

# California Health Benefits Review Program

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## Analysis of Senate Bill 189: Health Care Coverage: Wellness Programs

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A Report to the 2013–2014 California Legislature

April 25, 2013

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The California Health Benefits Review Program (CHBRP) responds to requests from the State Legislature to provide independent analyses of the medical, financial, and public health impacts of proposed health insurance benefit mandates and proposed repeals of health insurance benefit mandates. CHBRP was established in 2002 to respond to requests from the California Legislature to provide independent analysis of the medical, financial, and public health impacts of proposed health insurance benefit mandates and repeals per its authorizing statute.<sup>1</sup> The program was reauthorized in 2006 and again in 2009. CHBRP's authorizing statute defines legislation proposing to mandate or proposing to repeal an existing health insurance benefit as a proposal that would mandate or repeal a requirement that a health care service plan or health insurer: (1) permit covered individuals to obtain health care treatment or services from a particular type of health care provider; (2) offer or provide coverage for the screening, diagnosis, or treatment of a particular disease or condition; (3) offer or provide coverage of a particular type of health care treatment or service, or of medical equipment, medical supplies, or drugs used in connection with a health care treatment or service; and/or (4) specify terms (limits, timeframes, copayments, deductibles, coinsurance, etc.) for any of the other categories.

An analytic staff in the University of California's Office of the President supports a task force of faculty and staff from several campuses of the University of California to complete each analysis within a 60-day period, usually before the Legislature begins formal consideration of a mandate or repeal bill. A certified, independent actuary helps estimate the financial impacts. A strict conflict-of-interest policy ensures that the analyses are undertaken without financial or other interests that could bias the results. A National Advisory Council, drawn from experts from outside the state of California, as well as Loma Linda University, the University of Southern California, and Stanford University, and designed to provide balanced representation among groups with an interest in health insurance benefit mandates or repeals, reviews draft studies to ensure their quality before they are transmitted to the Legislature. Each report summarizes scientific evidence relevant to the proposed mandate, or proposed mandate repeal, but does not make recommendations, deferring policy decision making to the Legislature. The State funds this work through an annual assessment on health plans and insurers in California. All CHBRP reports and information about current requests from the California Legislature are available on the CHBRP website, [www.chbrp.org](http://www.chbrp.org).

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<sup>1</sup> Available at: [www.chbrp.org/documents/authorizing\\_statute.pdf](http://www.chbrp.org/documents/authorizing_statute.pdf).

## **A Report to the 2013–2014 California State Legislature**

### **Analysis of Senate Bill 189: Health Care Coverage, Wellness Programs**

**April 25, 2013**

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## PREFACE

This report provides an analysis of the medical, financial, and public health impacts of Senate Bill 189. In response to a request from the California Senate Committee on Health on February 28, 2013, the California Health Benefits Review Program (CHBRP) undertook this analysis pursuant to the program's authorizing statute.

Janet Coffman, MPP, PhD, Chris Tonner, MPH, and Gina Evans-Young, of the University of California, San Francisco, prepared the medical effectiveness analysis. Bruce Abbott, MLS, of the University of California, Davis, conducted the literature search. Stephen McCurdy, MD, MPH, and Meghan Soulsby, MPH, of the University of California, Davis, prepared the public health impact analysis. Shana Lavarreda, PhD, MPP, of the University of California, Los Angeles, prepared the cost impact analysis. Susan Pantely, FSA, MAAA, of Milliman, provided actuarial analysis. Content experts George Loewenstein, PhD, of Carnegie Mellon University, and Beth Ercolini, of ArlenGroup, provided technical assistance with the literature review and expert input on the analytic approach. John Lewis, MPA, and Nimit Ruparel, MPP, of CHBRP staff prepared the *Introduction* and synthesized the individual sections into a single report. A subcommittee of CHBRP's National Advisory Council (see final pages of this report) and a member of the CHBRP Faculty Task Force, Susan Ettner, PhD, of the University of California, Los Angeles, reviewed the analysis for its accuracy, completeness, clarity, and responsiveness to the Legislature's request.

CHBRP gratefully acknowledges all of these contributions but assumes full responsibility for all of the report and its contents. Please direct any questions concerning this report to:

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# TABLE OF CONTENTS

LIST OF TABLES .....	4
EXECUTIVE SUMMARY .....	5
INTRODUCTION .....	16
Developing Estimates for 2014 and the Effects of the Affordable Care Act.....	16
Bill-Specific Analysis of SB 189.....	17
Interaction With the Affordable Care Act .....	20
BACKGROUND ON HEALTH BEHAVIORS AND HEALTH STATUS.....	26
Leading Causes of Death and Modifiable Health Behaviors in California .....	26
Prevalence and Burden of Tobacco Use in California.....	26
Prevalence and Burden of Excessive Alcohol Consumption in California .....	29
Prevalence and Burden of Poor Diet and Physical Inactivity in California.....	30
MEDICAL EFFECTIVENESS .....	33
Research Approach and Methods .....	33
Methodological Considerations .....	34
Outcomes Assessed.....	35
Study Findings .....	35
Summary of Findings.....	42
BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS.....	44
Baseline 2014 Benefit Coverage, Utilization, and Cost .....	45
Postmandate 2014 Benefit Coverage, Utilization, and Cost.....	47
PUBLIC HEALTH IMPACTS.....	48
Estimated Public Health Outcomes .....	48
Impact on Gender and Racial Disparities .....	49
Impacts on Premature Death and Economic Loss .....	54
APPENDICES .....	57
Appendix A: Text of Bill Analyzed.....	57
Appendix B: Literature Review Methods.....	62
Appendix C: Description of Studies on Wellness Programs .....	66
Appendix D: Cost Impact Analysis: Data Sources, Caveats, and Assumptions.....	90
Appendix E: Information Submitted by Outside Parties .....	98
REFERENCES .....	99

## LIST OF TABLES

<b>Table 1.</b> SB 189 Requirements Regarding Wellness Programs That May Alter Premiums and/or Cost Sharing.....	9
<b>Table 2.</b> Deaths Attributed to Preventable Health Behaviors and Exposures in the United States, 2000.....	26
<b>Table 3.</b> Smoking Prevalence Rates Among Currently Insured California Adults (%), 2009.....	27
<b>Table 4.</b> Leading Causes of Tobacco-Related Deaths in California, 2005 .....	28
<b>Table 5.</b> Prevalence of Alcohol Consumption Among California Adults, 2011.....	29
<b>Table 6.</b> Prevalence of Overweight and Obesity Among California Adults, 2011 .....	31
<b>Table 7.</b> Prevalence of Selected Diet- and Physical Activity-Related Health Conditions by Body Mass Index, Among California Adults .....	32
<b>Table C-1.</b> Characteristics of Studies That Examined the Effectiveness of Wellness Programs	66
<b>Table C-2.</b> Summary of Findings From Studies of the Effectiveness of Wellness Programs .....	75
<b>Table C-3.</b> Impact of Financial Incentives on Various Outcomes.....	86
<b>Table D-1.</b> Population and Cost Model Data Sources and Data Items .....	93

# EXECUTIVE SUMMARY

## California Health Benefits Review Program Analysis of Senate Bill 189

The California Senate Committee on Health requested on February 28, 2013, that the California Health Benefits Review Program (CHBRP) conduct an evidence-based assessment of the medical, financial, and public health impacts of Senate Bill (SB) 189. In response to this request, CHBRP undertook this analysis pursuant to the provisions of the program's authorizing statute.<sup>2</sup>

In 2014, CHBRP estimates that approximately 25.9 million Californians (67%) will have health insurance that may be subject to a health benefit mandate law passed at the state level.<sup>3</sup> Of the rest of the state's population, a portion will be uninsured (and so will have no health insurance subject to any benefit mandate), and another portion will have health insurance subject to other state laws or only to federal laws.++++

Uniquely, California has a bifurcated system of regulation for health insurance subject to state benefit mandates. The California Department of Managed Health Care (DMHC)<sup>4</sup> regulates health care service plans, which offer benefit coverage to their enrollees through health plan contracts. The California Department of Insurance (CDI) regulates health insurers,<sup>5</sup> which offer benefit coverage to their enrollees through health insurance policies.

DMHC-regulated group plans and CDI-regulated group policies would be subject to SB 189, but individual market plans and policies would not be. The regulator, DMHC, and the purchaser, the California Department of Health Care Services, have indicated that by referencing "group" plans SB 189 would not require compliance from plans enrolling Medi-Cal beneficiaries into Medi-Cal Managed Care.<sup>6,7</sup> Therefore, the mandate would affect the health insurance of approximately 16.5 million enrollees (43% of all Californians).

### **Developing Estimates for 2014 and the Effects of the Affordable Care Act**

The Affordable Care Act (ACA)<sup>8</sup> is expected to dramatically affect health insurance and its regulatory environment in California, with many changes becoming effective in 2014. Beginning in 2014, an expansion of the Medicaid program to cover people up to 133% of the federal

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<sup>2</sup> Available at: [www.chbrp.org/docs/authorizing\\_statute.pdf](http://www.chbrp.org/docs/authorizing_statute.pdf).

<sup>3</sup> CHBRP's estimates are available at: [www.chbrp.org/other\\_publications/index.php](http://www.chbrp.org/other_publications/index.php).

<sup>4</sup> The California Department of Managed Health Care (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.

<sup>5</sup> The California Department of Insurance (CDI) licenses "disability insurers." Disability insurers may offer forms of insurance that are not health insurance. This report considers only the impact of the benefit mandate on health insurance policies, as defined in Insurance Code (IC) Section 106(b) or subdivision (a) of Section 10198.6.

<sup>6</sup> Personal communication, S. Lowenstein, Department of Managed Health Care, March 2013.

<sup>7</sup> Personal communication, C. Robinson, Department of Health Care Services, March 2013, citing Sec. 2791 of the federal Public Health Service Act.

<sup>8</sup> The federal "Patient Protection and Affordable Care Act" (P.L.111-148) and the "Health Care and Education Reconciliation Act" (P.L. 111-152) were enacted in March 2010. Together, these laws are referred to as the Affordable Care Act (ACA).

poverty level (FPL)<sup>9</sup> and the availability of subsidized and unsubsidized health insurance coverage purchased through newly established state health insurance exchanges are expected to significantly increase the number of people with health insurance in the United States.

State exchanges will sell health insurance in the small-group and individual market<sup>10</sup> through qualified health plans (QHPs), which will be certified by and sold in a state's exchange. QHPs sold through California's state exchange, Covered California,<sup>11</sup> will be DMHC-regulated plans or CDI-regulated policies, and as such will be subject to California state benefit mandates.

It is important to note that CHBRP's analyses of proposed benefit mandate bills typically address the marginal effects of the proposed bills—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, holding all other factors constant. CHBRP's estimates of these marginal effects are presented in this report. Because expanded enrollment will not occur until January 2014, CHBRP relies on projections from the California Simulation of Insurance Markets (CalSIM) model<sup>12</sup> to help set baseline enrollment for 2014. From this projected baseline, CHBRP estimates the marginal impact of proposed benefit mandates that could be in effect after January 2014. CHBRP's methods for estimating baseline 2014 enrollment from CalSIM projections are provided in further detail in Appendix D.

### **Bill-Specific Analysis of SB 189**

SB 189 would place requirements on DMHC-regulated plans and CDI-regulated insurers regarding their offering of and/or interaction with wellness programs established after January 1, 2014. The requirements would *not* be applicable to wellness programs established prior to January 1, 2014.

SB 189 would (unless the wellness program predated January 1, 2014):

- Prohibit group market plans/insurers from operating wellness programs that may impact premiums or cost sharing;
- Prohibit group market plans/insurers (regardless of who operates the wellness program) from altering premiums (through either discounts or rebates) or cost sharing (through deductibles, copayments, coinsurance) based on either wellness program participation or attaining goals set by a wellness program.

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<sup>9</sup> The Medicaid expansion, which California will pursue, is to 133% of the federal poverty level (FPL)—138% with a 5% income disregard.

<sup>10</sup> Effective 2017, states may allow large group purchasing through the exchange, which may make some large-group plans and policies subject to EHB requirements [ACA Section 1312(f)(2)(B)].

<sup>11</sup> The California Health Benefits Exchange Authorizing Statute is available here: [www.healthexchange.ca.gov/Documents/California%20Codes%20Governing%20the%20Health%20Benefit%20Exchange.pdf](http://www.healthexchange.ca.gov/Documents/California%20Codes%20Governing%20the%20Health%20Benefit%20Exchange.pdf).

<sup>12</sup> CalSIM was developed jointly and is operated by the University of California, Los Angeles, Center for Health Policy Research and the University of California, Berkeley, Center for Labor Research. The model estimates the impact of provisions in the ACA on employer decisions to offer, and individual decisions to obtain, health insurance.

As of January 1, 2014, SB 189 would require the following of any new wellness program operated by group market plans or insurers:

- A reasonable design to promote health or prevent disease;
- No incentives or rewards based on either participation in a wellness program or based on attaining goals set by a wellness program that alter premiums (through either discounts or rebates) or cost sharing (through deductibles, copayments, coinsurance);
- Be voluntary for participants;
- Not specify that receipt of an incentive or award be related to a participant satisfying a standard related to a health status factor;
- Be offered to all similarly situated enrollees;
- Provide reasonable accommodation for enrollees with disabilities who seek to participate;
- Assess (in design) the cultural competency needs of enrollees in the plan/policy;
- Provide language assistance for limited-English-speaking enrollees;
- Not result in any decrease in benefit coverage;
- Not result in an increase in premiums for the product;
- Not include an incentive or reward determined to be unreasonable; and
- Not include an incentive or reward that exceeds what is permissible by current or future federal law or regulation.

### Analytic Approach and Key Assumptions

For this analysis, CHBRP has considered a wellness program that could impact premiums or cost sharing and is operated by a plan or insurer to be a *health insurance benefit* that is covered for some enrollees. Whether a wellness program is operated by a plan/insurer, an employer, or other, for this analysis, CHBRP has considered any alteration by a plan or insurer of premiums or cost sharing based on either participation in a wellness program or based on attaining goals set by a wellness program a *term of benefit coverage*. Examples of plan/insurer alterations of premiums or cost sharing based on wellness programs in California’s fully insured markets include (but are not limited to):

- Premium rebates from plans/insurers to employers based on retrospective review of employee participation in a wellness program.
- Contributions made by plans/insurers to an enrollee’s health savings account (HSA) as an incentive for either participation in a wellness program or meeting a goal set by a wellness program. HSA contributions may be used to fund copayments or other cost-sharing requirements.

### *Defining “wellness program”*

SB 189 explicitly defines wellness programs as “programs designed to promote health or prevent disease.” SB 189 offers three examples of wellness programs: programs that reimburse part or all

of the cost for membership in a fitness center; diagnostic testing programs; and programs that provide health education seminars. Through prohibitions, SB 189 implicitly indicates that some wellness programs may involve offering of rewards or incentives, measurement of health status factors, or both.

### *Analytic approach*

As noted in Table 1, plans and insurers operate wellness programs that may impact premiums or cost sharing, but employers and other entities may also operate wellness programs, and employers may do so without involving plans or insurers. Employers often contract with other entities (companies other than plans/insurers that specialize in running wellness programs) in order to provide wellness programs for their employees.<sup>13</sup> Employers may operate wellness programs that may impact enrollee premiums or cost sharing—and may do so without involving any plan or insurer, even when the employer is purchasing fully insured health insurance. As with establishing and running the wellness program (which an employer may do on its own or with another entity, rather than engaging a plan or insurer to do so), an employer may establish and distribute incentives to employees, regardless of which entity runs the wellness program. Although plans and insurers may make wellness program–related contributions to enrollee HSAs, which may impact employee cost sharing (deductibles, co-pays, coinsurance), so may employers with or without the involvement of a plan or insurer. Although plans and insurers may alter premiums in the group markets based on enrollee participation in wellness programs, it is the plan/policy purchaser (usually an employer) who either does or does not alter the share of premiums that an enrollee (usually an employee) must pay—and the purchaser may do so without involving a plan or insurer. Employers are also increasingly utilizing incentives related to wellness programs. Employer-generated impacts on enrollee premiums or cost sharing related to wellness programs attached to self-insured plans or policies would not be subject to SB 189’s prohibitions.

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<sup>13</sup> Personal communication, G. Loewenstein, Carnegie Mellon University, April 2013.

**Table 1. SB 189 Requirements Regarding Wellness Programs That May Alter Premiums and/or Cost Sharing**

Wellness Programs (WPs)	SB 189 Would Prohibit	SB 189 Would Allow	SB 189 Unclear
<p><b>Current and pre-2014 WPs</b></p>		<p>Plans/insurers regulated by DMHC or CDI <b>may</b></p> <ul style="list-style-type: none"> <li>• Operate <i>current and pre-2014 WPs</i> that may alter premiums and/or cost sharing</li> <li>• Alter premiums and/or cost sharing based on <i>current and pre-2014 WPs</i> operated by an employer, or other</li> </ul> <p>Employers/others (a) <b>may</b></p> <ul style="list-style-type: none"> <li>• Operate <i>current and pre-2014 WPs</i> that may alter premiums and/or cost sharing (may do so directly or may do so through plans/insurers)</li> <li>• Engage more enrollees in <i>current and pre-2014 WPs</i> that may alter premiums and/or cost sharing</li> </ul>	<p>Plans/insurers regulated by DMHC or CDI <b>may or may not</b> be able to</p> <ul style="list-style-type: none"> <li>• Engage more enrollees in <i>current and pre-2014 WPs</i> operated by plans/insurers</li> <li>• Contract with other entities (companies other than plans/insurers that specialize in running WPs) in order to make <i>pre-2014 WPs</i> available to enrollees</li> </ul>
<p><b>WPs new in 2014</b></p>	<p>Plans/insurers regulated by DMHC or CDI <b>may not</b></p> <ul style="list-style-type: none"> <li>• Establish or operate <i>WPs new in 2014</i> that may alter premiums and/or cost sharing</li> <li>• Alter premiums and/or cost sharing based on <i>WPs new in 2014</i> operated by an employer or other</li> </ul> <p>Employers (b) <b>may not</b></p> <ul style="list-style-type: none"> <li>• Alter premiums and/or cost sharing based on <i>WPs new in 2014</i> through plans/insurers subject to SB 189 (an indirect effect due to SB 189 prohibiting the plans and insurers from such actions)</li> </ul>	<p>Employers/others (a) <b>may</b></p> <ul style="list-style-type: none"> <li>• Establish and operate <i>WPs new in 2014</i> that may alter premiums and/or cost sharing (employers must directly alter premiums and/or cost sharing directly)</li> <li>• Engage more enrollees in <i>WPs new in 2014</i> that may alter premiums and/or cost sharing</li> </ul>	

Source: California Health Benefits Review Program, 2013.

Note: (a) Employers and entities other than plans/insurers are not subject to health insurance benefit mandates, which would include SB 189.

(b) SB 189 would have an indirect effect on employers, as it would prohibit plans/insurers from altering premiums and/or cost sharing, even if the employer requested it be done.

Key: CDI=California Department of Insurance; DMHC=California Department of Managed Health Care; WPs=wellness programs.

### *Requirements in Other States*

Several states (New Hampshire, Rhode Island, and Michigan) have passed legislation promoting use of wellness programs;

Several states (New York, Wisconsin, Alaska, and Georgia) have passed legislation that provides protections from state discrimination or unfair trade practices related to wellness programs; and

One state (Colorado) requires consumer protections that exceed what is required by federal rules: wellness program must be accredited by a nationally recognized nonprofit organization; individuals are allowed to request an independent external review if the plan/insurer denies a request for an alternative standard or waiver of a standard; penalties for nonparticipation or failure to satisfy a standard are prohibited.

### **Background on Health Behaviors and Health Status**

Wellness programs target many external (nongenetic) modifiable health behaviors (also referred to as the “actual causes of death”) such as tobacco use, poor diet/physical inactivity, and excessive alcohol consumption, which are prevalent in California. These modifiable health behaviors are risk factors for many of the leading causes of death in California, including heart disease, stroke, cancer, diabetes, chronic liver disease, and obesity.

### **Medical Effectiveness**

The medical effectiveness review presents findings from randomized controlled trials (RCTs) of work-based wellness programs that address two topics pertinent to SB 189:

- The impact of work-based wellness programs on the health behaviors and health status of participants; and
- The effects of financial incentives on participation in work-based wellness programs and on the health behaviors and health status of participants.

The work-based wellness programs included in the medical effectiveness review provided one or more of the following interventions: a health risk appraisal, group activities, group counseling, individual counseling, self-help/educational materials, fitness center memberships, and Web-based educational materials, classes, and/or coaching. Some work-based wellness programs also incorporated modifications to the work environment, such as adding healthy foods and drinks to vending machines, increasing healthy dining options in onsite cafeterias, and creating walking paths.

Types of financial incentives assessed by studies included in the medical effectiveness review include gift cards, lotteries, competitions for prizes, contingent payments (e.g., pay participants \$10 per month for each month they abstain from smoking), and deposit contracts (e.g., persons deposit \$100 at the beginning of wellness program and are refunded the money at the end of the program if they complete it).

## Study Findings

### *CHBRP terminology for grading evidence of medical effectiveness*

CHBRP uses the following terms to characterize the strength of the evidence it identifies regarding the medical effectiveness of a treatment for which a bill would mandate coverage.

- Clear and convincing evidence;
- Preponderance of evidence;
- Ambiguous/conflicting evidence; and
- Insufficient evidence.

A grade of *clear and convincing evidence* indicates that there are multiple studies of a treatment and that the large majority of studies are of high quality and consistently find that the treatment is either effective or not effective.

A grade of *preponderance of evidence* indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective. This can be further subdivided into preponderance of evidence from high-quality studies and preponderance of evidence from low-quality studies.

A grade of *ambiguous/conflicting evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies of equal quality suggest the treatment is not effective.

A grade of *insufficient* evidence indicates that there is not enough evidence available to know whether or not a treatment is effective, either because there are too few studies of the treatment or because the available studies are not of high quality. It does not indicate that a treatment is not effective.

### *Effects of work-based wellness programs on health behaviors and health status*

- Health behaviors
  - There is clear and convincing evidence from RCTs that participating in work-based wellness programs that address tobacco cessation increases the likelihood of abstinence from smoking.
  - The preponderance of evidence from RCTs suggests that participating in work-based wellness programs that address alcohol use reduces the frequency of alcohol use.
  - The preponderance of evidence from RCTs suggests that participation in work-based wellness programs is associated with lower intake of fats, but findings for other dietary outcomes, such as intake of fruit and vegetables, are ambiguous.
  - Findings from RCTs regarding the impact of participating in work-based wellness programs on frequency or amount of physical activity are ambiguous.
- Health status

- Findings from RCTs regarding the impact of participating in work-based wellness programs on body mass index and other indicators used to identify obesity are ambiguous.
- The preponderance of evidence from RCTs suggests that participating in work-based wellness programs does not lower the following risk factors for disease: blood pressure, blood sugar, or cholesterol.
- Findings from RCTs regarding the effect of participating in work-based wellness programs on stress level are ambiguous.

*Effects of financial incentives on participants' health behaviors and health status*

- **CHBRP identified no RCTs that have assessed the impact of financial incentives linked to premiums or cost sharing for health insurance on participation in work-based wellness programs or the health behaviors or health status of persons who participate in work-based wellness programs.**
- The preponderance of evidence from two RCTs suggests that financial incentives other than those linked to premiums or cost sharing increase participation in work-based wellness programs, but there is insufficient evidence to assess the relative effectiveness of different types of financial incentives.
- Most RCTs on the impact of financial incentives other than those linked to premiums or cost sharing on the health behaviors and health status of persons participating in work-based wellness programs have addressed tobacco cessation.
- The preponderance of evidence suggests that work-based tobacco cessation programs that provide financial incentives for abstaining from smoking are no more effective than programs that do not provide financial incentives.
- Findings from RCTs and quasi-experimental studies of financial incentives for weight loss were inconsistent perhaps due to differences in comparison groups across studies.
- A single RCT found that behavioral counseling plus financial incentives was more effective than behavioral counseling alone in reducing blood pressure in the short term but that counseling without incentives was more effective at 12 months post-intervention.
- Two RCTs on the impact of financial incentives on cholesterol level reached opposite conclusions.

**Benefit Coverage, Utilization, and Cost Impacts**

As of March 2013, CHBRP estimates that:

- 948,000 (5.8% of enrollees in group market health insurance that would be subject to SB 189) have coverage for plan/insurer operated wellness programs that may impact premium or cost-sharing impacts. Distribution of these 948,000 enrollees is uneven:
  - All of these enrollees are in the large-group market and none are in the small-group market; and

- All of these enrollees have privately funded health insurance. No enrollees associated with CalPERS have coverage for plan/insurer-operated wellness programs that may impact premiums or cost sharing.
- Of the estimated 948,000 enrollees in DMHC-regulated plans and CDI-regulated policies who have health insurance that includes coverage for wellness programs that could impact premiums or cost sharing, an estimated 114,000 participated in plan/insurer-operated wellness programs that could impact enrollee premiums or cost sharing at some point during the prior 12 months.
- No enrollees see premium or cost-sharing alterations from DMHC-regulated plans or CDI-regulated insurers that are related to wellness programs operated by employers or other entities (companies other than plans/insurers that specialize in running wellness programs).

It should be noted that these March 2013 estimates focus on wellness programs with financial incentives operated by or including financial incentives directly from DMHC-regulated plans or CDI-regulated insurers. Additional enrollees may have access to wellness programs operated by an employer/other entity without involvement of the enrollee's plan/insurer. Therefore, the total number of enrollees in DMHC-regulated plans or CDI-regulated policies with access to wellness programs that can impact premiums or cost sharing may be higher.

*Baseline 2014 benefit coverage, utilization, and cost*

In order to identify the marginal impacts attributable to a health insurance benefit mandate bill and not to some other factor, CHBRP projects a current (baseline) by holding constant all factors other than enactment of the mandate.

As noted in Table 1, SB 189 would have a complicated impact on wellness programs that can impact premiums or cost sharing.

- SB 189 would place requirements on group market DMHC-regulated plans and CDI-regulated insurers regarding their operation of and interaction with wellness programs established *after January 1, 2014*. The requirements would prohibit these plans/insurers from operating wellness programs that include fiscal incentives that may impact premiums or cost sharing. The requirements would also prohibit plans/insurers from altering premiums or cost sharing in conjunction with an employer/other-operated wellness program. However, the requirements would *not be applicable* to plan/insurer activity connected to wellness programs established by either the plan/insurer or an employer/other, so long as the wellness program was established *prior to January 1, 2014*. It is unclear whether SB 189 would prohibit plans and insurers from contracting with other entities to make pre-2014 wellness programs available to enrollees.
- It is also unclear whether SB 189 would prohibit additional enrollees from joining plan/insurer-operated wellness programs in existence prior to January 1, 2014. Similarly, it is unclear, after that date, whether SB 189 would prohibit plans/insurers from altering premiums or cost sharing for those additional enrollees.

Due to the complicated nature of the bill's impacts, SB 189 could have a dampening effect on plans and insurers establishing and operating wellness programs that can impact premiums or cost sharing. However, it is unclear as to whether or how much any such dampening effect may be offset by plans and insurers contracting with other entities to establish access to more pre-2014 wellness programs and/or engaging additional enrollees in currently available pre-2014 wellness programs.

