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# The California Cost and Coverage Model: Analyses of the Financial Impacts of Benefit Mandates for the California Legislature

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**Objective.** To produce cost estimates of proposed health insurance benefit mandates for the California legislature.

**Data Sources.** The 2001 California Health Interview Survey, 2002 Kaiser Family Foundation/Health Research and Education Trust California Employer Health Benefits Survey, Milliman Health Cost Guidelines, and ad hoc surveys of large health plans were used.

**Study Design.** We developed an actuarial model to estimate short-term (1 year) changes in utilization and total health care expenditures, including insurance premiums and out-of-pocket expenditures, if insurance mandates were enacted. This model includes baseline estimates of current coverage and total current expenditures for each proposed mandate.

**Principal Findings.** Analysis of seven legislative proposals indicated 1-year increases in total health care expenditures among the insured population in California ranging from 0.006 to 0.200 percent. Even when proposed mandates were expected to reach a large target group, either utilization or cost was sufficiently low to keep total cost increases minimal.

**Conclusions.** Our ability to develop a California-specific model to estimate the impacts of proposed mandates in a timely fashion provided California legislators during the 2004 legislative session with more-detailed coverage and cost information than is generally available to legislative bodies.

**Key Words.** Insurance mandates, health care expenditures, utilization and cost impacts, evidence-based policy analysis

The California Health Benefits Review Program (CHBRP) is charged by the California legislature with estimating the medical effectiveness, public health, and cost implications of proposed health benefit mandates. Cost implica-

tions include factors such as the effect on premiums and out-of-pocket and administrative costs, the effect on the number of uninsured individuals and access to health care services, and effects on the provision of health insurance by different types of employers. In response to this legislation, we developed a California Cost and Coverage Model to estimate the financial impacts of proposed health insurance mandates. This article explains the general methods and employed in developing this model, and presents results from the application of this model during the 2004 legislative session, as well as an example of how the model was used to produce estimates for osteoporosis screening. The model was used to produce financial impacts of specific mandates reported elsewhere in this volume.

## BACKGROUND

The California Cost and Coverage Model serves as a unique example of a model developed in a timely and transparent manner. It was constructed and validated by researchers and UCLA and staff at Milliman, with input from the larger CHBRP project team, during a 6-month period during the second half of 2003 in time to analyze legislative initiatives requested by the legislature starting in December 2003 that were then considered during the first half of 2004. Our ability to develop a California-specific model to estimate the impacts of proposed mandates in such a timely fashion provided California legislators during the 2004 legislative session with more-detailed, specific coverage, and cost information than was previously available to legislative bodies.

In the legislation that created the CHBRP, California legislators identified two major types of financial effects they were interested in understanding regarding proposed mandates: (1) the present baseline coverage for the benefit and baseline per unit costs, utilization, and total per-member, per-month (PMPM) health care expenditures, and (2) projected changes in coverage,

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per-unit costs, utilization, and PMPM expenditures following the implementation of the mandate. The latter information is essentially the marginal impact of the mandate on health care expenditures in California. The baseline model was updated at the end of the 2004 calendar year for analysis of bills during the 2005 legislative session.

The California Cost and Coverage Model is primarily an actuarial forecasting model. Such models are particularly appropriate when substantial behavioral changes in response to mandates are likely to be limited in the short run. For example, a mandate requiring osteoporosis screening for all insured women ages 50–64 is unlikely to have an impact on the decision of employers to offer insurance, the rate of take-up of insurance by employees, or employer decisions about who is eligible for insurance in their firms, because the overall financial impact of such mandatory screening is likely to be small. Therefore, to the extent that our actuarially forecasted impact of a mandate has a small impact on health insurance premiums and overall health care expenditures (relative to large annual increases in premiums driven by overall utilization and price increases), behavioral changes do not need to be modeled and an actuarial forecast should produce a reliable first-order approximation of a mandate's short-term marginal impact on employers and employees. In cases where large marginal impacts are estimated, we need to account for possible changes in employer and employee behavior, as discussed below.

