



Economic Analysis of the Healthy California Single-Payer Health Care Proposal (SB-562)

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We are grateful for the contributions to this project and comments on a preliminary draft by Amal Ahmad, Michael Ash, Megan Baier, Brian Callaci, Shouvik Chakraborty, Don DeMoro, Jerry Epstein, Jerry Friedman, David Himmelstein, Dan Johnston, Jim Kahn, Ian Lewis, Michael Lighty, and Stephanie Woolhandler. We also appreciate the financial support for this project from the California Nurses Association. All errors remain our own.

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INTRODUCTION AND SUMMARY OF MAIN FINDINGS

The Healthy California Act, SB-562, was introduced before the California legislature in February 2017 by State Senator Ricardo Lara. This study provides an economic analysis of the proposed measure.

The study is comprised of four major sections. They are:

1. Cost Estimate of Universal Health Care Coverage in California
2. Cost Saving Potential under Healthy California
3. Financing Healthy California
4. Impact on Individual California Families and Businesses

The main findings of the study are as follows:

Cost Estimate of Universal Health Care Coverage in California

Total spending on health care in California at present is \$368.5 billion. This represents 14.2 percent of California's 2016 GDP.

At present, California's health care system includes 33.4 million people (92.5 percent) who have some form of health insurance coverage and 2.7 million (7.5 percent) who are uninsured. However, among the insured, about 12 million people—36 percent of the insured—are *underinsured*. These are people whose health insurance provisions include high deductibles and/or large out-of-pocket expenses.

The primary goal of Healthy California is to provide high-quality health care to all California residents. We estimate that to achieve this under California's existing health care system would increase overall costs of the system by 9.6 percent. Health care spending in California would thus increase to \$404.1 billion under the existing system.

Cost Saving Potential under Healthy California

We estimate that, through implementation of Healthy California, overall costs of providing full health care coverage to all Californians could fall by about 18 percent relative to spending levels under the existing system. There will be two broad areas of cost saving under Healthy California. The first is a set of structural changes in the areas of: 1) administration; 2) pharmaceutical pricing; and 3) fee structures for service providers. We estimate that cost savings in the range of 13 percent of total costs are achievable through structural changes in these areas.

The second is through significantly reducing the high level of inefficiency that currently prevails in service provision. The major 2010 study of the U.S. Institute of Medicine found that, as a lower-bound estimate, cost savings in the range of 19 percent of total expenditures are achievable through addressing four major problems with service delivery: 1) unnecessary services; 2) inefficiently delivered services; 3) missed prevention opportunities; and 4) fraud. We assume that achievable cost savings in these areas through Healthy California will be around 5 percent—i.e. roughly one-quarter of the Institute of Medicine's lower-bound 19 percent figure.

Assuming that universal coverage is achieved under Healthy California and that cost savings are also achieved to the extent we have estimated, the net impact will be to create a single-payer health care system in California that guarantees universal coverage for all California residents, while the overall costs of the full-coverage system will be about 10 percent less than the existing system. The overall annual costs of this single-payer system for California would be \$331 billion as of 2017.

Financing Healthy California

There will be two sources of financing for Healthy California. The first is the same public health care revenue sources that are presently providing about 71 percent of all health care funding in the state. These include Medicare and MediCal, which together provide nearly 50 percent of all health care funding in California at present. It also includes tax subsidies for health care expenditures by individuals and households in the state, which provide about 9 percent of the state's total health care funding. The Healthy California bill is explicit in stating that the State will work to obtain waivers in all of the present areas of public health funding, so that these present funding sources will continue to finance Healthy California.

Assuming the state is successful in obtaining these waivers, these funds will provide \$225 billion in funding for the state's single-payer program. That means that the remaining \$106 billion to fund Healthy California will need to be provided by new revenue sources in the state. We propose two new taxes to generate the required \$106 billion in additional funding as of 2017:

- 1) **A gross receipts tax of 2.3 percent.** This tax will be applied to all businesses in California. It will include an exemption for the first \$2 million in receipts for all businesses. Through this exemption, firms that average up to 9 employees will have no gross receipts tax obligation. Firms with up to 19 employees will pay taxes on only about one-third of their gross revenue.
- 2) **A sales tax of 2.3 percent.** The sales tax will exempt all spending on housing, utility and food at home. To be consistent with the existing California tax code, it will also include exemptions on a broad range of service expenditures. It further includes a 2 percent income tax credit for families currently insured through MediCal, to fully offset their 2.3 percent sales tax spending.

These two taxes, set at the rates and under the specific provisions stipulated, will raise roughly \$106 billion in the current California economy. In Appendix 3 of this study, we also present an alternative approach to generating the needed \$106 billion—relying on a payroll tax of 3.3 percent for both employers and employees rather than the 2.3 percent gross receipts tax, in addition to retaining the 2.3 percent sales tax.

Impact on Individual Families and Businesses

We consider the impact of Healthy California relative to the existing system for seven representative family types. These are: low-income families that currently qualify for MediCal; low-income families that do not qualify for MediCal and do not have private health insurance; middle-income families with distinct insurance arrangements, including families that are underinsured, individually insured, and insured by their employer; and high-income families, within the top 20 and top 10 percent income levels respectively.

We also examine impacts on small, medium and large businesses. We consider two types of small business—those that do not provide health insurance for their employees versus those that do provide coverage. We then consider medium-sized businesses, which employ 10 – 19 workers and 20 -99 workers respectively. We finally examine two types of large businesses, those that employ between 100 – 499 workers and ones employing 500 workers or more.

Our results show how Healthy California can promote both lower costs and greater equity in the provision of health care in California, for both families and businesses of all sizes.

For example, we find that for middle-income families, the net costs of health care under the present system range between 3.4 and 9.9 percent of the families' income. By contrast, California's high-income families are presently receiving *a net subsidy* of 1 percent of their income to support their health care coverage. Under Healthy California, net health care spending for middle-income families falls sharply, to an average of 0.8 percent of these families' income level. This represents a reduction in health care spending for California's middle-income families of between 2.6 – 9.1 percent of income. By contrast, with California's high-income families, health care costs will rise, but still only to an average of 0.6 percent of their average income level.

With respect to businesses, we find that all the representative firms of all sizes are at least no worse off through Healthy California relative to conditions with the existing system. In most cases, the firms be significantly better off. Thus, small firms that have been providing private health care coverage for their workers will see their health care costs fall by 22 percent as a share of payroll. The small firms that have not provided coverage will still make zero payments for health care under Healthy California, since their average level of gross receipts falls well below the \$2 million threshold for receiving a tax exemption.

Medium-sized firms will see their health care costs fall by between 6.8 and 13.4 percent as a share of payroll under Healthy California relative to the existing system. Even firms with up to 500 employees will experience a fall in their net health care costs of 5.7 percent as a share of payroll relative to the existing system. Finally, the largest firms in California, which employ an average of 1,143 workers and receive gross receipts, on average, of \$487.3 million, will experience a decline in their health care spending of 0.6 percent as a share of payroll under Healthy California relative to what they presently pay.

In sum, the establishment of the Healthy California single-payer system will generate financial benefits for both families and businesses at all levels of the California economy. For families at most income levels and for businesses of most sizes, these financial benefits will be substantial. These benefits are in addition to those that the residents of California will achieve through having universal access to decent health care.

In addition to summarizing our main findings, we should acknowledge at the outset that this study is relatively modest in its scope. We have by no means attempted to analyze the full range of economic effects of Healthy California. For example, we do not undertake a dynamic analysis of the change in California's health care system on private investment and employment that would be induced by sharply falling health care costs for firms that are presently providing coverage for their employees. We also do not examine how overall household consumption behavior may change due to the changes in health care spending that would result through Healthy California—with health care costs falling for low- and especially middle-income families, while rising modestly for high-income families. We also do not address the major challenges that the California economy will face as it proceeds with the transition out of the existing health care system and into a system based on the Healthy California legislation. Each of these important issues, as well as other related matters of significance, will need to be taken up in future work by ourselves and other researchers.

1. COST ESTIMATE OF UNIVERSAL HEALTH CARE COVERAGE IN CALIFORNIA

Estimates of health care expenditures at both the national and state levels are provided in the National Health Expenditure Accounts produced by the Centers for Medicare and Medicaid Services (CMS).¹ The most recent figures for California are for 2009.² But national-level figures are available through 2015, and projected national figures are provided through 2025. These projected figures are derived on the basis of the rates of cost increase for the individual components of total personal care.

Spending on Personal Care

We can use the most recent national figures and projections through 2017 to generate estimated figures for spending on personal health care in California through 2017. In Table 1, we present the actual 2009 spending figures, the estimated growth in costs for each of our spending categories and the resulting estimated cost figures for 2017.

**Table 1. Personal Health Care Expenditures in California:
2009 Actuals and 2017 Estimated Figures**

	2009 Actual Figures		Growth rate of spending, 2009 – 17	2017 Estimates	
	Spending level (billions \$\$)	Share of total spending		Spending level (billions \$\$)	Share of total spending
Hospitals	\$76.6	33.3%	4.87%	\$112.1	34.2%
Physicians/Clinics	\$67.7	29.4%	4.64%	\$97.4	29.7%
Pharmaceuticals	\$29.0	12.6%	4.53%	\$41.3	12.6%
Dental	\$14.7	6.4%	2.84%	\$18.4	5.6%
Nursing Home	\$11.4	4.9%	2.9%	\$14.3	4.4%
Home Health	\$9.1	4.0%	5.06%	\$13.5	4.1%
Other professional services	\$8.0	3.5%	4.72%	\$11.5	3.5%
Durable goods/equipment	\$2.8	1.2%	2.87%	\$3.6	1.1%
Other expenditure	\$10.8	4.7%	5.21%	\$16.1	4.9%
TOTAL PERSONAL CARE	\$230.1	100%	4.51%	\$328.2	100%

Sources: National Health Expenditure database; Keehan, Sean P., Devin A. Stone, John A. Poisal, Gigi A. Cuckler, Andrea M. Sisko, Sheila D. Smith, Andrew J. Madison, Christian J. Wolfe and Joseph M. Lizonitz. 2017. *National Health Expenditure Projections, 2016-25: Price Increases, Aging Push Sector To 20 Percent Of Economy Health Affairs* 36(3): 553-563.

¹ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html?redirect=/nationalhealthexpenddata/>

² Updated data on state-level spending (by state of residence) should become available later this year.

As Table 1 shows, the three main areas of personal health care expenditures are hospitals (34 percent, with rounding), physicians/clinics (30 percent) and pharmaceuticals (13 percent). Together, they account for about 77 percent of all personal health-care spending in California.

Total Spending, including Administration and Public Health Activity

In addition to personal care expenditures, there are two additional categories of health care spending in California. We show figures for these categories, along with those for personal care expenditures in Table 2.

The first additional category of spending is administration within both the public and private sectors of the California economy, as well as the profits of private health insurance companies.³ As we see in Table 2, this category of spending overall amounts to \$31.3 billion as of our 2017 estimate. The largest share of this category of spending is on private insurance administration and profits, which accounts for \$15.8 billion, or about 50 percent of this category of spending in total. The other large share of spending in this category is for public administration of Medicare and MediCal programs. These account for \$12.4 billion in spending for 2017, or nearly 40 percent of spending in this overall administrative category.

The third category of health care spending in California is for what the National Health Expenditure database terms "public health activity." This spending category incorporates government spending for the public provision of health services such as epidemiological surveillance, inoculations, immunization/vaccination services, disease prevention programs, the operation of public health laboratories, and other such functions. Most federal government public health activity emanates from the Health and Human Services Department. The Food and Drug Administration and the Centers for Disease Control and Prevention account for the great majority of federal spending in the area. State and local government public health activity expenditures are primarily for the operation of state and local health departments. As we see in Table 2, in 2017, this public health activity amounts to \$9.0 billion in total health care spending in California.

In Table 2, we also provide an estimate of total health care spending in California for 2017, including all personal care, administration, and public health activity. That total spending figure is \$368.5 billion. Table 2 also shows the proportions of total spending by category and subcategory. Thus, personal care spending represents 89.1 percent of total spending; administration and private insurance profits account for 8.5 percent; and public health activity is at 2.4 percent. Hospitals, physicians/clinics and pharmaceuticals account for 68 percent of all spending on health care in California. Adding the 8.5 percent of spending that goes to public and private administration means that these four largest overall spending categories represent roughly 77 percent of total health care spending in California.

³ This category of spending is termed "Government Administration and Net Cost" in the National Health Expenditure database.

**Table 2. Total Health Care in California
 Personal Health and Administrative Expenditures, 2017 Estimates**

	Spending level (billions \$)	Share of total spending
1. Total Personal Care	\$328.2	89.1% (= row1/row4)
■ Hospitals	\$112.1	30.4%
■ Physicians/Clinics	\$97.4	26.4%
■ Pharmaceuticals	\$41.3	11.2%
■ Dental	\$18.4	5.0%
■ Nursing Home	\$14.3	3.9%
■ Home Health	\$13.5	3.7%
■ Other professional services	\$11.5	3.1%
■ Durable goods/equipment	\$3.6	1.0%
■ Other expenditure	\$16.1	4.4%
2. Administration and Private Insurance Profits	\$31.3	8.5% (= row 2/row 4)
■ Private Insurance Administration and Profits	\$15.8	4.3%
■ Medicare and MediCal Administration	\$12.4	3.4%
■ Other third-party payers	\$2.4	0.7%
■ Other health insurance	\$0.8	0.2%
3. Public Health Activity	\$9.0	2.4%
4. TOTAL HEALTH EXPENDITURES (= rows 1+2+3)	\$368.5	100.0%

Sources: National Health Expenditure database; Keehan, Sean P., Devin A. Stone, John A. Poisal, Gigi A. Cuckler, Andrea M. Sisko, Sheila D. Smith, Andrew J. Madison, Christian J. Wolfe and Joseph M. Lizonitz. 2017. *National Health Expenditure Projections, 2016-25: Price Increases, Aging Push Sector To 20 Percent Of Economy* Health Affairs 36(3): 553-563.

Current Health Insurance Coverage in California

To estimate the current state of health insurance coverage in California, we use data from the March supplement of the Current Population Survey. This is a household survey jointly administered by the federal government's Bureau of the Census and Bureau of Labor Statistics. Our estimates here are based on data from the March 2016 supplement.