Because the direct and indirect impacts of SB 189 would be so complicated and so varied, CHBRP is unable estimate a 2014 baseline for benefit coverage of wellness programs that could impact premiums or cost sharing by plans and policies that would be subject to SB 189.

In addition, it is important to re-emphasize that SB 189 would not be directly applicable to employers/other entities, who may continue to operate wellness programs with financial incentives that may impact enrollee premiums and cost sharing established prior to January 1, 2014, and may establish new ones. The pre-2014 wellness programs could be operated without involvement of the plans and policies that would be subject to SB 189, though these plans and policies would be prohibited from involvement with wellness programs established after January 1, 2014. Therefore, access by enrollees to these kinds of wellness programs could continue to change, regardless of SB 189.

Because CHBRP is unable to estimate 2014 benefit coverage for wellness programs that could impact premiums or cost sharing by plans and insurers that would be subject to SB 189, CHBRP is also unable to estimate related utilization, premiums, and expenditures, and whether a lack of benefit coverage shifts costs to other payers.

#### *Postmandate benefit coverage, utilization, and cost*

**The impact of SB 189 on benefit coverage, utilization, and cost is unknown. For the reasons previously described, CHBRP is unable to estimate baseline 2014 benefit coverage for wellness programs that could impact premiums or cost sharing. Without baseline benefit coverage estimates, CHBRP cannot estimate baseline utilization or cost. Without baseline estimates, CHBRP cannot project marginal impacts. Therefore, the impact of SB 189 is unknown.**

#### **Public Health Impacts**

- As CHBRP is unable to estimate any change in coverage or utilization of work-based wellness programs, the public health impact of SB 189 on health behaviors and outcomes such as tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes is unknown.
- Although there are gender disparities in the prevalence of tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes in California, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors and outcomes. Therefore, the impact of SB 189 on reducing gender disparities is unknown.

- There are racial/ethnic disparities in the prevalence of tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes in California, but CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors and outcomes. Therefore, the impact of SB 189 on reducing racial/ethnic disparities is unknown.
- Although tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes may cause premature death, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors and outcomes. Therefore, the impact of SB 189 on reducing premature death is unknown.
- Tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes are contributors to economic loss. However, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors and outcomes. Therefore, the impact of SB 189 on reducing economic loss is unknown.

### **Interaction With the Federal Affordable Care Act**

A number of ACA provisions have the potential to or do interact with state benefit mandates. This does not appear to be the case for SB 189.

### **Essential Health Benefits**

Because SB 189's focus is on wellness programs and because wellness programs are not listed in the 10 specified categories of essential health benefits (EHBs) under the ACA, CHBRP assumes that SB 189 would have no interaction with EHBs.

### **Wellness Programs**

For wellness programs established after January 1, 2014, SB 189 would place more limits on DMHC-regulated plans and CDI-regulated policies than do either the ACA or the Health Insurance Portability and Accountability Act of 2006 (HIPAA).

Among other requirements, where the HIPAA and ACA would allow plans and policies to alter premiums and/or cost sharing based on wellness program participation, SB 189 would, in some instances, prohibit such actions.

# INTRODUCTION

The California Senate Committee on Health requested on February 28, 2013, that the California Health Benefits Review Program (CHBRP) conduct an evidence-based assessment of the medical, financial, and public health impacts of Senate Bill (SB) 189. In response to this request, CHBRP undertook this analysis pursuant to the provisions of the program's authorizing statute.<sup>14</sup>

In 2014, CHBRP estimates that approximately 25.9 million Californians (67%) will have health insurance that may be subject to a health benefit mandate law passed at the state level.<sup>15</sup> Of the rest of the state's population, a portion will be uninsured (and so has no health insurance subject to any benefit mandate), and another portion will have health insurance subject to other state laws or only to federal laws.

Uniquely, California has a bifurcated system of regulation for health insurance subject to state benefit mandates. The California Department of Managed Health Care (DMHC)<sup>16</sup> regulates healthcare service plans, which offer benefit coverage to their enrollees through health plan contracts. The California Department of Insurance (CDI) regulates health insurers,<sup>17</sup> which offer benefit coverage to their enrollees through health insurance policies.

DMHC-regulated group plans and CDI-regulated group policies would be subject to SB 189, but individual market plans and policies would not be. The regulator, DMHC, and the purchaser, the California Department of Health Care Services, have indicated that by referencing "group" plans, SB 189 would not require compliance from plans enrolling Medi-Cal beneficiaries into Medi-Cal Managed Care.<sup>18,19</sup> Therefore, the mandate would affect the health insurance of approximately 16.5 million enrollees (43% of all Californians).

## Developing Estimates for 2014 and the Effects of the Affordable Care Act

The Affordable Care Act (ACA)<sup>20</sup> is expected to dramatically affect health insurance and its regulatory environment in California, with many changes becoming effective in 2014. Beginning in 2014, an expansion of the Medicaid program to cover people up to 133% of the federal poverty level (FPL)<sup>21</sup> and the availability of subsidized and nonsubsidized health insurance

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<sup>14</sup> Available at: [www.chbrp.org/docs/authorizing\\_statute.pdf](http://www.chbrp.org/docs/authorizing_statute.pdf).

<sup>15</sup> CHBRP's estimates are available at: [www.chbrp.org/other\\_publications/index.php](http://www.chbrp.org/other_publications/index.php).

<sup>16</sup> The California Department of Managed Care (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.

<sup>17</sup> The California Department of Insurance (CDI) licenses "disability insurers." Disability insurers may offer forms of insurance that are not health insurance. This report considers only the impact of the benefit mandate on health insurance policies, as defined in Insurance Code (IC) Section 106(b) or subdivision (a) of Section 10198.6.

<sup>18</sup> Personal communication, S. Lowenstein, Department of Managed Health Care, March 2013.

<sup>19</sup> Personal communication, C. Robinson, Department of Health Care Services, March 2013, citing Sec. 2791 of the federal Public Health Service Act.

<sup>20</sup> The federal "Patient Protection and Affordable Care Act" (P.L.111-148) and the "Health Care and Education Reconciliation Act" (P.L. 111-152) were enacted in March 2010. Together, these laws are referred to as the Affordable Care Act (ACA).

<sup>21</sup> The Medicaid expansion, which California will pursue, is to 133% of the federal poverty level (FPL)—138% with a 5% income disregard.

coverage purchased through newly established state health insurance exchanges are expected to significantly increase the number of people with health insurance in the United States.

State exchanges will sell health insurance in the small-group and individual market<sup>22</sup> through qualified health plans (QHPs), which will be certified by and sold in a state's exchange. QHPs sold through California's state exchange, Covered California,<sup>23</sup> will be DMHC-regulated plans or CDI-regulated policies, and as such will be subject to California state benefit mandates.

It is important to note that CHBRP's analyses of proposed benefit mandate bills typically address the marginal effects of the proposed bills—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, holding all other factors constant. CHBRP's estimates of these marginal effects are presented in this report. Because expanded enrollment will not occur until January 2014, CHBRP relies on projections from the California Simulation of Insurance Markets (CalSIM) model<sup>24</sup> to help set baseline enrollment for 2014. From this projected baseline, CHBRP estimates the marginal impact of proposed benefit mandates that could be in effect after January 2014. CHBRP's methods for estimating baseline 2014 enrollment from CalSIM projections are provided in further detail in Appendix D.

## Bill-Specific Analysis of SB 189

### **Bill Language**

The full text of SB 189 can be found in Appendix A.

SB 189 would place requirements on DMHC-regulated plans and CDI-regulated insurers regarding their offering of and/or interaction with wellness programs established after January 1, 2014. The requirements would *not* be applicable to wellness programs established prior to January 1, 2014.

SB 189 would (unless the wellness program predated January 1, 2014):

- Prohibit group market plans/insurers from operating wellness programs that may impact premiums or cost sharing;
- Prohibit group market plans/insurers (regardless of who operates the wellness program) from altering premiums (through either discounts or rebates) or cost sharing (through deductibles, copayments, coinsurance) based on either wellness program participation or attaining goals set by a wellness program.

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<sup>22</sup> Effective 2017, states may allow large group purchasing through the exchange, which may make some large-group plans and policies subject to EHB requirements [ACA Section 1312(f)(2)(B)].

<sup>23</sup> The California Health Benefits Exchange Authorizing Statute is available here: <http://www.healthexchange.ca.gov/Documents/California%20Codes%20Governing%20the%20Health%20Benefit%20Exchange.pdf>

<sup>24</sup> CalSIM was developed jointly and is operated by the University of California, Los Angeles, Center for Health Policy Research and the University of California, Berkeley, Center for Labor Research. The model estimates the impact of provisions in the ACA on employer decisions to offer, and individual decisions to obtain, health insurance.

As of January 1, 2014, SB 189 would require the following of any new wellness program operated by a group market plans or insurers:

- A reasonable design to promote health or prevent disease;
- No incentives or rewards based on either participation in a wellness program or based on attaining goals set by a wellness program that alter premiums (through either discounts or rebates) or cost sharing (through deductibles, copayments, coinsurance);
- Be voluntary for participants;
- Not specify that receipt of an incentive or award be related to a participant satisfying a standard related to a health status factor;
- Be offered to all similarly situated enrollees;
- Provide reasonable accommodation for enrollees with disabilities who seek to participate;
- Assess (in design) the cultural competency needs of enrollees in the plan/policy;
- Provide language-assistance for limited-English-speaking enrollees;
- Not result in any decrease in benefit coverage;
- Not result in an increase in premiums for the product;
- Not include an incentive or reward determined to be unreasonable; and
- Not include an incentive or reward that exceeds what is permissible by current or future federal law or regulation.

### **Analytic Approach and Key Assumptions**

For this analysis, CHBRP has considered a wellness program that could impact premiums or cost sharing and is operated by a plan or insurer to be a *health insurance benefit* that is covered for some enrollees. Whether a wellness program is operated by a plan/insurer, an employer, or other, for this analysis, CHBRP has considered any alteration by a plan or insurer of premiums or cost-sharing based on either participation in a wellness program or based on attaining goals set by a wellness program a *term of benefit coverage*. Examples of plan/insurer alterations of premiums or cost sharing based on wellness programs in California's fully insured markets include (but are not limited to):

- Premium rebates from plans/insurers to employers based on retrospective review of employee participation in a wellness program.
- Contributions made by plans/insurers to an enrollee's health savings account (HSA) as an incentive for either participation in a wellness program or meeting a goal set by a wellness program. HSA contributions may be used to fund copayments or other cost-sharing requirements.

### *Defining “wellness program”*

SB 189 *explicitly* defines wellness programs as “programs designed to promote health or prevent disease.” SB 189 offers three examples of wellness programs: programs that reimburse part or all of the cost for membership in a fitness center; diagnostic testing programs; programs that provide health education seminars. Through prohibitions, SB 189 implicitly indicates that some wellness programs may involve offering of rewards or incentives, measurement of health status factors, or both.

### *Analytic approach*

As noted in Table 1, plans and insurers operate wellness programs that may impact premiums or cost sharing, but employers and other entities may also operate wellness programs, and employers may do so without involving plans or insurers. Employers often contract with other entities (companies other than plans/insurers that specialize in running wellness programs) in order to provide wellness programs for their employees.<sup>25</sup> Employers may operate (Mercer, 2010) wellness programs that may impact enrollee premiums or cost sharing—and may do so without involving any plan or insurer, even when the employer is purchasing fully insured health insurance. As with establishing and running the wellness program (which an employer may do on its own or with another entity, rather than engaging a plan or insurer to do so), an employer may establish and distribute incentives to employees, regardless of which entity runs the wellness program.<sup>26</sup> Although plans and insurers may make wellness program–related contributions to enrollee health spending accounts (HSAs), which may impact employee cost sharing (deductibles, copays, coinsurance), so may employers with or without the involvement of a plan or insurer. Although plans and insurers may alter premiums in the group markets based on enrollee participation in wellness programs, it is the plan/policy purchaser (usually an employer) who either does or does not alter the share of premiums that an enrollee (usually an employee) must pay—and the purchaser may do so without involving a plan or insurer. Employers are also increasingly utilizing incentives related to wellness programs (KFF, 2011, 2012). Employer-generated impacts on enrollee premiums or cost sharing related to wellness programs attached to self-insured plans or policies would not be subject to SB 189’s prohibitions.

### **Interaction With Other California Requirements**

CHBRP is aware of no other California requirements that would interact with SB 189. In 2011, various versions of Assembly Bill 1083 (Monning) Health Care Coverage would have addressed wellness programs to tie premium incentives to participation but would have prohibited incentives for meeting biometric or health status outcomes. However, the language related to wellness programs was struck from later versions of the bill before the law was enacted.

### **Requirements in Other States**

A recent review of state laws on wellness programs (Volk, 2013) found that:

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<sup>25</sup> Personal communication, G. Loewenstein, Carnegie Mellon University, April 2013.

<sup>26</sup> Personal communication, Beth Ercolini, ArlenGroup, March 2013.

- Several states (New Hampshire, Rhode Island, and Michigan) have passed legislation promoting use of wellness programs;
- Several states (New York, Wisconsin, Alaska, and Georgia) have passed legislation that provides protections from state discrimination or unfair trade practices related to wellness programs; and
- One state (Colorado) requires consumer protections that exceed what is required by federal rules: wellness program must be accredited by a nationally recognized nonprofit organization; individuals are allowed to request an independent external review if the plan/insurer denies a request for an alternative standard or waiver of a standard; penalties for nonparticipation or failure to satisfy a standard are prohibited.

## Interaction With the Affordable Care Act

A number of ACA provisions have the potential to or do interact with state benefit mandates.

This does not appear to be the case for SB 189.

Below is an analysis of how this proposed benefit mandate may interact with requirements in the ACA, including the requirement for certain health insurance to cover “essential health benefits” (EHBs).<sup>27</sup>

### **Essential Health Benefits**

Because SB 189’s focus is on wellness programs and because wellness programs are not listed in the 10 specified categories of essential health benefits (EHBs) under the ACA, CHBRP assumes that SB 189 would have no interaction with EHBs.

A brief discussion of what the ACA requires in terms of EHBs follows.

Effective 2014, the ACA requires nongrandfathered small-group and individual market health insurance—including, but not limited, to QHPs that will be sold in Covered California—to cover 10 specified categories of EHBs.<sup>28</sup> The U.S. Department of Health and Human Services (HHS) has allowed each state to define its own EHBs for 2014 and 2015 by selecting one of a set of

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<sup>27</sup> Resources on EHBs and other ACA impacts are available on the CHBRP website: [www.chbrp.org/other\\_publications/index.php](http://www.chbrp.org/other_publications/index.php).

<sup>28</sup> The 10 specified categories of essential health benefits (EHBs) are: ambulatory patient services; emergency services; hospitalization; maternity and newborn care; mental health and substance use disorder services, including behavioral health treatment; prescription drugs; rehabilitative and habilitative services and devices; laboratory services; preventive and wellness services and chronic disease management; and pediatric services, including oral and vision care. [ACA Section 1302(b)].

specified benchmark plan options.<sup>29</sup> California has selected the Kaiser Foundation Health Plan Small Group Health Maintenance Organization (HMO) 30 plan as its benchmark plan.<sup>30</sup>

The ACA allows a state to “require that a qualified health plan offered in [an exchange] offer benefits in addition to the essential health benefits.”<sup>31</sup> If the state does so, the state must make payments to defray the cost of those additionally mandated benefits, either by paying the purchaser directly or by paying the QHP. However, as laid out in the Final Rule on EHBs that HHS released in February 2013,<sup>32</sup> state benefit mandates enacted on or before December 31, 2011, would be included in the a state’s EHBs for 2014 and 2015, and there would be no requirement that the state defray the costs of those state-mandated benefits.

For state benefit mandates enacted after December 31, 2011, that are identified as exceeding EHBs, the state would be required to defray the cost. State benefit mandates that could exceed EHBs would “be specific to the care, treatment, and services that a state requires issuers to offer to its enrollees,” whereas “state rules related to provider types, cost sharing, or reimbursement methods” would not meet the definition of state benefit mandates that could exceed EHBs. A state’s exchange would be responsible for determining when a state benefit mandate exceeds EHBs, and QHP issuers would be responsible for calculating the cost that must be defrayed.<sup>33</sup>

### **Wellness Programs**

For wellness programs established after January 1, 2014, SB 189 would place more limits on DMHC-regulated plans and CDI-regulated policies than do either the ACA or the Health Insurance Portability and Accountability Act of 2006 (HIPAA).

Among other requirements, where the HIPAA and ACA would allow plans and policies to alter premiums and/or cost sharing based on wellness program participation, SB 189 would, in some instances, prohibit such actions.

A brief discussion of what HIPAA and the ACA allow in terms of plans and policy action in regard to wellness plans follows.

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<sup>29</sup> CCIIO, Essential Health Benefits Bulletin. Available at: [http://cciio.cms.gov/resources/files/Files2/12162011/essential\\_health\\_benefits\\_bulletin.pdf](http://cciio.cms.gov/resources/files/Files2/12162011/essential_health_benefits_bulletin.pdf). Accessed December 2011.

<sup>30</sup> H&SC Section 1367.005; IC Section 10112.27.

<sup>31</sup> ACA Section 1311(d)(3).

<sup>32</sup> Department of Health and Human Services. Patient Protection and Affordable Care Act: Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. *Federal Register*, Vol. 78 , No. 37. February 25, 2013; 12843. Available at: [www.gpo.gov/fdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf](http://www.gpo.gov/fdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf). Accessed March 2013.

<sup>33</sup> Essential Health Benefits. Final Rule. 12838.

### *Health Insurance Portability and Accountability Act*

In addition to the ACA, there are provisions of the HIPAA that are relevant to the analysis of this bill. HIPAA regulations established the following requirements for all “health-contingent” wellness programs<sup>34</sup>:

1. The total reward for all the plan’s wellness programs that require satisfaction of a standard related to a health factor is limited—generally, it must not exceed 20% of the cost of employee-only coverage under the plan. If dependents (such as spouses and/or dependent children) may participate in the wellness program, the reward must not exceed 20% of the cost of the coverage in which an employee and any dependents are enrolled. (This limit was subsequently increased by the ACA, as described in more detail below.)
2. The program must be reasonably designed to promote health and prevent disease.
3. The program must give individuals eligible to participate the opportunity to qualify for the reward at least once per year.
4. The reward must be available to all similarly situated individuals. The program must allow a reasonable alternative standard (or waiver of initial standard) for obtaining the reward to any individual for whom it is unreasonably difficult due to a medical condition, or medically inadvisable, to satisfy the initial standard.
5. The plan must disclose in all materials describing the terms of the program the availability of a reasonable alternative standard (or the possibility of a waiver of the initial standard).

### *Affordable Care Act (ACA)*

The ACA establishes further clarity on premium impacts for employees if either their employer or their health plan offers a program “designed to promote health or prevent disease” (essentially, a wellness program), in which they participate.<sup>35</sup> The ACA specifies that wellness programs may include programs for smoking cessation, weight management, stress management, physical fitness, nutrition, heart disease prevention, healthy lifestyle support, or diabetes prevention.<sup>36</sup> It is unclear whether types of programs outside the scope of those defined above could be also considered as wellness programs.

The ACA expands existing HIPAA regulations by stating that the reward offered to employees in programs that are tied to specific health outcomes cannot exceed “30 percent of the cost of employee-only coverage” under the particular insurance plan.<sup>37</sup> It specifies that if an enrollee has a spouse or dependent, then the 30% has to apply to the cost of providing coverage to all of

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<sup>34</sup> U.S. Department of Labor. Frequently Asked Questions: The HIPAA Nondiscrimination Requirements. Available at: [www.dol.gov/ebsa/faqs/faq\\_hipaa\\_ND.html#UJgEZnKs18E](http://www.dol.gov/ebsa/faqs/faq_hipaa_ND.html#UJgEZnKs18E). Accessed November 5, 2012.

<sup>35</sup> ACA Section 2705.

<sup>36</sup> ACA Section 2717(b).

<sup>37</sup> ACA Section 2705.

them. This reward amount represents an increase from the currently allowed amount under HIPAA, which is 20% of the cost of employee coverage.<sup>38</sup>

The ACA indicates that the reward is to be determined by tallying “the total amount of employer and employee contributions for the benefit package under which the employee is (or the employee and any dependents are) receiving coverage.” The ACA says that the “reward may be in the form of a discount or rebate of a premium or contribution, a waiver of all or part of a cost sharing mechanism (such as deductibles, copayments, or coinsurance), the absence of a surcharge, or the value of a benefit that would otherwise not be provided under the plan.”<sup>39</sup> It also says that the Secretary of HHS can increase this reward to “50 percent” if the federal government deems it necessary after implementation of health reform.<sup>40</sup>

According to 2011 estimates provided by the Commonwealth Fund, 30% of the average national cost of health coverage amounts to \$1,620 annually per enrollee (this number does not include coverage for dependents) (Schmidt et. al., 2012). According to the ACA, this amount could either be reduced from the employee contribution to their health insurance premium, or it could be added on as a penalty if the employee is not participating in the wellness program.<sup>41</sup>

Qualifying for the premium reduction can be based on the employee satisfying an outcome that is related to a health status factor<sup>42</sup>, not simply by participating in the wellness program. Because these health outcomes are often affected by genetic predisposition and other characteristics out of an enrollee’s control, there could conceivably be situations where an employee cannot participate in a wellness program or participates but does not achieve the required outcome to obtain the premium reduction/avoid the premium increase.<sup>43</sup> For example, employees with significant disabilities who participate in wellness programs but do not achieve the required health outcome metric due to their disability could be adversely affected by this policy. The ACA attempts to address this concern by stating that wellness programs cannot discriminate “based on a health status factor” and requiring programs to provide a “reasonable alternative standard (or waiver of the otherwise applicable standard) for any individual for whom it is unreasonably difficult due to a medical condition to satisfy the otherwise applicable standard.”<sup>44</sup> However, the law does not provide guidance on how programs can specifically be designed to safeguard against this type of discrimination. For that reason, there is great concern from consumer advocates about setting up stronger federal regulations to avoid discrimination based on health status, gender, race, age, and other factors in the establishment of these wellness programs (Health Affairs, 2012).

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<sup>38</sup> Department of the Treasury, Department of Labor, and Department of Health and Human Services. Nondiscrimination and Wellness Programs in Health Coverage in the Group Market; Final Rules. *Federal Register*, Vol. 71, No. 239, Wednesday, December 13, 2006; 75018. Available at: [www.dol.gov/ebsa/regs/fedreg/final/2006009557.pdf](http://www.dol.gov/ebsa/regs/fedreg/final/2006009557.pdf). Accessed March 2013.

<sup>39</sup> ACA Section 2705.

<sup>40</sup> ACA Section 2705.

<sup>41</sup> ACA Section 2705.

<sup>42</sup> ACA Section 2705.

<sup>43</sup> Nondiscrimination and Wellness Programs in Health Coverage in the Group Market; Final Rule. 75018.

<sup>44</sup> ACA Section 2705.

*Federal rule—incentives for nondiscriminatory wellness programs in group health plans:  
proposed rule*

The proposed federal rule published in Volume 77, Number 227 of the *Federal Register* on Monday, November 26, 2012, provides further guidance on the wellness program provisions of the ACA. The first is that it extends the requirements initially introduced in HIPAA and re-iterated in the ACA to group plans in both the grandfathered and nongrandfathered markets.<sup>45</sup> The federal rule also continues to explicitly divide wellness programs into two categories consistent with both HIPAA and the ACA: 1) participatory wellness programs; and 2) health-contingent wellness programs. Both the proposed rule and existing law indicate that participatory programs require only participation to achieve any available reward, whereas health-contingent programs require participating enrollee to meet some outcome related to their health status (such as lowering their BMI).<sup>46</sup> It is important to note that both program types allow for the receipt of rewards or incentives, including the possibility of premium reductions or penalties.

The rule re-iterates the five requirements described in the *HIPAA* section above, and states that they apply exclusively to health-contingent wellness programs. One major clarification of these rules is in response to the ACA provision described above that allows HHS to increase the maximum allowable premium reward from 30% to 50% for the enrollee engaged in the wellness program. It appears that HHS has chosen to exercise its authority from the ACA to increase this premium reward limit, as the federal rule states that health-contingent wellness programs designed to “prevent or reduce tobacco use” can allow for up to a 50% premium reduction as a reward.<sup>47</sup> This is a distinct and significant exception from the original provisions of the ACA, which established a maximum of 30% premium reduction for all health-contingent wellness programs. The rule also provides very specific and useful case-by-case examples<sup>48</sup> to help illustrate how these premium reductions would take effect in practice:

Example 1. Facts. An employer sponsors a group health plan. The annual premium for employee-only coverage is \$6,000 (of which the employer pays \$4,500 per year and the employee pays \$1,500 per year). The plan offers employees a health-contingent wellness program focused on exercise, blood sugar, weight, cholesterol, and blood pressure. The reward for compliance is an annual premium rebate of \$600. Conclusion. In this example 1, the program satisfies the requirements of this paragraph (f)(3)(ii) because the reward for the wellness program, \$600, does not exceed 30% of the total annual cost of employee-only coverage, \$1,800. ( $\$6,000 \times 30\% = \$1,800$ ).

Example 2. Facts. Same facts as example 1, except the wellness program is exclusively a tobacco prevention program. Employees who have used tobacco in the last 12 months and who are not enrolled in the plan’s tobacco cessation program are charged a \$1,000

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<sup>45</sup> Department of the Treasury, Department of Labor, and Department of Health and Human Services. Incentives for Nondiscriminatory Wellness Programs in Group Health Plans; Proposed Rule. *Federal Register*, Vol. 77, No. 227, Monday, November 26, 2012; 70620. Available at:

<http://webapps.dol.gov/federalregister/PdfDisplay.aspx?DocId=26492>. Accessed March 2013.

<sup>46</sup> Incentives for Nondiscriminatory Wellness Programs in Group Health Plans; Proposed Rule. 70622.

<sup>47</sup> Incentives for Nondiscriminatory Wellness Programs in Group Health Plans; Proposed Rule. 70623.

<sup>48</sup> Incentives for Nondiscriminatory Wellness Programs in Group Health Plans; Proposed Rule. 70633-70634.

premium surcharge (in addition to their employee contribution towards the coverage). (Those who participate in the plan's tobacco cessation program are not assessed the \$1,000 surcharge.) Conclusion. In this example 2, the program satisfies the requirements of this paragraph (f)(3)(ii) because the reward for the wellness program (absence of a \$1,000 surcharge) does not exceed 50% of the total annual cost of employee-only coverage, \$3,000. ( $\$6,000 \times 50\% = \$3,000$ .)

Example 3. Facts. Same facts as example 1, except that, in addition to the \$600 reward for compliance with the health-contingent wellness program, the plan also imposes an additional \$2,000 tobacco premium surcharge on employees who have used tobacco in the last 12 months and who are not enrolled in the plan's tobacco cessation program. (Those who participate in the plan's tobacco cessation program are not assessed the \$2,000 surcharge.) Conclusion. In this example 3, the program satisfies the requirements of this paragraph (f)(3)(ii) because both: the total of all rewards (including absence of a surcharge for participating in the tobacco program) is \$2,600 ( $\$600 + \$2,000 = \$2,600$ ), which does not exceed 50% of the total annual cost of employee-only coverage (\$3,000); and tested separately, the \$600 reward for the wellness program unrelated to tobacco use does not exceed 30% of the total annual cost of employee-only coverage, \$1,800.

