Analysis Methodology

Cost Impact Analysis and Research Approach

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California Health Benefits Review Program
University of California

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 insurance benefit mandates and other health insurance-related legislation.[1] To estimate projected cost impacts, CHBRP developed and maintains an actuarial model, the California Cost and Coverage Model (referred to elsewhere as the "Cost Model"). This document describes CHBRP's cost impact analytic approach and use of the Cost Model.

Additional information about CHBRP's cost impact analytic approach is available on the Cost Impact Analysis Methodology page[2] on CHBRP's website, including:

- Annually Updated Approach Documents
  - Cost Impact Analyses: Data Sources, Caveats, and Assumptions
  - Actuarial Value: Criteria and Methods for Estimating the Impact of Benefit Mandates on Actuarial Value
- Annually Updated Resources
  - Sources of Health Insurance in California
  - Pharmacy Benefit Coverage in State-Regulated Health Insurance
  - Deductibles in State-Regulated Health Insurance
- Uninsured: Criteria and Methods for Estimating the Impact of Mandates on the Number of Individuals Who Become Uninsured in Response to Premium Increases

Background

The legislative proposals CHBRP analyzes often relate to health insurance benefit mandates. Health insurance benefit mandates impose specific requirements on benefit coverage, often requiring coverage for specific tests, treatments, or services. These mandates may also impact terms and conditions of coverage, such as provider type, cost sharing, or other administrative or reimbursement requirements. Benefit mandates may impact both public and commercial health insurance. Benefit mandate repeals generally revoke requirements to cover certain tests, treatments, services, or other health insurance requirements.

[1] See CHBRP's authorizing statute.
[2] Available on CHBRP's website.

CHBRP estimates the cost impacts of proposed health benefit-related legislation. These impacts may include outcomes such as the effect on premiums, enrollee out-of-pocket expenses such as cost sharing, and utilization of health care services. The CHBRP Cost Model has proven to be rigorous yet flexible; it can be used under a rapid timeline for a variety of health insurance-related topics.[3]

Generally, changes to health insurance benefits fall into one of the five categories of benefits change, in which the mandated benefit is:

1. Already covered for a portion of the insured population, and the mandate would expand existing benefit coverage to a broader population;

2. Currently available but only as a noncovered service, and the mandate would expand coverage to a service that is currently paid out-of-pocket;

3. Changing the terms of existing benefit coverage, such as a change in cost-sharing requirements, prior authorization or other utilization management requirements, and/or other conditions;

4. An existing benefit for which coverage would no longer be mandated (i.e., a repeal), and benefit coverage would become optional; or,

5. A newly available service.

Information Included in CHBRP Reports

The CHBRP authorizing statute requests that CHBRP provide certain estimated financial impacts to assist the Legislature's consideration of proposed health insurance benefit mandates, including estimates of baseline (without the mandate in place) benefit coverage, utilization, and cost as well as projected postmandate change upon implementation.

CHBRP uses the following terms and definitions in its analyses:

- **Benefit coverage**: the extent to which the services relevant to a benefit mandate are covered by state-regulated health insurance.

- **Utilization**: the frequency or volume of use of a test, treatment or service relevant to a proposed health insurance benefit.

- **Cost**: the aggregate expenditures for health care services. In evaluating cost, CHBRP includes:

    - Insurance premiums (paid by employers, government, and enrollees)
    - Enrollee cost sharing (copayments, deductibles, coinsurance)
    - Noncovered health expenses (paid by enrollees who have health insurance, but whose insurance does not cover specified services)

Table 1 describes the type of benefit coverage, utilization, and cost information that is typically discussed within CHBRP analyses.

[3] See CHBRP's completed analyses.

Table 1. Benefit Coverage, Utilization, and Cost Information Typically Included in CHBRP Analyses

Baseline	Postmandate
• Current benefit coverage for the test/treatment/service in state-regulated health insurance markets • Current utilization of the test/treatment/service • Unit cost of the test/treatment/service • Current costs borne by insurers, relevant to the test/treatment/service	• Changes in benefit coverage for the test/treatment/service if the proposed mandate is enacted • Changes in utilization of the test/treatment/service • Changes in the per unit cost of the test/treatment/service borne by insurers • Changes in administrative costs • Impact on total health care costs • Costs or savings by market segment • Impact on access and availability of tests/treatments/services

Source: California Health Benefits Review Program, 2026.