In Table 3, we report figures on insured and uninsured, both in California and in the U.S. overall. As we see, as of 2016, there were 2.7 million people in California uninsured, amounting to 7.5 percent of the population. This figure is lower than the national figure for uninsured, which is 8.8 percent.

Table 3. Health Insurance Coverage in California and U.S. Total, 2016

	California		U.S. Total	
	Numbers of people (in millions)	Share of population	Numbers of people (in millions)	Share of population
Insured	33.4	92.5%	270.1	91.2%
Uninsured	2.7	7.5%	26.2	8.8%
Total	36.1	100%	296.3	100%

Source: Authors’ analysis of March Supplement of Current Population Survey, 2016, U.S. Census Bureau.

Both the California and U.S. percentages for uninsured have dropped significantly since the enactment of the federal Affordable Care Act (ACA) in 2010. Figure 1 shows this pattern for California. As we see, as of 2005, 20 percent of California’s population had no health insurance. That figure was still at 20 percent as of 2011, one year after the passage of the ACA. Following the enactment of the ACA, the percentage of uninsured dropped to 8.6 percent as of the most recently available official data for 2015. As noted above, we estimate that California’s uninsured population has fallen still further as of 2016, to 7.5 percent.

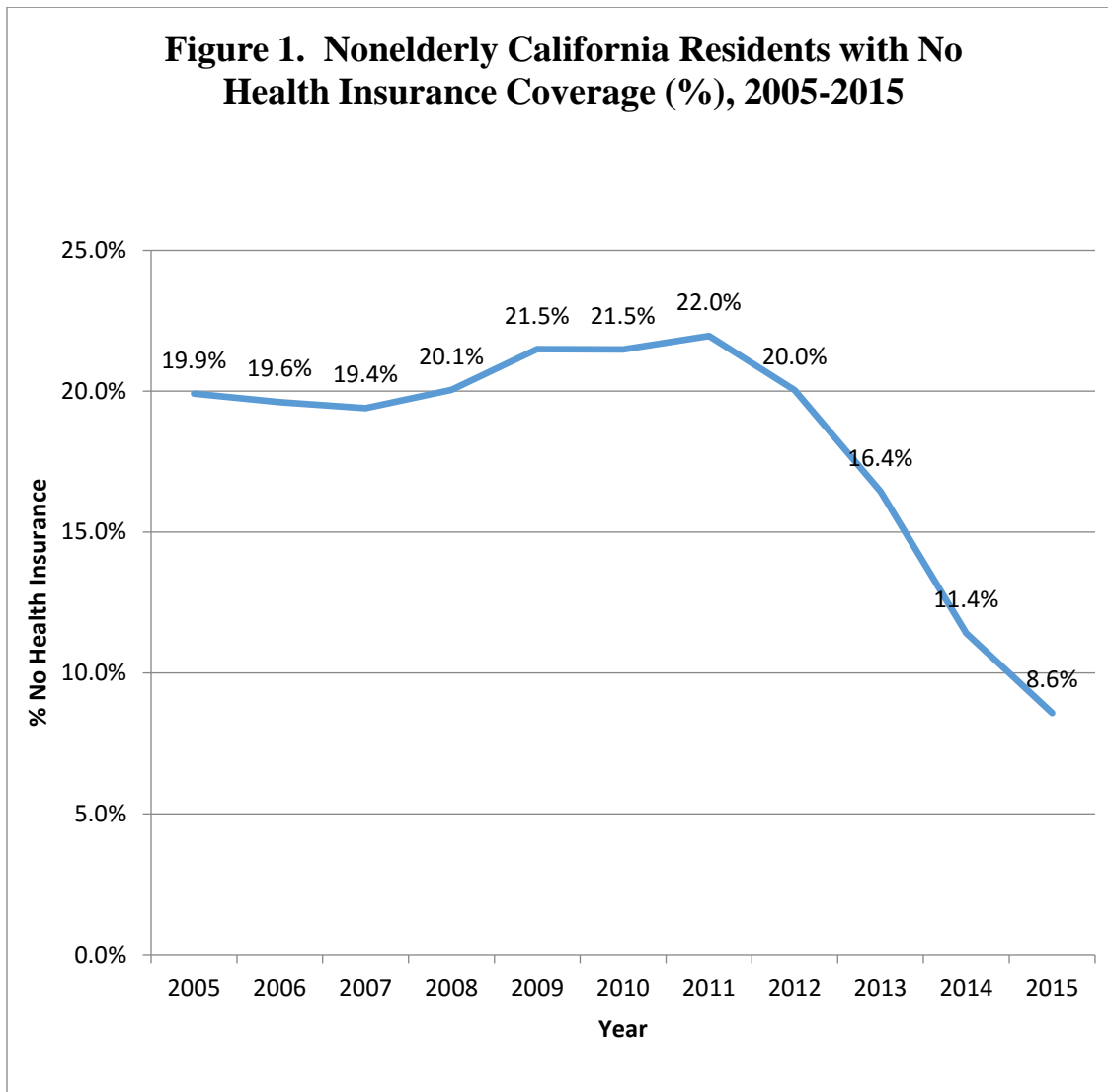
Yet, despite these significant gains in coverage achieved since the enactment of the ACA in 2010, it remains the case that nearly 3 million residents of California, as well as roughly 26 million throughout the U.S. overall, remain uninsured.

Current Health Care Expenditures on Uninsured

For the purposes of our overall cost estimates, it is important to recognize that the uninsured do utilize health care services, and providing these services do entail expenditures for California’s overall health care system.

An extensive 2014 study by Coughlin et al., *Uncompensated Care for the Uninsured in 2013*, found that, for the U.S. overall, the average uninsured person had half the amount of medical expenses as the average insured person (\$2,443 versus \$4,876). They also found that the cost to providers of uncompensated care was \$84.9 billion, with 60 percent of this care being provided by hospitals, with clinics, health care centers and office-based physicians providing the remaining uncompensated care. Federal, state, and municipal governments did provide \$53.3 billion to pay providers for uncompensated care costs—i.e. the providers were ultimately

reimbursed for about 63 percent of their uncompensated costs. In addition, the uninsured paid out of pocket an additional \$25.8 billion for their care (p. 1).



Source: Employee Benefit Research Institute estimates of the March Current Population Survey, 2006-2016 Supplements published by the California Health Care Foundation. See: <http://www.chcf.org/publications/2016/12/californias-uninsured>.

Note: 2005–2012 data are not comparable with 2013–2015 data because of a methodological change in the way individuals with coverage were counted in the CPS. Estimates prior to 2013 likely overstate the percent uninsured but not dramatically so.

For the purposes of our estimation, we will assume that California’s health care system currently follows the overall U.S. pattern with respect to spending for the uninsured. That would suggest that to provide full coverage for the 2.7 million presently uninsured in California, we assume that: 1) current average expenditure amounts on the uninsured in California are half the

average spending levels on the insured; and 2) providing full coverage for the uninsured will therefore entail doubling the current expenditure level.

Age Distribution of Uninsured Population

Table 4 shows the distribution of the uninsured population in California according to age cohorts. As we see, the largest percentage of uninsured are younger adults. Thus, the percentage of uninsured between the ages of 21 – 29 is 11.7 percent, and the figure for people between 30 – 39 is 12.0 percent. These percentages are both roughly 4.5 percentage points higher than the statewide average of 7.5 percent. The next highest figure is for those between 40 – 49 years old, at nearly 10 percent. The percentage who are uninsured is lowest among children 0 – 15 years old, at 3.4 percent, and people over 70 years old, in which 99 percent have insurance coverage. As we will discuss below, this age distribution is significant for estimating the overall costs of providing universal coverage, since the costs of providing insurance for younger people will be lower than the overall average figure.

**Table 4. Distribution of Uninsured Population in California
By Age Cohort, 2016**

	Number of Uninsured People	Share of Total Uninsured
Ages 0 – 15	251,248	3.4%
Ages 16 – 20	151,121	6.1%
Ages 21 – 29	558,034	11.7%
Ages 30 – 39	602,579	12.0%
Ages 40 – 49	487,628	9.9%
Ages 50 – 59	398,474	8.2%
Ages 60 – 69	229,324	6.3%
Ages 70 and over	29,738	1.0%
TOTALS	2,708,146	100%

Source: Authors' analysis of the March Supplement of the Current Population Survey, 2016, U.S. Census Bureau

Sources of Insurance Coverage

Table 5 reports on the sources of health insurance for California residents who have some form of insurance as of 2016. As the table shows, approximately two-thirds of the population get their insurance through some form of private insurance plan. The next largest source of insurance is MediCal, which covers 7 million people in the state, or nearly 21 percent of the 33.4 million covered. Medicare covers 2.0 million people, amounting to 6.1 percent, and most of the

rest are covered through the U.S. military—that coverage is for 1.3 million people, or 4.0 percent of all covered.

Table 5. Types of Insurance Carried by California Residents

	Number of People (in millions)	Share of total insured
Private Insurance	23.1	69.0%
MediCal	7.0	20.9%
Medicare	2.0	6.1%
Military coverage	1.3	4.0%
Other coverage	0.03	0.1%
TOTALS	33.4	100%

Source: March Supplement of Current Population Survey, 2016, U.S. Census Bureau.

Estimates of Underinsurance and Utilization Rates in California

As we noted above, the size of the uninsured population in California dropped significantly after the introduction of the ACA. However, despite these significant gains in health care coverage in California, there remains a very large share of California’s population that is *underinsured*. The underinsured are individuals and families covered by health insurance, but their insurance policies include deductibles and other forms of cost sharing that are prohibitively expensive—to the extent that people may be unable to obtain the health care they require.

A recent study using data from the Commonwealth Fund Biennial Health Insurance Survey found that, in 2014, 23 percent of insured individuals in the United States had sufficiently high deductibles or other out-of-pocket costs to be considered underinsured. The same study found that 19 percent of California residents would be considered underinsured because of high deductibles and out-of-pocket expenses. Furthermore, the study found that, nationally, 36 percent of insured individuals limited their access to medical care, at least to some extent, due to cost factors.⁴

⁴ In technical terminology, this finding is an elasticity estimate of health expenditures with respect to out-of-pocket costs of -0.2. Collins, Sara R., Petra W. Rasmussen, Sophie Beutel, and Michelle M. Doty. *The Problem of Underinsurance and How Rising Deductibles Will Make It Worse*. Issue Brief, May 2015. Commonwealth Fund, New York. A person is considered to be underinsured if out-of-pocket costs, excluding premiums, over the prior 12 months are equal to 10 percent or more of household income; out-of-pocket costs, excluding premiums, are equal to 5 percent or more of household income if income is under 200 percent of the federal poverty level; or if the deductible is 5 percent or more of household income.

These patterns serve as evidence in considering the broader issue of how cost-sharing with various types of health insurance affect how much people utilize health care. This issue is especially pertinent since the Healthy California proposal would eliminate all forms of cost-sharing, including all deductibles, co-payments and other out-of-pocket expenses.

Over recent decades, numerous studies focused on the U.S. case have shown that people do vary their utilization of health care, at least do some degree, depending on how much they must pay out-of-pocket for their care. Perhaps the most well-known study of this issue is the Rand Health Insurance experiment. This project was conducted between 1974 – 82. During those years, nearly 6,000 U.S. households were given health insurance, but with different arrangements with respect to cost-sharing. The various types of insurance were assigned randomly to the participating households. The experiment showed that health expenditures tended to fall as the amount of cost-sharing increased.⁵ Following from the results of the Rand Experiment and subsequent relevant literature, we would expect average health spending to increase if cost-sharing were reduced, as proposed in the draft legislation for the Healthy California program.

But that then raises the more precise question—that is, *how much* would we expect utilization rates to rise through the Healthy California program, relative to current utilization rates, especially among the uninsured and underinsured. The extensive literature that has emerged following from the Rand study is highly informative here.

Some of this subsequent literature, building from the Rand study, has utilized additional data and modeling assumptions, to produce a broad finding that, on average, a 10 percent increase in out-of-pocket costs would be associated with a 2 percent decrease in health expenditures.⁶ Correspondingly, this result suggests that a 10 percent decrease in out-of-pocket costs would be associated with a 2 percent increase in health expenditures.

At the same time, several studies have raised significant concerns with respect to relying on a single, static estimate of the relationship between out-of-pocket expenditures and overall health care spending. For instance, it has been shown that the extent to which people will alter their health care utilization rates will be responsive to the *specific types* of cost-sharing arrangement being used.⁷

In addition, the effects of cost-sharing arrangements will vary according to the *size of the deductible relative to the amount of the overall expenditure*. Consider a standard deductible. Up

⁵ For a review of the Rand experiment, including the potential for significant bias and possible dangers of applying the results to evaluate policy alternatives in the current U.S. context, see Aron-Dine, Aviva, Liran Einav and Amy Finkelstein. 2013. The RAND Health Insurance Experiment, Three Decades Later, *Journal of Economic Perspectives* 13(1): 197-222.

⁶ See Keeler, Emmett B., and John E. Rolph. 1988. The demand for episodes of treatment in the health insurance experiment. *Journal of Health Economics* 7(4): 337-67.

⁷ Finkelstein, Amy, Taubman, Sarah, Wright, Bill, Bernstein, Mira, Gruber, Jonathan, Gruber, Newhouse, Joseph P., Allen, Heidi, Baicker, Katherine, Oregon Health Study Group (2012) "The Oregon Health Insurance Experiment: Evidence from the First Year," *Quarterly Journal of Economics*, 127(3): 1057 – 1106.

to the deductible amount, an individual pays 100 percent of the healthcare costs (cost-sharing is zero). However, for each dollar spent above the deductible, there is significant cost sharing, with insurance often paying most, if not all, of the additional costs. If we were to simply assume that health care expenditures were to fall by 2 percent whenever out-of-pocket costs increase by 10 percent, we are not considering the effects of how much individuals will need to pay relative to the size of the deductible in proportion to the size of the overall expenditure.