Example 4. Facts. An employer sponsors a group health plan. The total annual premium for employee-only coverage (including both employer and employee contributions towards the coverage) is \$5,000. The plan provides a \$250 reward to employees who complete a health risk assessment, without regard to the health issues identified as part of the assessment. The plan also offers a Healthy Heart program, which is a health-contingent wellness program under paragraph (f)(2) of this section, with an opportunity to earn a \$1,500 reward. Conclusion. In this example 4, the plan satisfies the requirements of this paragraph (f)(3)(ii). Even though the total reward for all wellness programs under the plan is \$1,750 ( $\$250 + \$1,500 = \$1,750$ , which exceeds 30% of the cost of the annual premium for employee-only coverage [ $\$5,000 \times 30\% = \$1,500$ ]), only the reward offered for compliance with the health-contingent wellness program (\$1,500) is taken into account in determining whether the rules of this paragraph (f)(3)(ii) are met. (The \$250 reward is offered in connection with a participatory wellness program and therefore is not taken into account under this paragraph (f)(3)(ii)). The health-contingent wellness program offers a reward that does not exceed 30% of the total annual cost of employee-only coverage.

## BACKGROUND ON HEALTH BEHAVIORS AND HEALTH STATUS

Wellness programs aim to improve health by targeting health behaviors and health status indicators, many of which are directly linked with leading causes of death in California.

### Leading Causes of Death and Modifiable Health Behaviors in California

In 2010, there were 233,143 deaths in California, with heart disease and cancer accounting for nearly one-half of all deaths (24.9% and 24.1%, respectively) (CDPH, 2013). On the basis of national data for 2000, Mokdad et al. reported that nearly half of all deaths (46.8%) could be attributed to preventable health behaviors and exposures (Mokdad et al., 2005). These external (nongenetic) modifiable risk factors have been previously described as “actual causes of death” (McGinnis and Foege, 1993). Of total deaths attributable to preventable health behaviors and exposures (1,124,000 deaths), nearly 80% could be attributed to tobacco use, poor diet/physical inactivity, and excessive alcohol consumption, all of which contribute to most chronic disease-related morbidity and mortality (Table 2).

**Table 2.** Deaths Attributed to Preventable Health Behaviors and Exposures in the United States, 2000

Preventable Health Behaviors and Exposures	Number (%) of Deaths
Tobacco	435,000 (18.1%)
Poor diet/physical inactivity	365,000 (15.2%)
Alcohol consumption	85,000 (3.5%)
Microbial agents	75,000 (3.1%)
Toxic agents	55,000 (2.3%)
Motor vehicles	43,000 (1.8%)
Firearms	29,000 (1.2%)
Sexual behavior	20,000 (0.8%)
Illicit drug use	17,000 (0.7%)
<b>Total deaths attributable to preventable health behaviors/exposures</b>	<b>1,124,000 (46.8%)</b>

Source: Mokdad et al., 2004, 2005.

### Prevalence and Burden of Tobacco Use in California

The 2009 California Health Interview Survey (CHIS, 2013) reported that 11.4% of Californians aged 18–64 years with private or employment-based insurance were current smokers (defined as smoking cigarettes every day or some days). Men demonstrate higher smoking prevalence rates than women and exceed the *Healthy People 2010* target of 12% for adults (HHS, 2010). The smoking prevalence rate by race and ethnicity varies: there is more than a two-fold difference in smoking prevalence rates between the lowest group (Asians, 8.8%) and the highest group (multiracial individuals, 18.2%) (Table 3). California’s Latino, White, African American, and

Asian populations have reduced smoking prevalence below the 12% *Healthy People 2020* target, at 11.8% (Latino), 11.6% (White), 9.6% (African American), and 8.8% (Asian), respectively. Within each racial and ethnic group, there are also large differences by sex. Asian men are almost three times more likely to report smoking than Asian women, and smoking prevalence for Latino men is three times that of Latina women (CHIS, 2013).

**Table 3.** Smoking Prevalence Rates Among Currently Insured California Adults (%), 2009

	Male	Female	Total
Overall	14.6	8.3	11.4
Age (years)			
18–24	16.3	6.5*	11.3
25–39	18.1	8.5	13.4
40–64	12.1	8.6	10.2
Race/ethnicity			
Latino	17.7	5.1	11.8
White	13.4	10.0	11.6
African American	8.0	10.9	9.6
American Indian/Alaskan Native	28.8*	6.7*	17.2*
Asian	13.3	4.9*	8.8
Native Hawaiian/Pacific Islander	29.4*	30.8*	30.3*
Two or more races	21.1*	15.3*	18.2

Source: California Health Benefits Review Program, 2013 (based on 2009 California Health Interview Survey).

Note: Adults aged 18–64 years with private or employment-based insurance.

\* Statistical issues render this figure unreliable (variance too high or number of respondents too low).

In California, there were nearly 233,000 deaths in 2005; of those, 91,550 (39%) were from causes known to be tobacco-related (Table 4). Of these, 19% were due to heart disease, followed by respiratory tract cancers (trachea, bronchus, and lung; 6%), chronic obstructive pulmonary disease (5%), and stroke (5%) (CDPH/CTCP, 2010). Note that, although 91,550 persons in California (39% of all deaths) succumbed to conditions known to be tobacco-related, this figure includes deaths among persons who did not use tobacco, as tobacco-related conditions also occur in the absence of tobacco use. Thus, a nonsmoker dying of lung cancer would be included as having died from a tobacco-related condition, even though their death cannot be attributed to tobacco.

**Table 4.** Causes of Tobacco-Related Deaths in California, 2005

Leading Causes of Death	Number (%)* of Tobacco-Related Deaths	Age-Adjusted Rate/100,000
<b>Total tobacco-related deaths</b>	<b>91,550 (39%)</b>	
Ischemic heart disease	45,059 (19%)	176.0
Cancer of trachea, lung, bronchus	13,350 (6%)	52.7
Chronic obstructive pulmonary diseases (COPD)	12,562 (5%)	49.8
Stroke	11,680 (5%)	46.0
Diabetes	7,689 (3%)	26.8
Other tobacco-related neoplasms	1,210 (1%)	5.0
<b>Non-tobacco-related deaths</b>	<b>141,234 (61%)</b>	
<b>Total deaths</b>	<b>232,784 (100%)</b>	

Source: CDPH/CTCP, 2010.

\* Percentages represent the percent of all deaths in CA.

Gender and racial/ethnic disparities continue beyond smoking prevalence and extend to smoking-related morbidity and mortality. Despite a lower rate of smoking than men, women experience higher incidence rates of smoking-related disease, including lung cancer and cervical cancer. By contrast, there was a three-fold higher smoking-related death rate for California men than women from 2000 to 2004 (CDPH/CTCP, 2010). Ethnic and racial disparities are also well documented. For example, African Americans experience a higher incidence of cardiovascular disease, cancer, and infant mortality, all of which are smoking related. Native Americans experience the highest rate of infant mortality due to SIDS, which is also causally linked to smoking (Fiore, 2000; Piper et al., 2001). In another example, among cigarette smokers, African American and Native Hawaiian men had the highest incidence of lung cancer (Haiman et al., 2006).

In addition to compromising the health of the smoker, the medical literature indicates environmental tobacco smoke (sometimes termed “second-hand smoke”) affects the health of others. The Surgeon General's office confirms that environmental tobacco smoke is associated with an increased risk of lung cancer, heart disease, stroke, asthma, and other respiratory problems, and estimates that nearly 60% of children aged 3 to 11 years and more than 40% of nonsmoking adults are exposed to environmental tobacco smoke (HHS, 2006). In its seminal report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke*, the Surgeon General reported a 20% to 30% increase in lung cancer risk, as well as a 25% to 30% increase in risk of coronary heart disease, due to environmental tobacco smoke exposure (HHS, 2006). Exposure to environmental tobacco smoke is particularly harmful for children. It is associated with a higher risk of sudden infant death syndrome (SIDS), ear infections, and lower respiratory infections such as pneumonia and bronchitis, and is causally linked with low birth weight (HHS, 2006). The American Lung Association estimates that 50,000 deaths each year are attributable to environmental tobacco smoke (ALA, 2011).

## Prevalence and Burden of Excessive Alcohol Consumption in California

In 2011, 18.6% of Californians reported binge drinking, which is having five or more drinks on one occasion for adult males, or adult females having four or more drinks on one occasion. Additionally, 6.2% of Californians reported heavy drinking, which translates to more than two drinks per day for adult men and more than one drink per day for adult women). The prevalence of binge drinking among males is twice that of females, but they have similar prevalence rates of heavy drinking. The prevalence of binge drinking and heavy drinking is highest among younger age groups and White and Hispanic individuals (Table 5) (CDC, 2011a).

**Table 5.** Prevalence of Alcohol Consumption Among California Adults, 2011

	Binge Drinkers	Heavy Drinkers
Total	18.6%	6.2%
Gender		
Male	25.2%	6.4%
Female	12.1%	6.0%
Age (years)		
18–24	26.4%	7.8%
25–34	31.0%	7.1%
35–44	20.6%	5.7%
45–54	16.3%	5.4%
55–64	10.2%	5.6%
Race/ethnicity		
White	19.8%	9.0%
Black	16.9%*	2.7%*
Hispanic	20.0%	4.1%
Other	12.5%	2.8%*
Multiracial	19.7%*	9.1%*

*Source:* Behavioral Risk Factor Surveillance System Survey, 2011 (CDC, 2011a).

*Note:* Binge drinkers are adult males having five+ drinks on one occasion or adult females having four+ drinks on one occasion. Heavy drinkers are adult males having more than two drinks per day and adult females having more than one drink per day.

\* Small n, which may result in statistical instability.

Excessive, long-term alcohol consumption is a risk factor for many chronic diseases, including heart disease, cancer, liver disease (cirrhosis), gastrointestinal disease, and stroke. Excessive, long-term alcohol consumption can also lead to neurological problems, psychiatric problems (such as depression and suicide), and social problems (such as unemployment) (CDC, 2012). Additionally, excessive long-term alcohol consumption contributes to injury and death due to driving under the influence of alcohol. In 2010, there were 24,300 traffic-related injuries involving alcohol in California (ADP, 2012). During the same year, there were 791 alcohol-impaired driving fatalities (a 14% decrease from 2009), accounting for 29% of all fatalities in California in 2010 (OTP, 2013).

## Prevalence and Burden of Poor Diet and Physical Inactivity in California

In 2009, 40.1% of California adults consumed two or more servings of fruit per day and 26.8% consumed three or more servings of vegetables per day (CDC, 2010a), which is above the national average of 32.5% for fruits and 26.3% for vegetables. Based on a 2,000-calorie diet, the U.S. Department of Agriculture (USDA)'s *Dietary Guidelines for Americans, 2010* recommends consuming 4–5 servings of fruits and 4–5 servings of vegetables each day (USDA, 2010). Based on the 2009 California Dietary Practices Survey (CDPS)<sup>49</sup>, 22% of Californians do not eat whole grains, including whole-grain bread, other whole grains (such as brown rice, quinoa, or high-fiber cereal); only 6.7% report eating all three (CDPH, 2009). Over two-thirds (68.5%) of Californians report eating one or more servings of high-calorie, low-nutrient foods (such as breakfast pastries, deep-fried foods, potato chips, etc.) in the past 24 hours (CDPH, 2009). Nearly 30% of respondents ate at least one meal out on the previous day; of those, 43.2% ate out at a fast food restaurant, and nearly half (48.8%) of overweight/obese individuals who ate out did so at a fast food restaurant. Additionally, 7.2% of respondents ate at a fast-food restaurant four or more times in the past week. Compared to those who did not eat out, individuals eating out at fast food restaurants consumed fewer servings of healthy options (such as fruits, vegetables and low-fat milk) and more servings of unhealthy options (such as deep-fried snack foods, high-fat sweets, and sugar-sweetened beverages (CDPH, 2009).

Current national guidelines recommend that adults engage in at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity physical activity per week, and perform muscle-strengthening activities on two or more days per week (CDC, 2011b). In 2011, only 24% of Californians reported participating in enough aerobic and muscle strengthening exercises to meet these guidelines. Individuals most likely to report meeting physical activity guidelines were males (27.0%), individuals aged 18–24 (34.6%), and White or multiracial individuals (27.3% and 33.8%, respectively) (CDC, 2011c).

Diet and exercise influence a multitude of other aspects of health, including weight. In California, 36.4% of the adult population is overweight (i.e., with a body mass index [BMI] of 25 or greater), and nearly 24% are obese (i.e., with a BMI of 30 or greater) (CDC, 2011d). Compared to females, males have higher prevalence of being overweight, but the prevalence of obesity is similar in both genders. The prevalence of overweight is highest among individuals age 45–54 years, and the prevalence of obesity is highest among individuals 45–64 years. Hispanics have the highest prevalence of overweight, but Blacks have the highest prevalence of obesity (Table 6).

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<sup>49</sup> The California Dietary Practices Survey (CDPS) is a random digit dialing survey, providing an extensive dietary and physical activity assessment of adults 18 years and older in the state of California. Information about diet is collected using a simplified 24-hour recall which asks respondents about each meal on the previous day, including breakfast, lunch, dinner, and all snacks.

**Table 6.** Prevalence of Overweight and Obesity Among California Adults, 2011

	<b>Overweight (BMI 25.0-29.9)</b>	<b>Obese (BMI ≥30.0)</b>
Total	36.4%	22.8%
Gender		
Male	44.1%	23.1%
Female	28.5%	24.5%
Age		
18–24	26.8%	15.5%
25–34	36.1%	23.7%
35–44	38.2%	25.9%
45–54	39.0%	27.6%
55–64	38.1%	27.6%
Race/ethnicity		
White	36.2%	22.0%
Black	38.9%	33.1%
Hispanic	39.8%	30.3%
Other	29.5%	10.8%
Multiracial	30.0%	26.9%

*Source:* Behavioral Risk Factor Surveillance System Survey, 2011 (CDC, 2011d).

Obesity can contribute to numerous other chronic diseases. Obesity increases the risk for some of the leading causes of death—heart disease, cancer and stroke—as well as type 2 diabetes, sleep apnea, osteoarthritis, mental health conditions, and reproductive health conditions (CDC, 2011e).

Other health conditions impacted by diet and physical activity include high blood pressure, high cholesterol and type 2 diabetes. In 2009, approximately one in five Californians had been told by a doctor that they had high blood pressure, with overweight and obese individuals reporting higher prevalence (Table 7). A similar trend is seen among individuals who had a blood cholesterol test during the past 5 years and had high blood pressure identified. Among all Californians, 7% reported being told by a doctor that they had pre-diabetes or borderline diabetes, but the prevalence among obese individuals is twice as high. Approximately 5% of Californians have ever been diagnosed with diabetes, and the majority (88.2%) were diagnosed with type 2 diabetes. Compared to individuals with a BMI in the normal range, the prevalence of type 2 diabetes is more than three times as high among overweight individuals and more than four times as high among obese individuals (CHIS, 2013).

**Table 7.** Prevalence of Selected Diet- and Physical Activity-Related Health Conditions by Body mass Index, Among California Adults

	<b>Normal (BMI 18.5-24.9)</b>	<b>Overweight (BMI 25.0-29.9)</b>	<b>Obese (BMI ≥30.0)</b>	<b>Overall Population</b>
Has/had high blood pressure	10.2%	24.5%	38.3%	20.7%
High blood cholesterol found	14.8%	25.6%	28.3%	21.3%
Has/had borderline diabetes	3.1%	7.8%	14.9%	7.1%
Ever diagnosed with diabetes	1.6%	6.5%	12.3%	5.4%
Ever diagnosed with type 2 diabetes	11.3%	38.3%	50.3%	88.2%

*Source:* California Health Benefits Review Program, 2013 (based on 2005 and 2009 California Health Interview Surveys).

*Note:* Adults aged 18–64 years with private or employment-based insurance.

\* Statistical issues render this figure unreliable (variance too high or number of respondents too low).

*Key:* BMI=body mass index.

## MEDICAL EFFECTIVENESS

Among other provisions, Senate Bill (SB) 189 would place requirements on California Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated insurers regarding their offering of and/or interaction with work-based wellness programs established *after January 1, 2014*. The requirements SB 189 would place on plans/insurers regarding wellness programs would *not be applicable* in regard to plans/insurers' activity connected to wellness programs established *prior to January 1, 2014*.

The medical effectiveness review presents findings from randomized controlled trials (RCTs) that seek to answer two questions:

- Do work-based wellness programs improve the health behaviors and health status of participants?
- Do work-based wellness programs that offer financial incentives yield higher rates of participation in work-based wellness programs and/or larger improvements the health behaviors and health status of participants than work-based wellness programs that do not offer financial incentives?

Both questions are important for evaluating SB 189. The first question asks whether there is evidence that participating in work-based wellness programs improves health behaviors and whether better health behaviors are in turn associated with better health status. Such evidence sheds light on whether work-based wellness programs are likely to promote health and prevent disease. The second question asks whether offering financial incentives for participation in work-based wellness programs increases numbers of participants and leads to larger improvements in health behaviors and health status. The answer to this question provides information that can be used to assess the potential impact of restrictions on the use of incentives such as those proposed in SB 189.

Types of financial incentives assessed by studies included in the medical effectiveness review include gift cards, lotteries, competitions for prizes, contingent payments (e.g., pay participants \$10 per month for each month they abstain from smoking), and deposit contracts (e.g., persons deposit \$100 at the beginning of wellness program and are refunded the money at the end of the program if they complete it).

### Research Approach and Methods

Studies of work-based wellness programs were identified through searches of PubMed, the Cochrane Library, Web of Science, EMBASE, EconLit, the Cumulative Index of Nursing and Allied Health Literature and Business Source Complete. Websites maintained by the following organizations that produce and/or index meta-analyses and systematic reviews were also searched: the Agency for Healthcare Research and Quality, the International Network of Agencies for Health Technology Assessment (INAHTA), the National Health Service (NHS)

Centre for Reviews and Dissemination, the National Institute for Health and Clinical Excellence (NICE), and the Scottish Intercollegiate Guideline Network.

The search was limited to abstracts of studies published in English from 2000 to present. Of the 587 articles found in the literature review, 116 were reviewed for potential inclusion in this report on SB 189, and a total of 34 studies were included in the medical effectiveness review for this report. The other articles were eliminated because they did not address work-based wellness programs, did not have a control or comparison group, or did not report findings from research studies. A more thorough description of the methods used to conduct the medical effectiveness review and the process used to grade the evidence for each outcome measure is presented in Appendix B: Literature Review Methods. Findings from the literature review are summarized in Table C-2, which appears in Appendix C. Appendix C also includes a table describing the studies that CHBRP reviewed (Table C-1) and a table summarizing evidence of effectiveness (Table C-2).

## Methodological Considerations

CHBRP review of studies of the effectiveness of work-based wellness programs was limited to randomized controlled trials (RCTs). CHBRP chose to limit this part of its review to findings from RCTs due to concerns about selection bias. Selection bias occurs when there are systematic differences between the unmeasured characteristics of intervention and comparison groups before the intervention is provided. Such differences may affect the findings from a study and lead to erroneous conclusions about the effectiveness of an intervention. Selection bias is an especially strong risk in studies of wellness programs in which persons voluntarily choose to participate. Because wellness programs are aimed at improving health behaviors and health status, they may attract people who are highly motivated to improve their health. If this occurs, the effects of wellness programs may appear larger than they actually are because highly motivated persons are likely to improve their health behaviors and health status over time regardless of whether they participate in a wellness program. Conversely, wellness programs may attract people who already have good health habits. In such cases, the effects of wellness programs may appear smaller than they actually are because the potential to further improve their health is limited.

Due to the very small number of RCTs of financial incentives for work-based wellness programs that addressed health behaviors other than smoking, the review of studies of financial incentives included non-randomized studies with comparison groups.

The medical effectiveness review is also limited to studies of wellness programs provided by employers or by other organizations with which employers contract, hereafter referred to as “work-based wellness programs.” Studies of wellness programs provided to patients of health care facilities or in community settings were excluded. Because SB 189 would primarily affect persons who have private, group health insurance, studies of work-based wellness programs are most likely to enroll persons whose characteristics are similar to those of persons whose coverage would be affected by SB 189.

CHBRP had difficulty generalizing findings across RCTs of work-based wellness programs for several reasons. The health behaviors and health status indicators targeted by work-based

wellness programs vary widely. In addition, some work-based wellness programs focus on a single health behavior, such as tobacco use, whereas others are comprehensive programs that address multiple health behaviors. RCTs also use different measures to assess the effects of work-based wellness programs on the same outcome. For example, RCTs of work-based wellness programs aimed at reducing obesity have examined effects on body mass index (BMI), weight, fat mass, waist circumference, waist-to-height ratio, and waist-to-hip ratio.

The medical effectiveness review relied heavily on a systematic review of studies of multicomponent work-based wellness programs that was published in 2012 (Osilla et al., 2012) and two systematic reviews published by the Cochrane collaboration that presented findings from RCTs and well-designed nonrandomized studies with comparison groups that evaluated tobacco cessation programs. One of the Cochrane reviews synthesized findings from studies of work-based tobacco cessation programs (Cahill et al., 2008) and the other synthesized findings from studies of the effects of financial incentives on abstinence rates among smokers participating in tobacco cessation programs (Cahill and Perera, 2011). For the latter Cochrane review, CHBRP focused on findings from RCTs of work-based tobacco cessation programs. Findings from the three systematic reviews were supplemented with findings from individual studies.

## Outcomes Assessed

The outcomes assessed by RCTs of work-based place wellness programs vary depending on the health behaviors and health status indicators that the evaluated wellness programs target. Health behaviors examined include exercise, diet, alcohol use, and tobacco use. Health status indicators addressed include BMI and other measures of obesity, blood pressure, blood cholesterol, blood sugar, and mental health status.

## Study Findings

The work-based wellness programs assessed by the RCTs included in the medical effectiveness review provided one or more of the following interventions: a health risk appraisal, group activities, group counseling, individual counseling, self-help/educational materials, fitness center memberships, and Web-based educational materials, classes, and/or coaching. Some work-based wellness programs also incorporated modifications to the work environment, such as adding healthy foods and drinks to vending machines, increasing healthy dining options in onsite cafeterias, and creating walking paths (Osilla et al., 2012).

### **Effects of Work-Based Wellness Programs on Health Behaviors and Health Status**

#### *Health behaviors*

**Tobacco cessation.** Evidence of effectiveness is strongest for work-based tobacco cessation programs. A large number of RCTs have assessed the impact of tobacco cessation programs, including 37 that evaluated workplace programs. The Cochrane review of these studies

concluded that there is clear and convincing evidence that receipt<sup>50</sup> of individual and group counseling and pharmacotherapy increases the likelihood of quitting smoking and that such interventions are effective regardless of whether they are sponsored by employers or other organizations (Cahill et al., 2008). Self-help and social support interventions were less effective.

There is clear and convincing evidence that work-based tobacco cessation programs that incorporate counseling and/or pharmacotherapy increase the likelihood of quitting smoking.

**Alcohol use.** Three RCTs included in Osilla and colleagues' (2012) systematic review evaluated the impact of work-based wellness programs on alcohol use. These programs provided counseling regarding alcohol consumption to reduce the risk of accidents and of health problems associated with heavy drinking. Two of the RCTs found that participating in a work-based wellness program that addressed alcohol use reduced the frequency of drinking any alcohol and the frequency of drinking to intoxication. One RCT reported no statistically significant difference in frequency of drinking between the intervention and control groups.

The preponderance of evidence from RCTs suggests that participating in work-based wellness programs that address alcohol use reduce the frequency of alcohol use.

**Diet.** Nine RCTs have examined the impact of work-based wellness programs on diet. The authors of RCTs have used multiple measures of diet, including fat intake, fruit and vegetable intake, energy intake, and consumption of sugary foods and beverages. Fat intake is the only dietary measure for which the majority of RCTs found a statistically significant difference between the intervention and control group. Four of five RCTs reported that persons who participated in a work-based wellness program had lower intake of fats than persons in the control group (Brehm et al., 2011; Campbell et al; 2002; Hughes et al., 2011; Sternfeld et al., 2009). One RCT found no statistically significant difference (Thorndike et al., 2012). Findings of RCTs that assessed effects on consumption of fruits and vegetables were inconsistent. Three of eight RCTs reported that participation in a work-based wellness program was associated with a statistically significant increase in fruit and vegetable consumption (Campbell et al; 2002; Hughes et al., 2011; Sternfeld et al., 2009). Five RCTs found no statistically significant difference (Brehm et al., 2011; French et al., 2010; Siegel et al., 2010; Sorensen et al. 2003; Thorndike et al., 2012). Neither of the two RCTs that investigated effects of work-based wellness programs on energy intake reported a statistically significant difference between the intervention and control groups (Brehm et al., 2011; Lowe et al., 2010), nor did either of the two RCTs that analyzed effects on consumption of sugary foods and beverages (Sternfeld et al.,

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<sup>50</sup> Researchers often conduct "intent-to-treat" analyses of data from RCTs. In an "intent-to-treat" analysis, data are analyzed for all persons who were randomly assigned to the intervention group regardless of whether they received the treatment. In the case of tobacco cessation, an "intent-to-treat" analysis would include all persons in the intervention group regardless of whether they participated in the intervention (e.g., attended smoking cessation classes or counseling sessions). A major rationale for conducting an "intent-to-treat" analysis is that this technique preserves the random allocation of subjects to intervention and control groups. If data are analyzed only for persons who received the full intervention, the two groups may no longer be equivalent, especially if persons with certain characteristics were more likely to complete treatment. "Intent-to-treat" analysis also preserves the sample size for the intervention group, which increases the likelihood that the study will have sufficient statistical power to detect an effect. In addition, "intent-to-treat" analysis reflects real world conditions in which some persons may not follow treatment recommendations (Gupta, 2011).

2009; Thorndike et al., 2012). For studies that found a positive effect on diet, follow-up times varied, and the longest follow-up was 9 months after the intervention. Thus, we found limited evidence on sustained dietary changes.

Even when differences in diet between participants in work-based wellness programs and control were statistically significant, they were often small. For example, Campbell and colleagues (2002) reported that women participating in a work-based wellness program ate 0.7 more servings of fruit and vegetables per day, an increase of 24%, and ate 2 grams less fat per day, a decrease of 4%. Although even small dietary changes can be beneficial, participants in this wellness program consumed an average of 51 grams of fat per day at baseline, a much larger amount than the U.S. Department of Agriculture recommends for women (20 to 35 grams per day) (USDA, 2010). Thus, although the wellness program reduced fat intake, fat intake remained well above recommended consumption, which suggests that the program may not have reduced participants' risk for chronic conditions associated with diet, such as diabetes, heart disease, and stroke.

