over this interval, so that there is one firm with 25 employees, another firm with 26 employees, etc. Overall, there are 4,650 employees at firms with sizes between 25 and 99. The likelihood of being in a firm with *exactly* 25 employees equals 0.54 percent (25/4650), while the likelihood of being in a firm with *exactly* 99 employees equals 2.13 percent (99/4650). Larger firms contribute more to the employee's probability. The likelihood of being in a firm with between 25 and 49 employees is the sum of the probabilities between 25 and 49, or 19.89 percent ((25+26+...+49)/4650).
91. See *http://www.calmis.cahwnet.gov/FILE/INDSIZE/CAL$SF1.HTM*.
92. With the exception of military personnel, problem referrals, and uncodables, all Census industry codes could be linked to one-digit NAICS codes (the exceptions being Census codes 9890, 9970, 9990, 9670, 9680, 9690, 9770, 9780, 9790, and 9870). These cases constituted about 0.7 percent of the weighted sample of workers. With these exceptions, as well as "Not specified manufacturing industries," "Sporting goods, camera, and hobby

and toy stores," and "Not specified retail trade," all Census industry codes could be linked to two-digit NAICS codes (that is, all Census codes except the ones above and 3990, 5270, and 5790). As shown below, this constitutes about 1.07 percent of the unweighted sample of workers. These cases constituted about 1.17 percent of the weighted sample of workers. Finally, most Census industry codes could be linked to the three-digit NAICS codes. In addition to the ones above, the exceptions were "Not specified type of mining," "Not specified utilities," "Construction," "Knitting mills," "Not specified metal industries," "Not specified wholesale trade," "Radio and television broadcasting and cable," "Banking and related activities," "Securities, commodities, funds, trusts, and other financial investments," "Commercial, industrial, and other intangible assets rental and leasing," "Justice, public order, and safety activities," "Administration of environmental quality and housing programs," and "Administration of economic programs and space research." Besides the codes listed above, the additional Census codes that could not be linked at the three-digit NAICS level include 480, 690, 770, 1670, 2990, 4590, 6670, 6870, 6970, 7190, 9470, 9490, and 9570. Approximately 12.5 percent of the weighted sample of workers could not be linked to these three-digit codes. Thus, the overwhelming majority of respondents can be linked at the three-digit level, and virtually everyone else can be linked at the two-digit level in assigning HIA eligibility.

93. The HIA also has a number of requirements related to employment, in addition to firm size. In the analysis, a worker would not be assigned HIA eligibility unless he or she also met an hours requirement of 25 hours worked per week and a job tenure requirement. The actual hours requirement from HIA is less stringent than the criteria listed here since it only requires 1,200 hours per year (or approximately 23 hours per week rather than 25). This assumption would therefore understate the number of eligible workers. For job tenure, if the respondent worked more than 12 weeks in the year, he or she is deemed eligible (thus, I assume weeks of work is continuous). Dube (2003b) finds that an overwhelming percentage of the uninsured meet the job tenure requirement.
94. Because of a state tax credit for firms with 20 to 49 employees, the analysis takes the "fee" to be 64 percent of the full cost of single coverage, or $2,317.44.
95. In fact, the 2001 to 2003 CEHBS data reveal double-digit premium increases. Almost all of the existing work on the HIA uses 2001 premium data, which is now outdated. Such data underestimates the true costs of HIA with any of the methodologies that are currently used.
96. In reality, one observes either an employer contribution for a single plan or a family plan in the CPS. If the respondent has a single (family) plan where the employer pays all of the cost, I assume the same is true for the family (single) plan as well. If the respondent chooses a single (family) plan that pays for some or none of the costs, I scale the employer contribution proportionally upward (downward) to compute the family (single) plan contribution. I scale the employer contribution from single plans upward by 63.3 percent ($5,914/$3,621) to compute the employer contribution for a family plan, and I scale the employer contribution from family plans downward by 61.2 percent ($3,621/$5,914). The employer's cost would then depend on these contributions, the "fee" discussed in the text, and actual HIA eligibility.
97. Almost all Census industry codes could be matched to one of the CEHBS industry groupings. For respondents in industries that could not be matched, the CEHBS premium and cost-sharing information was imputed using firm size alone for all industries in the sample.

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