A 2015 study by Brot-Goldberg et al. sheds light on these dynamics. The authors examined circumstances in which individuals in a self-financed, employer-sponsored insurance plan were moved from a situation with no cost-sharing (i.e. no deductibles or co-pays) to a high-deductible plan with the same coverage of health services.⁸ The study found that individuals did reduce spending in response to the change in cost-sharing. But the reduction in spending was only evident when consumers were *under the deductible*. When consumers were no longer under the deductible amount, there was no evidence of a change in utilization associated with the shift to a high-deductible plan. That is, having to cover the co-payments above the deductible amounts had no further impact on the level of overall health care utilization. Considering then both the impact of the deductibles and co-pays, the Brot-Goldberg et al. study found that the movement from a zero cost-sharing plan to a high-deductible plan was associated with a decrease in healthcare spending of between 11 and 15 percent. We will draw on these and related findings in generating an estimate as to how much overall utilization is likely to change under the Healthy California proposal.

The Potential Impact of Physician-Induced Demand

The extent to which utilization may increase under a single-payer system by those who are already fully insured will be affected by how much any utilization increases result from actions by providers—i.e. physicians and hospitals—as opposed to decisions by individual patients. Under the existing health care system in California, as well as the U.S. more generally, there are incentives built into the system's operations that encourage what is termed "physician-induced demand." That is, some share of any increase in utilization could result through providers ordering more tests, procedures, and expensive drugs after the costs of such measures are fully covered through insurance, as opposed to patients having to partially cover these additional costs. A recent survey of the literature on this issue by EM Johnson describes the term as follows:

Under the physician-induced demand hypothesis, physicians influence patient demand to suit their own interests. They are able to do this because their patients know relatively little about the type or quantity of treatment they need. Faced with payment systems that reward quantity of care on the margin, the inducing physician provides care beyond the level that objective clinical judgement and patient preferences would dictate. In short,

⁸ Brot-Goldberg, Zarek C., Amitabh Chandra, Benjamin R. Handel, and Jonathan T. Kolstad. 2015. What Does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. Faculty Research Working Paper Series. Harvard Kennedy School, Cambridge, MA.

inducing physicians create their own demand rather than reacting to market demand (2014, p. 77).⁹

Johnson's conclusion is that the evidence is mixed as to the extent to which physician-induced demand occurs. He explains that it is difficult to establish one overarching pattern as to the extent of physician-induced demand because the incentives for physicians to engage in such practices vary widely according to the administrative framework in which they practice. Yet it is clear from the evidence he reviews that the extent of physician-induced demand will diminish within a health care system that establishes effective controls in the areas of provider fees, pharmaceutical pricing, hospital price-setting, and effective regulation over the level of service provision. That is, the incentive to engage in physician-induced demand will fall when the financial rewards provided by such behavior are limited by regulations. We consider these types of regulatory controls in what follows, within the overall context of the Healthy California proposal.

The Cost Impact of Eliminating Cost-Sharing for the Underinsured

The Commonwealth Fund survey cited above found, again, that about 36 percent of the U.S. population is underinsured, in that they are carrying health insurance but they limit their health spending to some degree because of cost-sharing. For the purposes of estimating the overall costs of the Healthy California program, we assume that these individuals are in a situation similar to people in high-deductible insurance plans, as described by Brot-Goldberg et al. More specifically, cost-sharing would be eliminated under Healthy California. This means that the cost-sharing constraint on health care spending would be removed for this 36 percent of the insured population.

The Brot-Goldberg study found that, when individuals moved from a zero cost-sharing plan to a high-deductible plan, overall spending of this group was reduced by 11 to 15 percent. Reversing this logic, removing the cost-sharing constraint should increase spending of those who limited their spending due to high deductibles by 11 to 15 percent. In the calculations that follow, we take the high end of this range. That is, we assume that the 36 percent of the insured population who are presently underinsured will increase their health care spending by 15 percent once they no longer face constraints on their health care spending due to cost sharing obligations.

In working with this high-end estimate of the increase in utilization for the presently uninsured in California, we are also effectively allowing for some additional increases in utilization among the population that is *fully insured* at present. The relevant research is mixed as to how much the fully insured may increase utilization after cost-sharing is eliminated from their health insurance plans, as would occur through Healthy California. Most of the evidence suggests that such utilization increases are likely to be modest. Part of the reason such utilization increases by the fully insured are likely to be modest is that, under Healthy California, the incentives to engage in physician-induced demand and related provider practices will be limited.

⁹ E.M. Johnson (2014) "Physician-Induced Demand," *Encyclopedia of Health Economics*, Volume 3, pp. 77 – 82.

Estimating Overall Costs of Full Universal Health Care Provision

We now estimate the overall costs of extending universal full health care coverage in California, assuming that the state's existing health care system remains intact otherwise. Our estimate is presented in Table 6.

Table 6.
Total California Health Care Expenditures in 2017 under Existing System with Full Universal Insurance Coverage

Current Expenditures	
1. Total 2017 Expenditures	\$368.6 billion
Current Insurance Coverage	
2. Number of insured	33.4 million (92.5%)
3. Total covered expenditures per insured (= \$368.6 billion/33.4 million people)	\$11,035
Full Coverage for Underinsured	
4. Percent underinsured	36%
5. Underinsured spending, as % of full access spending <i>(figure weighted by age distribution of underinsured)</i>	87%
6. System-wide cost increase for underinsured to receive full coverage	\$19.8 billion
7. Average expenditure if zero underinsured <i>(figure weighted by age distribution of underinsured)</i>	\$11,629
Full Coverage for Uninsured	
8. Number of uninsured	2.7 million (7.5%)
9. Current system-wide costs for uninsured health care provision <i>(= (\$5,814 x 2.7 million people)</i>	\$15.7 billion
10. System-wide cost increase for uninsured to receive full coverage <i>(= row 9 x 2)</i>	\$15.7 billion
11. TOTAL SPENDING WITH UNIVERSAL COVERAGE <i>(= rows 1 + 6 + 10)</i>	\$404.1 billion
PERCENTAGE INCREASE IN TOTAL SPENDING WITH UNIVERSAL COVERAGE <i>(= (row 11 – row 2)/row 2)</i>	9.6%

Sources: See Table 2 and references in text.

Note: Total cost figures include nursing homes, home health care and public health expenditures, though these categories are not yet included in the Healthy California bill.

We generated the figures in Table 6 based on the following:

- 1) Our estimate of 2017 expenditures on health care in California;
- 2) The estimate of the number of uninsured in the state, who will become fully insured under Healthy California. We assume that system-wide spending for the uninsured—including uncompensated costs; costs that are reimbursed by various federal, state and municipal agencies; as well as patients' own out-of-pocket expenses—are equal to 50 percent of the overall costs for the insured. As such, providing full coverage for the currently uninsured will entail a doubling of current overall spending levels on the uninsured.
- 3) Our assumption that the 36 percent of the population who are underinsured will increase their health care costs by an average of 15 percent after they obtain insurance that requires no cost sharing obligations. We then adjust the overall health care costs of the underinsured according to the age distribution of this cohort. We assume that this age distribution is comparable to that for the uninsured, as presented in Table 4. This brings total cost increases for the underinsured to 13 percent, given that younger people are disproportionately represented among the underinsured. We also reiterate that our estimate of increased utilization by those who are presently underinsured is meant to also account for a modest increase in utilization by those Californians who are presently fully insured.
- 4) We include spending on nursing homes, home health care and public health in our overall estimate. To date, these measures are not included in the range of coverage being proposed under Healthy California. But there is some expectation that some, if not most, of these categories will be incorporated into a California single-payer system. Thus, to err, if at all, on the side of overstating rather than understating costs for the purposes of our discussion, we include the full costs of all three programs in our overall cost figures.

As Table 6 shows, we estimate that the costs of bringing the 36 percent of California's population from their present status as underinsured to fully insured will be \$19.8 billion. We then estimate that the costs of bringing those who are presently uninsured to fully insured will be \$15.7 billion. Overall, the full cost increases will be \$35.5 billion. This would bring the total cost of California's health care system to \$404.1 billion, assuming that all California residents receive full health care coverage, but that otherwise, the existing health care system operating in California remains intact.

2. COST SAVING POTENTIAL UNDER HEALTHY CALIFORNIA

Implementing Healthy California will generate a full-scale restructuring of California's health care system. Working from the weight of evidence from the relevant research literature, it is reasonable to conclude that a single-payer system in California will generate substantial cost savings in a range of areas relative to the state's existing system. There will be two broad sources of saving. The first will be savings through changing the basic structural features of the system, including: 1) administration; 2) pharmaceutical pricing; and 3) providers' fee structures. The second broad source of savings will be through the delivery of services. There will be four

specific areas of potential saving here: 1) unnecessary services; 2) inefficiently delivered services; 3) missed prevention opportunities; and 4) fraud.

We discuss all of these areas of potential savings in what follows, including in Tables 7 – 10, which summarize our main statistical calculations and findings.

Structural Sources of Cost Savings

Administration

Under the current system, the overall costs—including time, money and personnel—dedicated to billing and insurance-related (BIR) activities are substantial.¹⁰ It is widely recognized that the existing system operates with widespread inefficiencies and redundancies. The areas of inefficiency and redundancy include: contracting, claims processing, credentialing providers and payment validation. Creating a single payment channel has the potential to reduce these inefficiencies and excess costs significantly. There are two broad sources of administrative savings: 1) the reduced administrative costs for providers associated with a move towards a single payer system; and 2) reduced administrative costs and mark-ups associated with the provision of health insurance.

Savings for Providers. Studies of healthcare administrative costs estimate that the cost of BIR related activities are between 10 and 20 percent of total revenues for physicians and between 4.8 and 10.8 percent of revenues for hospitals.¹¹ Studies of BIR administrative costs based on California data find that BIR administration represents 10 to 14 percent of physician revenue.¹² Estimates of similar administrative expenses for hospitals in California place BIR costs in the range of 6.6 to 10.8 percent of hospital revenues.¹³ Following the estimation methodology from a 2010 report of the Institute of Medicine (IOM), *The Healthcare Imperative: Lowering Costs and Improving Outcomes* (Yong et al. 2010), we assume that BIR administrative costs represent 13 percent of the revenues of physicians, clinics, and dentists and 8.5 percent of the revenues of hospitals and of other institutions providing health services (apart from physician and clinical services).¹⁴ We show these figures in Table 7.

¹⁰ See, for example, Aliya Jiwani, Aliya, David Himmelstein, Steffie Woolhandler and James G Kahn. 2014. Billing and insurance-related administrative costs in United States' health care: synthesis of micro-costing evidence. *BMC Health Services Research*. 14:556.

¹¹ Hsaio, William C., K.T. Li, and Steven Kappel. 2011. *Health System Reform Design Achieving Affordable Universal Health Care in Vermont*. Research Report. Vermont State Legislature. Montpelier.

¹² Kahn, James, R. Kronick, M Kreger, D.N. Gans. 2005. The cost of health insurance administration in California: estimates for insurers, physicians, and hospitals. *Health Affairs*, 24(6):1629–1639. Casalino, L. P., S. Nicholson, D. N. Gans, T. Hammons, D. Morra, T. Karrison, and W. Levinson.

¹³ 2009. What does it cost physician practices to interact with health insurance plans? *Health Affairs*. 28(4):w533-w543. Sakowski, J. A., J. G. Kahn, R. G. Kronick, J. M. Newman, and H. S. Luft. 2009. Peering into the black box: Billing and insurance activities in a medical group. *Health Affairs*. 28(4):w544-w554.

¹⁴ Kahn, James. 2010. Excess billing and insurance-related administrative costs. In *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Pierre L. Yong, Robert S. Saunders, and Leigh Anne Olsen, eds. Washington, D.C.: National Academies Press; 2010: 142–150.

¹⁴ Institute of Medicine. 2010. *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Pierre L. Yong, Robert S. Saunders, and Leigh Anne Olsen, eds. Washington, D.C.: National Academies Press

Table 7. Potential Cost Savings through Single-Payer 1:

- Administration
- Pharmaceutical Pricing
- Establishing Medicare Rates for Hospitals, Physicians/Clinics, and Dental

	1) Total sector spending as share of total health care spending	2) Spending in specific category as share of overall sector spending	3) Saving potential within specific spending category through single-payer	4) Cost saving within specific category as share of total health care expenditures (= columns 1 x 2 x 3)
Administration				
■ Hospitals	30.4%	8.5%	50%	1.3%
■ Doctors/clinics + Dental	31.4%	13.0%	50%	2.0%
■ Private and public insurance	8.5%	100%	40%	3.4%
Pharmaceuticals	11.2%	100%	30%	3.4%
--Medicare Rates for Hospitals and Physicians/Clinics				
--Dental rates reflect physician/clinic rate				
■ Hospitals	30.4%	Blended by Medicare, MediCal, and private insurance rates	22% relative to Medicare; 40% relative to MediCal	1.0%
■ Physicians/clinics ■ Dental	31.4%		22% relative to Medicare; 35% relative to MediCal	1.9%
TOTAL SAVING POTENTIAL	---	---	---	13.0%

Sources: References cited in text.

The savings that can be achieved by eliminating administrative inefficiencies for providers estimated to be substantial. Some estimates suggest the amount of excess BIR costs for physicians and hospitals operating in the U.S. to be on the order of 70 percent.¹⁵ The IOM study estimates potential cost savings associated with streamlining BIR activities to be somewhat

¹⁵ Aliya Jiwani, Aliya, David Himmelstein, Steffie Woolhandler and James G Kahn. 2014. Billing and insurance-related administrative costs in United States' health care: synthesis of micro-costing evidence. *BMC Health Services Research*. 14:556.

lower, on the order of 50 percent.¹⁶ For the purposes of estimating the savings associated with reducing the inefficiencies of BIR activities under the Health California program, we assume, conservatively, administrative cost savings of providers to be 50 percent.

Savings through Insurance Provision. Cost savings can also be achieved by reducing administrative overhead costs associated with providing health insurance. As we show in Table 7, administrative costs—both public and private—amount to 8.5 percent of all health care spending in California.