### *Previous Research on the Effect of Benefit Mandates*

Economists have generally focused more attention on what are known as individual or employer-based mandates (see, e.g., Summers 1989; Gruber 1994). Such mandates are requirements on individuals and firms to purchase insurance but usually are not concerned with particular benefit packages. Although policy makers refer loosely to mandates, broadly speaking, the kinds of mandates CHBRP examines usually are *benefit* mandates that require health insurers to cover specific services, in contrast to *insurance* mandates that require employers to provide insurance coverage to uninsured employees. There is a well-developed literature on mental health parity, which is effectively an expansion of benefits. With a few exceptions (Gabel and Jensen 1989; United States General Accounting Office 1996; Jensen and Morrisey 1999), however, the literature on estimating the effects of benefit mandates is not as well developed as other areas of health economics and health services research. Although these studies cite evidence that benefit mandates can increase the marginal cost of insurance premiums substantially (e.g., more than 1

percent), most of these mandates involve packages of services that are fairly comprehensive. In contrast, as shown below, the mandates evaluated in California to date have focused on very specific services that are often relatively low-cost on a per-unit basis.

## METHODS

Our model includes two distinct components: one that remains constant across all benefit mandates and one that varies by mandate. The first component is used to produce baseline estimates of the number of Californians in each insurance market segment who are potentially affected by each proposed mandate. The second component of the model is designed to provide specific information requested by the legislature, and is summarized in Table 1. For each mandate, CHBRP must report on the following information at baseline (i.e., before implementation of the mandate): (1) the current utilization and cost of providing the proposed mandated benefit; (2) existing coverage of the service in the current insurance market; and (3) the current costs borne by insurers. The specific postmandate information requested by the legislature and produced by our model, also summarized in Table 1, includes: (1) utilization changes; (2) changes in the per-unit cost of providing the service; (3) administrative costs; (4) impact on total health care costs; and (5) the costs or savings for different types of insurers.

### *Data Sources*

To estimate current levels of coverage, utilization, and expenditures for the mandated services, we constructed a baseline cost and coverage model using data from three primary data sources: (1) the 2001 California Health Interview Survey (CHIS); (2) the 2002 Kaiser Family Foundation/Health Research and Education Trust (KFF/HRET) California Employer Health Benefits Survey; and (3) the Milliman Health Cost Guidelines. In addition, we conducted ad hoc surveys of the largest health plans in California for each proposed mandate to determine the baseline (i.e., premandate) percentage of total members currently covered for the mandated benefit. A detailed description of the model is presented elsewhere (Kominski et al. 2004).

*Baseline Model of Insured Population Affected by Insurance Mandates in California.* Before performing any analyses, we first constructed a generic baseline population, cost and coverage model that remains constant across all

Table 1: Overview of Data and Methods Used to Calculate Baseline and Postmandate Utilization, Cost, and Coverage Impacts

| *Utilization, Cost, and Coverage Components (Varies by Mandate)* | *Data Sources* |
|---|---|
| *Baseline* (*Premandate*) | |
| 1. Current utilization levels, and costs of the mandated benefit | Milliman Health Cost Guidelines (HCGs); prevalence of disease estimates for utilization<br>Public health or population data estimates of prevalence |
| 2. Current coverage of the mandated benefit, including out of pocket charges, referral requirements, visit or dollar limits | Five largest health plans are mailed a survey of their coverage policies<br>Evidence of Coverage; health plan and insurer documents<br>Laws or regulations, for public programs |
| 3. Current costs borne by payers (both public and private entities) in the absence of the mandated benefit | HCGs to estimate current out-of-pocket spending |
| *Postmandate* | |
| 1. Utilization changes | HCGs<br>Population surveys and prevalence<br>Research on utilization changes for the service or similar services following coverage<br>Utilization in plans with full coverage<br>Behavioral assumptions based on standard economic theory relating to consumer price and demand |
| 2. Unit cost of the affected services | HCGs |
| 3. Impact on administrative and other expenses | HCGs |
| 4. Impact of the mandate on total health care costs in percentage change and dollars | Total change in costs = change in premiums+change in out-of-pocket expenditures |
| 5. Costs or savings by market segment | Percent and dollar changes in premiums for each market segment, including public sector |

analyses. The model uses data from three main data sources: (1) the 2001 CHIS; (2) the 2002 KFF/HRET California Employer Health Benefits Survey; and (3) the Milliman Health Cost Guidelines. This model is updated annually.