Findings from RCTs suggest that effects of work-based wellness programs on diet vary depending on the measure assessed. There is a preponderance of evidence that work-based wellness programs reduce fat intake. Findings from RCTs on effects on fruit and vegetable consumption are ambiguous. The results of smaller numbers of studies suggest that work-based wellness programs do not change energy intake or reduce consumption of sugary foods and beverages.

**Physical activity.** Twelve RCTs have examined the impact of work-based wellness programs on physical activity. The measure of physical activity most frequently assessed was frequency or amount of physical activity, typically measured on a per week basis. Findings from the nine RCTs that evaluated the effect of work-based wellness programs on this outcome were inconsistent. Three RCTs reported that participation in a work-based wellness program was associated with a statistically significant increase in physical activity (Hughes et al., 2011; Purath et al., 2004; Sternfeld et al., 2009). Six RCTs found no statistically significant difference between intervention and control groups (Cook et al., 2007; French et al., 2010; Gosliner et al., 2010; Siegel et al., 2010; Sforzo et al., 2012; Thorndike et al., 2012). RCTs that investigated the impact of work-based wellness programs on the likelihood of getting any exercise also did not have statistically significant findings. A single RCT found that participating in a work-based wellness program reduced energy expenditure (Nichols et al., 2000). Another RCT concluded that a work-based wellness program decreased sedentary behavior (Sternfeld et al., 2009).

Findings from RCTs regarding the impact of participating in work-based wellness programs on frequency or amount of physical activity are ambiguous.

### *Health status*

**Obesity.** Fifteen RCTs have evaluated the impact of work-based wellness programs on obesity. As noted previously, the authors of these studies used a variety of measures to identify persons who were obese or overweight. BMI was the most frequently used measure. Findings from RCTs that examined the impact of work-based wellness programs on BMI were inconsistent. Four RCTs found that participating in a work-based place wellness program was associated with a

statistically significant reduction in BMI (Barham et al., 2011; Meenan et al., 2010; Racette et al., 2009; Siegel et al., 2010). Seven found no difference in BMI between the intervention and control group (Brehm et al., 2011; French et al. 2010; Hughes et al., 2011; Linde et al., 2012; Lowe et al., 2010; Sforzo et al., 2012; Thorndike et al., 2012). Weight was the second most commonly used measure. Only one of five RCTs that assessed the impact of work-based wellness programs on participants' weight found that participation was associated with a statistically significant difference in weight (Barham et al., 2011; Cook et al., 2007; Hughes et al., 2011; Sforzo et al., 2012; Thorndike et al., 2012). Eight RCTs analyzed other measures of obesity, including change in percent body weight, fat mass, waist circumference, waist-to-height ratio, and waist-to-hip ratio. Only three RCTs found statistically significant differences in these measures (Barham et al., 2011; Meenan et al., 2010; Racette et al., 2009). Even where statistically significant differences were found they were not always sustained over time. For example, Barham and colleagues (2011) found that decreases in BMI, weight, and waist circumference that were observed immediately after the intervention were not sustained at 12-month follow-up.

Findings from RCTs regarding the impact of participating in work-based wellness programs on body mass index and other indicators used to identify obesity are ambiguous.

**Cholesterol, blood pressure, and blood sugar.** Five RCTs have investigated the impact of work-based wellness programs on three physiological indicators of risk factors for chronic disease: high cholesterol, high blood pressure, and high blood sugar. Having high cholesterol increases the likelihood of developing heart disease. High blood pressure is associated with increased risk of coronary heart disease, heart failure, kidney failure, and stroke. High blood sugar is an indication of diabetes, which is associated with greater risk of heart disease, kidney disease, and stroke, as well as damage to the eyes, feet, and nerves.

Three RCTs examined the impact of work-based wellness programs on participants' cholesterol levels (Brehm et al., 2011; Lowe et al., 2010; Thorndike et al., 2012). None of these RCTs found a statistically significant difference in the cholesterol levels of persons in the intervention and control groups. Three RCTs assessed effects of work-based wellness programs on blood pressure and found no statistically significant difference between the intervention and control groups (Brehm et al., 2011; Sforzo et al., 2012; Thorndike et al., 2012). Two RCTs that investigated the impact of work-based wellness programs on blood sugar also reported no statistically significant difference between the intervention and control groups (Brehm et al., 2011; Thorndike et al., 2012). One RCT evaluated the effect of a work-based wellness program on metabolic syndrome, a group of risk factors associated with increased risk of diabetes, heart disease and stroke.<sup>51</sup> The authors found no difference in the percentages of persons in the intervention and control groups who had metabolic syndrome (Racette et al., 2009).

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51 Metabolic syndrome consists of the five factors associated with elevated risk for diabetes, heart disease, and stroke: large waistline, high triglyceride level (or taking medication to lower triglycerides), low HDLhigh-density lipoprotein (HDL) cholesterol (or on medication to increase HDL cholesterol), high blood pressure (or taking medication to control blood pressure), and high fasting blood sugar (or taking medication to treat high blood sugar). [www.nhlbi.nih.gov/health/health-topics/topics/ms/](http://www.nhlbi.nih.gov/health/health-topics/topics/ms/).

The preponderance of evidence from RCTs suggests that participating in work-based wellness programs does not lower blood pressure, blood sugar, or cholesterol.

**Stress.** Two RCTs examined the impact of work-based wellness programs on participants' stress levels. Both studies collected data on stress via self-report; one used three different health outcome measures, whereas the other used the nine-item Psychological Stress Measure (PSM-9). One RCT found no statistically significant difference in the stress levels of participants (Cook et al., 2007), whereas another RCT found an association between participation in a work-based wellness program and reduction in stress level that approached statistical significance ( $p=0.052$ ) (Sforzo et al., 2012). One possible explanation for the difference in the findings of these RCTs is that the two work-based wellness programs differed in intensity. Both provided self-help materials and access to a Web portal, but the work-based wellness program evaluated by Sforzo and colleagues also included health education classes on stress reduction and other topics.

Findings from RCTs regarding the effect of participating in work-based wellness programs on stress level are ambiguous.

### **Effects of Financial Incentives on Participation in and Outcomes of Wellness Programs**

*CHBRP identified no RCTs that have assessed the impact of financial incentives linked to premiums or cost sharing for health insurance on participation in wellness programs or on the health behaviors or health status of participants.*

Two RCTs examined the impact of financial incentives on participation in work-based wellness programs. Additional RCTs and quasi-experimental studies have been conducted to examine the effects of other types of financial incentives on health behaviors and health status, including tobacco cessation, weight loss, and blood pressure and cholesterol reduction. Whether findings from these studies generalize to wellness programs that have financial incentives linked to premiums or cost sharing is unknown.

#### *Participation*

A large study ( $n = 1,299$ ) that enrolled employees of a health care management company compared the effects of three different incentives on completion of a health risk assessment (HRA) (Haisley et al., 2012). The study was a two-arm RCT with a convenience comparison sample. Persons in the comparison group were offered \$25 if they completed the HRA. The main intervention consisted of entering persons into a lottery in addition to giving them \$25 for completion of the HRA. Persons in the lottery condition were assigned to teams of four to eight people and, conditional on HRA completion, were entered into a lottery with a prize of \$100 (expected value, \$25) and a bonus value of an additional \$25 if 80% of team members participated. The second intervention involved providing a \$25 grocery gift card in addition to \$25 for completion of the HRA. The lottery condition was associated with a higher rate of completion of the HRA than the \$25 incentive and the difference was statistically significant. There was no difference in the rates of HRA completion between persons in the group that received the \$25 gift card plus \$25 cash and the group that received \$25 cash. A major strength

of this study is that the authors examined whether employees' demographic and socioeconomic characteristics affected response to financial incentives. They found that the lottery condition had a larger effect on HRA completion among low-income persons than high-income persons.

A small RCT (n = 48) assessed the impact of a deposit incentive on participation in a work-based weight loss program (Follick et al., 1984). Persons in both the intervention and control group had to make a deposit of \$70 before participating in a 14-session behavioral counseling program. The deposit was returned to persons in the control group during the first session. Deposits made by persons in the intervention group were returned in \$5 increments for each session attended. If a person in the intervention group attended one session, he or she was refunded \$5. Persons were refunded an additional \$5 for each session attended up to a maximum of the entire \$70 deposited. There was a statistically significant difference in the number of sessions completed that favored the deposit incentive. Persons receiving the deposit incentive were also more likely to complete all 14 sessions (60% vs. 20%).

Although these two RCTs suggest that financial incentives increase participation in work-based wellness programs, the types of incentives studied differ so substantially that there is insufficient evidence to determine whether some types of incentives are more effective than others.

The preponderance of evidence from two RCTs suggests that financial incentives other than those linked to premiums or cost sharing increase participation in work-based wellness programs but there is insufficient evidence to assess the relative effectiveness of different types of financial incentives.

#### *Health behaviors and health status*

**Tobacco cessation.** The use of financial incentives has been studied more extensively for tobacco cessation than for other types of work-based wellness programs. RCTs on the impact of financial incentives on outcomes for work-based tobacco cessation programs have studied the effects of various types of financial incentives, including lotteries, competitions for prizes, and contingent payment (e.g., pay participants \$10 per month for each month they abstain from smoking) (Cahill and Perera, 2011). Some RCTs of financial incentives for tobacco cessation examined incentives provided to individual persons, whereas others examined incentives that were provided to teams of workers or to worksites. Some RCTs evaluated programs that combined incentives for individual persons with incentives for teams or worksites (Cahill and Perera, 2011). The size of financial incentives varied as did the extent to which participants received tobacco cessation counseling. Some programs provided extensive cessation counseling, whereas others provided participants with information about tobacco cessation services in their communities.

The preponderance of evidence suggests that work-based tobacco cessation programs that provide financial incentives for abstaining from smoking are no more effective than programs that do not provide financial incentives (Cahill and Perera, 2011). Only one large RCT that offered substantial cash payments for prolonged abstinence found statistically significant differences in abstinence rates between smokers who were eligible for financial incentives and smokers in the control group (Volpp et al., 2009). This study offered persons in the financial incentive group the opportunity to receive up to \$750 (\$100 for completion of a smoking

cessation program, \$250 for cessation within six months of enrolling in the study, and \$400 for abstinence for an additional six months after the initial cessation. Cessation was confirmed by a biochemical test.<sup>52</sup> Some RCTs of financial incentives for tobacco cessation may not have had sufficient statistical power to detect statistically significant differences in rates of quitting smoking. In addition, some studies compared persons who received group or individual tobacco cessation counseling to persons who received counseling plus financial incentives. Given that counseling alone has been shown to increase abstinence rates (Cahill et al., 2008), adding financial incentives to counseling may not have as large an effect as one would find if financial incentives alone were compared to receipt of information alone.

**Weight loss.** Two RCTs and one nonrandomized study with a comparison group have evaluated the impact of financial incentives on weight loss among persons participating in work-based wellness programs (Follick et al., 1984; Gomel et al., 1993; Lahiri and Faghri, 2012).

Follick and colleagues (1984) reported a deposit incentive did not affect the amount of weight lost. Among participants who completed the 14-session behavioral counseling program, persons who received a deposit incentive were no less likely to be overweight at the end of the program than persons who did not receive the deposit incentive.

Gomel and colleagues (1993) completed a four-arm group RCT of persons employed by 28 ambulance stations. The four arms consisted of (1) an assessment of participants' risk factors for cardiovascular disease, (2) risk factor assessment plus advice on reducing risk factors, (3) risk factor assessment, risk factor education, plus up to six sessions of behavioral counseling, and (4) risk factor assessment, risk factor education, behavioral counseling, plus a lottery. The authors found that BMI increased in all four groups in the 12 months following the intervention but that the increases were smaller in the groups that received behavioral counseling (with or without the lottery incentive) than in the risk factor assessment group and the risk factor assessment plus risk factor education group. They found no statistically significant difference in BMI between the group that received behavioral counseling plus the lottery and the behavioral counseling group alone. Both behavioral counseling groups experienced a statistically significant decrease in body fat during the first 3 months following risk assessment, but in both groups, body fat had returned to baseline levels at 12 months post-risk assessment.

Lahiri and Faghri (2012) conducted a nonrandomized study with a comparison group to examine the impact of financial incentives on weight loss among overweight and obese workers at four nursing homes. Both the intervention and comparison groups received self-help materials and consultations regarding physical activity and healthy eating. Persons in the incentive group could receive up to \$260 if they achieved their weight-loss goals (1 to 1.5 lb per week for 16 weeks). They could also deposit up to \$80, which was returned and matched if they met their goals. The authors reported that persons who were eligible for the financial incentives lost more weight than persons in the comparison group (7.3 lb vs. 2.1 lb) and that the difference was statistically significant.

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<sup>52</sup> Even this study reported that the percentage of smokers in the group eligible for financial incentives who achieved prolonged abstinence from smoking was small, 9% in the intervention group versus 4% in the control group (Volpp et al., 2009).

**Blood pressure reduction.** One RCT examined the impact of financial incentives on blood pressure reduction. Gomel and colleagues (1993) found that at 3 months following completion of the risk assessment, the behavioral counseling plus financial incentives group achieved a greater reduction in blood pressure than the group that received behavioral counseling alone and that this difference was statistically significant. However, at 12 months risk assessment, the group that received behavioral counseling alone had attained a larger decrease in blood pressure.

**Cholesterol reduction.** Two RCTs on the impact of financial incentives on cholesterol level among persons participating in work-based wellness programs reached opposite conclusions. (Bloch et al., 2006; Gomel et al., 1993). Gomel and colleagues (1993) found no statistically significant difference in changes in total cholesterol among the four interventions they studied. Bloch and colleagues (2006) compared three groups of persons who worked in several different industries. The financial incentive group included online educational materials plus \$100 cash if participants met individualized goals for cholesterol reduction. The nurse educator group was given access to online educational materials, invited to attend classes about cholesterol management, and assigned to a nurse educator who provided monthly individualized education and counseling via telephone. The usual care group had access to online educational materials only. Both the financial incentive group and the nurse educator group achieved greater reductions in total cholesterol and low-density lipoprotein (LDL) cholesterol than the usual care group. However, there were no statistically significant differences in total cholesterol and LDL cholesterol between the financial incentive and nurse educator groups.

The preponderance of evidence suggests that work-based tobacco cessation programs that provide financial incentives for abstaining from smoking other than those linked to premiums or cost sharing are no more effective than programs that do not provide such financial incentives. Findings from studies of the effects of financial incentives other than those linked to premiums or cost sharing on weight, blood pressure, and cholesterol are ambiguous.

## Summary of Findings

### *Effects of work-based wellness programs on health behaviors and health status*

- Health behaviors
  - There is clear and convincing evidence from RCTs that participating in work-based wellness programs that address tobacco cessation increases the likelihood of abstinence from smoking.
  - The preponderance of evidence from RCTs suggests that participating in work-based wellness programs that address alcohol use reduces the frequency of alcohol use.
  - The preponderance of evidence from RCTs suggests that participation in work-based wellness programs is associated with lower intake of fats but findings for other dietary outcomes, such as intake of fruit and vegetables, are ambiguous.
  - Findings from RCTs regarding the impact of participating in work-based wellness programs on frequency or amount of physical activity are ambiguous.
- Health status

- Findings from RCTs regarding the impact of participating in work-based wellness programs on body mass index and other indicators used to identify obesity are ambiguous.
- The preponderance of evidence from RCTs suggests that participating in work-based wellness programs does not lower blood pressure, blood sugar, or cholesterol.
- Findings from RCTs regarding the effect of participating in work-based wellness programs on stress level are ambiguous.

*Effects of financial incentives on participants' health behaviors and health status*

- **CHBRP identified no RCTs that have assessed the impact of financial incentives linked to premiums or cost sharing for health insurance on participation in work-based wellness programs or on the health behaviors or health status of persons who participate in work-based wellness programs.**
- The preponderance of evidence from two RCTs suggests that financial incentives other than those linked to premiums or cost sharing increase participation in work-based wellness programs but there is insufficient evidence to assess the relative effectiveness of different types of financial incentives.
- Most RCTs on the impact of financial incentives other than those linked to premiums or cost sharing on the health behaviors and health status of persons participating in work-based wellness programs have addressed tobacco cessation.
- The preponderance of evidence suggests that work-based tobacco cessation programs that provide financial incentives for abstaining from smoking are no more effective than programs that do not provide financial incentives.
- Findings from RCTs and quasi-experimental studies of financial incentives for weight loss were inconsistent perhaps due to differences in comparison groups across studies.
- A single RCT found that behavioral counseling plus financial incentives was more effective than behavioral counseling alone in reducing blood pressure in the short term but that counseling without incentives was more effective at 12 months post-intervention.
- Two RCTs on the impact of financial incentives on cholesterol level reached opposite conclusions.

# BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS

As noted in the *Introduction*, wellness programs with financial incentives that can impact premiums or cost sharing may be established and operated by the California Department of Managed Health Care (DMHC)-regulated plans or California Department of Insurance (CDI)-regulated insurers or may be established and operated by employers and other entities (companies other than plans/insurers that specialize in running wellness programs).<sup>53</sup>

Coverage of wellness programs that impact premiums or cost sharing as of March 2013 was determined by a survey of the seven largest providers of health insurance in California. CHBRP surveys the largest major health plans and insurers regarding coverage. Responses to this survey represented 80.7% of the privately funded, CDI-regulated market and 88.1% of the privately funded, DMHC-regulated market. Combined, responses to this survey represent 86.3% of the privately funded market subject to state mandates.

As of March 2013, CHBRP estimates that:

- 948,000 (5.8% of enrollees in group health insurance that would be subject to SB 189) have coverage for plan/insurer operated wellness programs that may impact premium or cost-sharing impacts.
- Distribution of these 948,000 enrollees is uneven:
  - All of these enrollees are in the large-group market, and none are in the small-group market.
  - All of these enrollees have privately funded health insurance. No enrollees associated with CalPERS have coverage for plan/insurer-operated wellness programs that may impact premiums or cost sharing.
- Of the estimated 948,000 enrollees in DMHC-regulated plans and CDI-regulated policies who have health insurance that includes coverage for wellness programs that could impact premiums or cost sharing, an estimated 114,000 participated in plan/insurer-operated wellness programs that could impact enrollee premiums or cost sharing at some point during the prior 12 months.
- No enrollees saw premium or cost-sharing alterations from DMHC-regulated plans or CDI-regulated insurers that were related to wellness programs operated by employers or other entities (companies other than plans/insurers that specialize in running wellness programs).

It should be noted that these March 2013 estimates focus on wellness programs with financial incentives operated by or including financial incentives directly from DMHC-regulated plans or CDI-regulated insurers. Additional enrollees may have access to wellness programs operated by an employer/other entity without involvement of the enrollee's plan/insurer. Therefore, the total

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<sup>53</sup> Personal communication, G. Loewenstein, Carnegie Mellon University, April 2013.

number of enrollees in DMHC-regulated plans or CDI-regulated policies with access to wellness programs that can impact premiums or cost sharing may be higher.

As of March 2013, the long-term impacts of SB 189 are also unknown, in that the long-term cost effectiveness of wellness programs of any kind, and particularly those that could impact premiums or cost sharing, is undetermined in the research literature. The most recent systematic review found that most companies with wellness programs with any kind of incentives for participation reported cost savings for the companies themselves, in terms of some significant return on investment and lower employee absenteeism (Kaspin et al., 2013). Nayer, Burger and Mahoney (2010) found that in companies with wellness programs of any kind, health care costs grew by only 4% over the study period, as compared to the 8%–10% of companies without wellness programs. By contrast, an earlier systematic review comparing quasi-experimental studies to randomized controlled trials found that only the former showed some economic benefit to the companies (van Dongen et al., 2011). A randomized controlled trial of veterans found that the health benefits of the wellness program lasted only as long as the program itself, and enrollees reverted to their prior weight after the program ended (John, et al., 2011). This would negate any cost savings from reduced health care medical expenses from obesity reduction over time. In summary, the literature currently available is insufficient to confirm that wellness programs have the potential to reduce health care costs by reducing the need for health care services and thereby reducing premiums.

### **Baseline 2014 Benefit Coverage, Utilization, and Cost**

As noted in Table 1 (in the *Executive Summary*), SB 189 would have a complicated impact on wellness programs that can affect premiums or cost sharing.

- SB 189 would place requirements on group market DMHC-regulated plans and CDI-regulated insurers regarding their operation of and interaction with wellness programs established *after January 1, 2014*. The requirements would prohibit these plans/insurers from operating wellness programs that include fiscal incentives that may impact premiums or cost sharing. The requirements would also prohibit plans/insurers from altering premiums or cost sharing in conjunction with an employer/other-operated wellness program. However, the requirements would *not be applicable* to plan/insurer activity connected to wellness programs established by either the plan/insurer or an employer/other, so long as the wellness program was established *prior to January 1, 2014*. It is unclear whether SB 189 would prohibit plans and insurers from contracting with other entities to make pre-2014 wellness programs available to enrollees.
- It is also unclear whether SB 189 would prohibit additional enrollees from joining plan/insurer-operated wellness programs in existence prior to January 1, 2014. Similarly, it is unclear, after that date, whether SB 189 would prohibit plans/insurers from altering premiums or cost sharing for those additional enrollees.

Due to the complicated nature of the bill's impacts, SB 189 could be expected to have a dampening effect on plans and insurers establishing and operating wellness programs that can impact premiums or cost sharing. However, it is unclear as to whether or how much any such dampening may be offset by plans and insurers contracting with other entities to establish access

to more pre-2014 wellness programs and/or engaging additional enrollees in currently available pre-2014 wellness programs.

Because the direct and indirect impacts of SB 189 would be so complicated and so varied, CHBRP is unable to estimate a 2014 baseline for benefit coverage of wellness programs that could impact premiums or cost sharing by plans and policies that would be subject to SB 189.

In addition, it is important to re-emphasize that SB 189 would not be directly applicable to employers/other entities, who may continue to operate wellness programs with financial incentives that may impact enrollee premiums and cost sharing established prior to January 1, 2014, and may establish new ones. The pre-2014 wellness programs could be operated without involvement of the plans and policies that would be subject to SB 189, though these plans and policies would be prohibited from involvement with wellness programs established after January 1, 2014. Therefore, access by enrollees to these kinds of wellness programs could continue to change, regardless of SB 189.

Because CHBRP is unable to estimate 2014 benefit coverage for wellness programs that could impact premiums or cost sharing by plans and insurers that would be subject to SB 189, CHBRP is also unable to estimate related utilization, premiums, and expenditures, and whether a lack of benefit coverage shifts costs to other payers.

### **Public Demand for Benefit Coverage**

Considering the criteria specified by CHBRP's authorizing statute, CHBRP reviews public demand for benefits relevant to a proposed mandate in two ways. CHBRP:

- Considers the bargaining history of organized labor; and
- Compares the benefits provided by self-insured health plans or policies (which are not regulated by the DMHC or CDI and so not subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

On the basis of conversations with the largest collective bargaining agents in California, CHBRP concluded that as of March 2013 unions are interested in the presence of wellness programs that may impact premiums or cost sharing, but are not uniform as to whether they do or do not prefer the presence of such wellness programs.<sup>54</sup>

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS currently have the largest number of enrollees. The CalPERS PPOs, as of 2013, do not provide coverage for wellness programs that could impact premiums or cost sharing, and neither do the CalPERS HMOs, which would be subject to SB 189. Therefore, benefit coverage for enrollees association with CalPERS is similar to what is available to the majority of enrollees in group health insurance plans and policies that would be subject to the mandate.

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<sup>54</sup> Personal communication, S. Flocks, California Labor Federation, March 2013.

To further investigate public demand, CHBRP used the bill-specific coverage survey to ask carriers who act as third-party administrators for (non-CalPERS) self-insured group health insurance programs whether coverage for wellness programs that could impact premiums or cost sharing differed from what is offered in group market plans or policies that would be subject to the mandate. The responses indicated that a similarly limited number of Californians enrolled in self-insured plans and policies have access to wellness programs that could impact premiums or cost sharing.

Given the variety of responses generated by the three arms of inquiry, CHBRP is unable to make a conclusion about public demand for benefit coverage being essentially satisfied by the 2013 state of the market.

### **Postmandate 2014 Benefit Coverage, Utilization, and Cost**

CHBRP generally assesses the marginal impact of a benefit mandate bill by analyzing:

- How the proposed mandate would change benefit coverage overall, and how it would impact access and health treatment/service availability as well as per-unit cost;
- How the proposed mandate might directly or indirectly change utilization;
- What impact the proposed mandate would have on administrative and other expenses;
- What impact the mandate would have on total health care costs, including the change in total expenditures, potential cost offsets or savings in the first 12 months after enactment, and the impact on costs beyond the initial 12 months;
- What impact the proposed mandate would have on each category of payer; and
- What impact the proposed mandate would have on the uninsured and public programs.

**The impact of SB 189 on benefit coverage, utilization, and cost is unknown. For the reasons previously described, CHBRP is unable to estimate baseline 2014 benefit coverage for wellness programs that could impact premiums or cost sharing. Without baseline benefit coverage estimates, CHBRP cannot estimate baseline utilization or cost. Without baseline estimates, CHBRP cannot project marginal impact. Therefore, the impact of SB 189 is unknown.**

## PUBLIC HEALTH IMPACTS

Among other provisions, Senate Bill (SB) 189 would place requirements on Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated insurers regarding their offering of and/or interaction with work-based wellness programs established *after January 1, 2014*. The requirements SB 189 would place on plans/insurers regarding wellness programs would *not be applicable* in regards to plans/insurers' activity connected to wellness programs established *prior to January 1, 2014*.

This section presents the overall public health impact of SB 189, followed by an analysis examining the potential for reduction in gender and racial/ethnic disparities in health outcomes and the potential for the mandate to reduce premature death and societal economic losses.

### Estimated Public Health Outcomes

As presented in the *Medical Effectiveness* section, there is clear and convincing evidence that participation in wellness programs addressing tobacco cessation increases the likelihood of abstinence from smoking. There is a preponderance of evidence that participation in wellness programs addressing alcohol abuse decreases the frequency of alcohol use, and participation in wellness programs is associated with a lower intake of fats. There is a preponderance of evidence that participation in wellness programs does not lower blood pressure, blood sugar, or cholesterol. There is ambiguous evidence that participation in wellness programs increases intake of fruits and vegetables or increases frequency or amount of physical activity. The evidence is also ambiguous on the effect of participation in wellness programs on body mass index, other measures of obesity, or on stress levels.

The *Medical Effectiveness* section found no randomized controlled trials that assessed the impact of financial incentives linked to premiums or cost sharing for health insurance. The preponderance of evidence from two randomized controlled trials suggests that financial incentives increase participation in work-based wellness programs, but there is insufficient evidence to assess the relative effectiveness of different types of financial incentives. For example, *Medical Effectiveness* did find randomized controlled trials that assessed the impact of financial incentives with tobacco cessation programs and their impact on health behavior and health status, but the preponderance of evidence suggests that tobacco cessation programs that provide financial incentives for abstaining from smoking are no more effective than those that do not provide financial incentives.

As presented in the *Benefit Coverage, Utilization, and Cost Impacts* section, 5.8% (948,000 enrollees) of enrollees in the DMHC-regulated plans and CDI-regulated policies currently have coverage for plan/insurer operated wellness programs that may impact premiums or cost sharing; all of these enrollees are in the large-group market. Of enrollees with coverage for these plan/insurer operated wellness programs that may impact premiums or cost sharing, 12% (114,000) are estimated to have participated in such programs at some point during the prior 12 months.