By contrast, estimates of the administrative costs of Medicare are significantly lower – on the order of 3 to 4.5 percent of spending.¹⁷ According to the National Health Expenditure data, the national administrative costs of Medicare and Medicaid, federal and state, totaled \$33.2 billion in 2015 out of \$1.2 trillion in total spending on the two programs. This suggests that administrative costs for Medicare and Medicaid represent about 3 percent of total spending.¹⁸ A study of insurance administrative costs in other high-income countries shows that insurance administration costs as a share of total expenditures were lower compared to the U.S.: 1.9 percent in Finland, 2.8 percent in Australia, 3.3 percent in the U.K., 4.1 percent in Canada, and 5.6 percent in Germany.¹⁹ Given these comparative statistics, it is reasonable to assume, conservatively, that moving to a single-payer system under the Healthy California program could reduce the administrative costs of insurance to 5.0 percent of total spending. We report this conclusion in Table 7, column 3, in which we show the saving potential in administrative costs to be 40 percent (i.e. the share of administrative costs falls from 8.5 percent to 5.0 percent, a decline of about 40 percent).

Pharmaceutical costs

Pharmaceutical costs are a substantial element of overall healthcare spending, at 11.2 percent of overall costs.²⁰ High pharmaceutical prices are a result of significant market power among key firms and the patent protections granted to specific drugs. Moreover, in the U.S., prescription drugs are priced differently for different pharmaceutical market segments and

¹⁶ Kahn, James. 2010. Excess billing and insurance-related administrative costs. In *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Pierre L. Yong, Robert S. Saunders, and Leigh Anne Olsen, eds. Washington, D.C.: National Academies Press; 2010: 142–150. See Table 4-2, p. 148-9.

¹⁷ Kahn, James, R. Kronick, M Kreger, D.N. Gans. 2005. The cost of health insurance administration in California: estimates for insurers, physicians, and hospitals. *Health Affairs*, 24(6):1629–1639. Aliya Jiwani, Aliya, David Himmelstein, Steffie Woolhandler and James G Kahn. 2014. Billing and insurance-related administrative costs in United States' health care: synthesis of micro-costing evidence. *BMC Health Services Research*. 14:556.

¹⁸ These estimates do not include other overhead costs.

¹⁹ Collins, Sara R., Rachel Nuzum, Sheila D. Rustgi, Stephanie Mika, Cathy Schoen, and Karen Davis. 2009. How health care reform can lower the costs of insurance administration. Issue Brief. July 2009. Commonwealth Fund, New York.

²⁰ This figure is based on the National Health Expenditures (NHE) databased developed and maintained by CMS. However, the NHE figures include only retail expenditures. Non-retail prescription expenditures such as those consumed in hospitals and physician offices are excluded. This share of the overall pharmaceutical market are accounted for in the respective areas of service provision, such as hospital care.

different payers – generating price variations for the same pharmaceutical products. This raises the possibility of being able to negotiate down drug prices under a single-payer system. 21'22'23

Federal agencies and programs typically pay less for prescription drugs than pharmaceuticals acquired through private means (i.e. private insurance or out-of-pocket payments). For example, analysis by the Congressional Budget Office shows that federal agencies pay between 65 percent and 84 percent of the best private-sector prices.²⁴ The Department of Veterans Affairs (VA) oversees a national drug plan for more than nine million veterans and provides 144 million prescriptions per year.²⁵ The VA uses a managed formulary to set prices by weighing the additional therapeutic value of a drug to determine the amount of reimbursement. It is based on the capacity to refuse reimbursement of a drug if its low therapeutic value does not justify its price. According to one study, the VA pays on average 60 percent the price paid by Medicare prescription drug plans,²⁶ and other analysts have estimated even greater discounts.²⁷ At the same time the VA has achieved high levels of adherence to drug therapies and does have a process to request coverage of prescription drugs not found on its formulary.²⁸ It is precisely by restricting the prescriptions drug covered, that the VA is able to increase its bargaining power and obtain lower prices. According to one recent study, this procurement system for the VA generated savings of \$32 billion between 2004 – 2014.²⁹

21 Frank, R. G. 2001. Prescription drug prices: why do some pay more than others do? *Health Affairs*, 20(2), 115-128.

22 Kesselheim, A. S., Avorn, J., & Sarpatwari, A. 2016. The high cost of prescription drugs in the United States: origins and prospects for reform. *Jama*, 316(8), 858-871. <http://bit.ly/2qU4EBB>

23 Veghte, B., Schreur, E., & Bradley, A. 2017. Health Insurance: Reigning in Prescription Drug Prices in Report to the New Leadership and the American People on Social Insurance and Inequality, Washington DC: National Academy of Social Insurance, pp. 98-110. <http://bit.ly/2qUveLA>

24 Congressional Budget Office. 2005. Prices for Brand-Name Drugs Under Selected Federal Programs. Washington, DC: Congressional Budget Office. <http://bit.ly/2qmlHij>

25 Aspinall, S. L., Sales, M. M., Good, C. B., Calabrese, V., Glassman, P. A., Burk, M., & Valentino, M. A. (2016). Pharmacy Benefits Management in the Veterans Health Administration Revisited: A Decade of Advancements, 2004-2014. *Journal of managed care & specialty pharmacy*, 22(9), 1058-1063. <http://bit.ly/2pyopO5>

26 Frakt, Austin B., Steven D. Pizer, Roger Feldman. 2012. Should Medicare adopt the Veterans Health Administration formulary? *Health Economics* 21(5): 485-95.

27 Gagnon, M. A., & Wolfe, S. (2015). Mirror, Mirror on the Wall: Medicare Part D pays needlessly high brand-name drug prices compared with other OECD countries and with U.S. government programs. School of Public Policy and Administration, Carleton University, Canada. <http://bit.ly/2psmH0C>

28 Neuman, P., Stollo, M. K., Guterman, S., Rogers, W. H., Li, A., Rodday, A. M. C., & Safran, D. G. (2007). Medicare prescription drug benefit progress report: findings from a 2006 national survey of seniors. *Health Affairs*, 26(5), w630-w643. <http://bit.ly/2pZbmlQ>

29 Aspinall, S. L., Sales, M. M., Good, C. B., Calabrese, V., Glassman, P. A., Burk, M., & Valentino, M. A. (2016). Pharmacy Benefits Management in the Veterans Health Administration Revisited: A Decade of Advancements, 2004-2014. *Journal of managed care & specialty pharmacy*, 22(9), 1058-1063. <http://bit.ly/2pyopO5>. It is also important to recognize here that, broadly speaking, the relevant literature finds that the VA health care system has been successful in providing decent health care to its members. See, for example, Paul G. Shekelle, Steven Asch, Peter Glassman, Sierra Matula, and Amal Trivedi (2010) "Comparison of Quality of Care in VA and Non-VA Settings: A Systematic Review," Department of Veterans Affairs Health Services Research & Development Service, Evidence Based Synthesis Program, <https://www.hsrd.research.va.gov/publications/esp/quality.pdf>; and Arthur L. Kellerman (2012) "'Socialized' or Not, We Can Learn from the VA," RAND Corporation, The RAND BLOG, August 8, <https://www.rand.org/blog/2012/08/socialized-or-not-we-can-learn-from-the-va.html>

One potential concern in using the VA price-setting system as a comparison point for California is that the VA system serves a limited sample of the U.S. population—i.e. veterans, who are all adults, and are mainly male adults. By contrast, the California population obviously includes young people and women distributed in their normal demographic proportions. It is therefore useful to consider another pharmaceutical procurement system that does itself also serve all demographic groups according to a normal demographic distribution. An appropriate comparison system here is Canada's publicly-funded health care system, which is called Medicare. Through Canadian Medicare, all Canadian residents have reasonable access to medically necessary hospital and physician services without having to paying out-of-pocket at any point in the delivery of service.

With respect to pharmaceutical pricing specifically within Canadian Medicare, the most recent research finds that, on average, per capita drug prices in Canada are 31 percent lower than those in the U.S.³⁰ This figure is roughly in line with the prices found within the U.S. VA system. The Canadian system also maintains its lower pharmaceutical prices through a regulatory structure similar to the U.S. VA system. That is, the Canadian system is governed by the Patented Medicine Prices Review Board. This is an independent quasi-judicial body responsible for ensuring that the prices of all patented medicines sold in Canada are not excessive. If the prices are found excessive the board may order them to be lowered. The governing statute reads as follows:

Where the Board finds that a patentee of an invention pertaining to a medicine is selling the medicine in any market in Canada at a price that, in the Board's opinion, is excessive, the Board may, by order, direct the patentee to cause the maximum price at which the patentee sells the medicine in that market to be reduced to such level as the Board considers not to be excessive and as is specified in the order. (Patent Act (R.S.C., 1985, c. P-4).³¹

The board takes into account a number of factors in regulating prices, including: 1) the prices at which the medicine has been sold in the relevant market; 2) the prices at which other medicines in the same therapeutic class have been sold in the relevant market; 3) the prices at which the medicine and other medicines in the same therapeutic class have been sold in countries other than Canada; and 4) changes in the Consumer Price Index and other factors specified in the law.

Given this basic evidence for both the U.S. VA system and Canadian Medicare, we conclude that the cost savings potential in the area of pharmaceutical pricing within Healthy California should be at least 30 percent. In fact, additional evidence with respect to current trends in the U.S. pharmaceutical market reinforces our conclusion that this 30 percent cost-reduction figure is a lower-end figure.

³⁰ OECD (2017). Pharmaceutical spending (indicator). doi: 10.1787/998febf6-en (Accessed on 25 May 2017)

³¹ Patent Act (R.S.C., 1985, c. P-4, 83-1). <http://laws-lois.justice.gc.ca/eng/acts/P-4/page-17.html#h-42>

One important consideration is that much of the recent and projected increase in pharmaceutical spending in the U.S. has been shifting strongly to expensive specialty medicines from traditional treatments. According to Quintiles IMS (formerly IMSHealth), national spending on specialty medicines as a share of total drug spending has increased from 22 percent in 2007 to 40 percent in 2016.³² Moreover, this trend is occurring primarily in the non-retail segment of the market. Specialty drugs account for one-third of spending in the retail segment and 58 percent of total drug spending in non-retail settings.

Specialty medications are generally expensive and are frequently dispensed in hospitals and physician offices. These drugs are therefore excluded from the pharmaceutical category in the national health accounts (i.e. they fall under the non-retail segment of the pharmaceutical market). Thus, the 30 percent of savings on drug expenditures under Healthy California may underestimate the true savings that are possible because our estimates are derived from the national health accounts and do not include drugs purchased through non-retail channels.

In addition, we apply the 30 percent savings to all drugs, including generics, which are lower in price than branded medications. However, while generics account for more than 80 percent of all prescriptions, they contribute only about one-quarter to drug expenditures. In addition, there is growing evidence of rising prices in the generic market, particularly among older established generics. One group of researchers recently noted that established generics have been increasing in prices since at least 2007.³³ Similarly, the U.S. Government Accountability Office (GAO) recently reported that between 2010 and 2015, 300 of the 1,441 established generic drugs analyzed had at least one extraordinary price increase of 100 percent or more.³⁴

Given all these considerations, we assume, as a conservative estimate, that, under Healthy California, pharmaceutical prices in California can be maintained at a level that is, on average, 30 percent below the prices that prevail presently under the state's existing health care system. We show this in Table 7 as a 30 percent saving within the pharmaceutical category of overall health care spending in California.

³² QuintilesIMS reports 100 percent coverage of the retail and non-retail channels for national pharmaceutical sales. Specialty drugs are defined as "as those which treat chronic, complex or rare diseases, and which have a minimum of four out of seven additional characteristics related to the distribution, care delivery and/or cost of the medicines." These include e.g. list price in excess of \$6,000 per year, initiated/maintained by a specialist, administration by another individual or health care professional (i.e. not self-administered). For a comprehensive definition of specialty drugs and for the data reported here see, QuintilesIMS. (2017). *Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021*. Parsippany, NJ. <http://bit.ly/2rI8vWs>

³³ Aitken, M., Berndt, E. R., Cutler, D., Kleinrock, M., & Maini, L. (2016). Has The Era Of Slow Growth For Prescription Drug Spending Ended? *Health Affairs*, 35(9), 1595-1603.

³⁴ Government Accountability Office (GAO). (2016). *Generic Drugs under Medicare: Part D Generic Drug Prices Declined Overall, but Some Had Extraordinary Price Increases*. <http://www.gao.gov/products/GAO-16-706>

Physician/clinics, dental and hospital payments for services

The Healthy California program allows for the negotiation of provider payments for health services. Under the current system, reimbursement rates for service provision varies enormously. The variation in rates depend on whether payments are financed through MediCal, Medicare, out-of-pocket, or private insurance. A single-payer system would harmonize these rates, so that rates would not vary based on the type of insurance or source of financing.

One well-established benchmark for determining the rates under the Healthy California program would be to use the existing Medicare rates. Since 1992, Medicare has implemented a fee schedule that stipulates the payments for specific physician services. These fees are adjusted for geographical differences. Similarly, hospitals receive a set amount per episode of patient care, based on the diagnosis made at the hospital. Medicare rates can accommodate both fee-for-service and capitated payment models.

Medicare rates are lower, on average, than the rates of private insurance plans.³⁵ Medicaid/MediCal rates are, in turn, lower on average than private insurance rates and Medicare rates.³⁶ Creating a single rate system under the Healthy California program, based on Medicare reimbursement rates, therefore has the potential to generate savings , as long as the lower rates relative to private insurance compensate for the higher rates that would be paid for individuals currently covered by MediCal.

Based on the analysis of the Medicare Payment Advisory Commission in its 2017 report to Congress, Medicare rates for physician and other health services were, on average, 22 percent lower than commercial rates.³⁷ A study by the General Accountability Office (GAO) found that Medicaid fee-for-service (FFS) payments were 27 to 65 percent lower than private insurance and managed care payments were 31 to 65 percent lower, with California at the lower end of this range.³⁸ With regard to total expenditures, rather than simply reimbursement rates, a recent national study of spending under Medicaid (MediCal in California) found that, controlling for individual demographics and health status, spending under private insurance would be 34 percent higher than under Medicaid for physician services and between 33 and 40 percent higher for hospital services.³⁹ Other studies yielded similar findings – spending under Medicaid was between 18 and 25 percent lower compared to private insurance.⁴⁰

³⁵ Medicare Payment Advisory Commission. 2017. *Medicare Payment Policy. Report to Congress*. Washington, DC.