*Population Covered by Health Insurance, by Type of Insurance and Firm Size.* The 2001 CHIS is used to identify the demographic characteristics and estimate the insurance coverage of the population in the state. To obtain estimates of the percentage of employees by size of firm and type of health plan, we used

the 2002 KFF/HRET survey of California employers. These data provide estimates of numbers of employees working in such firms and their types of coverage, based on a representative sample of California's employers. Coverage categories include conventional fee-for-service (FFS), preferred provider organizations (PPOs), point-of-service plans (POS), and health maintenance organizations (HMOs). Furthermore, the KFF/HRET survey also provides information on whether each health plan is self-insured or underwritten. The latter two data elements were used to complement the CHIS data, as CHIS does not provide details on PPO, POS, or self-insured coverage.

We divided the insured market into four different types of health plans (HMO, PPO, POS, and FFS) and three market segments (large group, small group, and individual) to represent typical insured plan benefits in California. Specifically, the commercial market was divided into large group (51 or more employees), small group (2–50 employees), and individual coverage, because each of these markets is subject to different regulations and market forces. The baseline model generally excludes people covered by Medicare, as states do not have authority for mandating benefits under the Medicare program.

Table 2 shows the distribution of California's population by health plan and market segment based on these data. Most mandates affect only those with private insurance who are not employed in self-insured firms. For 2004, we estimate that 16.261 million Californians were potentially affected by such mandates. For mandates that affect only Knox–Keene licensed plans in California (i.e., HMOs), we estimate that 9.817 million Californians were potentially affected by such mandates in 2004.

*Baseline Expenditures for Insurance Premiums.* We obtain baseline data on insurance premiums for the large- and small-group insurance directly from the 2002 KFF/HRET California Employer Health Benefits Survey. For the individual market, we obtain estimates from Milliman benchmarked against other published sources (Beeuwkes-Buntin et al. 2003; KFF 2004; Trauner 2003).

*Out-of-Pocket Expenditures for Insurance Premiums.* Baseline premiums and out-of-pocket expenditures for 2005 obtained from the 2002 KFF/HRET survey and Milliman HCGs, trended forward to account for changes in utilization and unit costs since 2002. These estimates are average per capita expenditures within each of the market segments (large group, small group,

Table 2: Insurance Coverage of Californians, 2004

| | *Age Group* | *HMO* | *PPO* | *POS* | *FFS* | *Total* |
|---|---|---|---|---|---|---|
| Medi-Cal | All ages | | | | | 4,864,000 |
| Healthy families | 0–17 | | | | | 458,000 |
| Medicare, non-Medi-Cal | 65+ | | | | | 2,619,000 |
| Other public, non-Medi-Cal | 0–64 | | | | | 389,000 |
| Other public coverage, non-Medi-Cal elderly | 65+ | | | | | 122,000 |
| Uninsured | All ages | | | | | 4,616,000 |
| Individually purchased | 0–64 | 748,000 | | 854,000* | | 1,602,000 |
| Employment-based | | | | | | |
| Small group† | | | | | | |
| Self-insured‡ | 0–64 | 109,000 | 69,000 | 50,000 | 3,000 | 231,000 |
| Underwritten‡ | 0–64 | 2,630,000 | 1,247,000 | 877,000 | 45,000 | 4,799,000 |
| Large group† | | | | | | |
| Self-insured‡ | 0–64 | 714,000 | 2,451,000 | 303,000 | 23,000 | 3,491,000 |
| Underwritten‡ | 0–64 | 6,439,000 | 1,739,000 | 1,621,000 | 61,000 | 9,860,000 |
| California's total population | | | | | | 33,051,000 |

*Sources:* 2001 California Health Interview Survey (CHIS), 2002 Kaiser Family Foundation/Health Research and Education Trust Survey of California Employers.