As presented in the *Benefit Coverage, Utilization, and Cost Impacts* section, the impact of SB 189 on benefit coverage and utilization is unknown. Although SB 189 would prohibit DMHC-regulated plans and CDI-regulated insurers from establishing and operating wellness programs that could impact premiums and/or cost sharing after January 1, 2014, *Cost* cites three mechanisms by which an unknown number of enrollees could gain and/or retain coverage for these programs after implementation of the mandate (please refer to the *Benefit Coverage, Utilization, and Cost Impacts* section for further explanation).

SB 189 could impact enrollee coverage or utilization of work-based wellness programs affecting health behaviors and outcomes such as tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes. However, CHBRP is unable to estimate any change in coverage or utilization of work-based wellness programs (see *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the public health impact is unknown.

## **Impact on Gender and Racial Disparities**

Several competing definitions of “health disparities” exist. CHBRP relies on the following definition:

A health disparity/inequality is a particular type of difference in health or in the most important influences of health that could potentially be shaped by policies; it is a difference in which disadvantaged social groups (such as the poor, racial/ethnic minorities, women or other groups that have persistently experienced social disadvantage or discrimination) systematically experience worse health or great health risks than more advantaged groups (Braveman, 2006).

### **Impact on Gender Disparities**

#### *Tobacco use*

Gender disparities in the prevalence of smoking exist in California. As presented in Table 3 of the *Background* section, 14.8% of men with private or employment-based insurance smoke and 8.3% of women do so (CHIS, 2013). The California Tobacco Survey (CTS) found that a higher percentage of men than women made any kind of quit attempt in 2008 (63% and 56%, respectively) (Al-Delaimy et al., 2010). As discussed in the *Background* section, gender disparities extend to smoking-related morbidity. Despite a lower rate of smoking than men, women smokers experience higher incidence rates of smoking-related disease than men smokers, including lung cancer (CDPH/CTCP, 2010).

#### *Excessive alcohol consumption*

As presented in Table 5 of the *Background* section, in California, the prevalence of binge drinking (defined as five or more drinks on one occasion for adult males or four or more drinks on one occasion among females) among males is twice that of females. However, men and women have similar prevalence rates of heavy drinking (defined as two or more drinks per day for adult men and more than one drink per day for adult women) (CDC, 2011a). In California in

2010, males were more likely than females to be involved in a motor vehicle accident while drinking under the influence of alcohol (6.9% vs. 3.3%) (CHP, 2013).

### *Poor diet and physical inactivity*

The 2009 California Dietary Practices Survey (CDPS) found numerous differences in dietary patterns between males and females. Males were significantly more likely to report consumption of two or more high-calorie, low-nutrient foods in the past day than females (41% vs. 33%, respectively). Males were also significantly more likely to have eaten at least one meal out in the past day than females (33% vs. 26%) and were more than twice as likely than females to have eaten at a fast food restaurant four or more times in the past week (10% vs. 4%). When eating out at a restaurant, females were more likely than males (43% vs. 34%) to include fruits or vegetables with their meal. Females were less likely than males to report consuming two or fewer servings of fruits and/or vegetables in the past day (25% vs. 34%). Despite lower consumption of fruits and vegetables, males were as likely as females to report thinking that they should eat more fruits and vegetables (75% and 73%, respectively). The reasons cited by survey respondents for not eating more fruits and vegetables differed by gender. Females were more likely to say that fruits and vegetables were too expensive and that they took too much time to prepare, whereas males were more likely to say that they were not in the habit of consuming or did not like the taste of fruits and vegetables (CDPH, 2009).

As presented in the *Background* section, in 2011, more California males (27%) than females (20.4%) participated in enough aerobic and muscle strengthening exercises to meet current national guidelines of at least 150 minutes or aerobic exercise per week and muscle strengthening on at least 2 days per week. The prevalence of males and females participating in aerobic exercise guidelines was similar (58.9% and 57.5%, respectively), but significantly more males than females report participating in muscle strengthening exercises on at least 2 days per week (37.9% vs. 26.3%) (CDC, 2011c).

Poor diet and physical inactivity affect a multitude of chronic health conditions. As presented in the *Background* section, males are more likely than females to be overweight (44.1% vs. 28.5%), but there is little gender difference in obesity prevalence (23.1% among males and 24.5% among females). As seen in Table 7, among normal weight adults, males have higher prevalence rates than do females for many chronic conditions. However, the pattern of higher prevalence of chronic conditions among males is not present in overweight and obese adults.

**Table 7.** Prevalence of Selected Diet- and Physical Activity-Related Health Conditions by BMI, Among California Adults, by Gender

	Normal (BMI 18.5-24.9)		Overweight (BMI 25.0-29.9)		Obese (BMI ≥30.0)	
	Male	Female	Male	Female	Male	Female
Has/had high blood pressure	11.3%	9.5%	24.0%	25.4%	38.9%	37.5%
High blood cholesterol found	16.0%	14.1%	27.3%	22.6%	29.1%	27.4%
Has/had borderline diabetes	4.1%	2.5%	7.2%	8.6%	14.9%	14.9%
Ever diagnosed with diabetes	2.3%	1.2%	6.3%	6.8%	10.9%	14.0%
Ever diagnosed with type 2 diabetes	82.0%*	67.9%	85.9%*	87.1%	92.6%	93.9%

Source: California Health Benefits Review Program, 2013 (based on 2005 and 2009 California Health Interview Surveys).

Note: Adults are aged 18–64 years with private or employment-based insurance.

\* Statistical issues render this figure unreliable (variance too high or number of respondents too low).

Key: BMI=body mass index.

There are gender disparities in the prevalence of tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes in California. However, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of SB 189 on reducing gender disparities is unknown.

### **Impact on Racial/Ethnic Disparities**

Evaluating the impact on racial and ethnic health disparities is particularly important because racial and ethnic minorities report having poorer health status and worse health indicators (KFF, 2007). One important contributor to racial and ethnic health disparities is differences in the prevalence of insurance, where minorities are more likely than Whites to be uninsured. However, coverage disparities still exist within the insured population and may contribute to gaps in access and/or utilization among those covered (Kirby et al., 2006; Lillie-Blanton and Hoffman, 2005; Rosenthal et al., 2008). To the extent that racial/ethnic groups are disproportionately distributed among policies with more or less coverage, a mandate bringing all policies to parity may impact an existing disparity.

CHBRP analyses are limited to the insured population (because the uninsured would not be affected by a health benefit mandate). Therefore, to assess a mandate’s possible effects on health disparities (assuming the covered intervention is medically effective), CHBRP must answer two questions:

- (1) Are there known racial/ethnic disparities in the prevalence or incidence of the tobacco use, excessive alcohol consumption, poor diet, and physical inactivity and
- (2) Are there known racial/ethnic disparities in premandate benefit coverage and/or utilization?

### *Tobacco use*

Racial and ethnic disparities in the prevalence of smoking exist in California. As presented in Table 3 of the *Background* section, multiracial individuals have the highest prevalence of smoking (18.2%) and Asians have the lowest (8.8%) (CHIS, 2013).

There is evidence that utilization of cessation treatments differs across racial and ethnic groups. For example, one study found that African American smokers are more likely to attempt to quit, but are less likely to use a cessation treatment (Piper et al., 2010). Related to these conclusions are California-specific data from the 2008 CTS indicating that non-Hispanic Whites are less likely to make a quit attempt (54%) than are African Americans (72%) and Hispanics (68%) (Al Delaimy et al., 2010). Others reported that minority smokers may be less likely to use cessation aids when available (Fu et al., 2008; King et al., 2007). The 2008 CTS shows that non-Hispanic Whites and African Americans were more likely to use nicotine replacement therapy (NRT) (22.5% and 18.4%, respectively) compared to Hispanics (9.2%) and Asians (9.8%). Other studies recommended that further investigation of targeted- versus generic-cessation interventions is warranted for racial and ethnic minority populations (Carlsten et al., 2011; Fiore et al., 2000; Lawrence et al., 2003; Sanderson Cox et al., 2011). More recent research found that minority groups are less likely than Whites to have been prescribed or used NRT to quit smoking (Trinidad et al., 2011).

Sanderson Cox et al. (2011) conducted a literature review of published studies examining tobacco cessation treatments among ethnic/racial and minority populations in the United States over the past two decades. This review provides evidence that racial and ethnic minority populations have interest in quitting smoking. There is also evidence that different racial and ethnic groups use different smoking cessation pharmacotherapy treatments. For example, there is support for nicotine patch use among Latino smokers and for nicotine patch, nicotine nasal spray, and bupropion among African American smokers. No studies in this review assessed non-daily smoking, and given the use of light or non-daily smoking among minority populations, there is a greater need to assess the smoking level, adherence to smoking-cessation treatment, and outcomes that may be associated with quitting smoking among light smokers. Although decades of research exist, there is still a need to study tobacco cessation treatments among racial and ethnic minority populations (Sanderson Cox et al., 2011).

As discussed in the *Background* section, there are racial and ethnic disparities in the prevalence of smoking-related disease. African Americans experience a higher incidence of cardiovascular disease, cancer, and infant mortality—all of which are smoking-related. Native Americans experience the highest rate of infant mortality due to sudden infant death syndrome (SIDS), which is also causally linked to smoking (Fiore, 2000; Piper et al., 2001). African American and Native American men also have higher incidence of lung cancer (Haiman et al., 2006).

### *Excessive alcohol consumption*

As presented in Table 5 of the *Background* section, there are differences in the prevalence of binge drinking and heavy drinking by race/ethnicity. Hispanics have the highest prevalence of binge drinking (20.0%), which is defined as five or more drinks on one occasion for adult males or four or more drinks on one occasion for females. Heavy drinking, defined as two or more

drinks per day for adult men and more than one drink per day for adult women, is highest among whites (9.0%) (CDC, 2011a).

### *Poor diet and physical inactivity*

According to the 2009 California Dietary Practices Survey (CDPS), racial/ethnic differences exist in dietary trends among California adults. Asian/Pacific Islanders are more likely than other racial/ethnic groups to report eating no whole grains during the past day (27.3%), whereas Hispanics are the least likely to report low whole-grain consumption (16.0%). Blacks are more likely to report eating two or more high-calorie, low-nutrient foods during the past day (44.4%) and Asian/Pacific Islanders are least likely (27.6%). Blacks were more than twice as likely as Asian/Pacific Islanders to report eating out at a fast food restaurant in the past day (60.9% vs. 26.9%). Additionally, Blacks and Whites were more likely to eat a meal at a fast food restaurant three times (9.9% and 9.4%, respectively) or four or more times (8.8% and 7.7%, respectively) during the past week compared to Hispanics (4.4% and 6.9%, respectively) and Asian/Pacific Islanders (7.8% and 4.4%, respectively). When eating out, Asian/Pacific Islanders and Whites were more likely to include fruits and vegetables in their meal (45.1% for Whites and 43.1% for Asian/Pacific Islanders) compared to Hispanics (25.7%) and Blacks (36.7%). Asian/Pacific Islanders were more likely to report consuming two or more servings of fruit and three or more servings of vegetables during the previous day (37.1%) compared to Hispanics (30.1%), Whites (24.4%), and Blacks (20.0%). The reasons cited for not consuming more fruits and vegetables varied by racial/ethnic group. Blacks were more likely to report that fruits and vegetables were too expensive and that they are not in the habit of eating them. Hispanics were also likely to say they were not in the habit of eating fruits and vegetables and dislike the taste. Asians also reported disliking the taste of fruits and vegetables, as well as perceiving the time to prepare them as a barrier to consumption. Whites cited the cost and time to prepare fruits and vegetables as reasons for not consuming them on a more frequent basis than other racial and ethnic groups (CDPH, 2009).

As presented in the *Background* section, in California in 2011, multiracial and White individuals were more likely to have participated in enough aerobic and muscle strengthening exercises to meet current national guidelines (33.8% for multiracial persons and 27.3% for Whites) compared to Blacks (24.4%) and Hispanics (18.7%). When separating aerobic activities and muscle strengthening activities, the same racial/ethnic trend is seen. Whites and multiracial Californians are more likely to have participated in 150 minutes or more of aerobic physical activity per week (65.3% and 66.0%), and Hispanics are least likely (50.0%) compared to other racial/ethnic groups. Similarly, Whites and multiracial Californians are more likely to have participated in muscle strengthening exercises more than twice per week (35.2% and 43.1%, respectively), and Hispanics are least likely (27.1%) compared to other racial/ethnic groups (CDC, 2011c).

There are racial/ethnic disparities in the prevalence of tobacco use, excessive alcohol consumption, poor diet, physical inactivity and related health outcomes in California (see the *Background* section). However, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of SB 189 on reducing gender disparities is unknown.

## Impacts on Premature Death and Economic Loss

Premature death is often defined as death before the age of 75 years (Cox, 2006). The overall impact of premature death due to a particular disease can be measured in years of potential life lost prior to age 75 and summed for the population (generally referred to as “YPLL”) (Cox, 2006; Gardner and Sanborn, 1990). In California, it is estimated that there are nearly 102,000 premature deaths each year, accounting for more than two million YPLL (CDPH, 2011; Cox, 2006). In order to measure the impact of premature mortality across the population impacted by a proposed mandate, CHBRP first collects baseline mortality rates. Next, the literature is examined to determine whether the proposed mandated benefit impacts mortality and whether YPLL have been established for the given condition. Some diseases and conditions do not result in death, and therefore a mortality outcome is not relevant.

Economic loss associated with disease is generally presented in the literature as an estimation of the value of the YPLL in dollar amounts (i.e., valuation of a population’s lost years of work over a lifetime). For CHBRP analyses, a literature review is conducted to determine whether lost productivity has been established in the literature. In addition, morbidity associated with the disease or condition of interest can also result in lost productivity; either by causing the worker to miss days of work due to their illness or due to their role as a caregiver for someone else who is ill.

### **Premature Death**

#### *Tobacco use*

California-specific data show the societal effects of premature death and morbidity attributable to smoking. The CDC estimated that in California from 2000 to 2004, the average annual smoking-attributable mortality rate was 235 per 100,000, resulting in 36,684 deaths (CDC, 2010b).

Several studies found that smoking cessation is as effective as other medical treatments for smoking-attributable diseases. Two separate studies concluded that quitting results in a similar reduction in morbidity and mortality that would be achieved through pharmaceutical interventions commonly prescribed for heart disease patients (Critchley and Capewell, 2003; Suskin et al., 2001). Taylor and colleagues (2002) estimated the life extension achieved by smoking cessation. Cessation at age 35 years results in a predicted additional 7 to 8 years of life for men and a predicted additional 6 to 7 years of life for women. By contrast, cessation at age 65 years results in significantly fewer predicted life years gained (1 to 2 years for men and 2 to 3 years for women), but nevertheless illustrates the benefits of cessation at any age. California’s Department of Health Services (now the California Department of Public Health) reported that in 1999, on average, 12.4 years of potential life were lost per smoker due to smoking-related disease (Max et al., 2004).

In California, it is estimated that secondhand smoke is responsible for 21 cases of SIDS, 1,600 cases of low birth weight infants, 4,700 preterm deliveries, 31,000 episodes of asthma in children, 400 cases of lung cancer, and 3,600 cardiac deaths each year in the state (EPA, 2006). In the United States, secondhand smoke causes 46,000 premature deaths resulting from heart disease as well as 3,400 lung cancer deaths each year (CDC, 2008).

### *Excessive alcohol consumption*

In California in 2005, Rosen et al. found that there were 9,439 alcohol-attributable deaths; of these, 5,382 were health-related deaths, 2,380 were injury-related deaths, and 533 were due to violent crimes (Rosen et al., 2008). In 2005, Shield et al. calculated that excessive alcohol consumption resulted in 1,288,700 YPLL among individuals ages 15-64 in the United States, representing nearly 11% of all-cause YPLL. Alcohol-attributable YPLL among males was 1,087,280 (14.7% of all-cause YPLL) and 201,420 YPLL (4.3% of all-cause YPLL) among females. Compared to other racial/ethnic groups, Native Americans had the highest rate of alcohol-attributable YPLL (22.8% of all-cause YPLL) (Shield et al., 2005). In 2009, an estimated 3.5% of all cancer deaths (19,500 individuals) in the United States were attributable to alcohol consumption. Leading alcohol-attributable cancer deaths by site include cancers of the oral cavity and pharynx (39%), followed by cancer of the larynx (22%) and esophagus (22%), and liver cancer (13%). Among females, an estimated 15% of breast cancer deaths were attributable to alcohol consumption. Alcohol-attributable cancers resulted in approximately 340,000 YPLL, or about 18 YPLL per cancer death. Alcohol-attributable cancers of the oral cavity and pharynx, larynx, rectum, and liver each resulted in approximately 17 YPLL per cancer death (Nelson et al., 2013).

### *Poor diet and physical inactivity*

Poor diet and physical inactivity are the primary causes of obesity. According to the United States Surgeon General, an estimated 300,000 deaths per year may be attributed to obesity. Compared to individuals with a normal BMI, obese individuals have a 50%–100% increased risk of all-cause premature death (HHS, 2013). Modest sustained weight loss can have significant health benefits. Oster et al estimated a 10% weight loss could reduce years of life with hypertension and type 2 diabetes by 1.5 and 0.8 (expressed as disease-years averted). Lifetime risk for cardiovascular disease and stroke would also decrease by 3%–8% and 0.6%–6.5%, respectively, depending on age, sex, and BMI (Oster et al., 1999).

Although tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes may cause premature death, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors (see *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of SB 189 on premature death is unknown.

## **Economic Loss**

### *Tobacco use*

According to the California Department of Public Health, \$8.5 billion (47%) of smoking-related health care costs in California were due to lost productivity from smoking-attributed early death or illness (not including burn or secondhand smoke deaths) (CDPH/CTCP, 2010a). Furthermore, there is evidence that other indirect costs are reduced by smoking cessation. For example, smokers who successfully quit report improved quality of life relative to current smokers (Mulder et al., 2001).

Other studies report that the cost for treating high blood pressure associated with heart disease ranges from \$5,000 to \$45,000 per additional life year gained, whereas smoking cessation treatment is estimated to cost a few hundred to a few thousand dollars per additional life year gained (Warner et al., 2004). Placing smoking cessation into a preventive treatment context demonstrates that cost effectiveness of smoking cessation is comparable or superior to other commonly used preventive services. For example, mammography screening is estimated to cost \$20,000 per life-year saved (Warner et al., 2004). Should some smokers quit, a corresponding increase in productivity would likely result.

On an annual basis, secondhand smoke costs the United States nearly \$5 billion in medical expenses associated with diseases related to tobacco exposure (lung cancer, asthma, coronary artery disease, etc.), as well as an additional \$4.6 billion in lost wages (Behan et al., 2005). One study found that exposure to parental smoking is associated with 5.4 million excess cases of disease (including low birth weight, ear infections, asthma, and burns) resulting in a total cost of \$4.6 billion per year for direct medical expenditures. Loss-of-life costs associated with exposure to parental smoking are estimated to exceed \$8 billion (Aligne and Stoddard, 1997).

#### *Excessive alcohol consumption*

Rosen et al. estimated the economic cost of alcohol consumption in California in 2005 at \$38.5 billion, consisting of \$5.4 billion in medical and mental health spending, \$25.3 billion in work losses, and \$7.8 billion in criminal justice, property damage and public program costs. Losses associated with premature death from alcohol were \$6.8 billion; losses associated with hospitalization and disability were \$5.7 billion (Rosen et al., 2008).

#### *Poor diet and physical inactivity*

An analysis of university and health system employees who completed a voluntary health risk assessment (HSA) from 1997-2004 found that higher BMI levels were positively associated with increases in workers compensation claims, lost workdays, and indemnity claims. Employees with a BMI exceeding 40 had twice the rate of workers compensation claims than employees with a healthy BMI (11.65 claims per 100 employees compared to 5.80 claims per 100 employees). The number of lost workdays among those with a BMI between 35 and 39.9 and greater than 40 was 8 times and 13 times as high, respectively, compared to employees with a BMI in the healthy range. Additionally, indemnity (income replacement) claims were 11 times higher among employees with a BMI exceeding 40 compared to those with a healthy BMI (Ostbye et al., 2007).

Although tobacco use, excessive alcohol consumption, poor diet, physical inactivity, and related health outcomes cause economic loss, CHBRP is unable to estimate any change in coverage and/or utilization of work-based wellness programs that may address these health behaviors (see *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of SB 189 on economic loss is unknown.

# APPENDICES

## Appendix A: Text of Bill Analyzed

On February 29, 2013, the Senate Committee on Health requested that CHBRP analyze SB 189.  
BILL NUMBER: SB 189 INTRODUCED  
BILL TEXT

INTRODUCED BY Senator Monning

FEBRUARY 7, 2013

An act to add and repeal Section 1367.007 of the Health and Safety Code, and to add and repeal Section 10112.7 of the Insurance Code, relating to health care coverage.

### LEGISLATIVE COUNSEL'S DIGEST

SB 189, as introduced, Monning. Health care coverage: wellness programs.

Existing federal law, the federal Patient Protection and Affordable Care Act (PPACA), enacts various health care coverage market reforms that take effect January 1, 2014. Among other things, PPACA allows the premium rate charged by a health insurance issuer offering small group or individual coverage to vary only by family composition, rating area, age, and tobacco use, as specified, and prohibits discrimination against individuals based on health status, as specified. PPACA prohibits a health insurance issuer from requiring any individual to pay a premium or contribution that is greater than the premium or contribution paid by a similarly situated individual on the basis of any health status-related factor and prohibits construing this provision to prevent a group health insurance issuer from establishing premium discounts or rebates or modifying copayments or deductibles in return for adherence to wellness programs, as specified.

Existing law, the Knox-Keene Health Care Service Plan Act of 1975, provides for the licensure and regulation of health care service plans by the Department of Managed Health Care and makes a willful violation of the act a crime. Existing law also provides for the regulation of health insurers by the Department of Insurance. Existing law allows small employer health care service plan contracts and health insurance policies for plan years on or after January 1,

2014, to vary rates only based on age, geographic, region, and family size, as specified.

This bill, until January 1, 2020, would prohibit a health care service plan or health insurer from offering a wellness program in connection with a group health care service plan contract or group health insurance policy, or offering an incentive or reward under a group health care service plan contract or group health insurance policy, based on adherence to a wellness program, unless specified requirements are satisfied. The bill would specify that it does not apply to wellness programs established prior to its enactment provided that those programs comply with all other applicable laws, as specified.

Because a willful violation of the bill's requirements relative to health care service plans would be a crime, the bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

Vote: majority. Appropriation: no. Fiscal committee: yes.  
State-mandated local program: yes.

## THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 1367.007 is added to the Health and Safety Code, to read:

1367.007. (a) A health care service plan shall not offer a wellness program in connection with a group health care service plan contract, or offer an incentive or reward under a group health care service plan contract based on adherence to a wellness program, unless all of the following requirements are satisfied:

(1) The program is reasonably designed to promote health or prevent disease. A program complies with the preceding sentence if the program has a reasonable chance of improving the health of, or preventing disease in, participating individuals, is not overly burdensome, is not a subterfuge for discriminating based on a health status factor, does not lead to cost shifting, and is not highly suspect in the method chosen to promote health or prevent disease.

(2) The incentive or reward is not in the form of a discount on or rebate of premium, deductible, copayment, or coinsurance. Incentives may include rewards for participation that are not linked to premiums, deductibles, copayments, or coinsurance.

(3) Participation in the program is voluntary.

(4) Receipt of an incentive or reward for participation in the program is not conditioned on an individual satisfying a standard that is related to a health status factor. The following wellness programs shall be deemed to satisfy this paragraph:

(A) A program that reimburses all or part of the cost for memberships in a fitness center.

(B) A diagnostic testing program that provides a reward for participation and does not base any part of the reward on outcomes.

(C) A program that provides a reward to individuals for attending a periodic health education seminar, so long as participation is not related to a particular health condition or any other health status factor.

(5) Participation in the program is offered to all similarly situated individuals.

(6) Reasonable accommodation is provided for individuals with disabilities who seek to voluntarily participate in the program.

(7) A reasonably available and equivalent alternative is provided to those individuals who seek to voluntarily participate in the program but are unable to participate due to occupational requirements, a medical condition, or other hardship.

(8) All materials related to the program disclose the availability of the accommodations under paragraphs (6) and (7).

(9) The program assesses the cultural competency needs of the health care service plan's population in its design.

(10) The program provides language assistance for limited English-speaking individuals.

(11) The program does not result in any decrease in benefits coverage.

(12) The program does not result in an increase in premium for the product as demonstrated through rate review consistent with Article 6.2 (commencing with Section 1385.01).

(13) The incentive or reward does not exceed the amounts determined to be unreasonable by regulation by the director in consultation with the Insurance Commissioner

(14) The incentive or reward does not exceed the percentage of the cost of coverage under the plan contract identified in Section 2705 (j)(3)(A) of the federal Public Health Service Act (42 U.S.C. Sec. 300gg-4) or regulations adopted thereunder.

(b) Nothing in this section shall prohibit a wellness program that was established prior to January 1, 2014, and applied consistent with all applicable laws in effect immediately prior to that date, and that is operating immediately prior to that date, from continuing to be carried out for as long as those laws remain in effect.

(c) By March 1, 2019, the department shall submit a report to the appropriate policy committees of the Legislature on the operation of health care service plan-based wellness programs.

(d) For purposes of this section, "wellness program" means a program that is designed to promote health or prevent disease.

(e) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SEC. 2. Section 10112.7 is added to the Insurance Code, to read:

10112.7. (a) A health insurer shall not offer a wellness program in connection with a group health insurance policy or offer an incentive or reward under a group health insurance policy based on adherence to a wellness program unless all of the following requirements are satisfied:

(1) The program is reasonably designed to promote health or prevent disease. A program complies with the preceding sentence if the program has a reasonable chance of improving the health of, or preventing disease in, participating individuals, is not overly burdensome, is not a subterfuge for discriminating based on a health status factor, does not lead to cost shifting, and is not highly suspect in the method chosen to promote health or prevent disease.

(2) The incentive or reward is not in the form of a discount on or rebate of premium, deductible, copayment, or coinsurance. Incentives may include rewards for participation that are not linked to premiums, deductibles, copayments, or coinsurance.

(3) Participation in the program is voluntary.

(4) Receipt of an incentive or reward for participation in the program is not conditioned on an individual satisfying a standard that is related to a health status factor. The following wellness programs shall be deemed to satisfy this paragraph:

(A) A program that reimburses all or part of the cost for memberships in a fitness center.

(B) A diagnostic testing program that provides a reward for participation and does not base any part of the reward on outcomes.

(C) A program that provides a reward to individuals for attending a periodic health education seminar, so long as participation is not related to a particular health condition or any other health status factor.

(5) Participation in the program is offered to all similarly situated individuals.

(6) Reasonable accommodation is provided for individuals with disabilities who seek to voluntarily participate in the program.

(7) A reasonably available and equivalent alternative is provided to those individuals who seek to voluntarily participate in the program but are unable to participate due to occupational requirements, a medical condition, or other hardship.