³⁶ Clemans-Cope, Lisa, John Holahan, and Rachel Garfield. 2016. *Medicaid Spending Growth Compared to Other Payers: A Look at the Evidence*. Issue Brief (April), Kaiser Family Foundation.

³⁷ Medicare Payment Advisory Commission. 2017. *Medicare Payment Policy. Report to Congress*. Washington, DC.

³⁸ General Accountability Office (GAO). 2014. *Medicaid Payment: Comparisons of Selected Services under Fee-for- Service, Managed Care, and Private Insurance*. Washington, DC.

³⁹ Ku, Leighton. 2009. *Medical and dental utilization and expenditures under Medicaid and private health insurance,* Medical Care Research and Review 66, no. 4 (2009):456-71.

⁴⁰ Clemans-Cope, Lisa, John Holahan, and Rachel Garfield. 2016. *Medicaid Spending Growth Compared to Other Payers: A Look at the Evidence*. Issue Brief (April), Kaiser Family Foundation.

Table 7 shows estimated savings under the Healthy California program in which Medicare rates are used to determine provider payments. The estimates assume that Medicare rates are 78 percent of private insurance rates (a 22 percent discount) and that MediCal spending is 35 percent below private rates for physician and clinical services and 40 percent below for hospital services. Based on analysis by the UCLA Center for Health Policy Research, Medicare accounts for an estimated 20.3 percent of healthcare spending in California and MediCal accounts for 27.3 percent of expenditures.⁴¹ We assume these shares of expenditure apply to both hospitals as well as physicians/clinics.

Dental services, for the most part, are not covered through Medicare. We therefore do not have a Medicare-based rate schedule comparable to that for physicians as a reference point. For the purposes of our discussion, we assume that rates on dental services will adjust in conformity with the rate adjustments for physicians—i.e. that dental services under Healthy California will be compensated at 78 percent of current private rates.⁴²

Based on these parameters, reimbursing hospitals at Medicare rates would lower total expenditures on hospitals by 3.3 percent. Since hospitals account for 30.1 percent of all health care spending in California, the cost savings for the system overall would be 1.0 percent ($=3.3$ percent \times 0.301). With physicians/clinics as well as dentists, expenditures would decline by 6.1 percent. This would lower overall costs for health care in California by 1.9 percent, since physicians/clinics as well as dentists account for 31.4 percent of total health care costs in California ($= 6.1$ percent \times 0.314).

Overall Potential Cost Savings from Structural Savings Categories

In the bottom row of Table 7, we show our estimate for overall savings from these three health care spending categories for California—administration; pharmaceutical pricing; and establishing uniform Medicare rates for fees. As we see, this total figure is 13.0 percent of overall spending relative to the level of spending under California's current health care system.

Potential Savings through Service Delivery

In addition to the structural sources of savings that can be directly derived through the establishment of Healthy California—i.e. in the areas of administration; pharmaceutical prices;

⁴¹ Sorensen, Andrea, Narissa J. Nonzee, and Gerald F. Kominski. 2016. Public funds account for over 70 percent of health care spending in California. *Health Policy Brief*, August. UCLA Center for Health Policy Research.

⁴² A range of factors are likely to influence our overall cost estimate of providing full dental coverage to all Californians through Healthy California. All else equal, we would expect utilization to increase among current Medicare recipients, since, at present, a high proportion of this population group has been unable to afford paying for dental care out-of-pocket. At the same time, the payments by the share of Medicare recipients who have been paying out-of-pocket for dental care is already accounted for in our overall health care spending figures. Additionally, the serious neglect of dental care under the current system does then lead in some cases to serious dental problems that, in turn, require oral surgery or other more intensive and expensive services. These more expensive treatments *are* covered by Medicare. We would therefore expect that the spending devoted to these irregular but expensive treatments to decline under Healthy California, when the full California population is provided with access to regular non-emergency dental care support.

and payments for services—there are further opportunities to obtain significant savings through the major restructuring of California’s health care delivery system.

The 2010 IOM study (Yong et al. 2010) established what it termed a set of “lower bound” estimates of excess health care costs throughout the U.S. in four areas, in addition to the three areas we have outlined above. In Table 8, we list these four areas along with a brief description of the excessive costs associated with each. As Table 8 shows, the four areas are: unnecessary services; insufficiently delivered services; missed prevention opportunities; and fraud. In combination, the IOM’s lower- bound estimate of excessive costs in these four areas amount to 18.8 percent of total health care spending in the U.S. This estimate is also consistent with several other well-regarded sources addressing this same set of questions. These include Wennberg (2002), Farrell (2007), Bentley et al. (2008), Berwick (2012) and OECD (2017).

Table 8. Potential Cost Savings through Single-Payer 2:

- *Unnecessary Services;*
- *Insufficiently Delivered Services;*
- *Missed Prevention Opportunities;*
- *Fraud*

<i>Category</i>	<i>Sources</i>	<i>Excessive Costs as Share of U.S. Health Care Spending</i>
Unnecessary Services	-- Overuse beyond evidence-established levels	8.4%
	-- Discretionary use beyond benchmarks	
	-- Unnecessary choice of higher-cost services	
Inefficiently Delivered Services	--Mistakes—errors, preventable complications	5.2%
	--Care fragmentation	
	--Unnecessary use of higher-cost providers	
	--Operational inefficiencies at care delivery sites	
Missed Prevention Opportunities	--Primary prevention	2.2%
	--Secondary prevention	
	--Tertiary prevention	
Fraud	All sources—payers, clinicians, patients	3.0%
Total Savings Potential from all four categories		18.8%

Source: Yong et al. (2010), Box S-2, p. 52.

Beyond these studies providing global cost estimates, there is an extensive literature supporting these broad conclusions through detailed studies in each of these areas of potential cost savings. In Appendix 1, we provide further details and key references in support of each of these potential cost savings areas.

Designing Healthy California to Achieve Cost Savings

While a broad consensus exists in the research literature as to the rough magnitude of excessive costs in the areas of service delivery, there is much less agreement as to how much cost savings can be realistically achieved through any given set of reforms in care delivery. More specifically for our purposes, we must consider how much cost savings is realistically achievable within the structure of Healthy California as presented in the current draft legislation.

According to the draft legislation, the state government will form the Healthy California Board as one key institutional feature of the state's new health care system. This Board will be responsible to carry out the mandate of Healthy California. With respect to the specific area of service provision, the most relevant section explaining the responsibility of the Board is in Section 11, titled "Program Standards." The key passages in that section of the proposed legislation is as follows:

Requirements and standards under the program shall include, but not be limited to, provisions to promote the following:

(1) simplification, transparency, uniformity, and fairness in health care provider credentialing and participation in health care organization networks, referrals, payment procedures and rates, claims processing, and approval of health care services, as applicable;

(2) in-person primary and preventive care, care coordination, efficient and effective health care services, quality assurance, and promotion of public, environmental, and occupational health;

(3) elimination of health care disparities;
(p. 19).

This language in the draft legislation thus broadly mandates the Board to develop the state's single-payer system as an integrated care structure. The bill clearly does not delve into details as to how to organize itself within an integrated care framework. The challenge therefore will be to develop such a structure that is both fully consistent with the broad principles of the bill while also being capable of achieving some of the significant cost savings in the areas of service provision that the IOM and other studies have documented.

As we have discussed, major cost saving measures will emerge in the implementation of Healthy California as price controls are established in the sale of pharmaceuticals as well as the provision of services by hospitals, physicians/clinics and dentists. But these price controls are not capable, by themselves, of also discouraging unnecessary services, insufficiently delivered services, missed prevention opportunities and fraud. In fact, as we discuss further below, price controls can produce the perverse effect of, for example, encouraging excessive service

provision—e.g. physician-induced demand increases—as a means of compensating hospitals and providers for the lower prices they will be forced to charge through Healthy California.

There are several models within the United States health care system, operating either at present or within the recent past, which should be considered in developing an effective cost saving framework in service provision. These models provide both positive and negative lessons for Healthy California.

Cost Saving Approaches within the Affordable Care Act

The Affordable Care Act became law in 2010, but most of its key features were implemented starting only in 2014. The ACA does include measures designed to achieve cost savings through developing innovative integrated care systems. This is most prominently the case through the development of Accountable Care Organizations (ACOs). The ACO framework aimed to encourage hospitals and physicians to collaborate effectively by offering financial incentives to these providers if they improved the quality and efficiency of care.

To date, the evidence on the performance of the ACOs has been mixed. For example, Schulman and Richman (2016) write that “based on 3 published evaluations of the ACO program, the experiment so far has failed to produce needed efficiencies,” (2106, p. 707). But Song and Fisher (2016) argue, to the contrary, that while cost savings have been modest to date, further savings are still achievable, and at the same time, quality improvements have been significant. Hsu et al. (2017) are also cautiously positive in their assessment of cost savings to date through the ACO framework. They find, for example, that rates of emergency department visits and hospitalizations have fallen by an average of 6 and 8 percent respectively through implementing ACO operating systems.⁴³

A major problem in implementing the Accountable Care Organizational structure, and with the Affordable Care Act more generally, is that the incentives they have created to control costs are relatively weak, while the opportunities for hospitals and doctors to avoid the cost controls and even expand their profit opportunities within the ACO system remain largely intact. The extensive reporting on this problem presented in Elizabeth Rosenthal’s new book *An American Sickness* (2017) describes this situation vividly. Rosenthal writes:

Providers—up and down the health care supply chain—rapidly devised ways to stay within the letter of the new law while often flagrantly flaunting its quality-promoting cost-saving intentions....The small incentives to encourage good behavior and coordinated medical care often paled compared to the profit that could be garnered by creative or aggressive billing that tested the boundaries of the law. Physical exams had to

⁴³ Kevin A. Schulman and Barak D. Richman (2016) Reassessing ACOs and Health Care Reform, *Journal of the American Medical Association (JAMA)*. August 16, pp 707-08; Zirul Song and Elliot Fisher (2016). [The ACO Experiment in Infancy—Looking Back and Looking Forward](#), *Journal of the American Medical Association (JAMA)*, August 16, pp. 705-06; John Hsu, Mary Price, Christine Vogeli, Richard Brand, Michael E. Chernew, Sreekanth K. Chagutura, Eric Weil, and Timothy G. Ferris (2017) Bending the Spending Curve by Altering Care Delivery Patterns: The Role of Care Management within a Pioneer ACO. *Health Affairs* 36, no 5, pp. 876 – 884.

be free, for example, but not all the attendant blood tests a doctor might order... The ACA benefit that required no-cost preventive screenings was distorted as doctors perverted the meaning of "preventive" and "covered" and "no cost" to no end (p. 237).⁴⁴

Rate-setting Regulations for Oligopolistic Hospital Systems

One fundamental problem with the Accountable Care Organization structure is that it did not address the trend of growing market power of large hospital-led delivery systems. In turn, this increased market power has enabled the hospitals to exert increase price-setting power. Thus, Schulman and Richman find that "Monopoly hospitals, those that dominate a local market with no other competing hospital, have 15.3 percent higher prices than hospitals in more competitive markets, and hospital consolidation is responsible for sharp price increases across markets within states," (2016, p. 707). With respect to California specifically, Schulman and Richman report that, for 2012, costs of care per patient were about 56 percent higher when the patients were seen in a physician practice owned by a multihospital system as opposed to a practice owned independently by a physician.⁴⁵

Healthy California will control price setting per se within monopolistic or oligopolistic hospital structures through establishing a Medicare rate standard for all services. But to achieve overall cost savings in service delivery, it will be also necessary to control the hospitals' efforts to maintain high profit rates through, for example, ordering excessive tests and treatments and relying excessively on expensive equipment.

A widely utilized policy approach for controlling excess profits within monopolistic or oligopolistic market settings is to directly regulate the rates, or more specifically, the profits, of

⁴⁴ Steffie Woolhandler and David Himmelstein describe the results to date with the ACA similarly in their recent study "The Affordable Care Act: How Nixon's Health Reform Proposal Became Democrats' Albatross," *International Journal of Health Services*, forthcoming 2017. They write, "Proponents claimed that this payment shift would give hospitals and doctors incentives to improve efficiency and save money, since they would share in the savings. They also asserted that the shift would give providers incentives to better coordinate care, upgrading the quality of care. Finally, they emphasized that quality measurement would protect patients against incentives for undercare, and that bonuses based on these metrics would goad providers to improve quality. Unfortunately there is no evidence that any of these promises have been fulfilled. Medicare has realized no savings, after the cost of bonuses paid to providers has been factored in. And claims for quality improvement are based on providers' reports of their own performance that are heavily influenced by incentives to "teach to the test," improving scores on surrogate measures but not actually improving health outcomes." This pattern of behavior under the ACO framework is closely analogous to the more general issue of physician-induced demand, discussed earlier.

⁴⁵ For 2015, the profits received by private hospitals in California amounted to \$8.2 billion (Source: American Hospital Association, *AHA Hospital Statistics*). This represented about 2.5 percent of all spending on health care in California for that year. Thus, reducing the rate of profit for the state's private hospitals by one-third would itself result in a decline in overall system costs of 0.83 percentage points. These findings for California specifically are consistent with other studies focused on other state-level health care markets. For example, the 2011 report by the Massachusetts Office of the Attorney General Martha Coakley, *Examination of Health Care Cost Trends and Cost Drivers*, reached the following conclusions: "Wide disparities in prices are not explained by differences in quality, complexity of services, or other characteristics that might justify variations in prices paid to providers. In significant measure, this market dysfunction resulted from historic negotiating and contracting practices that were not challenged because the system lacked the transparent, reliable information needed to identify, measure and correct this dysfunction," (2011, p. 2)

the oligopolistic business firms. Such rate-setting has been practiced for decades in the electric utility sector of the U.S. economy. The results of such regulations have been broadly successful.⁴⁶

In recent years, there have also been some developments with rate setting and profit controls within the U.S. health care industry itself. The Medicare Inpatient Prospective Patient System (IPPS) system is one major example of a rate-setting framework operating presently in the U.S. market. The State of Maryland has also operated a rate setting system since 1974 with generally favorable results. Frankford (2016) describes the rate setting system within the Medicare system and in Maryland as follows:

Properly designed, it can control prices *and the volume and intensity of services* (emphasis added). It also promises large administrative savings in that rates are transparent and they are standardized....” For example, both Maryland and Medicare use changes in a “market –basket index,” which measures changed prices of hospitals’ inputs, (2016, p. 571).⁴⁷

Once input prices can be reasonably established, then the system can set a fixed allowable profit margin over the total cost of inputs. For example, a hospital’s profit rate could be indexed relative to a standard measure of market rates of return, such as the 10-year U.S. Treasury bond rate.