*CHIS data only distinguish individuals with HMO coverage from those with non-HMO coverage.

†Estimates of workers in HMOs, PPOs, FFS, and POS are obtained by multiplying the percentages of workers in each plan type from CA HRET 2002 data and CHIS population estimate of workers.

‡Estimates of workers in HMOs, PPOs, FFS, and POS who are in self-insured plans are obtained by multiplying the percentages self-insured workers in each plan type from HRET 2002 data and CHIS population estimate of workers. Estimates are then inflated to account for the proportion of children covered (29.11%).

HMO, health maintenance organization; PPO, preferred provider organization; POS, point-of-service plans; FFS, fee-for-service; HRET, Health Research and Education Trust.

individual) and insurance plan types (HMO, PPO, POS, FFS), and are multiplied by the population estimates obtained from CHIS and KFF/HRET in each market segment/insurance plan category to obtain total baseline expenditures.

*Costs versus Expenditures.* Because of the presence of insurance, it is important to identify the cost to whom—that is, insurer, employer, employee, patient, or society in general. As defined in the California Cost and Coverage Model, cost represents the aggregate expenditures, or the prices paid, for health care services—not the costs incurred by the providers of health care. The rationale

for this definition of cost is that legislators are ultimately interested in evaluating the financial impact of mandates on each of the major payers for health care services in the state.

The elements of cost included in the model are: (1) insurance premiums; (2) member cost-sharing; (3) cost of services currently not covered, that is, the amount paid by users of services proposed by the mandate but not currently covered by insurance; and (4) total expenditures, that is, the sum of amounts paid for insurance plus the amounts paid for such services not covered by insurance.

*Baseline Coverage, Utilization, and Expenditures for Different Mandated Benefits*

For each legislative request, we estimate of baseline coverage, utilization, and expenditures related to the specific mandated benefit. To estimate coverage of the benefit, we send surveys to the five largest health plans and insurers in California for each proposed mandate to determine the baseline (i.e., premandate) percentage and number of total members currently covered for the mandated benefit, by market segment and by firm size. Coverage is typically not a yes/no determination. Some services are covered, but are limited by out of pocket charges, visit limits, or a referral requirements, Response rates for the surveys have been around 50–70 percent, because of extensive follow-up.

Survey data are supplemented and validated using "Evidence of Coverage" documents, which provide detailed information on which benefits are covered. A sample of such documents is kept on file for a variety of plans and insurers are held on file by CHBRP. Likewise, because public programs are also part of CHBRPs required estimates (although we focus largely on private programs here), publicly available documents on what programs such as Medicaid covers are examined.

The baseline utilization and expenditure data for each mandate are drawn primarily from the Milliman HCGs. The HCGs are a health care pricing tool used by actuaries in many of the major health plans in the United States. The HCGs are licensed and used nationwide and by several California HMOs and insurance companies, including at least five of the largest plans. It is likely that these organizations would use the HCGs, among other tools, to determine the initial premium impact of any new mandate. Thus, in addition to producing what we believe are accurate estimates of the costs of a mandate, the HCG-based values should also be good estimates of the premium impact as estimated by the HMOs and insurance companies.

Most of the data sources underlying the HCGs are claims databases from commercial health insurance plans. In particular, the data come from health insurance companies, Blue Cross/Blue Shield plans, HMOs, self-funded employers, and from private data vendors from throughout the U.S. The data are mostly from loosely managed health care plans, such as traditional indemnity style plans and PPO plans. The HCGs are also based on data commonly used by health services researchers. Specific examples of these data sets include:

- Nationwide commercial claims data for approximately 4 million members, purchased from a commercial vendor (MEDSTAT).
- Claims data from Milliman clients who agree to use of their blinded data for research, consisting of about 3 million members.
- All commercial inpatient claims from 24 states that release this information, including data on all hospital discharges in California. These data are purchased directly from the states, but are also available to researchers through the Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP).