CHBRP's California Cost and Coverage Model

CHBRP has developed the Cost Model to produce baseline and projected postmandate financial impacts of a proposed bill, were it to pass into law. CHBRP's Cost Model is primarily an actuarial forecasting model which estimates the proposed impact of a bill in its first year following full implementation. It uses data from a variety of sources, including CHBRP's surveys of health plans and insurers, administrative payer data, the California Health Interview Survey (CHIS), the KFF Employer Health Benefits Survey, and the California Simulation of Insurance Markets (CalSIM). Each year, economists and researchers from several University of California campuses, along with Milliman (CHBRP's contracted actuarial firm) and CHBRP staff, update and refine CHBRP's Cost Model.

Baseline Model of Insured Population in California (Not Bill-Specific)

To estimate levels of coverage, utilization, and expenditures for mandated services, CHBRP uses a baseline Cost Model using data from several primary data sources. The Cost Model is updated annually, as is its companion document, *Cost Analysis Data Sources, Caveats, and Assumptions,* which discusses the estimation methods, data sources, caveats, and assumptions applicable to CHBRP's cost impact analyses. The document is available on CHBRP's website and is generally published with updated information by February each year.[4] A detailed description of the Cost Model is available externally.[5]

To establish baselines figures for the Cost Model, CHBRP determines both of the following:

- **Enrollment:** number of Californians that will be enrolled in state-regulated health insurance at the time a newly passed legislation would take effect. This includes people enrolled in health care service plans regulated by the Department of Managed Health Care (DMHC) and health insurance policies regulated by the California Department of Insurance (CDI).
- **Premiums:** premiums paid by or for enrollees in state-regulated health insurance.

CHBRP relies on data from CalSIM,[6] CHIS, and state agencies, as well as CHBRP's Annual Enrollment and Premium (AEP) survey of the state's eight largest (by enrollment) health plans and insurers. Because some proposed legislation

[4] See CHBRP's *Cost Analysis Data Sources, Caveats, and Assumptions* document.
[5] See Kominski, G. F., Ripps, J. C., Laugesen, M. J., Cosway, R. G., & Pourat, N. (2006). The California Cost and Coverage Model: analyses of the financial impacts of benefit mandates for the California legislature. Health Serv Res, 41(3 Pt 2), 1027-1044. doi:10.1111/j.1475-6773.2006.00518.x
[6] A microsimulation model used to estimate the continuing effects of Affordable Care Act (ACA) implementation on health insurance enrollment, developed by the UC Berkeley Center for Labor Research and Education and UCLA Center for Health Policy Research. *Methodology & Assumptions, California Simulation of Insurance Markets (CalSIM) Version 1.8*, March 2013. Accessed November 5, 2014.

would have differing effects on grandfathered and nongrandfathered plans and policies, CHBRP's AEP survey asks the state's largest (by enrollment) health plans and insurers to include data for both grandfathered[7] and nongrandfathered plans and policies.

Regulators and Market Segments[8]

CHBRP's Cost Model includes health insurance regulated by two different state agencies: DMHC[9] and CDI.[10]

DMHC regulates health care service plans, which include:

- Health maintenance organizations (HMO) plans
- Point of Service (POS) plans
- Certain Preferred Provider Organizations (PPO) plans

CDI regulates health insurance policies, which include:

- PPO policies
- Fee-for-Service (FFS) policies

All DMHC-regulated health plans and CDI-regulated health policies are categorized into different markets based on size:

- Large group: 101 or more employees
- Small group: two to 100 employees
- Individual market: direct purchase

The Cost Model also considers publicly financed sources of health insurance coverage such as Medi-Cal, California Public Employees' Retirement System (CalPERS) plans regulated by DMHC, and Covered California, the state's health insurance marketplace.