In short, designing a well-functioning rate-setting system should be seen as potentially one important component of the newly created Healthy California Board, in its efforts to capture, through care integration, at least a significant fraction of the 18.8 percent in wasted spending on service delivery identified by the IOM. This task clearly falls within the framework outlined by the draft legislation.

What is a Realistic Level of Cost Saving?

It is realistic, in short, to expect that an effective rate-setting system can be established as one important feature of care integration under Healthy California. But it is still unrealistic to assume that the full 18.8 percent savings in total system-wide costs identified by the IOM could be achieved through the establishment of a single-payer system for California, at least while the

⁴⁶ Recent references on utility rate setting include Jonathan A. Lesser and Leonardo R Giacchino (2013) *Fundamentals of Energy Regulation* 2nd edition, Public Utilities Reports and Lowell E. Alt Jr. (2006) *Energy Utility Rate Setting*, Lulu.com. An earlier standard reference is Charles F. Phillips (1993) *The Regulation of Public Utilities*, 3rd edition, Public Utility Reports.

⁴⁷ David M. Frankford (2016) It’s the Prices, Advanced Capitalism, and the Need for Rate Setting—Stupid. *The Journal of Law, Medicine, and Ethics*, 44, pp. 569 – 75. Frankford’s paper is, analytically, an extension of the classic study by Gerald F. Anderson, Uwe Reinhardt, Peter S. Hussey and Varduhi Petrosyan, “It’s the Prices Stupid: Why the United States is So Different from Other Countries,” *Health Affairs*, 22:3, pp. 89 – 105. Another useful discussion on rate setting in the U.S. health care system is: Murray, R. and Berenson, R.A. (2015). *Hospital Rate Setting Revisited: Dumb Price Fixing or a Smart Solution to the Providing Pricing Power and Delivery Reform*. Urban Institute, <http://www.urban.org/research/publication/hospital-rate-setting-revisited-dumb-price-fixing-or-smart-solution-provider-pricing-power-and-delivery-reform>.

full details of the administrative structure necessarily remain uncertain. The IOM study itself assumes that this level of savings would be achievable only after a 10-year period of system restructuring. Creating a single-payer system with care integration should be able to accelerate the process of administrative restructuring relative to the assumptions of the IOM study. But significant time lags in implementation will still be unavoidable.

Another consideration is that, at present, about 8.3 million residents of California receive their health care coverage as members of Kaiser Permanente. That amounts to about 25 percent of the 33.4 million California residents who now have health insurance. This is significant because Kaiser does already operate its health delivery system on an integrated basis, and has achieved significant cost savings through their organizational model relative to more standard health care delivery systems, both in California and the U.S. overall.⁴⁸ This does not mean that Kaiser's particular model for integrated care will be appropriate within the framework of a statewide single-payer system. As discussed above, the implementation of Healthy California will necessarily entail the careful development of its own operating procedures that are consistent with the principles stated in the bill itself. At the same time, because Kaiser is already covering about one-fourth of the state's insured residents on the basis of a relatively efficient delivery system, the additional potential gains in efficiency that are available in California are likely to be less than the lower-bound 18.8 percent figure established by the IOM for the U.S. overall.

As such, for the purposes of this analysis, it is prudent to assume that, at least in the short run of five years or less, the level of savings that is realistically achievable through the initial implementation of Healthy California would be substantially less than 18.8 percent. For our purposes, we assume as a lower-end estimate that the achievable aggregate savings level in the four areas of unnecessary services, insufficiently delivered services, missed prevention opportunities and fraud would be 5 percent of total costs—i.e. roughly only 25 percent of the IOM's lower-bound figure. This figure would represent a relatively modest rate of improvement in overall efficiency of about 1 percent per year achieved within the framework of the Healthy California single-payer system relative to California's existing health care system.

Achieving significant improvements in the areas of service delivery will also be critical for controlling the longer-term pattern of cost and price increases over time. The structural changes that we have examined—in the areas of administration, pharmaceutical pricing and hospital, physicians/clinics and dental fees—are capable of generating significant one-time cost reductions as well as establishing an improved overall framework for controlling costs over time. But it is still the case that, even with a dramatically restructured health delivery system through Healthy California, costs can continue to rise excessively through ineffective delivery systems.

Overall Cost Saving Potential through Single-Payer

⁴⁸ Pines, Jesse, Selevan, Jeff, McStay, Frank, George, Meaghan, and McClellan, Mark (2015) "Kaiser Permanente-California: A Model for Integrated Care for the Ill and Injured," Center for Health Policy, Brookings Institution.

In Table 9, we summarize our conclusions regarding all sources of potential cost savings, including saving through both changes in the structure of California’s health care system—administration, pharmaceutical pricing, and fee rates for providers—as well as in the delivery of services. As we see in Table 9, the sources of structural savings total, again, to 13.0 percent of total health care costs in California. Our estimate of savings through improved service delivery is 5 percent of total health care costs. Combining both the structural savings and savings from service delivery brings this total saving potential to 18.0 percent of total health care costs in California.

Table 9. Overall Cost Saving Potential through California Single Payer Health Care System

Categories of Spending	Cost Saving within Spending Categories as Share of Total Health Care Expenditures
Structural Categories	
Administration	6.7%
Pharmaceutical pricing	3.4%
Medicare rates for all providers	2.9%
Service Delivery Categories	
<ul style="list-style-type: none"> ■ Unnecessary services ■ Inefficiently delivered services ■ Missed prevention opportunities ■ Fraud 	5.0%
Total Savings Potential	18.0%

Sources: See Tables 7 and 8.

In proceeding with this estimate for total savings potential through the establishment of Healthy California, it is important to reiterate the ways in which we derived our total figure through a series of moderate to conservative assumptions relative to the research literature on each of the specific issues. Working from this research literature, we could have reasonably concluded that overall savings potential was closer to 30 percent or higher.

For example, the 2010 IOM study estimates, as their *lower-bound estimate*, that total cost saving potential from all sources within the existing U.S. health care system is 30.7 percent. In terms of the more specific spending areas, some studies have concluded that savings on administrative costs could be about 70 percent. We have assumed a 50 percent savings in this category. Some studies on pharmaceutical pricing suggest that the saving potential is in the range of 50 – 60 percent, especially through building from the VA pricing framework. We have assumed a 30 percent saving potential in this category. Finally, as noted above, the IOM itself concludes that the saving potential available through improving the service delivery system to be

nearly 19 percent of total health care spending in the U.S. overall. We have assumed that this figure to be 5 percent as a result of implementing Healthy California.⁴⁹

3. FINANCING HEALTHY CALIFORNIA

Overall Costs of Healthy California with Cost Savings

As presented in Table 6, our estimate of total health care expenditures in California with the establishment of universal full coverage—i.e. no uninsured or underinsured residents—but still operating under California's existing health care system is \$404.1 billion. This figure incorporates all spending areas, including nursing homes, home health care, and public health, even though these three areas of total health care spending are not covered in the Healthy California bill in its present form.

Our assumption as to the potential cost savings that are attainable through Healthy California—based on a series of moderate to conservative assumptions—is 18.0 percent. We can now apply this potential cost saving estimate to our full cost estimate derived within the framework of California's existing health care system. That is, if total covered costs are \$404.1 billion under California's existing health care arrangement, this implies that under the Healthy California single-payer system, the overall cost figure will fall by 18 percent. That is, we estimate that the total costs of operating a single-payer system will be \$331 billion in 2017 (= \$404.1 billion x 0.82). Table 10 summarizes these results.

Table 10.
Estimated Total California Health Care Spending under Provisions of Healthy California

Total health care expenditures with universal coverage and existing system	\$404.1 billion
Total saving potential through Healthy California provisions	18.0%
Total health care expenditures with universal coverage and Healthy California provisions	\$331 billion (= \$404.1 billion x 0.82)

Sources: See Tables 7-9.

⁴⁹ For alternative approaches to estimating cost savings potential within a state-level single-payer see, for New York State and Vermont respectively: Friedman, Gerald (2015). "Economic analysis of the New York Health Act." http://www.infoshare.org/main/Economic_Analysis_New_York_Health_Act_-_GFriedman_-_April_2015.pdf; and Hsaio, William C., Kappel, Steven and Gruber, Jonathan (2011). *Health System Reform Design: Achieving Affordable Universal Health Care in Vermont*. Research Report, Vermont State Legislature.

In this section, we consider how to finance this level of health care spending in California. There will be two basic funding sources: 1) existing federal, state, and local government health care programs; and 2) newly-generated tax revenues provided by California residents. We can calculate the levels of newly-generated tax revenues that will be needed to reach \$331 billion in total financing after we first establish the amount of funding that will continue to be provided by existing government programs.

Existing Public Sector Support for California Health Care

At present, 71 percent of all health care spending in California comes from a range of public funding sources. In Table 11, we list these public funding sources, as well as their share of the 71 percent in total health care spending. The figures in Table 11 are taken from a 2016 study by researchers at the UCLA Center for Health Policy Research (Sorensen et al. 2016).

Table 11. Public Health Care Expenditures in California, 2016
Figures reported by revenue source

Revenue Source	Percentage of Overall State-wide Health Spending
<i>Direct government expenditures</i>	
Medicare	20.3%
Medi-Cal/Healthy Families	
■ Federal share	17.1%
■ State share	10.2%
Other government programs	2.7%
County health expenditures	2.7%
<i>Government employer premium contributions</i>	
Federal Employee Health Benefits Program premiums	0.5%
CalPERS premiums	0.3%
TRICARE	1.1%
<i>Tax subsidies</i>	
Tax subsidies for employer-sponsored insurance	
■ Federal	9.0%
■ State and local	3.0%
Affordable Care Act subsidies	2.4%
Total public health care expenditures	71.0%

Source: Sorensen et al. (2016)

The Healthy California bill stipulates that the funding levels from virtually all of these sources should continue in tact after the state’s single payer system is established. The bill states specifically as follows:

The State will work to obtain waivers relating to MediCal, Children's Health Insurance Plan, Medicare, the Patient Protection and Affordable Care Act, and any other appropriate federal programs, under which federal funds and other subsidies that would otherwise be paid to California will be paid by the federal government to California and deposited in the California Health trust fund. Under such a waiver, health coverage under those programs will be replaced and merged into HC, which will operate as a true single-payer program. If such a waiver is not obtained, the State shall use State plan amendments and seek waivers to maximize, and make as seamless as possible, the use of federally-matched health programs and federal health programs in HC (p. 2).

Following from this passage, all of the funding sources listed in Table 11 would continue under Healthy California with the one relatively small exception. In Appendix 2, we provide a full analysis of federal health care waiver laws through which Healthy California will continue to receive virtually full funding from its current public revenue sources.

The one existing federal funding source listed in Table 11 that will not be covered through Healthy California will be the tax subsidies from state and local governments for employer-sponsored insurance. This one specific funding source will be replaced by the new state-level taxes established through Healthy California, the details of which we discuss below. To provide a state-level tax subsidy for a state-level tax would be inefficient within this policy framework. The more direct policy measure would be to simply operate with a lower state-level tax rate without the complication of the state-level tax subsidy.

But the situation is not comparable with the *federal subsidy* for employer-sponsored insurance listed in Table 11. Of course, it will be true that, under Healthy California, there will no longer be employer-sponsored private insurance policies, so there is no need for a federal tax subsidy for a defunct private insurance system. Nevertheless, California residents and businesses will be paying newly-established state-level taxes under Healthy California. These state-level tax payments should therefore be credited by Californians against their federal tax payments in the same way that state residents and businesses presently receive a tax subsidy with their various private insurance policies. For the purposes of our discussion, we therefore assume that this federal subsidy will remain, after appropriate administrative adjustments are established that reflect the transition from private health insurance policies to Healthy California.

As we see in Table 11, the state and local tax subsidies amount to 3.0 percent of overall statewide health spending, out of the total of 71 percent provided by all public revenue sources. Since we assume that this one funding source will no longer be operating under Healthy California, it follows that we would expect that 68 percent of all funding will still be provided by the remaining funding sources listed in Table 11.

Given our estimate of total financing for Healthy California at \$331 billion in 2017, this implies that \$225 billion (= \$331 billion x 0.68) will be provided by the existing funding sources. It further implies that the remaining \$106 billion will need to be provided by new tax revenue streams established within the California economy.

Funding Healthy California through Business Gross Receipts and Consumer Sales Taxes

There are alternative ways through which the State of California can generate the remaining \$106 billion in revenue that will be needed to fully fund its Healthy California single-payer health care system. In this section, we focus on describing the combination of new taxes that will generate the needed \$106 billion in the most equitable and efficient manner. In the next section, we show the impact on a representative range of families and businesses of the proposed new state-level taxes.

We find that the most equitable and efficient set of new taxes for generating \$106 billion in new state revenue are as follows:

1. ***A sales tax of 2.3 percent.*** This sales tax will include exemptions for spending on housing, utilities, food at home. To be consistent with the existing California tax codes, we also include exemptions on a broad range of service expenditures. We further include a 2 percent income tax credit for families currently insured through MediCal, to fully offset their 2.3 percent sales tax spending.
2. ***A gross receipts tax on businesses at 2.3 percent of gross receipts.*** This tax will include an exemption for the first \$2 million in receipts for all businesses. As we show, small businesses will face no gross receipts tax obligation through this exemption. The effective gross receipts tax rate will also be reduced for medium-sized firms.

Tax Design and Revenue Estimates

Both sales taxes and, even more so, business gross receipts taxes have the merit of operating with a broad base—i.e. the number of people and business firms that will be obligated to pay either of these taxes is very high. This is because everyone purchases goods that will be subject to the sales tax and virtually all businesses generate some positive level of receipts. At the same time, both tax structures include factors that need to be addressed carefully to ensure that their overall effect will be both equitable and efficient as they operate in California.