Because most of data used by Milliman to develop the HCGs represent "loosely" managed care from throughout the U.S., all the baseline analyses performed by Milliman start with PPOs in the large-group market, then make adjustments to these baseline data to account for differences by type of insurance, size of market, and geographic location. This process is described in more detail elsewhere (Kominski et al. 2004). We then develop baseline estimates of utilization within each category using Milliman's HCGs, or other published sources of data identified in the course of the literature review conducted for each analysis.

Another source of data is the prevalence of disease that are made by the CHBRP Public Health Team, published research, and population and/or health surveys such as CHIS, where this is available.

In general, mandated benefits fall into one of the three general categories of benefits expansion, in which the mandate benefit is:

1. already covered for a portion of the insured population, so the mandate is expanding existing coverage to a broader population;
2. currently available but only as a noncovered (i.e., noninsured) service, so the mandate is expanding coverage to a service that is currently paid out-of-pocket;
3. newly available service, so the mandate is expanding coverage for a service not previously available.

In the first two cases, existing Milliman HCGs and other data can be used to establish baseline utilization rates, whereas there is no baseline utilization in the third case. Changes in utilization resulting from the mandate can be estimated using claims data in the first case, but in all three cases, previously published studies or "educated guesses" may be necessary to estimate how utilization levels will change in the postmandate period. During the 2004 legislative session, all of the proposed mandates fell into the first category above; namely, benefits that were already available to some portion of the insured population. As a result, we were able to obtain reliable estimates of baseline utilization from existing claims data.

*Estimating the Impact of Proposed Mandates*

*Utilization.* The key assumption in estimating the impact of a proposed mandate is determining how much utilization will change. For proposed mandates such as osteoporosis (discussed in more detail below) and ovarian cancer screening, we developed estimates of baseline utilization from claims data for women who are currently treated for these conditions, and then made assumptions about the increased use of screening based on utilization rates of screening mammography and Pap smears.

*Per-Unit Costs.* Changes in per-unit costs of mandated benefits are estimated from Milliman's HCGs and from information gathered from the literature review conducted separately by the CHBRP Medical Effectiveness Team regarding how a mandated benefit may change the mix of services provided to members. For example, some mandates may produce a reduction in utilization of inpatient hospitalization as a result of more effective outpatient treatment or earlier diagnosis. In those cases, we factor the savings related to this reduced utilization into overall per-unit costs of treating members with that specific condition or illness.

*Administrative and Other Expenses.* Milliman's HCGs are the primary source for estimated the portion of insurance premiums related to administrative expenses. We assume that increases in the underlying costs of insurance related to utilization increases also produce an increase in administrative expenses.

*Total Health Care Costs.* Total health care costs are calculated as the change in PMPM premiums, including both the employer and employee share of premiums, plus the out-of-pocket expenditures by employees for copayments and deductibles.

*Costs or Savings by Market Segment.* Based on distribution of California's insured population shown in Table 2, we produce separate estimates of total health care costs for each of the following market segments: (1) large group HMO, (2) large group PPO, (3) large group POS, (4) large group FFS, (5) small group HMO, (6) small group PPO, (7) small group POS, (8) small group (FFS), (9) individual HMO market, and (10) individual PPO market. In addition, we produce costs or savings estimates for the two public-insurance programs funded by the state, Medi-Cal and Healthy Families. Although these programs are exempt from most mandates, the impact of mandates on the private insurance market could have significant spillover effects on these public insurance programs.