Bill-Specific Baseline

Benefit Coverage

In response to requests by the Legislature, CHBRP typically surveys the state's eight largest (by enrollment) health plans and insurers regarding current coverage for the tests, treatments, and services relevant to the proposed legislation. These bill-specific surveys allow CHBRP to estimate baseline benefit coverage. For state-regulated health insurance, benefit coverage would change based on the details of proposed legislation. This information is displayed as the percent and number of enrollees with health insurance subject to the bill with baseline benefit coverage.

Utilization and Unit Cost

To determine how frequently a relevant test, treatment, or service is used—whether or not an enrollee has benefit coverage—and how much each unit of the test, treatment, or service costs, CHBRP uses a variety of sources, including the Milliman Consolidated Health Cost Guidelines Sources Database (CHSD) and academic literature related to health costs, among other sources.

Use of the CHSD Claims Database

The Milliman CHSD is the primary source for medical and pharmacy claims-level data used to complete CHBRP analyses that require data on utilization and/or average cost per unit for specific services. An internal Milliman database, CHSD is large, credible, and nationally representative, containing the standard medical codes and other data elements necessary

[7] A grandfathered health plan is defined as a group health plan that was created — or an individual health insurance policy that was purchased — on or before March 23, 2010. Grandfathered plans are exempt from some of the protections provided under the Affordable Care Act. Plans or policies may lose their "grandfathered" status if they make certain significant changes that reduce benefits or increase costs to consumers. Accessed on September 3, 2024.
[8] See CHBRP's resource, *Sources of Health Insurance in California* for more information.
[9] DMHC was established in 2000 to enforce the Knox-Keene Health Care Service Plan of 1975; see Health and Safety Code (H&SC) Section 1340.
[10] CDI licenses "disability insurers." Disability insurers may offer forms of insurance that are not health insurance. CHBRP considers only the impact of benefit mandates on health insurance policies, as defined in Insurance Code (IC) Section 106(b) or subdivision (a) of Section 10198.6.

to identify specific medical services, medical devices, pharmaceuticals, and/or medical conditions that may be impacted by proposed legislation.[11]

Once CHBRP has examined the services and/or conditions impacted by the bill, a set of criteria for identifying the bill-impacted services and/or population are developed in consultation with subject matter experts. In addition to demographic considerations, the criteria typically include the specific diagnosis codes, procedure codes, or national drug codes associated with the mandated coverage.

Data is extracted from CHSD using the specified criteria and summarized to produce information related to the mandated coverage, such as prevalence rates, utilization rates, unit costs, and per capita costs. CHBRP will generally limit the data to California but will consider including other states when the services or conditions in question are very rare. CHBRP adjusts the baseline data as appropriate to reflect the California market as a whole, including differences in types of coverage, benefit levels, and provider reimbursement levels.

In cases where CHSD data is not available for a specific service or condition, CHBRP looks to research literature, subject matter experts, and other credible sources to establish benchmarks for the key baseline utilization and cost metrics used in its estimates.

Postmandate Impacts

Once CHBRP has estimated baselines for benefit coverage, utilization, and unit cost, CHBRP must then estimate how the volume of utilization would change if the proposed legislation were enacted. CHBRP focuses on the marginal change within the first year following full implementation of legislation, should the bill be signed into law.

Changes in utilization of health care services are driven by many factors, including changes in any or all of the following: levels and details of benefit coverage; levels of cost sharing; enrollee demand and awareness of benefit coverage; provider practice patterns; and level of health care utilization management policies, such as prior authorization and step therapy. CHBRP takes these factors into account when developing estimates. Other factors may impact changes in utilization. Similarly, CHBRP must also determine the unit cost for each test, treatment, or service of the proposed mandate, and whether it would change postmandate based on any expected deviations in demand for the benefit. Together, CHBRP's estimates of changes in utilization and cost provide an estimate of the incremental change a specific proposed mandate would have on expenditures for health care services associated with state-regulated health insurance, including premiums for employers and enrollees, cost sharing, noncovered expenses, and other expenditures as they relate to the legislation.