(8) All materials related to the program disclose the availability of the accommodations under paragraphs (6) and (7).

(9) The program assesses the cultural competency needs of the health care service plan's population in its design.

(10) The program provides language assistance for limited English-speaking individuals.

(11) The program does not result in any decrease in benefits coverage.

(12) The program does not result in an increase in premium for the product as demonstrated through rate review consistent with Article 4.5 (commencing with Section 10181).

(13) The incentive or reward does not exceed the amounts determined to be unreasonable by regulation by the commissioner in consultation with the Director of the Department of Managed Health Care.

(14) The incentive or reward does not exceed the percentage of the cost of coverage under the policy identified in Section 2705(j)(3) (A) of the federal Public Health Service Act (42 U.S.C. Sec. 300gg-4(j)(3)(A)) or regulations adopted thereunder.

(b) Nothing in this section shall prohibit a wellness program that was established prior to January 1, 2014, and applied consistent with all applicable laws in effect immediately prior to that date, and that is operating immediately prior to that date, from continuing to be carried out for as long as those laws remain in effect.

(c) By March 1, 2019, the department shall submit a report to the appropriate policy committees of the Legislature on the operation of health insurer-based wellness programs.

(d) For purposes of this section, "wellness program" means a program that is designed to promote health or prevent disease.

(e) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

## Appendix B: Literature Review Methods

Appendix B describes methods used in the medical effectiveness literature review conducted for this report. A discussion of CHBRP's system for grading evidence, as well as lists of MeSH Terms, Publication Types, and Keywords, follows.

As previously detailed in the *Introduction*, SB 189 *explicitly* defines wellness programs as “programs designed to promote health or prevent disease.” CHBRP reviewed studies of wellness programs provided by employers or by other organizations with which employers contract, hereafter referred to as “work-based wellness programs.”

The literature search was limited to studies published in English from January 2000 to present. The following databases of peer-reviewed literature were searched: MEDLINE (PubMed), the Cochrane Database of Systematic Reviews, the Cochrane Register of Controlled Clinical Trials, the Cumulative Index of Nursing and Allied Health Literature, EMBASE, EconLit, and Web of Science. In addition, websites maintained by the following organizations that index or publish systematic reviews and evidence-based guidelines were searched: the Agency for Healthcare Research and Quality, International Network of Agencies for Health Technology Assessment, National Health Service Centre for Reviews and Dissemination, National Guidelines Clearinghouse, National Institute for Health and Clinical Excellence, and the Scottish Intercollegiate Guideline Network.

CHBRP review of studies of the effectiveness of work-based wellness programs was limited to randomized controlled trials (RCTs). CHBRP chose to limit this part of its review to findings from RCTs due to concerns about selection bias. Selection bias occurs when there are systematic differences between the unmeasured characteristics of intervention and comparison groups before the intervention is provided. Such differences may affect the findings from a study and lead to erroneous conclusions about the effectiveness of an intervention. Selection bias is an especially strong risk in studies of wellness programs in which persons voluntarily choose to participate. Because wellness programs are aimed at improving health behaviors and health status, they may attract people who are highly motivated to improve their health. If this occurs, the effects of wellness programs may appear larger than they actually are because highly motivated persons are likely to improve their health behaviors and health status over time regardless of whether they participate in a wellness program.

Due to the very small number of RCTs of financial incentives for work-based wellness programs that addressed health behaviors other than smoking, the review of studies of financial incentives included non-randomized studies with comparison groups.

Two reviewers screened the title and abstract of each citation retrieved by the literature search to determine eligibility for inclusion. The reviewers acquired the full text of articles that were deemed eligible for inclusion in the review and reapplied the initial eligibility criteria.

Of the 587 articles found in the literature review, 116 were reviewed for potential inclusion in this report, and a total of 34 studies were included in the medical effectiveness review.

## **Evidence Grading System**

In making a “call” for each outcome measure, the medical effectiveness lead and the content expert consider the number of studies as well the strength of the evidence. Further information about the criteria CHBRP uses to evaluate evidence of medical effectiveness can be found in CHBRP’s *Medical Effectiveness Analysis Research Approach*.<sup>55</sup> To grade the evidence for each outcome measured, the team uses a grading system that has the following categories:

- Research design;
- Statistical significance;
- Direction of effect;
- Size of effect; and
- Generalizability of findings.

The grading system also contains an overall conclusion that encompasses findings in these five domains. The conclusion is a statement that captures the strength and consistency of the evidence of an intervention’s effect on an outcome. The following terms are used to characterize the body of evidence regarding an outcome:

- Clear and convincing evidence;
- Preponderance of evidence;
- Ambiguous/conflicting evidence; and
- Insufficient evidence.

A grade of *clear and convincing evidence* indicates that there are multiple studies of a treatment and that the large majority of studies are of high quality and consistently find that the treatment is either effective or not effective.

A grade of *preponderance of evidence* indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective. This can be further subdivided into preponderance of evidence from high-quality studies and preponderance of evidence from low-quality studies.

A grade of *ambiguous/conflicting evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies of equal quality suggest the treatment is not effective.

A grade of *insufficient* evidence indicates that there is not enough evidence available to know whether or not a treatment is effective, either because there are too few studies of the treatment or because the available studies are not of high quality. It does not indicate that a treatment is not effective.

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<sup>55</sup> Available at: [www.chbrp.org/analysis\\_methodology/docs/medeffect\\_methods\\_detail.pdf](http://www.chbrp.org/analysis_methodology/docs/medeffect_methods_detail.pdf).

## **Search Terms**

The search terms used to locate studies relevant to SB189 were as follows:

### *MeSH Terms Used to Search PubMed*

- Body mass index
- Diet
- Health behavior
- Health promotion
- Health status
- Life style
- Obesity
- Occupational health
- Smoking/legislation and jurisprudence
- Workplace
- Workplace/legislation and jurisprudence

### *Major MeSH Terms Used to Search PubMed*

- Health education
- Health promotion
- Occupational health
- Occupational health services/organization and administration
- Tobacco smoke pollution/legislation and jurisprudence
- Tobacco smoke pollution/prevention and control

*Keywords used to search PubMed, Cochrane Library, EconLit, Web of Science, and relevant websites*

- Health
- Health promotion
- Involuntary smoking
- Passive smoking
- Programs

- Promotion
- Second hand smoke
- Smoke-free
- Smoking ban
- Wellness
- Wellness programmes
- Wellness programs
- Workplace

*Keywords used to search Google scholar*

- Incentives
- Premium reductions
- Wellness program

Publication Types:

- Clinical Trial
- Comparative Study
- Controlled Clinical Trial
- Meta-Analysis
- Practice Guideline
- Randomized Control Trial
- Systematic Reviews

## Appendix C: Description of Studies on Wellness Programs

Appendix C describes the meta-analyses, systematic reviews, and individual studies on work-based wellness programs that were included in the medical effectiveness review for SB 189. Table C-1 describes the populations studied, and the intervention and comparison groups. Table C-2 summarizes findings from the studies included in the medical effectiveness review that have examined the impact of work-based wellness programs on health behaviors and/or health status. Table C-2 is divided into sub-sections based on the outcomes that work-based wellness programs have targeted. Table C-3 summarizes findings from RCTs that assessed the effectiveness of financial incentives on participation in work-based wellness programs and on the health behaviors and health outcomes of persons participating in work-based wellness programs.

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs**

Type of Intervention	Citation	Type of Trial <sup>56</sup>	Intervention versus Comparison Group	Population Studied	Location
Worksite wellness program for dyslipidemia with incentives	Bloch et al., 2006	Level II study	The main intervention included online educational materials and a monetary incentive if a specific goal was met. The secondary intervention also included online educational materials, classes educating them on cholesterol management, and a nurse educator who provided monthly individualized phone motivation. The usual-care group received access to online educational materials only.	Enrollees were employees working in local government, public schools, or gaming/casinos who had participated in annual health screenings. All patients with LDL cholesterol >130 mg/dL, or >100mg/dL if they had been diagnosed with diabetes mellitus or established coronary heart disease.	United States

<sup>56</sup> Level I=well-designed randomized controlled trials (RCTs); level II=RCTs with major weaknesses; level III=nonrandomized studies with comparison groups; level IV=case series; level V=case studies.

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Worksite environmental wellness programs with multiple components	Brehm et al., 2011	Level II study	The intervention group included employee advisory committees, point-of-decision prompts, walking paths, cafeteria/vending machine changes, and educational materials. The control group consisted of employees at worksites receiving no intervention.	Enrollees were randomly selected from eight manufacturing companies.	Kentucky, USA
Competitions and incentives for smoking cessation	Cahill and Perera, 2011	Systematic review: 19 level II studies	Included RCTs with both intervention and control groups that collected both baseline and post-intervention measures. Types of interventions include contests, competitions, raffles, lotteries, incentive schemes, and contingent payment.	Participants from workplaces, groups within workplaces, communities, or other individuals	Australia, Canada, United Kingdom, United States
Worksite wellness program for weight loss with incentives	Follick et al., 1984	Level II study	Both groups participated in the weight loss program, which included an invitation to 14 separate treatment sessions. Only the intervention group was offered incentives, and all participants were required to provide deposits for each treatment session. The control group received their deposit back at the first session, whereas the intervention had their deposit returned only if they turned in daily food and caloric intake logs and weighed in.	Enrollees were overweight or obese employees of a general hospital.	United States

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
<p>Worksite wellness programs for cardiovascular risk reduction, including incentives</p>	<p>Gomel et al., 1993</p>	<p>Level II study</p>	<p>RCT with four intervention arms, all addressing cardiovascular risk. The health risk assessment (HRA) arm provided feedback on their risk factor profile based on their cholesterol or blood pressure reading. The risk factor education group received the HRA, as well as standardized advice in a 50-minute session, which included manuals and videotapes on lifestyle changes to reduce heart disease risk factors. The behavioral counseling group received the same components as the risk factor education group, but were also offered six lifestyle counseling sessions over a 10-week period. The behavioral counseling plus incentive group received the same components as the risk factor education group; they were also offered a goal setting and follow-up counseling session in addition to a range of incentives. Incentives were based on adherence to lifestyle changes, as well as achieving risk factor reduction goals, which were biochemically and physically validated.</p>	<p>Employees from 28 stations of an ambulance service. Stations qualified if they had 12 or more employees. Exclusion included anticipated absence from work for more than 4 weeks during the intervention period, imminent transfer to another station, and serious health problems.</p>	<p>New South Wales, Australia</p>

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Impact of alternative incentives on completion of health risk assessments	Haisley et al., 2012	Level I study	Two-arm RCT with a convenience comparison sample. The main intervention entered participants into a lottery in addition to receiving \$25 for completing a health risk assessment (HRA). The second intervention received \$25 plus a \$25 grocery gift certificate for completing the HRA. The control group received \$25 for completing the HRA.	Enrollees were employees in one of 14 offices of a health care management company located in the US. Employees had to have an established account on the company's health insurance provider's website in order to qualify for the study.	United States
Worksite wellness program with multiple components	Hughes et al., 2011	Level II study	RCT with two interventions groups and a control group. The more intensive intervention arm consisted of a review of risk assessments with a MPH-educated coach, followed by development of action plans, referrals to appropriate programs, and revised action plans, as needed. The less intensive intervention gave participants access to a website that generated individual risk factor profiles and provided guidance on areas needing improvement. The control group only received printed health-promotion materials.	Enrollees were support and academic staff from a university who were all over age 40, and were either retired or actively employed.	Illinois, USA

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Incentives for weight loss in a worksite wellness program.	Lahiri and Faghri, 2012	Level III study	Both arms participated in a weight loss program, only the intervention group qualified for the incentives. Both arms also received a one-on-one consultation and received an action plan. The 16-week intervention included signing a contract for the program as well as the 12-week follow-up. Incentives were based on weight loss, and contingent on losing a certain amount of weight dependent on the individuals starting BMI. Part of the incentive consisted of a deposit from the participant that was matched by the company only if the person met their target weight. If the weight was not met, the deposited money was not returned.	Employees in one of four nursing homes belonging to a single corporation. Employees were required to be part time or full time, 18 and older, and overweight or obese.	United States
Worksite environmental wellness program for weight-gain prevention	Linde et al., 2012	Level II study	The intervention group sites made changes to the food environment by adding more calorie-smart foods, lowering the prices of those foods, and offering smaller portion sizes. The physical component included providing enrollees with pedometers and access to an online step tracking site, as well as promoting walking at work. The control group was only contacted to engage in evaluation procedures at three time points throughout the study.	Enrollees were employees working in a metropolitan area at least 50% time onsite during the daytime shift.	United States

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Worksite wellness program with multiple components for weight loss and obesity prevention	Meenan et al., 2010	Level II study	Study with two intervention groups. Level 1 employees were in an awareness-raising group focusing on weight and healthy habits. Level 2 employees participated in a multicomponent lifestyle approach including onsite weight management program and various environmental initiatives. Both groups received feedback and advice in relation to their actual weight relative to their ideal weight, and a flyer about good health habits.	Enrollees overweight and obese employees (BMI >25) hotel employees.	Hawaii, USA
Worksite wellness programs with multiple components	Osilla et al., 2012	Systematic review of level II and level III studies	Included RCTs and nonrandomized studies with comparison groups. Many studies used nonparticipants as their comparison group.  Most interventions studied had multiple components, including interventions aimed at increasing exercise, improving diet, smoking cessation, reducing alcohol consumption, improving physiological markers of health risk factors, improving physical health status, improving mental health status, reducing health care costs, and reducing absenteeism.	Enrollees from 33 studies on mostly medium to large companies with a worksite wellness program in the US.	United States

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Worksite wellness program with multiple components	Sforzo et al., 2012	Level II study	Study with two intervention groups and a control group. The more intensive intervention group was invited to attend 12 education classes presenting different health topics, and given access to two websites where additional wellness information was available. Both groups were given access to the fitness facility (fee waived) and given a 25% discount on food considered a healthy choice in the cafeteria. The secondary intervention group only received access to the fitness facility and the discount on healthy food. The control group was allowed to join the fitness facility and eat the healthy choice meals in the cafeteria but did not receive discounts.	Enrollees were employees from a multinational financial corporation working full time and not classified as outside contractors.	New York, USA
Worksite wellness program with multiple components	Sternfeld et al., 2009	Level II study	The intervention group consisted of a program delivered via email to focus on increase of fruits and vegetables, physical activity, or decrease of fats and sugars. Each participant focused on one of the three components. The control group was not contacted other than for data collection.	Enrollees were employees from administrative offices of a large health care organization	United States

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
<p>Worksite health promotion program focused on health risk status and consumer activation.</p>	<p>Terry et al., 2011</p>	<p>Level II study</p>	<p>Study with two intervention groups and one control group. The traditional health promotion program included seminars and interactive educational campaigns on topics such as physical activity, nutrition, injury prevention, and stress management. For those at high risk, traditional healthy lifestyle coaching was offered. The activated consumer intervention offered seminars, communications, and campaigns on consumerism on topics such as evaluating sources of health information, choosing a health benefits plan, becoming familiar with preventive service guidelines, and understanding the risks of not taking medications as prescribed. At-risk participants were offered individualized health consumer coaching that emphasized health care decision making. The control group was offered information on personal development topics.</p>	<p>Enrollees were employees from either a large health care system or a national airline. Nine sites from the health care employer were combined to create three geographically distinct groups. Airline employees were randomly assigned to one of the three groups.</p>	<p>United States</p>

**Table C-1. Characteristics of Studies That Examined the Effectiveness of Work-Based Wellness Programs (Cont'd)**

Type of Intervention	Citation	Type of Trial	Intervention versus Comparison Group	Population Studied	Location
Worksite wellness program with multiple components	Thorndike et al., 2012	Level II study	The intervention group had two components: internet and personal contact. The internet component included logging, and goal setting. The personal contact gave participants the option to work with a nutritionist or personal trainer once every 3 months. After randomization assignment, the control group was not contacted again until 1-year follow-up.	Enrollees were employees from a large teaching hospital. Exclusion criteria included pregnant women, and those planning to end employment within 3 months.	Massachusetts, USA
Worksite wellness programs focused on smoking cessation	Volpp et al., 2009	Level II study	Both the intervention and control groups received information about community-based smoking cessation resources within 20 miles of their worksite. Only the intervention group received incentives. Three levels of cash incentives were offered to the intervention group for participation, cessation, or abstinence.	Enrollees were employees of a multinational company.	United States

Sources: Brehm et al., 2011; Cahill and Perera, 2011; Hughes et al., 2011; Linde et al., 2012; Meenan et al., 2010; Osilla et al., 2012; Sforzo et al., 2012; Sternfeld et al., 2009; Terry et al., 2011; Thorndike et al., 2012; Volpp et al., 2009.

**Table C-2.** Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs

**Table C2-a. Impact of Interventions on Smoking**

<b>Outcome</b>	<b>Citation</b>	<b>Research Design<sup>57</sup></b>	<b>Statistical Significance</b>	<b>Direction of Effect</b>	<b>Size of Effect</b>	<b>Conclusion</b>
Abstain from smoking	Cahill et al., 2008	Systematic review: 51 level I and II studies	Statistically significant: most studies that compared smoking cessation intervention to no or minimal intervention	Favors intervention: most studies that compared to no or minimal intervention	Varies across studies	Clear and convincing evidence that smoking cessation programs increase abstinence from smoking.

<sup>57</sup> Level I=well-designed randomized controlled trials (RCTs); level II=RCTs with major weaknesses; level III=nonrandomized studies with comparison groups; level IV=case series; level V=case studies.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C2-b. Impact of Interventions on Alcohol Use**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Frequency of drinking	Osilla et al., 2012	Systematic review: 3 level II studies (Anderson and Larimer, 2002; Doumas and Hannah, 2008; Heirich and Sieck,, 2000)	Statistically significant in 2 of 3	Favors intervention in 2 of 3  No effect 1 of 3	Anderson: effect size = 0.55  Doumas: not reported	The preponderance of the evidence suggests that wellness programs targeting the frequency of drinking are effective.
Frequency of drinking to intoxication	Osilla et al., 2012	Systematic review: 1 level II study (Doumas and Hannah, 2008)	Statistically significant	Favors intervention	Not reported	A study found that wellness programs targeting the frequency of drinking to intoxication are effective.
Peak consumption of alcohol	Osilla et al., 2012	Systematic review: 1 level II study (Doumas and Hannah, 2008)	Statistically significant	Favors intervention	Not reported	A study found that wellness programs targeting peak consumption of alcohol drinking are effective.

**Table C-2.** Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs

**Table C2-c. Impact of Interventions on Diet**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Fat intake	Osilla et al., 2012 Brehm et al., 2011 Sternfeld et al., 2009 Thorndike et al., 2012 Hughes et al., 2011	Systematic review: 1 level II study (Campbell et al., 2002)  Randomized controlled trial: 4 level II studies	Statistically significant: 4 of 5 studies  Not statistically significant in 1 of 5 studies	Favors intervention 4 of 5 studies  No effect in 1 of 5 studies	Campbell: 48.1–51.0 g vs. 51.8–52.4 g  Not reported: Brehm  Sternfeld: intake of saturated fat declined by ( $\beta = -0.95$ , SE=0.36, trans fat declined by ( $\beta = 0.29$ , se=0.12) in intervention group vs. control  Hughes: $z = -1.93$ decrease in percentage energy from fat at 12 months	The preponderance of the evidence suggests that wellness programs targeting fat intake are effective.
Fruit and vegetable intake	Osilla et al., 2012 Brehm et al., 2011 Sternfeld et al., 2009 Thorndike et al., 2012 Hughes et al., 2011	Systematic review: 4 level II studies (Campbell et al., 2002, French et al., 2010, Siegel et al., 2010, Sorensen et al., 2003)  Randomized controlled trial: 4 level II studies	Statistically significant : 3 of 8 (Campbell, Hughes, Sternfeld)  Not statistically significant: 5 of 8	Favors intervention in 3 of 8 studies (Campbell, Sternfeld, Hughes)  No effect in 5 of 8 studies	Campbell: +0.7 servings  Sternfeld: $\beta = 0.18$ SE = 0.08  Hughes: $z = 3.55$ increase at 12 months	The evidence regarding wellness programs targeting fruit and vegetable intake is ambiguous.

**Table C-2.** Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs

**Table C2-c. Impact of Interventions on Diet (Cont'd)**

<b>Outcome</b>	<b>Citation</b>	<b>Research Design</b>	<b>Statistical Significance</b>	<b>Direction of Effect</b>	<b>Size of Effect</b>	<b>Conclusion</b>
Energy intake	Osilla et al., 2012  Brehm et al., 2011	Systematic review: 1 level II study (Lowe et al., 2010)  Randomized controlled trial: 1 level II study	Not statistically significant: 2 of 2 studies	No effect: 2 studies (Lowe)	No difference	The evidence suggests that wellness programs targeting energy intake are not effective.
Healthy behaviors and readiness	Osilla et al., 2012	Systematic review: 2 level II studies (Cook et al., 2007; Gosliner et al., 2010)	Statistically significant: 1 of 2 studies (Cook)  Not statistically significant: 1 of 2 studies (Gosliner)	Favors intervention in 1 of 2 (Cook)  No effect in 1 of 2 studies (Gosliner)	Cook: not reported	The evidence regarding wellness programs targeting healthy behaviors and readiness is ambiguous.
Sugary food and beverages	Thorndike et al., 2012	Randomized controlled trial: 1 level II study	Not statistically significant	No effect	No difference	A study found that a wellness program targeting sugary food and beverages is not effective.
Added sugars	Sternfeld et al., 2009	Randomized controlled trial 1 level II study	Not statistically significant	No effect	No difference	A study found that a wellness program targeting added sugars is not effective.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C2-d. Impact of Interventions on Exercise**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Any exercise	Osilla et al., 2012  Hughes et al., 2011	Systematic review: 1 level II study (Campbell et al., 2002) Randomized controlled trial 1 level II study (Hughes)	Not statistically significant: 2 studies	No effect: 2 studies	No difference	The evidence suggests that wellness programs targeting any exercise are not effective.
Frequency or amount of physical activity	Osilla et al., 2012  Sforzo et al., 2012  Sternfeld et al., 2009  Thorndike et al., 2012  Hughes et al., 2011	Systematic review: 5 level II studies (Cook et al., 2007, French et al., 2010, Gosliner et al., 2010, Purath et al., 2004, Siegel et al., 2010)  Randomized controlled trial: 4 level II studies	Statistically significant: 3 studies (Hughes, Purath, Sternfeld)  Not statistically significant: 6 studies (Cook, French, Gosliner, Siegel, Sforzo, Thorndike)	Better: 3 studies (Hughes, Purath, Sternfeld)  No effect: (Cook, French, Gosliner, Siegel, Sforzo, Thorndike)	Purath: weekend activity (0.77 hours vs. 0.36 hours; total minutes walked per week (103.1 vs. 76.2)  Sternfeld: intervention increased all measures: moderate physical activity by 28.0 min/wk (SE = 7.4), vigorous physical activity by 12.5 min/wk (SE = 5.7), walking by 21.5 min/wk (SE = 5.5) relative to the control group  Hughes: moderate activity: z = 2.22 (significant) Vigorous activity: z = 1.11 (not significant)	The evidence regarding wellness programs targeting the frequency or amount of physical exercise is ambiguous.

**Table C-2.** Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs

**Table C2-d. Impact of Interventions on Exercise (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Energy expenditure	Osilla et al., 2012	Systematic review: 1 level II study (Nichols et al., 2000)	Statistically significant	Favors intervention	Effect size = 0.98	A study found that a wellness program targeting energy expenditure is effective.
Change in sedentary behavior	Sternfeld et al., 2009	Randomized controlled trial: 1 level II study	Statistically significant	Favors intervention	Decrease in sedentary behavior $\beta = -59.8$ SE = 28.9	A study found that a wellness program targeting sedentary behavior is effective.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C2-e. Impact of Interventions on Physiologic Markers**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Body Mass Index (BMI)	Osilla et al., 2012 Brehm et al., 2011 Linde et al., 2012 Meenan et al., 2010 Sforzo et al., 2012 Thorndike et al., 2012 Hughes et al., 2011	Systematic review: 5 level II studies (Barham et al., 2011; French et al., 2010; Lowe et al., 2010; Racette et al., 2009; Siegel et al., 2010) Randomized controlled trial: 6 level II studies	Statistically significant in 4 of 11 studies (Barham, Racette, Siegel, Meenan) Not statistically significant: 7 of 11 studies (French, Lowe, Brehm, Linde, Sforzo, Thorndike, Hughes)	Favors intervention: 4 of 11 studies No effect: 5 of 11 studies Worse: 2 of 11 studies	Barham: not reported Siegel: intervention BMI (28.54–28.40) reduced by 0.04 kg/m <sup>2</sup> vs. control BMI (27.56–27.98) increased by 0.37 kg/m <sup>2</sup> Not reported: Racette Meenan: level 2: level 1 change overall 2 years 0.47 units for men, and 0.32 units for women	The evidence regarding wellness programs targeting decreased BMI is ambiguous.
Weight	Osilla et al., 2012 Sforzo et al., 2012 Thorndike et al., 2012 Hughes et al., 2011	Systematic review: 2 level II studies (Barham et al., 2011; Cook et al., 2007) Randomized controlled trial: 3 level II studies	Statistically significant in 1 of 5 studies	Favors intervention in 1 of 5 No effect 4 of 5	Barham: -2.3 kg vs. 0.73 kg	The preponderance of the evidence suggests that wellness programs targeting weight loss are not effective.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C2-e. Impact of Interventions on Physiologic Markers (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Percent body weight	Thorndike et al., 2012	Randomized controlled trial: 1 level II study	Not statistically significant	No effect	Thorndike: body weight 2.7% vs. 2.4% at 1 year	A study found that wellness programs targeting percent body fat are not effective.
Waist circumference or waist to hip ratio or waist to height ratio	Osilla et al., 2012 Meenan et al., 2012 Sforzo et al., 2012 Thorndike et al., 2012 Hughes et al., 2011	Systematic review: 2 level II studies (Barham et al., 2011; Siegel et al., 2010) Group randomized trial: 1 level II study Randomized controlled trial: 3 level II studies	Statistically significant in 2 of 6 studies Not statistically significant in 4 of 6 studies	Favors intervention in 2 of 6 No effect in 4 of 6	Not reported: (Barham, et al., 2011; Meenan et al., 2012 )	The evidence for wellness programs successfully decreasing waist circumference of ratios is ambiguous.
Fat mass	Osilla et al., 2012 Brehm et al., 2011	Systematic review: 1 level II study (Racette et al., 2009) Randomized controlled trial: 1 level II study	Statistically significant in 1 of 2 Not statistically significant in 1 of 2	Favors intervention 1 of 2 No effect 1 of 2	Not reported	The evidence for wellness programs decreasing fat mass is ambiguous.
Blood pressure	Brehm et al., 2011 Sforzo et al., 2012 Thorndike et al., 2012	Randomized controlled trial: 3 level II studies	Not statistically significant 3 of 3	No effect 3 of 3	No difference	Evidence shows wellness programs are not effective in decreasing blood pressure.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**  
**Table C2-e. Impact of Interventions on Physiologic Markers (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Cholesterol	Osilla et al., 2012 Brehm et al., 2011 Thorndike et al., 2012	Systematic review 1 level II study (Lowe et al., 2010) Randomized controlled trial: 2 level II studies	Not statistically significant	No effect in 3 of 3	No difference	Evidence suggests wellness programs targeting lowering cholesterol are not effective.
Triglycerides	Brehm et al., 2011 Thorndike et al., 2012	Randomized controlled trial: 2 level II studies	Not statistically significant in 2 or 2	No effect in 2 of 2 studies	Not reported	Evidence suggests wellness programs targeting lowering triglycerides are not effective.
Metabolic syndrome	Osilla et al., 2012	Systematic review: 1 level II study (Racette et al., 2009)	Not statistically significant	No effect	No difference	A study found that a wellness program targeting the risk for metabolic syndrome is not effective.
Glucose and insulin	Brehm et al., 2011 Thorndike et al., 2012	Randomized controlled trial: 2 level II studies	Not statistically significant	No effect 2 of 2 studies	No difference	Evidence suggests that wellness programs targeting lowering of glucose and insulin risk are not effective.