### *Forecasting Longer-Term Effects*

Although legislators may expect savings in health care costs from mandates of preventive services, because of the reduction in the need for other services, the short-term effect on premiums is usually an increase. Accordingly, our model generally projects increased insurance premiums based on actuarial assumptions. Immediate and long-term cost savings as a result of mandates are not modeled or estimated because of the inherent difficulty in forecasting reductions in future costs accurately, even though some mandated services may result in longer-term savings to the health care system.

### *Modeling Dynamic Responses in the Private Market for Health Insurance*

The decision to offer insurance by employers is a function of worker demand, labor market conditions, and establishments' costs (price) of coverage along with firm level characteristics, competition in the market, and the size of other firms in the market (Hadley and Reschovsky 2002). Firm size is the most commonly measured factor determining whether firms offer insurance. In 1998, 94 percent of establishments with 100+ employees offered health insurance (Bureau of Census 2002) whereas only 66 percent of firms with 10–24 employees offered insurance. Moreover, the size of the firm affects the number of insurance plans employees are offered (Moran, Chernew, and Hirth 2001).

Employees also have the choice of taking coverage if offered by the employer. If the out-of-pocket premium cost is too high, some eligible workers will forgo coverage, and the employees who forgo coverage are likely to be those who anticipate not benefiting as much from health insurance, such as those who are younger or in better health. If such "low-cost enrollees" drop out of the employer's covered pool, the premium for the remaining enrollees is likely to further increase (aside from the effects of the mandate per se). This selective disenrollment (i.e., adverse selection) may eventually lead the employer to drop coverage entirely. Under conditions of increased premiums, mandates may impact access to health care. Depending on the magnitude of the premium increase, the number of employers offering insurance in the group market may go down, or employers may absorb the premium increase. If employers no longer offer insurance, employees face several choices. Employees may become uninsured, may switch to spousal coverage if available, they may enroll in a public insurance program if eligible, or may buy individual coverage. Individuals already purchasing insurance may drop coverage altogether if they cannot afford the new premium.

The impact on public programs is mainly observed in the low-income population. This population is most affected by price changes and is more likely to be eligible for income-tested benefits. In general, low-income individuals tend not to buy insurance even at very low prices (Chernew, Frick, and McLaughlin 1997). The loss of private coverage and increase in public insurance participation is considered as a crowd-out effect. There is some controversy about how large crowd-out effects are. However, in general, employees who are eligible for public insurance take up employer-provided insurance less frequently (Cutler and Gruber 1996).

The Lewin Group has developed estimates as part of its Health Benefits Simulation Model that incorporate both these effects, and find that the overall average elasticity of demand for insurance is $-0.34$ (Lewin Group 2002). This elasticity varies from $-0.55$ for individuals with \$10,000 annual income to $-0.09$ for individuals with annual income of \$100,000. For mandates that have a large impact on premiums, relative to average annual increases in California health insurance premiums, our analyses include discussion of the possible impacts on the number of Californians who might become uninsured in response to premium price increases, based on Lewin's estimated elasticity. Only two bills analyzed during the 2004 legislative session (Senate Bill [SB] 897, maternity benefits, and the follow-up companion bill, SB 1555) resulted in large premium increases for those without coverage for the proposed mandated benefit. Our analyses of those bills used Lewin's elasticity of demand for

insurance to estimate the potential increase in the number of uninsured because of estimated premium increases.

Finally, we assume that marginal cost changes estimated in our analyses get passed on directly to employers and thus to employees.

## RESULTS

During the 2004 legislative session, we used the California Cost and Coverage Model to analyze the cost and coverage impacts of nine bills introduced into the California legislature. These bills included mandates adding osteoporosis screening, ovarian cancer screening, prenatal and maternity services, substance abuse treatment (including smoking cessation), asthma self-management training and supplies, and hearing aids for children.