CHBRP analyses report the estimated incremental impact of full-scale implementation of the proposed legislation on benefit coverage, utilization, and cost for a single year.[12] Full-scale implementation typically requires a "ramp up" period which may include educating enrollees, providers and insurance carriers on the new benefits or coverage, updating procedures and policies, and increasing provider capacity for marginal utilization resulting from the proposed legislation. Furthermore, some policies may have staggered implementation or longer-term changes in utilization. The incremental impact estimates used in CHBRP analyses assume there is no "ramp up" period and represent ongoing annual costs at full-scale implementation of the bill, including potential short-term offsets. CHBRP further assumes that state and industry policies and provider and patient behaviors would remain constant throughout the time period it takes for the full impact of the bill to be realized.[13]

[11] More information on CHSD is available on Milliman's website.
[12] For some analyses, impacts as a result of changes to health insurance benefits may occur over multiple years (e.g. impacts in pregnancy and childbirth rates resulting from changes to utilization of fertility services, staggered implementation, or long-term changes in utilization). CHBRP's estimates represent the full impact of the mandate in one year even if changes in coverage, utilization offsets, and costs may be realized in more than one year.
[13] CHBRP's Cost and Coverage Model also assumes enrollees maintain one form of health insurance for the entire calendar year. Examples of state and industry policies and behavior include medications that may be developed or approved in the future, health insurance market changes beyond what is known at the time of publication of this analysis, and statutory changes resulting from other health benefit mandates.

Categories of Marginal Change

Benefit Coverage. CHBRP assumes that health insurers will comply fully with new benefit coverage mandates, and that benefit coverage will reach 100% for the specific benefit required by the effective date of the legislation.

Utilization. The key assumption in estimating the impact of proposed legislation is determining how much utilization will change. CHBRP makes assumptions about the potential change in use of the relevant tests, treatment and/or service using peer-reviewed literature when available. If relevant literature is not available, analysis of claims data or other sources may be used.

Unit Costs. Changes in per-unit costs of mandated benefits are estimated from the CHSD and from information gathered from the literature review conducted separately by the CHBRP Medical Effectiveness Team. This information is used to inform how a mandated benefit may change the mix of services provided to enrollees. 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, and where evidence supports such offsets, CHBRP estimates the potential offsets related to reduced utilization.

Administrative and Other Expenses. Milliman's analysis of the CHSD is the primary source for estimating the portion of insurance premiums related to administrative expenses. CHBRP assumes that increases in the underlying costs of insurance related to utilization increases also produce an increase in administrative expenses.

Total Health Care Costs. Impacts on total health care costs are calculated as the change in per member per month (PMPM) premiums, including both the employer and employee share of premiums; the out-of-pocket expenditures by employees for copayments, coinsurance, and deductibles; expenditures for individually-purchased insurance coverage; and enrollee expenses for noncovered benefits. Each year, CHBRP and its contracted actuary consider medical cost trend (the rate of growth of medical costs), which influences annual premium increases.

Impacts by Market Segment. Based on the distribution of California's insured population, CHBRP produces separate expenditure estimates for:

- *Purchaser premiums*: employer-sponsored, CalPERS employer, and Medi-Cal managed care plans
- *Enrollee premiums*: enrollees in individually purchased insurance, including outside and through Covered California, and enrollees in employer-sponsored group insurance
- *Enrollee out-of-pocket expenses*: cost sharing for covered benefits (deductibles, copayments, and coinsurance), and expenses for noncovered benefits

When relevant, CHBRP produces costs or savings estimates for Medi-Cal beneficiaries enrolled in County Organized Health Systems (COHS).

Table 2 describes the key data sources and a high-level overview of the methods used to calculate the baseline and postmandate benefit coverage, utilization, and cost.