**Table C-2.** Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs

**Table C2-e. Impact of Interventions on Physiologic Markers (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Health risk status	Terry et al., 2011	Group randomized trial I level II study	Statistically significant	Favors interventions	Personal wellness profile (PWP) scores mean change 5.5 in the main intervention group from baseline. The secondary intervention group improved with a mean score change of 6.7 from baseline.	A study found that a wellness program may be effective at increasing self-assessment of health risk status.

**Table C-2. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C2-f. Impact of Interventions on Stress**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Stress level	Osilla et al., 2012  Sforzo et al., 2012	Systematic review: 1 level II study (Cook et al., 2007)  Randomized controlled trial: 1 level II study	Not statistically significant 1 of 2  Approaches statistical significance 1 of 2	No effect 1 of 2  Favors intervention 1 of 2	Sforzo: $F_{1,63} = 3.93$	The preponderance of the evidence suggests that wellness programs targeting stress reduction are not effective.

*Sources:* Brehm et al., 2011; Cahill et al., 2008; Hughes et al., 2011; Linde et al., 2012; Meenan et al., 2010; Osilla et al., 2012; Sforzo et al., 2012; Sternfeld et al., 2009; Terry et al., 2011; Thorndike et al., 2012.

**Table C-3. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C-3. Impact of Financial Incentives on Various Outcomes**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Incentives to complete health risk assessments	Haisley et al., 2012	Level I study	Statistically significant	Favors intervention	Compared to secondary intervention: $t_{(671)} = 4.76$ (CI 12%–28%) Compared to control: $t_{(1113)} = 8.15$ (CI 18%–29%)	Lottery incentive associated with higher participation rate than gift certificate incentive.
Incentives for weight loss—attrition	Follick et al., 1984	Level III study	Statistically significant	Favors intervention	Mean number of sessions attended by intervention = 9.42 (SD = 4.04) compared to control = 6.04 (SD = 2.67)	60% of the incentive group completed treatment compared to 20% in the control.
Incentives for smoking cessation	Cahill and Perera, 2011	Systematic review: 19 level I and level II studies	Most studies were not statistically significant, with the exception of one large study with 878 smokers, which was statistically significant and which achieved a high and long-lasting success rate.	Incentives are not more effective in obtaining smoking cessation	Varied across studies	Preponderance of the evidence suggests adding incentives has not been shown to enhance long-term cessation rates.

**Table C-3. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C-3. Impact of Financial Incentives on Various Outcomes (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Incentives for weight loss - BMI	Gomel et al., 1993	Level II study	Statistically significant	Worse	Increase in all four groups: greater increase for health risk assessment and risk factor education groups compared to both behavioral counseling, and counseling plus incentive groups $t = 2.12$	
Incentives for weight loss - weight	Lahiri and Faghri, 2012  Follick et al., 1984	2 Level III studies	Statistically significant 1 of 2 (Lahiri and Faghri, 2012)  Not statistically significant: 1 of 2 studies (Follick et al., 1984)	Favors intervention 1 of 2 studies  No effect 1 of 2 studies	Lahiri: Average weight loss intervention = -7.3 lb compared to control = -2.1 lb  Follick: No difference	Findings regarding the impact of incentives on weight loss are inconsistent
Incentives for weight loss—percentage of body fat	Gomel et al., 1993	Level II study	Not statistically significant	No effect	Not reported	Significant decrease in body fat, followed by a return to baseline for both behavioral counseling groups compared to the health risk assessment and risk factor education groups.

**Table C-3. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C-3. Impact of Financial Incentives on Various Outcomes (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Incentives for lowering cholesterol—LDL cholesterol	Bloch et al., 2006	Level II study	Not statistically significant—intervention group with incentives vs. intervention group without incentives	No difference	Incentive group: reduced mean LDL 17.9 mg/dL (11.3%), no incentive intervention: reduced mean LDL 17.9 mg/dL (11.5%) compared to the control: reduced mean LDL 5.5 mg/dL (3.5%)	Both interventions yielded greater reductions in cholesterol than achieved by control group but no difference between the intervention groups with and without incentive.
Incentives for lowering LDL—total cholesterol	Bloch et al., 2006 Gomel et al., 1993	2 Level II studies	Not statistically significant—intervention group with incentives vs. intervention group without incentives	No difference	Bloch: incentive group: reduced mean total cholesterol 25.8 mg/dL (11%), no incentive intervention: reduced mean total cholesterol 25.8 mg/dL (11%) compared to the control: reduced mean LDL 12.6 mg/dL (5%)	Both interventions yielded greater reductions in cholesterol than achieved by control group but no difference between the intervention groups with and without incentive.

**Table C-3. Summary of Findings From Studies of the Effectiveness of Work-Based Wellness Programs**

**Table C-3. Impact of Financial Incentives on Various Outcomes (Cont'd)**

Outcome	Citation	Research Design	Statistical Significance	Direction of Effect	Size of Effect	Conclusion
Incentives for lowering LDL—HDL cholesterol	Bloch et al., 2006	Level II study	Not statistically significant—intervention group with incentives vs. intervention group without incentives and control group	No effect	No difference	No statistically significant difference in HDL cholesterol.
Incentives for lowering LDL—triglycerides	Bloch et al., 2006	Level II study	Not statistically significant—intervention group with incentives vs. intervention group without incentives and control group	No effect	No difference	No statistically significant difference in HDL cholesterol.
Incentives for cardiovascular risk factor reduction—blood pressure	Gomel et al., 1993	Level II study	Statistically significant	Better and worse	Significant short-term decrease followed by an increase in behavioral counseling plus incentives group compared to behavioral counseling group $t = 2.78$ $df = 72$  Significant decrease from baseline to 12 months in behavioral counseling group compared to those in the behavioral counseling plus incentives group $t = 4.3$ $df = 72$	Adding a financial incentive to behavioral counseling produced a greater reduction in blood pressure in the short term, but not in the long term.

Sources: Bloch et al., 2006; Cahill et al., 2011; Follick et al., 1984; Gomel et al., 1993; Haisley et al., 2012; Lahiri and Faghri, 2012.

## Appendix D: Cost Impact Analysis: Data Sources, Caveats, and Assumptions

This appendix describes data sources, estimation methodology, as well as general and mandate-specific caveats and assumptions used in conducting the cost impact analysis. For additional information on the cost model and underlying methodology, please refer to the CHBRP website at [www.chbrp.org/analysis\\_methodology/cost\\_impact\\_analysis.php](http://www.chbrp.org/analysis_methodology/cost_impact_analysis.php).

The cost analysis in this report was prepared by the members of the cost team, which consists of CHBRP task force members and contributors from the University of California, San Diego, the University of California, Los Angeles, the University of California, Davis, and University of California, Berkeley, as well as the contracted actuarial firm, Milliman, Inc. (Milliman).<sup>58</sup>

### **Data Sources**

In preparing cost estimates, the cost team relies on a variety of data sources as described below.

#### *Baseline model*

1. The California Simulation of Insurance Markets (CalSIM) is used to project health insurance status of Californians aged 64 and under in 2014. CalSIM is a microsimulation model that projects the effects of the Affordable Care Act on firms and individuals.<sup>59</sup> CalSIM relies on national Medical Expenditure Panel Survey (MEPS) Household Component and Person Round Plan, California Health Interview Survey (CHIS) 2009, and California Employer Health Benefits Survey data.
2. California Health Interview Survey (2011) data is used to estimate the number of Californians aged 65 and older, and the number of Californians dually eligible for both Medi-Cal and Medicare coverage. CHIS 2011 is also used to determine the number of Californians with incomes below 400% of the federal poverty level. CHIS is a continuous survey that provides detailed information on demographics, health insurance coverage, health status, and access to care. CHIS 2011 surveyed approximately 23,000 households and is conducted in multiple languages by the UCLA Center for Health Policy Research. More information on CHIS is available at [www.chis.ucla.edu](http://www.chis.ucla.edu).
3. The latest (2012) California Employer Health Benefits Survey is used to estimate:
  - a. Size of firm
  - b. Percentage of firms that are purchased/underwritten (versus self-insured)
  - c. Premiums for health care service plans regulated by the Department of Managed Health Care (DMHC) (primarily health maintenance organizations [HMOs] and point of service [POS] plans)

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<sup>58</sup> CHBRP's authorizing legislation requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact ([www.chbrp.org/docs/authorizing\\_statute.pdf](http://www.chbrp.org/docs/authorizing_statute.pdf)).

<sup>59</sup> UC Berkeley Center for Labor Research and Education and UC Los Angeles Center for Health Policy Research. *Methodology & Assumptions, California Simulation of Insurance Markets (CalSIM) Version 1.7*, June 2012. Available at: [www.healthpolicy.ucla.edu/pubs/files/calsim\\_methods.pdf](http://www.healthpolicy.ucla.edu/pubs/files/calsim_methods.pdf). Accessed October 19, 2012.

- d. Premiums for health insurance policies regulated by the California Department of Insurance (CDI) (primarily preferred provider organizations [PPOs] and fee-for-service [FFS] plans)

This annual survey is currently released by the California Health Care Foundation/National Opinion Research Center (CHCF/NORC) and is similar to the national employer survey released annually by the Kaiser Family Foundation and the Health Research and Educational Trust. Information on the CHCF/NORC data is available at: [www.chcf.org/publications/2010/12/california-employer-health-benefits-survey](http://www.chcf.org/publications/2010/12/california-employer-health-benefits-survey).

4. Milliman data sources are relied on to estimate the premium impact of mandates. Milliman's projections derive from the Milliman Health Cost Guidelines (HCGs). The HCGs are a health care pricing tool used by many of the major health plans in the United States. See [www.milliman.com/expertise/healthcare/products-tools/milliman-care-guidelines/index.php](http://www.milliman.com/expertise/healthcare/products-tools/milliman-care-guidelines/index.php). Most of the data sources underlying the HCGs are claims databases from commercial health insurance plans. The data are supplied by health insurance companies, HMOs, self-funded employers, and private data vendors. The data are mostly from loosely managed health care plans, generally those characterized as preferred provider organization (PPO) plans. The HCGs currently include claims drawn from plans covering 37 million members. In addition to the Milliman HCGs, CHBRP's utilization and cost estimates draw on other data, including the following:
  - a. The MarketScan databases, which reflects the health care claims experience of employees and dependents covered by the health benefit programs of large employers. These claims data are collected from approximately 100 different insurance companies, Blue Cross Blue Shield plans, and third party administrators. These data represent the medical experience of insured employees and their dependents for active employees, early retirees, individuals with COBRA continuation coverage, and Medicare-eligible retirees with employer-provided Medicare Supplemental plans. No Medicaid or Workers Compensation data are included.
  - b. An annual survey of HMO and PPO pricing and claim experience. The most recent survey (2010 Group Health Insurance Survey) contains data from seven major California health plans regarding their 2010 experience.
  - c. Ingenix MDR Charge Payment System, which includes information about professional fees paid for health care services, based upon approximately 800 million claims from commercial insurance companies, HMOs, and self-insured health plans.
  - d. These data are reviewed for applicability by an extended group of experts within Milliman but are not audited internally.
5. Premiums and enrollment in DMHC-regulated health plans and CDI-regulated policies by self-insured status and firm size are obtained annually from CalPERS for active state and local government public employees and their dependents who receive their benefits through CalPERS. Enrollment information is provided for DMHC-regulated health care service plans covering non-Medicare beneficiaries—about 74% of CalPERS total

enrollment. CalPERS self-funded plans—approximately 26% of enrollment—are not subject to state mandates. In addition, CHBRP obtains information on current scope of benefits from evidence of coverage (EOC) documents publicly available at [www.calpers.ca.gov](http://www.calpers.ca.gov). For the 2013 model, CHBRP assumes CalPERS’s enrollment in 2014 will not be affected by the ACA.

6. Enrollment in Medi-Cal Managed Care (beneficiaries enrolled in Two-Plan Model, Geographic Managed Care, and County Operated Health System plans) is estimated based on data maintained by the Department of Health Care Services (DHCS). CHBRP assesses enrollment information online at: [www.dhcs.ca.gov/dataandstats/statistics/Pages/RASB\\_Medi-Cal\\_Enrollment\\_Trends.aspx](http://www.dhcs.ca.gov/dataandstats/statistics/Pages/RASB_Medi-Cal_Enrollment_Trends.aspx). Starting with the 2013 model, the most recent Medi-Cal enrollment data from DHCS is projected to 2014 based on CalSIM’s estimate of the impact of the Medi-Cal expansion in 2014.

*Estimate of Premium Impact of Mandates*

7. CHBRP’s Annual Enrollment and Premium Survey collects information from the seven largest providers of health insurance in California (Aetna, Anthem Blue Cross of California, Blue Shield of California, CIGNA, Health Net, Kaiser Foundation Health Plan, and United Healthcare/PacifiCare) to obtain estimates of baseline enrollment by purchaser (i.e., large and small group and individual), type of plan (i.e., DMHC-regulated or CDI-regulated), grandfathered and nongrandfathered status, and average premiums. Enrollment in plans or policies offered by these seven insurers represents an estimated 97.5% of the persons with health insurance subject to state mandates. This figure represents an estimated 97.9% of enrollees in full-service (nonspecialty) DMHC-regulated health plans and an estimated 96.1% of enrollees in full-service (nonspecialty) CDI-regulated policies.

For CHBRP reports analyzing specific benefit mandates, CHBRP surveys the seven major carriers on current coverage relevant to the benefit mandate. CHBRP reports the share of enrollees—statewide and by market segment—reflected in CHBRP’s bill-specific coverage survey responses. The proportions are derived from data provided by CDI and DMHC. CDI provides data by market segment (large, small, and individual) based on “CDI Licenses With HMSR Covered Lives Greater Than 100,000” as part of the Accident and Health Covered Lives Data Call September 30, 2011, by the California Department of Insurance, Statistical Analysis Division. The Department of Managed Health Care’s interactive website “Health Plan Financial Summary Report,” July–September 2012, provides data on DMHC-regulated plans by segment.<sup>60</sup>

The following table describes the data sources mentioned above, and the data items that they inform.

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<sup>60</sup> CHBRP assumes DMHC-regulated PPO group enrollees and POS enrollees are in the large-group segment. <http://wps0.dmhc.ca.gov/flash/>.

**Table D-1. Population and Cost Model Data Sources and Data Items**

<b>Data Source</b>	<b>Items</b>
California Simulation of Insurance Markets (CalSIM)	Uninsured, age: 0–17; 18–64 Medi-Cal (non-Medicare) (a), age: 0–17; 18–64 Other public (b), age: 0–64 Individual market, age: 0–17; 18–64 Small group, age: 0–17; 18–64 Large group, age: 0–17; 18–64
California Health Interview Survey, 2011 (CHIS, 2011)	Uninsured, age: 65+ Medi-Cal (non-Medicare), age: 65+ Other public, age: 65+ Employer-sponsored insurance, age: 65+
CalPERS data, annually, enrollment as of September 30	CalPERS HMO and PPO enrollment • Age: 0–17; 18–64; 65+ HMO premiums
California Employer Survey, conducted annually by NORC and funded by CHCF	Enrollment by HMO/POS, PPO/indemnity self-insured, fully insured, Premiums (not self-insured) by: • Size of firm (3–25 as small group and 25+ as large group) • Family vs. single • HMO/POS vs. PPO/indemnity vs. HDHP employer vs. employer premium share
DHCS administrative data for the Medi-Cal program, annually, 11-month lag from the end of November	Distribution of enrollees by managed care or FFS distribution by age: 0–17; 18–64; 65+ Medi-Cal Managed Care premiums
CMS administrative data for the Medicare program, annually (if available) as of end of September	HMO vs. FFS distribution for those 65+ (noninstitutionalized)
CHBRP enrollment survey of the seven largest health plans in California, annually as of end of September	Enrollment by: • Size of firm (2–50 as small group and 51+ as large group), • DHMC vs. CDI regulated • Grandfathered vs. nongrandfathered  Premiums for individual policies by: • DMHC vs. CDI regulated • Grandfathered vs. nongrandfathered
Department of Finance population projections, for intermediate CHIS years	Projected civilian, noninstitutionalized CA population by age: 0–17; 18–64; 65+
Medical trend influencing annual premium increases	Milliman estimate

Source: California Health Benefits Review Program, 2013.

Notes: (a) Includes children previously enrolled in Healthy Families, California’s CHIP. By January 1, 2014, children enrolled in Healthy Families will be transitioned into Medi-Cal as required in the 2012–2013 state budget agreement.

(b) Includes individuals dually eligible for Medi-Cal and Medicare.

Key: CDI=California Department of Insurance; CHCF=California HealthCare Foundation; CHIS=California Health Interview Survey; CMS=Centers for Medicare & Medicaid Services; DHCS=Department of Health Care Services; DMHC=Department of Managed Health Care; FFS=fee-for-service; HMO=health maintenance organization; NORC=National Opinion Research Center; PPO=preferred provider organization.

## **Projecting the Effects of the Affordable Care Act in 2014**

This subsection discusses adjustments made to CHBRP's Cost and Coverage Model to account for the potential impacts of the ACA effective January 2014. It is important to emphasize that CHBRP's analysis of specific mandate bills typically addresses the marginal effects of the mandate bill—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, *holding all other factors constant*. CHBRP's estimates of these marginal effects are presented in the *Benefit Coverage, Utilization, and Cost Impacts* section of this report.

### *Baseline premium rate development methodology—2014 post-ACA*

Mandate bills introduced during 2013 would, if passed, become effective in 2014. Many significant provisions of the Affordable Care Act also become effective in 2014. In many cases, provisions required in the ACA would become effective on the same date as a mandate proposed to California law.

CHBRP's analyses of mandates effective in 2014 assume that carriers implement the new ACA provisions first. The baseline premiums reflect the estimated 2014 premium levels costs *after* carriers have implemented the 2014 ACA provisions. The estimated cost impact of a proposed mandate is then calculated relative to this post-ACA baseline.

The key components of the baseline model for utilization and expenditures are estimates of the per member per month (PMPM) values for each of the following:

- Insurance premiums PMPM;
- Gross claims costs PMPM;
- Member cost sharing PMPM; and
- Health care costs paid by the health plan.

For each plan type, we first obtained an estimate of the insurance premium PMPM by taking the 2012 reported premium from the above-mentioned data sources and trending that value to 2014. CHBRP uses trend rates published in the Milliman Health Cost Guidelines to estimate the health care costs for each plan segment in 2014.

In 2014, 4 plan segments in the previous CHBRP model<sup>61</sup> were split into 12 segments. Each of the two small-group segments (CDI-regulated and DMHC-regulated), and individual segments (CDI-regulated and DMHC-regulated) were split into: grandfathered non-exchange, nongrandfathered non-exchange, and exchange groups in order to separately calculate the impact of ACA and specific mandates that may apply differently to these three subgroups. The premium rate information received from NORC did not split the premiums based on grandfathered or exchange status. The 2012 CHBRP Annual Enrollment and Premium Survey asked the seven

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<sup>61</sup> In the past, CHBRP's model has reflected large-group, small-group, and individual market segments. These market segments were further subdivided by regulator: DMHC-regulated and CDI-regulated. The four plan segments refer to the small and individual market subdivisions by regulator.

largest insurance carriers in California to provide their average premium rates separately for grandfathered and nongrandfathered plans. The ratios from the carrier survey data are then applied to the NORC aggregate premium rates, to estimate premium rates for grandfathered and nongrandfathered plans that were consistent with the NORC results.

The marginal impact of ACA on 2014 premiums was established as follows:

- For nongrandfathered small-group and individual market segments, a 3% increase in medical costs is applied to reflect the total cost of requiring each plan to cover the essential health benefits.
- For nongrandfathered small-group plans, a 5% increase in medical costs is applied to reflect the other additional costs of ACA (e.g., age rating, health status, increased premium taxes and fees, change in actuarial value, etc.).
- For DMHC-regulated individual plans and CDI-regulated individual policies, an increase of 20% and 31%, respectively, in medical costs is applied to reflect the other additional costs of ACA.

The remaining three values were then estimated by the following formulas:

- Health care costs paid by the health plan = insurance premiums PMPM  $\times$  (1 – profit/administration load).
- Gross claims costs PMPM = health care costs paid by the health plan  $\div$  percentage paid by health plan
- Member cost sharing PMPM = gross claims costs  $\times$  (1 – percentage paid by health plan)

In the above formulas, the quantity “profit/administration load” is the assumed percentage of a typical premium that is allocated to the health plan’s administration and profit. These values vary by insurance category, and under the ACA, are limited by the minimum medical loss ratio requirement. CHBRP estimated these values based on Milliman’s knowledge of the health care market.

In the above formulas, the quantity “percentage paid by health plan” is the assumed percentage of gross health care costs that are paid by the health plan, as opposed to the amount paid by member cost sharing (deductibles, copays, etc.). In ACA terminology, this quantity is known as the plan’s “actuarial value.” These values vary by insurance category. For each insurance category, Milliman estimated the member cost sharing for the average or typical plan in that category. Milliman then priced these plans using the Milliman Health Cost Guidelines to estimate the percentage of gross healthcare costs that are paid by the carrier.

### *Medi-Cal Managed Care*

Given that:

- California has not yet decided on Medi-Cal’s EHBs for Californians newly eligible for Medi-Cal Managed Care; and,

- The ACA does not require coverage of EHBs for individuals currently eligible for Medicaid,

CHBRP has estimated that the PMPM cost for Medi-Cal’s newly eligible population—in the absence of further guidance on EHBs for the newly eligible population—will equal the projected cost of Medi-Cal’s currently eligible family population, excluding maternity costs.

### **General Caveats and Assumptions**

The projected cost estimates are estimates of the costs that would result if a certain set of assumptions were exactly realized. Actual costs will differ from these estimates for a wide variety of reasons, including:

- Prevalence of mandated benefits before and after the mandate may be different from CHBRP assumptions.
- Utilization of mandated benefits (and, therefore, the services covered by the benefit) before and after the mandate may be different from CHBRP assumptions.
- Random fluctuations in the utilization and cost of health care services may occur.
- The impact of ACA on the mandated benefit cost may be different from CHBRP assumptions.

Additional assumptions that underlie the cost estimates presented in this report are:

- Cost impacts are shown only for plans and policies subject to state benefit mandate laws.
- Cost impacts are only for the first year after enactment of the proposed mandate.
- Employers and employees will share proportionately (on a percentage basis) in premium rate increases resulting from the mandate. In other words, the distribution of the premium paid by the subscriber (or employee) and the employer will be unaffected by the mandate.
- For state-sponsored programs for the uninsured, the state share will continue to be equal to the absolute dollar amount of funds dedicated to the program.
- When cost savings are estimated, they reflect savings realized for 1 year. Potential long-term cost savings or impacts are estimated if existing data and literature sources are available and provide adequate detail for estimating long-term impacts. For more information on CHBRP’s criteria for estimating long-term impacts, please see: [http://chbrp.org/documents/longterm\\_impacts08.pdf](http://chbrp.org/documents/longterm_impacts08.pdf).
- Several studies have examined the effect of private insurance premium increases on the number of uninsured (Chernew et al., 2005; Glied and Jack, 2003; Hadley, 2006). Chernew et al. (2005) estimate that a 10% increase in private premiums results in a 0.74 to 0.92 percentage point decrease in the number of insured, whereas Hadley (2006) and Glied and Jack (2003) estimate that a 10% increase in private premiums produces a 0.88 and a 0.84 percentage point decrease in the number of insured, respectively. Because each of these studies reported results for the large-group, small-group, and individual insurance markets combined, CHBRP employs the simplifying assumption that the

elasticity is the same across different types of markets. For more information on CHBRP's criteria for estimating impacts on the uninsured, please see: [http://chbrp.org/documents/uninsured\\_010109.pdf](http://chbrp.org/documents/uninsured_010109.pdf).

There are other variables that may affect costs, but which CHBRP did not consider in the cost projections presented in this report. Such variables include, but are not limited to:

- Population shifts by type of health insurance: If a mandate increases health insurance costs, some employer groups and individuals may elect to drop their health insurance. Employers may also switch to self-funding to avoid having to comply with the mandate.
- Changes in benefit plans: To help offset the premium increase resulting from a mandate, subscribers/policyholders may elect to increase their overall plan deductibles or copayments. Such changes would have a direct impact on the distribution of costs between the health plan and policies and enrollees, and may also result in utilization reductions (i.e., high levels of patient cost sharing result in lower utilization of health care services). CHBRP did not include the effects of such potential benefit changes in its analysis.
- Adverse selection: Theoretically, individuals or employer groups who had previously foregone health insurance may now elect to enroll in a health plan or policy, postmandate, because they perceive that it is to their economic benefit to do so.
- Medical management: Health plans and insurers may react to the mandate by tightening medical management of the mandated benefit. This would tend to dampen the CHBRP cost estimates. The dampening would be more pronounced on the plan types that previously had the least effective medical management (i.e., PPO plans).
- Geographic and delivery systems variation: Variation in existing utilization and costs, and in the impact of the mandate, by geographic area and delivery system models: Even within the health insurance types CHBRP modeled (HMO—including HMO and POS plans—and non-HMO—including PPO and FFS policies), there are likely variations in utilization and costs by type. Utilization also differs within California due to differences in the health status of the local population, provider practice patterns, and the level of managed care available in each community. The average cost per service would also vary due to different underlying cost levels experienced by providers throughout California and the market dynamic in negotiations between providers and health plans or insurers. Both the baseline costs prior to the mandate and the estimated cost impact of the mandate could vary within the state due to geographic and delivery system differences. For purposes of this analysis, however, CHBRP has estimated the impact on a statewide level.
- Compliance with the mandate: For estimating the postmandate coverage levels, CHBRP typically assumes that plans and policies subject to the mandate will be in compliance with the coverage requirements of the bill. Therefore, the typical postmandate coverage rates for populations subject to the mandate are assumed to be 100%.

## Appendix E: Information Submitted by Outside Parties

In accordance with CHBRP policy to analyze information submitted by outside parties during the first 2 weeks of the CHBRP review, the following parties chose to submit information.

The following information was submitted in March 2013 by the Office of Assembly Member William Monning.

AARP. Recommendations Re: Incentives for Nondiscriminatory Wellness Programs in Group Health Plans. January 25, 2013.