Table 3 provides the results of the model for one particular mandate—osteoporosis screening—and for one of the plan types affected by the mandate (large group HMO). Similar analysis is done for each plan type, and the effect on the entire state is based on the aggregate values. This proposed mandate would have affected women ages 50–64. Currently, no health plans in California provide general screening benefits for osteoporosis, but women at high risk are eligible for screening and treatment, both of which are covered by most plans. Based on data from the Milliman HCGs, we estimated that at baseline, 11 percent of women ages 50–64 are high risk, and thus eligible for screening, and that 8 percent of women ages 50–64 are actually using osteoporosis screening services, at a cost of $173 per screening. Postmandate, we estimated that screening rates would increase from 8 to 30 percent. This assumption was based on the 2-year rates for mammography in California of 72–76 percent reported by the Pacific Business Group on Health. Taking the midpoint of this range, 74 percent, implies a 37 percent annual rate of osteoporosis screening. We reduced this rate to 30 percent to reflect the fact that osteoporosis screening was likely to be used less often relative to mammography during the first years of the benefit.

We estimated that the annual increase in screening rates of 22 percentage points because of the mandate would produce about a 0.95 percent increase in newly diagnosed osteoporosis, based on an incidence rate of 4.33 percent ($0.22 \times 0.0433 = 0.0095$), and that roughly two-thirds of these newly diagnosed cases would seek treatment at an annual cost of $1,300, including the cost of an office visit and prescriptions. Finally, we assumed that 0.13 percent of those newly diagnosed with osteoporosis would avoid hip or

Table 3: Summary Table of Cost Impacts of Proposed on Mandate for Osteoporosis Screening of Women Ages 50–64, 2004

| | *Baseline (Premandate)* | *Post-mandate* | *Mandate Impact* | *Annual Expenditure Impact* |
|---|---|---|---|---|
| Insurance market | Large group | | | |
| Type of insurance | HMO | | | |
| Insured population in market segment | 6,439,000 | 6,439,000 | | |
| Insured women, ages 50–64, in market segment | 542,000 | 542,000 | | |
| Portion of insured women with screening benefit | 11%* | 100% | | |
| Portion of insured women, ages 50–64 who are screened for osteoporosis | 8%* | 30% | | |
| A. Insured premiums | | | | |
| Average portion of premium paid by employer | $169.13 | $169.38 | $0.25 | $19,680,000 |
| Average portion of premium paid by employee | $48.87 | $48.94 | $0.07 | $5,640,000 |
| Total premium | $218.00 | $218.32 | $0.33 | $25,320,000 |
| B. Covered benefit paid by member (deductibles, copays, etc.) | $7.72 | $7.73 | $0.01 | $840,00 |
| C. Total cost of covered benefits | $225.72 | $226.05 | $0.34 | $26,160,000 |
| D. Benefits not covered | $0.00 | $0.00 | $0.00 | $0 |
| E. Total expenditures per member | $225.72 | $226.05 | $0.34 | $26,160,000 |
| Percent increase in premiums (%) | | | 0.15 | |
| Percent increase in expenditure (%) | | | 0.15 | |

*At baseline, woman at high risk for osteoporosis have coverage for screening and treatment, but general screening for the entire female population, ages 50–64, is not a covered benefit.

*Note:* Dollars may not add precisely because of rounding error.

HMO, health maintenance organization.

vertebral fractures, and thus would produce a savings on average of $19,000 by avoiding hospitalization. Therefore, the net increase in premiums of $0.33 shown in Table 3 represents the net impact of increased utilization, increased treatment costs for newly diagnosed cases, and savings related to reduced hospitalizations.

Table 4 summarizes the major cost and coverage impacts of these proposed mandates, including a revised maternity benefits bill that was introduced subsequent to our original analysis. In general, the mandates analyzed during the 2004 legislative session would have produced small increases in total health expenditures according to our estimates; ranging 0.006–0.020