Table 2. Overview of Data and Methods Used to Calculate Baseline and Postmandate Utilization, Cost, and Coverage Impacts

Utilization, Cost, and Benefit Coverage Components (Varies by Mandate)	Data Sources
Baseline (without mandate)	
1. Current coverage of the mandated benefit, including out of pocket charges, referral requirements, visit, or dollar limits	• Largest health insurers, representing majority of enrollees, are queried about their benefit coverage policies • Health plan or policy documents, e.g., Evidence of Coverage documents • Laws or regulations, for public programs
2. Current utilization levels and costs of the mandated benefit	• Milliman CHSD or other credible source • Prevalence of disease estimates for utilization • Public health or population data estimates of prevalence
3. Current costs borne by payers (both public and private entities) in the absence of the mandated benefit	• Milliman analysis of the CHSD to estimate current out-of-pocket spending • Other research as needed
Postmandate (with mandate)	
1. Utilization changes	• Milliman CHSD or other credible source • Population surveys and prevalence • Research on utilization changes for the service or similar services following coverage • Utilization in plans with full coverage, if applicable • Behavioral assumptions based on standard economic theory relating to consumer price and demand
2. Unit cost of the affected services	• Milliman CHSD or other credible source • Other research as needed
3. Impact on administrative and other expenses	• Milliman CHSD or other credible source
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

Source: California Health Benefits Review Program, 2026.
Key: CHSD = Consolidated Health Cost Guidelines Sources Database.

Other Important Considerations

Actuarial Value

As part of its analyses, CHBRP will consider the possibility of a proposed mandate impacting the actuarial value of DMHC-regulated plans and CDI-regulated policies associated with Covered California, the state's health insurance marketplace. Actuarial value is the estimated average percentage of allowed health costs that are paid for by the health plan or insurer, with the remaining costs paid by the enrollee through the cost-sharing provisions (such as deductibles, copays, and coinsurance) associated with the enrollee's particular plan or policy.[14]

[14] For more information, see CHBRP's publication, *Actuarial Value: Criteria and Methods for Estimating the Impact of Benefit Mandates on Actuarial Value*.

Long-Term Impacts

CHBRP has focused its impact analysis to a one-year horizon for several reasons. In addition to limited evidence and capacity, CHBRP's one-year outlook mimics the internal processes of health plans and insurers.[15] Should evidence exist to support differing impacts in the second year postmandate, CHBRP will present these estimates.

Impact on the Number of Uninsured Individuals

In each analysis, CHBRP considers the potential impact of the proposed legislation on the size of the uninsured population. CHBRP estimates that a 1% increase in insurance premiums in the individual and small-group markets would lead to 0.07% decrease in the number of insured people in the individual and small-group markets. For the large-group market, CHBRP estimates a 1% increase in premiums would lead to a 0.022% decrease in the number of insured people in the large-group market. In 2026, this would mean an approximate 25,000 person increase in the uninsured population in California due to a 1% increase in premiums in the individual and small-group markets, and an 8,000 person increase in the uninsured population due to a 1% increase in premiums in the large-group market.[16]

Conclusions

The California Cost and Coverage Model represents a comprehensive effort by CHBRP's faculty, health services researchers, staff, and actuaries to develop a model to estimate the effects of health insurance benefit mandates for different types of insurers and on different market segments. The goals of this model are to provide accurate and timely estimates of health insurance benefit mandates and other benefit-related bills to legislatures, and to make those estimates as transparent and reflective of the real world as possible. 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.

[15] For more information, see CHBRP's publication, *Criteria and Guidelines for the Analysis of Long-Term Impacts on Healthcare Costs and Public Health.*
[16] For more information, see CHBRP's publication, *Uninsured: Criteria and Methods for Estimating the Impact of Mandates on the Number of Individuals Who Become Uninsured in Response to Premium Increases (December 2015)*.

About the California Health Benefits Review Program (CHBRP)

Drawing on the experience and assistance of multi-disciplinary faculty, researchers, and analysts based at the University of California, CHBRP provides the California Legislature with timely, independent, and rigorous evidence-based analyses of introduced health insurance benefits-related legislation. Most frequently, CHBRP analyzes proposed health insurance benefit mandates (e.g., mandates to cover a test, treatment, or service, such as continuous glucose monitors). For more about CHBRP's 60-day analysis process, see the resource Academic Rigor on a Legislature's Timeline.

To read any of the 200+ bill analyses CHBRP has completed, see the Completed Analysis page on CHBRP's website. In addition to analysis of introduced legislation, CHBRP produces other publications including several annually updated resources, as well as issue briefs and explainers.