Sales tax. At present, California is already operating with a sales tax. The state-level sales tax rate is currently 6 percent. However, California adds a mandatory local rate of 1.25 percent that increases the minimum total state sales tax base to 7.25 percent. Depending on local municipalities, the total tax rate can be as high as 9.75 percent. The 2.3 percent sales tax increase that we are proposing would therefore represent an addition to the rates already being paid at each individual municipal level.

In its simplest design framework, a sales tax has the serious drawback that its overall impact will be regressive. That is, lower-income consumers spend a proportionally higher share of their overall income, and save a proportionally lower share. They will therefore pay a higher share of their income in sales taxes than upper-income households, assuming there is only one sales tax rate that applies across the board to all products. But this problem with a sales tax can

be greatly diminished, if not eliminated altogether, through an exemption from the sales tax for spending on housing, utilities and food prepared at home. This is because lower-income households devote a higher share of their overall spending on these necessities. We therefore propose that food, housing and utilities be exempt from any Healthy California sales tax proposal.

As noted above, these exemptions will be in addition to exempting a range of services to be consistent with current general practice in California. Toward that end, we assume that all purchases from non-profit organizations in California will be exempt from the tax. We also assume that 10 percent of all recreational purchases will be exempt, to reflect spending on veterinary services. We finally also exempt 25 percent of all activities that fall under the catch-all category "other services" in the U.S. National Income and Product Accounts. This includes spending on legal and accounting services, professional dues, funeral and burial services, personal care and for-profit educational institutions. We do not exempt financial services, for-profit educational institutions, and most forms of recreation, including gambling, sporting events and movies.⁵⁰

In all, total personal consumption expenditures in California for 2016 amounted to roughly \$1.6 trillion. Our exemptions add up to about 60 percent of total personal consumption expenditures. This means that our taxable base for the increased sales tax will be \$640 billion. With 2.3 percent sales tax on this \$640 billion base, the tax will generate \$14.7 billion ($= \640×0.023). As also noted above, we further propose to provide a 2 percent tax credit for families who currently receive their health care coverage through MediCal. This will ensure that current MediCal recipients will face no net loss of income through having to pay the 2.3 percent sales tax increase on non-necessary goods. As we will see in Section 4 in more detail, this will mean a loss of about \$400 million in tax revenue for the state.⁵¹ Overall then, the 2.3 percent sales tax on non-exempted consumption spending in California will generate a net of \$14.3 billion.

Gross receipts tax. As the name suggests, a gross receipts tax is a tax imposed on all business sales. In the United States, gross receipts taxes were first introduced at the state level in the early 1920s. According to 2015 report by the tax consulting firm CBIZ, gross receipts taxes were in operation as of 2015 in Texas, Ohio, Washington, Delaware, and Washington.⁵²

A gross receipts tax has the highly favorable feature that it creates no disproportionate burdens on businesses whose operations rely more on employing workers as opposed to relying more on utilizing expensive machinery and buildings (i.e. "capital plant and equipment") to produce goods and services. That is, a gross receipts tax does not discriminate in its impact between more "labor-intensive" firms as opposed to more "capital-intensive" firms. This is in

⁵⁰ The source for Personal Consumption Expenditure data and definitions of expenditure categories for California is the Bureau of Economic Analysis, U.S. Department of Commerce, NIPA database, https://www.bea.gov/newsreleases/regional/pce/pce_newsrelease.htm.

⁵¹ As we show in Section 4, the average tax credit for these families will be \$260. This credit will be provided for 1.56 million families. Thus $\$260 \times 1.56$ million families = \$406 million in total tax credits.

⁵² CBIZ Inc. (2015) "The Gross Receipts Tax: The Not-Income and Not-Sales Tax," April 14, <https://www.cbiz.com/insights-resources/details/articleid/2586/the-gross-receipts-tax-the-not-income-and-not-sales-tax-article>.

contrast with a payroll tax, in which the tax base is established according to the total amount of wages a business is paying to its workers. A payroll tax therefore favors firms that heavily utilize machinery as an alternative to hiring people to conduct its operations. We therefore focus our discussion in this section on establishing a new gross receipts tax in California as a funding source for Healthy California. However, in Appendix 3, we do also examine the impact of utilizing a payroll tax as an alternative to the gross receipts tax for funding Healthy California.

As noted above, we propose to incorporate into the Healthy California gross receipts tax an exemption for the first \$2 million in receipts received by all businesses. Through this exemption, smaller firms will be fully exempt from paying the tax, and the tax rates will be substantially reduced for medium-sized firms.

We illustrate the effect of the \$2 million exemption more specifically in Table 12, through reporting on the share of total receipts that will be subject to the 2.3 percent tax for firms of different sizes. We see in Table 12 that, on average, firms with up to 9 employees will face no gross receipts tax obligation because their level of gross receipts falls below \$2 million. Firms with 10 – 19 employees, and with an average of \$3.1 million in gross receipts, will pay the 2.3 percent tax on only \$1.1 million of their overall \$3.1 million in gross receipts, i.e. on 36 percent of their gross receipts. Firms which employ between 20 – 99 workers average \$10 million in gross receipts. They will therefore pay the 2.3 percent tax \$8 million, or 80 percent of their average of \$10.0 million in gross receipts. As Table 12 shows, it is only the firms which, on average, employ over 100 workers that will need to pay 2.3 percent on virtually all their gross receipts.

Through having calculated these tax requirements for business firms of different sizes in California, along with the number of firms at each firm size (column 6), we can now estimate the overall tax base and revenue potential for the 2.3 percent gross receipts tax. Thus we see that firms with 1 – 19 workers and an average of \$3.1 million in gross receipts, will pay 2.3 percent on \$1.1 million of non-exempted gross revenues. There are 73,249 firms in this size category. These firms will therefore generate a total of \$1.8 billion in revenues. Firms with 500 or more workers average \$487.3 million in gross revenues. Their tax base is therefore \$485.3, which means they are paying the full 2.3 percent tax. There are 5,925 firms included in this category. Overall, these firms will generate \$66.1 billion in gross receipts tax revenue.

Finally, we see that total revenues generated by the gross receipts tax from firms of all sizes will amount to \$92.6 billion. Of this total, the largest firms will provide 71 percent of all revenue, at \$66.1 billion in revenues of the \$92.6 billion total. The share of total revenue coming from both the firms with between 100 – 499 workers along with these largest firms amounts to \$79.2 billion, or 86 percent of all revenues generated by the statewide gross receipts tax.

**Table 12. Gross Receipts Tax Requirements for Different-Sized Firms in California:
 Tax Rate is 2.3 percent with a \$2 million gross receipts exemption**

Figures are estimates for 2016

1. Firm size by number of employees	2. Firm size by average gross receipts	3. Gross receipts subject to 2.3% tax (= column 2 - \$2 million)	4. Percentage gross receipts subject to tax (= column 3 / \$2 million)	5. Effective gross receipts tax rate (= column 4 x 2.3%)	6. Number of firms in size category	7. Taxes paid, by firm-size category (= columns 3 x 6) x 2.3%
0 – 4 employees	\$581,000	0	0	0	448,179	0
5 – 9 employees	\$1.6 million	0	0	0	121,713	0
10 – 19 employees	\$3.1 million	\$1.1 million	36%	0.8%	73,249	\$1.8 billion
20 – 99 employees	\$10.0 million	\$8.0 million	80%	1.8%	62,657	\$11.5 billion
100 – 499 employees	\$46.5 million	\$44.6 million	96%	2.2%	12,760	\$13.1 billion
500+ employees	\$487.3	\$485.3 million	99%	2.3%	5,925	\$66.1 billion
TOTALS	---	---	---	---	724,483	\$92.6 BILLION

Sources: Data on gross receipts by firm size are from the 2007 Statistics of U.S. Businesses (SUSB) of the U.S. Census, inflated to 2016 values using nominal GDP growth in California between 2007 to 2016 for California. Data on number of firms is from the most recent 2014 dataset.

Overall Revenue Generated through Sales and Gross Receipts Taxes

Our revenue estimates from our proposed two new tax sources—both a statewide sales tax at 2.3 percent and a gross revenue tax also at 2.3 percent, with exemptions and tax credits as described above—is as follows:

- 2.3 percent sales tax: \$14.3 billion
- 2.3 percent gross revenues tax: \$92.6 billion
- **TOTAL REVENUE = \$106.9 BILLION**⁵³

⁵³ Note that these rates for both the payroll and sales taxes are *effective rates*. That is, they are the rates that are necessary to generate the \$106.7 billion per year necessary to finance Healthy California, assuming that various public entities continue to provide 68 percent of overall funding for health care in the state. As we saw, that 68 percent share of health care funding would amount to \$225 billion under Healthy California as of 2017. Depending on how the administrative details are worked out with respect to the delivery of public subsidies under Healthy

Overall then, we see that this combination of new sales and gross receipts tax will fully cover the additional \$106 billion in costs necessary to fund Healthy California. This assumes that the current share of funding from existing public sector sources will continue virtually intact, at \$225 billion. It is through this combination of existing and newly-established funding sources that California can generate the full \$331 billion in funding necessary to finance Healthy California.

4. IMPACT ON INDIVIDUAL CALIFORNIA FAMILIES AND BUSINESSES

It is of course critical to obtain a clear picture as to how the Healthy California measure will impact individual households and businesses, at all income levels and all firm sizes. In this section, we provide evidence on these impacts by estimating the relative costs of health care in California for both households and businesses under the state's existing system versus what is likely to prevail under Healthy California.

Specifically, we consider the impact of Healthy California relative to the existing system for seven representative family types. These are:

- **Low-income families.** a) \$13,000 in family income with Medi-Cal; b) \$35,800 in family income without health insurance.
- **Middle-income families.** \$62,300 in family income with distinct insurance arrangements: a) Underinsured; b) Individually insured; and c) Insured by employer; and
- **High-income families.** a) \$227,600 in family income—top 20 percent income category with high-level private insurance; b) \$340,400 in family income—top 10 percent in family income with high-level private insurance.

We then examine impacts on small, medium and large businesses. These include:

- **Small businesses**—0 – 9 employees which, respectively a) *are not* providing health insurance; and b) *are* providing health insurance to their employees.
- **Medium-sized businesses**—a) 10 – 19 employees; and b) 20 – 99 employees, both of which are providing private health insurance to their employees.
- **Large businesses**—a) 100 – 499 employees; and b) 500+ employees, both of which are providing health insurance to their employees.

California, it may be that the *nominal* payroll and sales tax rates would be set higher. This would result if some share of the tax subsidy were provided through federal tax rebates. An example of such a situation would be if the nominal state sales tax were set at 3.3 percent rather than 2.3 percent, but that California taxpayers were provided an automatic rebate on their federal taxes equal to 70 percent of their 3.3 percent state sales tax payment. This would mean that the nominal sales tax would be 3.3 percent but that the effective rate would be 2.3 percent.

We present the results of these comparative exercises in Tables 13 - 16, including two summary tables—14 for households and 16 for businesses.

For families under the existing system, we add up payments for insurance premiums and out-of-pocket costs, then subtract all tax subsidies, to obtain figures for the families' net health care spending. We then calculate these net health care spending figures relative to income levels for each of the representative family types.

In estimating the impact of Healthy California on individual families, we follow the intent of the bill in assuming that California will obtain the necessary federal waivers they are seeking, as we discuss above. This will enable California will continue to receive tax subsidies at roughly its current level from the various federal, state, and municipal programs. The specific administrative features of these tax subsidies will need to be adjusted in some cases under Healthy California relative to the existing arrangements. But the underlying purposes of these subsidies as well as their overall level of support should be comparable. We also note that accurately measuring subsidy costs at the level of individual households and business firms is challenging, given the large number of variables at play with such calculations. In Appendix 4, we document our methodology for deriving the estimates we report.

Estimates for Households

We start in Table 13A with the case of a low-income family, with family income at \$13,000. This family's health insurance is covered by Medi-Cal. As the table shows, this family is paying \$660 per year in out-of-pocket health care costs in addition to its Medi-Cal coverage. This \$660 in spending equals 5.1 percent of the family's income. Under Healthy California, the family's total payments for the single-payer system will be its sales tax spending minus the 2 percent of income tax credit they receive for being Medi-Cal eligible. As such, their net spending on health care is a subsidy of \$51. On balance, this family lowers its health care costs as a share of income by 5.5 percent in moving from Medi-Cal to Healthy California.

The uninsured family with an income level of \$35,800 also derives net benefits through Healthy California. This family pays \$775 in out-of-pocket expenses under the present system, amounting to 2.2 percent of the family's income. Under Healthy California, this family pays \$338 in sales tax, but is not eligible for the 2 percent tax credit. Nevertheless, its health care spending falls by 1.2 percent under Healthy California relative to the existing system.