Table 4: Summary of Cost and Coverage Impacts of Legislative Bills Analyzed Using the Cost and Coverage Model during the 2004 Legislative Session

| *Assembly or Senate Bill Number* | *Proposed Benefit Mandate* | *Insured Members Targeted by Proposed Mandate* | *Total Targeted Insured Population (Millions)* | *Insured Members without Coverage before Mandate (Millions)* | *Utilization Rate before Mandate (%)* | *Utilization Rate after Mandate (%)* | *Total Insured Members Affected by Mandate (Millions)* |
|---|---|---|---|---|---|---|---|
| AB 438 | Osteoporosis screening | Women 50–64 | 1.777 | 1.580 | 11.00 | 30.00 | 16.261 |
| AB 547 | Ovarian cancer screening | Women 18–64 | 5.890 | 5.540 | 6.00 | 22.00 | 16.261 |
| SB 101 | Substance disorder treatment | Members 0–64 | 16.261 | 16.261 | ** | ** | 16.261 |
| SB 174 | Hearing aids for children | Members 0–17* | 4.408 | 1.630 | 63.00 | 65.00 | 15.513 |
| SB 897 | Maternity services | Members 0–64 | 0.375 | 0.375 | 1.34 | 1.34 | 16.261 |
| SB 1555 | Maternity services | Non-HMO Members 0–64 | 0.292 | 0.292 | 1.34 | 1.34 | 6.444 |
| AB 2185 | Childhood asthma self-management | HMO Members 0–17 | 3.495 | 0.377 | 54.00 | 64.00 | 16.261 |

*Does not apply to children covered by individual policies and enrolled in HMOs.

**Multiple services are affected by mandate, so a single utilization rate does not apply.

*Source:* Analyses of individuals bills conducted by the California Health benefits review program. Individual reports are available at http://www/chbrp.org/analyses.html

HMO, health maintenance organization.

percent of total health expenditures among insured Californians. The small impact of these mandates is primarily attributable to the fact the proposed benefits were relatively inexpensive on a per-unit basis (osteoporosis screening, ovarian cancer screening, hearing aids for children, and childhood asthma self-management) or would be used by a relatively small percentage of the insured population (substance disorder treatment and maternity services).

In every case except maternity services, the proposed mandate would have a small impact on the insurance premiums. In the case of maternity services, we estimated a 13 percent premium increase on average among the 44,000 individuals (male and female) ages 25–39 who currently purchase individual policies, because premiums are typically age related, but do not differ by gender. Based on Lewin's estimated elasticity of demand for insurance, we predicted that a 13 percent increase in premiums among this age 25–39 group would produce a 3.4 percent increase in the uninsured—about 1,900 additional uninsured Californians, of whom about 12 percent would be eligible for Medi-Cal.

## DISCUSSION

The California Cost and Coverage Model is based on a widely used actuarial model of national Health Cost Guidelines developed by Milliman augmented with two California-specific databases that represent "gold standards" for understanding the distribution of California's population by insurance status (CHIS) and the level of premiums paid by California employers and employees (KFF/HRET). The existence of these databases provided us with the ability to develop a California-specific model to estimate the impacts of proposed mandates in a very timely fashion.

In general, the legislature responded very favorably to the detail provided in our financial impact analysis, and given the "bottom-line" orientation of most legislators, focused considerably on our estimates of the impact on health insurance premiums and total health expenditures, including out-of-pocket expenditures. One minor criticism of our financial analyses was that the major assumptions and impacts were not presented in a standardized manner across reports. We responded to this feedback by developing standardized templates for summarizing the impacts of proposed mandates on coverage, utilization, per-unit costs, and total expenditures. These standardized templates have been used for analyses conducted during the 2005 legislative session.

## CONCLUSIONS

The California Cost and Coverage Model represents a comprehensive effort by actuaries and health services researchers to develop a model to estimate the effects of health insurance benefit mandates for different types of insurers and for different employer firm sizes. The goals of this model are to provide accurate and timely estimates of health insurance benefit mandates to legislatures, and to make those estimates as transparent as possible. Based on feedback we have received from the legislature and from health plans, we have met these goals. As more states become interested in evaluating the financial impacts of mandates, actuarial models such as the one described here can be developed in a timely manner so that researchers and stakeholders can assess the quality of the data and assumptions used to estimate the impacts of benefit mandates.

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