Arnett DK, for the American Heart Association. Re: Wellness Programs [letter]. January 25, 2013. Available at: [www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm\\_448562.pdf](http://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_448562.pdf). Accessed March 2013.

Gowrisankaran G, Norberg K, Kymes S, et al. A hospital system's wellness program linked to health plan enrollment cut hospitalizations but not overall costs. *Health Affairs (Millwood)*. 2013;32:477-485. Available at: <http://content.healthaffairs.org/content/32/3/477.full.html>. Accessed March 2013.

O'Donnell M, Mitts L. Should employees get insurance discounts for completing wellness programs? *The Wall Street Journal*. February 18, 2013. Available at: <http://online.wsj.com/article/SB10001424127887324610504578273673319849976.html>. Accessed March 2013.

Osilla KC, Van Busum K, Schnyer C, Larkin JW, Eibner C, Mattke S. Systematic review of the impact of worksite wellness programs. *American Journal of Managed Care*. 2012;18:e68-e81. Available at: [www.ajmc.com/articles/Systematic-Review-of-the-Impact-of-Worksite-Wellness-Programs](http://www.ajmc.com/articles/Systematic-Review-of-the-Impact-of-Worksite-Wellness-Programs). Accessed March 2013.

Saporta C, Roscoe N, Dennis A, Cantor J, Wurtz J. Health, Equity, and the Bottom Line: Workplace Wellness and California Small Businesses. December 2012. Berkeley, CA: Greenlining Institute and Prevention Institute. Available at: <http://greenlining.org/wp-content/uploads/2013/02/GIWWPBrief.pdf>. Accessed March 2013.

Schmidt H, Voigt K, Wikler D. Carrots, sticks, and health care reform: problems with wellness incentives. *The New England Journal of Medicine*. 2010;362:e3(1)-e3(3). Available at: [www.nejm.org/doi/pdf/10.1056/NEJMp0911552](http://www.nejm.org/doi/pdf/10.1056/NEJMp0911552). Accessed March 2013.

Volk J, Corlette S. Premium Incentives to Drive Wellness in the Workplace: A Review of the Issues and Recommendations for Policymakers. February 2012. Washington DC: Georgetown University Health Policy Institute. Available at: [www.rwjf.org/content/dam/web-assets/2012/02/premium-incentives-to-drive-wellness-in-the-workplace](http://www.rwjf.org/content/dam/web-assets/2012/02/premium-incentives-to-drive-wellness-in-the-workplace). Accessed March 2013.

Submitted information is available upon request.

For information on the processes for submitting information to CHBRP for review and consideration please visit: [www.chbrp.org/requests.html](http://www.chbrp.org/requests.html).

## REFERENCES

- Al-Delaimy WK, White MM, Mills AL, et al. *Two Decades of the California Tobacco Control Program: California Tobacco Survey, 1990-2008*. Final Summary Report. La Jolla, CA: University of California, San Diego; 2010.
- Aligne CA, Stoddard JJ. Tobacco and children: an economic evaluation of the medical effects of parental smoking. *Archives of Pediatric Adolescent Medicine*. 1997;151:648-653.
- American Lung Association (ALA). Health Effects. 2011. Available at: [www.lung.org/stop-smoking/about-smoking/health-effects](http://www.lung.org/stop-smoking/about-smoking/health-effects). Accessed March 2013.
- Anderson BK, Larimer ME. Problem drinking and the workplace: an individualized approach to prevention. *Psychology of Addictive Behaviors*. 2002;16:243-251.
- Barham K, West S, Trief P, Morrow C, Wade M, Weinstock RS. Diabetes prevention and control in the workplace: a pilot project for county employees. *Journal of Public Health Management and Practice*. 2011;17:233-241.
- Behan DR, Eriksen MP, Lin Y. Economic effects of environmental tobacco smoke. Society of Actuaries. 2005. Available at: [www.soa.org/Files/Research/Projects/ETSReportFinalDraft\(Final-3\).pdf](http://www.soa.org/Files/Research/Projects/ETSReportFinalDraft(Final-3).pdf). Accessed March 22, 2011.
- Bloch MJ, Armstrong DS, Dettling L, Hardy A, Caterino K, Barrie S. Partners in lowering cholesterol: comparison of a multidisciplinary educational program, monetary incentives, or usual care in the treatment of dyslipidemia identified among employees. *Journal of Occupational and Environmental Medicine*. 2006;48:675-681.
- Braveman P. Health disparities and health equity: concepts and measurement. *Annual Review of Public Health*. 2006;27:167-194.
- Brehm BJ, Gates DM, Singler M, Succop PA, D'Alessio DA. Environmental changes to control obesity: a randomized controlled trial in manufacturing companies. *American Journal of Health Promotion*, 2011;25:334-340.
- Cahill K, Moher M, Lancaster T. Workplace interventions for smoking cessation. *Cochrane Database of Systematic Reviews*. 2008;(4):CD003440.
- Cahill K, Perera R. Competitions and incentives for smoking cessation. *Cochrane Database of Systematic Reviews*. 2011;(4):CD004307.
- California Department of Alcohol and Drug Programs (ADP). Fact Sheet: Driving-Under-The-Influence (DUI) Statistics, 2010. August 2012. Available at: [www.adp.state.ca.us/FactSheets/DrivingUnderTheInfluenceStatistics.pdf](http://www.adp.state.ca.us/FactSheets/DrivingUnderTheInfluenceStatistics.pdf). Accessed April 2013.
- California Department of Public Health (CDPH). California Dietary Practices Survey (CDPS) Data Tables, 2009. Available at: [www.cdph.ca.gov/programs/cpns/Pages/2009CDPSDataTableS.aspx](http://www.cdph.ca.gov/programs/cpns/Pages/2009CDPSDataTableS.aspx). Accessed March 2013.
- California Department of Public Health (CDPH). Premature Mortality Trends 2000-2007. Available at: [www.cdph.ca.gov/programs/ohir/Pages/YPLL2007Main.aspx](http://www.cdph.ca.gov/programs/ohir/Pages/YPLL2007Main.aspx). Accessed December 2011.

- California Department of Public Health (CDPH). Table 5-8. Thirteen leading causes of death by race/ethnic group and sex, California, 2005. Available at: [www.cdph.ca.gov/data/statistics/Documents/VSC-2005-0508.pdf](http://www.cdph.ca.gov/data/statistics/Documents/VSC-2005-0508.pdf), Accessed March 2013.
- California Department of Public Health, California Tobacco Control Program (CDPH/CTCP). Adult Smoking Prevalence. 2010. Available at: [http://www.cdph.ca.gov/programs/tobacco/Documents/CTCPAdultSmoking\\_10.pdf](http://www.cdph.ca.gov/programs/tobacco/Documents/CTCPAdultSmoking_10.pdf)[www.cdph.ca.gov/programs/tobacco/Documents/CTCPAdultSmoking\\_10.pdf](http://www.cdph.ca.gov/programs/tobacco/Documents/CTCPAdultSmoking_10.pdf). Accessed March 2013.
- California Environmental Protection Agency (EPA) Air Resources Board. Fact Sheet—Environmental Tobacco Smoke: A Toxic Air Contaminant. October 2006. Available at: [www.arb.ca.gov/toxics/ets/factsheetets.pdf](http://www.arb.ca.gov/toxics/ets/factsheetets.pdf). Accessed March 22, 2011.
- California Health Interview Survey (CHIS). 2005, 2009, 2011, 2012 data. Los Angeles, CA: UCLA Center for Health Policy Research; 2013. Available at: [www.chis.ucla.edu](http://www.chis.ucla.edu). Accessed March 2013.
- California Highway Patrol (CHP). Section 5—alcohol involved collisions. In: *2010 Annual Report of Fatal and Injury Motor Vehicle Traffic Collisions*. Available at: [www.chp.ca.gov/switrs/pdf/2010-sec5.pdf](http://www.chp.ca.gov/switrs/pdf/2010-sec5.pdf). Accessed April 2013.
- California Office of Traffic Safety (OTS). California Traffic Safety Report Card. Revised February 2012. Available at: [www.ots.ca.gov/OTS\\_and\\_Traffic\\_Safety/Report\\_Card.asp](http://www.ots.ca.gov/OTS_and_Traffic_Safety/Report_Card.asp). Accessed April 2013.
- Campbell MK, Tessaro I, DeVellis B, et al. Effects of a tailored health promotion program for female blue-collar workers: health works for women. *Preventive Medicine*. 2002;34:313-323.
- Carlsten C, Halperin A, Crouch J, Burke W. Personalized medicine and tobacco-related health disparities: is there a role for genetics? *Annals of Family Medicine*. 2011;9:366-371.
- Centers for Disease Control and Prevention (CDC). Smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000-2004. *MMWR: Morbidity and Mortality Weekly Report*. 2008;57:1226-1228.
- Centers for Disease Control and Prevention (CDC). State-specific trends in fruit and vegetable consumption among adults—United States, 2000-2009. *MMWR: Morbidity and Mortality Weekly Report*. 2010a;59:1125-1130.
- Centers for Disease Control and Prevention (CDC). *Smoking and Tobacco Use: State Tobacco Activities Tracking and Evaluation (STATE System: Detailed Report California)* (SAMMEC). 2010b. Available at: <http://apps.nccd.cdc.gov/statesystem/HighlightReport/HighlightReport.aspx/>. Accessed April 2013.
- Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data—Alcohol Consumption*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2011a.
- Centers for Disease Control and Prevention (CDC). How Much Physical Activity Do Adults Need? Updated December 2011b. Available at: [www.cdc.gov/physicalactivity/everyone/guidelines/adults.html](http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html). Accessed April 2013.

- Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data—Physical Activity*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2011c.
- Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data—Overweight and Obesity (BMI)*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2011d.
- Centers for Disease Control and Prevention (CDC). Obesity: Halting the Epidemic by Making Health Easier, At a Glance. 2011e. Available at: <http://www.cdc.gov/chronicdisease/resources/publications/aag/obesity.htm>. Accessed March 2013.
- Centers for Disease Control and Prevention (CDC). Fact Sheets: Alcohol Use and Health. Updated October 2012. Available at: [www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm](http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm). Accessed March 2013.
- Chernew M, Cutler M, Seliger Keenan P. Competition, markets, and insurance: Increasing health insurance costs and the decline in insurance coverage. *Health Services Research*. 2005;40:1021-1039. Available at: [http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/May/1603\\_Schmidt\\_moving\\_forward\\_wellness\\_incentives\\_germany\\_intl\\_brief.pdf](http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/May/1603_Schmidt_moving_forward_wellness_incentives_germany_intl_brief.pdf).
- Cook RF, Billings DW, Hersch RK, Back AS, Hendrickson A. A field test of a web-based workplace health promotion program to improve dietary practices, reduce stress, and increase physical activity: randomized controlled trial. *Journal of Medical Internet Research*. 2007;9:e17.
- Cox DH. Premature mortality in California, 2004. Center for Health Statistics. December 2006. Available at: [www.cdph.ca.gov/pubsforms/Pubs/OHIRprematuremortality2004.pdf](http://www.cdph.ca.gov/pubsforms/Pubs/OHIRprematuremortality2004.pdf). Accessed November 30, 2011.
- Critchley JA, Capewell S. Mortality risk reduction associated with smoking cessation in patients with coronary heart disease: a systematic review. *Journal of the American Medical Association*. 2003;290:86-97.
- Doumas DM, Hannah E. Preventing high-risk drinking in youth in the workplace: a web-based normative feedback program. *Journal of Substance Abuse Treatment*. 2008;34:263-271.
- Fiore MC. U.S. Public Health Service clinical practice guideline: treating tobacco use and dependence. *Respiratory Care*. 2000;45:1200-1262.
- Fiore MC, Bailey WC, Cohen SJ, et al. *Treating Tobacco Use and Dependence*. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service; 2000.
- Follick MJ, Fowler JL, Brown RA. Attrition at worksite weight-loss interventions: the effects of an incentive procedure. *Journal of Consulting and Clinical Psychology*. 1984;52:139-140.
- French SA, Harnack LJ, Hannan PJ, Michell NR, Gerlach AF, Toomey TL. Worksite environment intervention to prevent obesity among metropolitan transit workers. *Preventive Medicine*. 2010;50:180-185.

- Fu S, Kodi M, Joseph A, et al. Racial/ethnic disparities in the use of nicotine replacement therapy and quit ratios in lifetime smokers ages 25 to 44 years. *Cancer Epidemiology Biomarkers & Prevention*. 2008;17:1640-1647.
- Gardner JW, Sanborn JS. Years of potential life lost (YPLL)—what does it measure? *Epidemiology*. 1990;1:322-329.
- Glied S, Jack K. *Macroeconomic conditions, health care costs, and the distribution of health insurance*. NBER Working Paper No. 10029. Cambridge, MA: National Bureau of Economic Research; October 2003. Available at: [www.nber.org/papers/W10029](http://www.nber.org/papers/W10029). Accessed August 2, 2010.
- Gomel M, Oldenburg B, Simpson JM, Owen N. Work-site cardiovascular risk reduction: a randomized trial of health risk assessment, education, counseling, and incentives. *American Journal of Public Health*. 1993;83:1231-1238.
- Gosliner WA, James P, Yancey AK, Ritchie L, Studer N, Crawford PB. Impact of a worksite wellness program on the nutrition and physical activity environment of child care centers. *American Journal of Health Promotion*. 2010;24:186-189.
- Gupta SK. Intent-to-treat concept: a review. *Perspectives in Clinical Research*. 2011;2:109-112.
- Hadley J. The effects of recent employment changes and premium increases on adults' insurance coverage. *Medical Care Research and Review*. 2006;63:447-476.
- Haiman CA, Stram DO, Wilkens LR, et al. Ethnic and racial differences in the smoking-related risk of lung cancer. *New England Journal of Medicine*. 2006;354:333-342.
- Haisley E, Volpp KG, Pellathy T, Lowenstein G. The impact of alternative incentive schemes on completion of health risk assessments. *American Journal of Health Promotion*. 2012;26:184-188.
- Heirich M, Sieck CJ. Worksite cardiovascular wellness programs as a route to substance abuse prevention. *Journal of Occupational and Environmental Medicine*. 2000;42:47-56.
- Health Affairs. *Health Policy Brief: Workplace*. Updated December 4, 2012. Available at: [http://healthaffairs.org/healthpolicybriefs/brief\\_pdfs/healthpolicybrief\\_81.pdf](http://healthaffairs.org/healthpolicybriefs/brief_pdfs/healthpolicybrief_81.pdf). Accessed March 2013.
- Hughes SL, Seymour RB, Campbell RT, Shaw JW, Fabiyi C, Sokas R. Comparison of two health-promotion programs for older workers. *American Journal of Public Health*. 2011;101:883-890.
- John LK, Lowenstein G, Troxol AB, Norton L, Fassbender JE, Volpp KG. Financial incentives for extended weight loss: a randomized, controlled trial. *Journal of General Internal Medicine*. 2011;26:621-626.
- Kaiser Family Foundation (KFF). Employer Health Benefits 2011 Annual Survey. Available at: <http://ehbs.kff.org/2011.html>. Accessed March 2013.
- Kaiser Family Foundation (KFF). Employer Health Benefits 2012 Annual Survey. Available at: <http://ehbs.kff.org/>. Accessed March 2013.

- Kaiser Family Foundation (KFF). Key Facts: Race, Ethnicity and Medical Care. 2007 Update. January 2007. Available at: [www.kff.org/minorityhealth/upload/6069-02.pdf](http://www.kff.org/minorityhealth/upload/6069-02.pdf). Accessed March 2009.
- Kaspin LC, Gorman KM, Miller RM. Systematic review of employer-sponsored wellness strategies and their economic and health-related outcomes. *Population Health Management*. 2013;16:14-21.
- King G, Polednak A, Gilreath T, Bendel R. Disparities in smoking cessation among U.S. adults with a history of asthma. *Annals of Behavioral Medicine*. 2007; 33:312-317.
- Kirby JB, Taliaferro G, Zuvekas SH. Explaining racial and ethnic disparities in health care. *Medical Care*. 2006;44(suppl):164-172.
- Lahiri S, Faghri PD. Cost-effectiveness of a workplace-based incentivized weight loss program. *Journal of Occupational and Environmental Medicine*. 2012;54:371-377.
- Lawrence D, Graber JE, Mills SL, Meissner HI, Warnecke R. Smoking cessation interventions in the U.S. racial/ethnic minority populations: an assessment of the literature. *Preventive Medicine*. 2003;36:204-216.
- Lillie-Blanton M, Hoffman C. The role of health insurance coverage in reducing racial/ethnic disparities in health care. *Health Affairs (Millwood)*. 2005;24:398-408.
- Linde JA, Nygaard KE, MacLehose RF, et al. HealthWorks: results of a multi-component group-randomized worksite environmental intervention trial for weight gain prevention. *International Journal of Behavioral Nutrition and Physical Activity*. 2012;9:14.
- Lowe MR, Tappe KA, Butryn ML, et al. An intervention study targeting energy and nutrient intake in worksite cafeterias. *Eating Behaviors*. 2010;11:144-151.
- Max W, Rice DP, Sung HY, Zhang X, Miller L. The economic burden of smoking in California. *Tobacco Control*. 2004;13:264-267.
- McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA*. 1993;270:2207-2212.
- Meenan RT, Vogt TM, Williams AE, Stevens VJ, Albright CL, Nigg C. Economic evaluation of a worksite obesity prevention and intervention trial among hotel workers in Hawaii. *Journal of Occupational and Environmental Medicine*. 2010;(suppl 1):S8-S13.
- Mercer Health and Benefits. The prevalence, structure and effectiveness of employee health management programs. A special analysis of data from: Mercer's National Survey of Employer-Sponsored Health Plans and the HERO Employee Health Management Best Practice Scorecard. May 2010. Available at: <http://www.mass.gov/ocabr/government/oca-agencies/doi-lp/analysis-of-wellness-and-health-management.html>  
[www.mass.gov/ocabr/government/oca-agencies/doi-lp/analysis-of-wellness-and-health-management.html](http://www.mass.gov/ocabr/government/oca-agencies/doi-lp/analysis-of-wellness-and-health-management.html). Accessed March 2013.
- Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual Causes of Death in the United States, 2000. *JAMA*. 2004;291:1238-1245
- Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Correction: Actual Causes of Death in the United States, 2000. *JAMA*. 2005;293:293-294.

- Mulder I, Tijhuis M, Smith HA, Kromhout D. Smoking cessation and quality of life: the effect of amount of smoking and time since quitting. *Preventive Medicine*. 2001;33:653-660.
- Nayer C, Berger J, Mahoney J. Wellness, hard to define, reduces trend up to 4 percent. *Population Health Management*. 2010;13:83-89.
- Nelson DE, Jarman DW, Rehm J, et al. Alcohol-attributable cancer deaths and years of potential life lost in the United States. *American Journal of Public Health*. 2013;103:641-648.
- Nichols JF, Wellman E, Caparosa S, Sallis JF, Calfas KJ, Rowe R. Impact of a worksite behavioral skills intervention. *American Journal of Health Promotion*. 2000;14:218-221.
- Osilla KC, Van Busum K, Schnyer C, Larkin JW, Eibner C, Mattke S. Systematic review of the impact of worksite wellness programs. *American Journal of Managed Care*. 2012;18:e68-e81.
- Oster G, Thompson D, Edelsberg J, Bird AP, Colditz GA. Lifetime health and economic benefits of weight loss among obese persons. *American Journal of Public Health*. 1999;89:1536-1542.
- Ostbye T, Dement JM, Krause KM. Obesity and workers' compensation: results from the Duke Health and Safety Surveillance System. *Archives of Internal Medicine*. 2007;167:766-773.
- Piper ME, Cook J, Schlam T, et al. Gender, race, and education differences in abstinence rates among participants in two randomized smoking cessation trials. *Nicotine and Tobacco Research*. 2010;12:647-657.
- Piper ME, Fox BJ, Welsch SK, Fiore MC, Baker TB. Gender and racial/ethnic differences in tobacco-dependence treatment: A commentary and research recommendations. *Nicotine and Tobacco Research*. 2001;3:291-297.
- Purath J, Miller AM, McCabe G, Wilbur J. A brief intervention to increase physical activity in sedentary working women. *Canadian Journal of Nursing Research*. 2004;36:76-91.
- Racette SB, Deusinger SS, Inman CL, et al. Worksite Opportunities for Wellness (WOW): effects on cardiovascular disease risk factors after 1 year. *Preventive Medicine*. 2009;49:108-114.
- Rosen SM, Miller TR, Simon M. The cost of alcohol in California. *Alcoholism, Clinical and Experimental Research*. 2008;32:1925-1936.
- Rosenthal MB, Landon BE, Normand SL, Ahmad TS, Epstein AM. Engagement of health plans and employers in addressing racial and ethnic disparities in health care. *Medical Care Research and Review*. 2008;66:219-231.
- Sanderson Cox L, Okuyemi K, Choi WS, Ahluwalia JS. A review of tobacco treatments in U.S. ethnic minority populations. *American Journal of Health Promotion*. 2011;25(suppl):S11-S30.
- Schmidt H, Stock S, Doran T. Moving forward with wellness incentives under the Affordable Care Act: lessons from Germany. Commonwealth Fund publication 1603. *Issues in International Health Policy*; May 2012. Available at: [www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/May/1603\\_Schmidt\\_moving\\_forward\\_wellness\\_incentives\\_germany\\_intl\\_brief.pdf](http://www.commonwealthfund.org/~media/Files/Publications/Issue%20Brief/2012/May/1603_Schmidt_moving_forward_wellness_incentives_germany_intl_brief.pdf). Accessed March 2013.

- Shield KD, Gmel G, Kehoe-Chan T, Dawson DA, Grant BF, Rehm J. Mortality and potential years of life lost attributable to alcohol consumption by race and sex in the United States in 2005. *PLoS ONE*. 2013;8:e51923.
- Siegel JM, Prelip ML, Erausquin JT, Kim SA. A worksite obesity intervention: results from a group-randomized trial. *American Journal of Public Health*. 2010;100:327-333.
- Sforzo GA, Kaye MP, Calleri D, Ngai N. Free choice access to multipoint wellness education and related services positively impacts employee wellness: a randomized and controlled trial. *Journal of Occupational and Environmental Medicine*. 2012;54:471-477.
- Sorensen G, Stoddard AM, LaMontagne AD, et al. A comprehensive worksite cancer prevention intervention: behavior change results from a randomized controlled trial (United States). *Journal of Public Health Policy*. 2003;24:5-25.
- Sternfeld B, Block C, Quesenberry CP Jr., et al. Improving diet and physical activity with ALIVE: a worksite randomized trial. *American Journal of Preventive Medicine*. 2009;36:475-483.
- Suskin N, Sheth T, Negassa A, Yusuf S. Relationship of current and past smoking to mortality and morbidity in patients with left ventricular dysfunction. *Journal of the American College of Cardiology*. 2001;37:1677-1682.
- Taylor DH, Hasselblad V, Henley SJ, Thun MJ, Sloan FA. Benefits of smoking cessation for longevity. *American Journal of Public Health*. 2002;92:990-996.
- Terry PE, Fowles JB, Xi M, Harvey L. The ACTIVATE study: results from a group-randomized controlled trial comparing a traditional worksite health promotion program with an activated consumer program. *American Journal of Health Promotion*. 2011;26:e64-e73.
- Thorndike AN, Sonnenberg L, Healey E, Myint-U K, Kvedar JC, Regan S. Prevention of weight gain following a worksite nutrition and exercise program: a randomized controlled trial. *American Journal of Preventive Medicine*. 2012;43:27-33.
- Trinidad DR, Pérez-Stable EJ, White MM, Emery SL, Messer K. A nationwide analysis of U.S. racial/ethnic disparities in smoking behaviors, smoking cessation, and cessation-related factors. *American Journal of Public Health*. 2011;101:699-706.
- U.S. Department of Agriculture and U.S. Department of Health and Human Services (USDA). *Dietary Guidelines for Americans, 2010*. 7th ed. Washington, DC: U.S. Government Printing Office; December 2010. Available at: [www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/PolicyDoc.pdf](http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/PolicyDoc.pdf). Accessed April 2013.
- U.S. Department of Health and Human Services (HHS). *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006.

- U.S. Department of Health and Human Services (HHS), Office of Disease Prevention and Health Promotion. Tobacco use. In: *Healthy People 2020: Objective Topic Areas*—Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion; December 2010:315-330. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/pdfs/HP2020objectives.pdf>[www.healthypeople.gov/2020/topicsobjectives2020/pdfs/HP2020objectives.pdf](http://www.healthypeople.gov/2020/topicsobjectives2020/pdfs/HP2020objectives.pdf). Accessed March 2013.
- U.S. Department of Health and Human Services (HHS), Office of the Surgeon General. Overweight and Obesity: Health Consequences. Available at: [www.surgeongeneral.gov/library/calls/obesity/fact\\_consequences.html](http://www.surgeongeneral.gov/library/calls/obesity/fact_consequences.html). Accessed April 2013.
- van Dongen JM, Proper KI, van Wier MF, et al. Systematic review on the financial return of worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity. *Obesity Reviews*. 2011;12:1031-1049.
- Volk J, Corlette S. Premium Incentives to Drive Wellness in the Workplace: A Review of the Issues and Recommendations for Policymakers. February 2012. Georgetown University Health Policy Institute. Available at: [www.rwjf.org/content/dam/web-assets/2012/02/premium-incentives-to-drive-wellness-in-the-workplace](http://www.rwjf.org/content/dam/web-assets/2012/02/premium-incentives-to-drive-wellness-in-the-workplace). Accessed March 2013.
- Volpp KG, Troxel AB, Pauley MV, et al. A randomized, controlled trial of financial incentives for smoking cessation. *New England Journal of Medicine*. 2009;360:699-709.
- Warner KE, Mendez D, Smith D. The financial implications of coverage of smoking cessation treatment by managed care organizations. *Inquiry*. 2004;41:57-69.

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A group of faculty and staff undertakes most of the analysis that informs reports by the California Health Benefits Review Program (CHBRP). The CHBRP **Faculty Task Force** comprises rotating representatives from six University of California (UC) campuses. In addition to these representatives, there are other ongoing contributors to CHBRP from UC. This larger group provides advice to the CHBRP staff on the overall administration of the program and conducts much of the analysis. The **CHBRP staff** coordinates the efforts of the Faculty Task Force, works with Task Force members in preparing parts of the analysis, and coordinates all external communications, including those with the California Legislature. The level of involvement of members of the CHBRP Faculty Task Force and staff varies on each report, with individual participants more closely involved in the preparation of some reports and less involved in others. As required by CHBRP's authorizing legislation, UC contracts with a certified actuary, Milliman Inc., to assist in assessing the financial impact of each legislative proposal mandating or repealing a health insurance benefit. Milliman also helped with the initial development of CHBRP methods for assessing that impact.

The **National Advisory Council** provides expert reviews of draft analyses and offers general guidance on the program to CHBRP staff and the Faculty Task Force. CHBRP is grateful for the valuable assistance and thoughtful critiques provided by the members of the National Advisory Council. However, the Council does not necessarily approve or disapprove of or endorse this report. CHBRP assumes full responsibility for the report and the accuracy of its contents.

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