Table 13.
Impact of Transition to Healthy California on Families
Family of 3: 2 adults/one child
Figures are for 2015

A) Low-Income Families

	Low-income, with MediCal	Low-income, Uninsured
1. Income	\$13,000	\$35,800
2. Wages/Salaries	\$6,000	\$26,000
3. Non-exempt spending <ul style="list-style-type: none"> ■ Exemptions for food, housing, utilities, and various services 	\$9,100	\$14,700
<i>Health care spending under existing system</i>		
4. Health insurance premium	\$0	\$0
5. Out of pocket health care costs	\$660	\$775
6. Tax subsidies	\$0	\$0
7. Total net spending (=row 4 + row 5 – row 6)	\$660	\$775
8. Total health spending as share of income (=row 7/row 1)	5.1%	2.2%
<i>Health care spending under Healthy California</i>		
9. Sales tax (= 2.3% of non-exempt spending)	\$209	\$338
10. 2% income tax credit for MediCal eligible families	\$260	\$0
11. Total net spending (=row 9 – row 10)	-\$51	\$338
12. Total net spending as share of income (=row 11/row 1)	-0.4%	0.9%
<i>Net impact of Healthy California</i>		
13. Change in net income through Healthy California (= row 7 – row 11)	+\$711	+\$437
14. Percentage change in health care costs as share of income (= row 12 – row 8)	-5.5%	-1.2%

B) Middle-Income Families

	<i>Underinsured</i>	<i>Individually Insured</i>	<i>Insured by Employer</i>
1. Income		\$62,300	
2. Wages/Salaries		\$43,000	
3. Non-exempt spending ■ Exemptions for food, housing, utilities, and various services		\$22,000	
<i>Health care spending under existing system</i>			
4. Health insurance premium	\$4,900	\$9,300	\$4,900
5. Out of pocket health care costs	\$6,230 (10% of income)	\$3,645	\$2,430
6. Tax subsidies	\$5,220	\$6,800	\$5,220
7. Total net spending (=row 4 + row 5 – row 6)	\$5,910	\$6,145	\$2,110
8. Total health spending as share of income (=row 7/row 1)	9.5%	9.9%	3.4%
<i>Health care spending under Healthy California</i>			
9. Sales tax (= 2.3% of non-exempt spending)		\$506	
10. Sales tax as a share of income (= row 9/row 1)		0.8%	
<i>Net impact of Healthy California</i>			
11. Change in net income through Healthy California (= row 7 – row 9)	+\$5,404	+\$5,639	+\$1,604
12. Percentage change in health care costs as share of income (= row 10 – row 8)	-8.7%	-9.1%	-2.6%

C) High-Income Families

	Top 20 percent	Top 10 percent
1. Income	\$227,600	\$340,400
2. Wages/Salaries	\$122,200	\$207,500
3. Non-exempt spending ■ Exemptions for food, housing, utilities, and various services	\$61,920	\$85,400
<i>Health care spending under existing system</i>		
4. Health insurance premium	\$7,350	\$7,350
5. Out of pocket health care costs	\$810	\$810
6. Tax subsidies	\$10,500	\$11,400
7. Total net spending (=row 4 + row 5 – row 6)	-\$2,340	-\$3,240
8. Total health spending as share of income (=row 7/row 1)	-1.0%	-1.0%
<i>Health care spending under Healthy California</i>		
9. Sales tax (= 2.3% of non-exempt spending)	\$1,424	\$1,964
10. Sales tax as a share of income (= row 9/row 1)	0.6%	0.6%
<i>Net impact of Healthy California</i>		
11. Change in net income through Healthy California (= row 7 – row 9)	-\$3,764	-\$5,204
12. Percentage change in health care costs as share of income (= row 10 – row 8)	+1.7%	+1.5%

Sources: See Appendix 4.

In Table 13B, we consider the situation for middle-income families which are either: 1) underinsured; 2) insured individually; or 3) insured by their employers. In all cases, the net cost savings for these families is substantial under Healthy California. Thus, the underinsured middle-income family spends \$5,910 in health care, including premiums, out-of-pocket expenditures and tax subsidies under the current system. This amounts to fully 9.5 percent of their income. Health care costs under Healthy California will fall to 0.8 percent of income for

this family due to the \$506 sales tax. In other words, this household saves \$5,404, or 8.7 percent of income, through Healthy California relative to California's existing health care system.

The gains are even larger for the individually insured family. Under the existing system in California, this family is spending 9.9 percent of its income on health care. They will also spend only 0.8 percent of income, through the sales tax, with Healthy California—a gain of 9.1 percent in health care costs as a share of family income. Even for middle-income family that receives health insurance an employer within the present system, their health care costs fall by 2.6 percent as a share of income.

Health care costs do rise for high-income families under Healthy California relative to the existing system, as we show in Table 13C. This is despite the fact that these families are paying, on average, \$7,350 in health care premiums and \$810 in out-of-pocket expenses under the current system. But these families also benefit greatly through having their health care spending count fully against their current income tax payments. We estimate that total tax subsidies for high-income families amount to \$10,500 for top 20 percent families and \$11,400 for top 10 percent families. Because of this, the net cost for these families to receive health insurance is actually negative. They receive a net subsidy equal to about 1 percent of their income. But even with the loss of this subsidy for high-income families under Healthy California, the net increase in health care costs that these families will experience will amount to only 1.7 percent of income for families in the top 20 percent of the distribution, and 1.5 percent for those in the top 10 percent of the distribution.

In Table 14, we summarize the main findings shown in Tables 13A – C. This table conveys clearly the extent to which the costs of health care are presently borne disproportionately by lower- and especially middle-income families relative to high-income families under the current system. It also shows how Healthy California can promote far greater equity in the provision of health care in California.

Thus, we see that for middle-income families, the net costs of health care under the present system range between 3.4 and 9.9 percent of the families' income. By contrast, California's high-income families are presently receiving *a net subsidy* of 1 percent of their income to support their health care coverage.

Under Healthy California, net health care spending for middle-income families falls sharply, to an average of 0.8 percent of these families' income level. This represents a reduction in health care spending for California's middle-income families of between 2.6 – 9.1 percent of income. By contrast, with California's high-income families, health care costs will rise, but still only to an average of 0.6 percent of their income level.

Table 14.
Impact of Transition to Healthy California on Households:
Summary Figures

	Health Care Spending as Share of Income		3. Change in Health Care Spending as Share of Income (= column 2 – column 1)
	1. Existing System	2. Healthy California	
Low-income families			
\$13,000 in income with MediCal	5.1%	-0.4%	-5.5%
\$35,800 in income, uninsured	2.2%	0.9%	-1.2%
Middle-income families:			
\$62,300 in income			
Underinsured	9.5%	0.8%	-8.7%
Individually insured	9.9%	0.8%	-9.1%
Insured by employer	3.4%	0.8%	-2.6%
High-income families			
Top 20 percent: \$227,600 in income	-1.0%	+0.6%	+1.7%
Top 10 percent: \$340,400 in income	-1.0%	+0.6%	+1.5%

Source: Tables 13A – C.

Estimates for Businesses

In Tables 15A, we consider the impacts on small businesses, with a range between 0 – 9 employees and \$811,000 in gross receipts, under two scenarios. In the first scenario, the firm is not providing health insurance for its employees under the present system, while, in the second case, the firm is providing insurance coverage to its employees. However, even the firm that is paying nothing now for its employees' health care coverage will not experience any cost increases, since it will be exempt from having to pay the gross receipts tax. The small firm that has been providing for its workers who receive a windfall through Healthy California. This firm is paying nearly \$25,000 for employees' health insurance under the existing system. That expense is eliminated through Healthy California. Moreover, again, the firm is exempt from having to pay the gross receipts tax. As a result, the firm's health care costs fall by 22.0 percent relative to its payroll.

The representative medium-sized firms—with 10 – 19 and 20 – 99 employees respectively, will also experience significantly lower health care costs through Healthy California relative to the existing system. As we see in Table 15B, the firms with between 10 – 19 employees will see its net health care costs fall by \$82,520, or 13.4 percent of payroll. For the firm with 20 – 99 employees, health care costs fall by a lesser, but still substantial, 6.8 percent of payroll.

Table 15. Impact of Transition to Healthy California on Businesses
Figures are for 2015

A. Small businesses: Firms with 0-9 employees with and without health benefits

	<i>0-9 employees (no health benefits)</i>	<i>0-9 employees (with health benefits)</i>
1. Average number of workers in firm	3	3
2. Average payroll	\$139,300	\$139,300
3. Average gross receipts	\$811,100	\$811,100
4. Gross receipt tax base after \$2 million exemption (= row 3 - \$2 million)	\$0	\$0
<i>Health care spending under existing system</i>		
5. Average cost of health insurance per worker	\$0	\$9,000
6. Average firm spending on health insurance (= row 1 x 5)	\$0	\$27,000
7. Business health care tax subsidy (=7.65% x row 6)	\$0	\$2,065
8. Total net health care spending (= row 6 - row 7)	\$0	\$24,935
9. Total net spending as share of payroll (= row 8/row 2)	0%	22.0%
<i>Health care spending under Healthy California</i>		
10. Gross receipts tax (= 2.3% of gross receipts, with \$2 million exemption)	\$0	\$0
11. Gross receipts tax as share of payroll (= row 10/row 2)	0%	0%
<i>Net impact of Healthy California</i>		
12. Change in health care spending through Healthy California (= row 10 – row 8)	\$0	-\$24,935
13. Percentage change in health care spending as share of payroll (= row 11- row 9)	0%	-22.0%

B. Medium businesses: Firms with 10-19 employees; and with 20-99 employees

	10-19 employees	20-99 employees
1. Average number of workers in firm	13	38
2. Average payroll	\$614,300	\$1.9 million
3. Average gross receipts	\$3.11 million	\$10.0 million
4. Gross receipt tax base after \$2 million exemption (= row 3 - \$2 million)	\$1.11 million	\$8.0 million
Health care spending under existing system		
5. Average cost of health insurance per worker	\$9,000	\$9,000
6. Average firm spending on health insurance (= row 1 x 5)	\$117,000	\$342,000
7. Business health care tax subsidy (=7.65% x row 6)	\$8,950	\$26,160
8. Total net health care spending (= row 6 - row 7)	\$108,050	\$315,840
9. Total net spending as share of payroll (= row 8/row 2)	17.6%	16.2%
Health care spending under Healthy California		
10. Gross receipts tax (= 2.3% of gross receipts, with \$2 million exemption)	\$25,530	\$184,000
11. Gross receipts tax as share of payroll (= row 10/row 2)	4.2%	9.4%
Net impact of Healthy California		
12. Change in health care spending through Healthy California (= row 10 – row 8)	-\$82,520	-\$131,840
13. Percentage change in health care spending as share of payroll (= row 11- row 9)	-13.4%	-6.8%

C. Large businesses: Firms with 100 – 499 employees; and with 500+ employees

	100 – 499 employees	500+ employees
1. Average number of workers in firm	150	1,143
2. Average payroll	\$8.8 million	\$81.4 million
3. Average gross receipts	\$46.5 million	\$487.3 million
4. Gross receipt tax base after \$2 million exemption (= row 3 - \$2 million)	\$44.5 million	\$485.3 million
Health care spending under existing system		
5. Average cost of health insurance per worker	\$11,000	\$11,000
6. Average firm spending on health insurance (= row 1 x 5)	\$1.65 million	\$12.57 million
7. Business health care tax subsidy (=7.65% x row 6)	\$126,225	\$961,800
8. Total net health care spending (= row 6 - row 7)	\$1.5 million	\$11.6 million
9. Total net spending as share of payroll (= row 8/row 2)	17.4%	14.3%
Health care spending under Healthy California		
10. Gross receipts tax (= 2.3% of gross receipts, with \$2 million exemption)	\$1.0 million	\$11.16 million
11. Gross receipts tax as share of payroll (= row 10/row 2)	11.7%	13.7%
Net impact of Healthy California		
12. Change in health care spending through Healthy California (= row 10 – row 8)	-\$0.5 million	-\$0.5 million
13. Percentage change in health care spending as share of payroll (= row 11- row 9)	-5.7%	-0.6%

Source: See Appendix 4.

The firms now employing 100 – 499 employees also benefit substantially, paying 5.7 percent less on health care costs relative to payroll through Healthy California relative to the existing system. Even the largest firms, those that employ over 500 employees, will achieve a small but still significant income gain through Healthy California of 0.6 percent of their payroll.

Table 16 provides a summary of the main impacts on the transition to Healthy California for small, medium, and large businesses in the state. Again, we see in column 3 that all representative firms of all sizes are *at least* no worse off through Healthy California relative to conditions with the existing system, and in most cases will be significantly better off. Thus, small firms that have been providing private health care coverage for their workers will see their health care costs fall by 22 percent as a share of payroll, while the small firms that have not provided coverage are still paying nothing for health care, since they are exempt from having to pay the gross receipts tax. Medium-sized firms will see their health care costs fall by between 6.8 and 13.4 percent as a share of payroll under Healthy California relative to the existing system. Even firms with up to 500 employees will experience a fall in their net health care costs of 5.7 percent as a share of payroll relative to the existing system. Finally, the largest firms in California, which employ an average of 1,143 workers and receive gross receipts of \$487.3 million, will experience a decline in their health care spending of 0.6 percent as a share of payroll under Healthy California relative to what they presently pay.

Table 16.
Impact of Transition to Healthy California on Businesses:
Summary Figures

	Health Care Spending as Share of Payroll		3. Change in Health Care Spending as Share of Payroll (= column 2 – column 1)
	1. Existing System	2. Healthy California	
Small businesses—0 – 9 employees			
No health benefits	0%	0%	+0%
With health benefits	22.0%	0	-22.0%
Medium-sized businesses			
10- 19 employees	17.6%	4.2%	-13.4%
20 – 99 employees	16.2%	9.4%	-6.8%
Large businesses			
100 – 499 employees	17.4%	11.7%	-5.7%
500+ employees	14.3%	13.7%	-0.6%

Source: See Tables 15A – C.

In sum, the establishment of the Healthy California single-payer system will generate financial benefits for both families and businesses throughout the California economy. For families at most income levels and for businesses of most sizes, these financial benefits will be substantial. These benefits are in addition to those that the residents of California will achieve through having universal access to decent health care.

APPENDIX 1.

References on Wasteful Health Care Expenditures in the United States

Introduction

The Institute of Medicine identified approximately 30 percent of health care expenditures in the U.S. as wasteful (IOM, 2010, 2013). These include excess administrative costs, prices that are too high, unnecessary services, inefficiently delivered services, missed prevention opportunities and fraud. Moreover, the waste associated with each of these categories is based on the panel's lower-bound estimates. Donald Berwick, former head of the Centers for Medicare and Medicaid Services (CMS), and Andrew Hackbarth (2012), using similar categories, estimated that between 21 and 47 percent of total health care expenditures were wasted. These estimates are consistent, if not more conservative, than other related studies using different analytic approaches (OECD, 2017; Kelly, 2009; Farrell, 2008; Price Waterhouse Coopers, 2008).

Clearly the health care landscape has changed over the last few years. There had been some slowdown in the growth of health care expenditures, particularly between 2009 and 2013, which many analysts attribute to the Great Recession and to some degree the introduction of the Affordable Care Act. Yet, the CMS is currently projecting national health care expenditures to grow at an annual rate of 5.6% from 2016-2025 (Keehan, 2017). Emerging trends such as the increase in concentration in the hospital and private insurance industries, the evolution of increasingly expensive pharmaceuticals and other factors are pushing prices and expenditures higher and we have little reason to believe that the excess waste identified by IOM, Berwick, the OECD and others has significantly diminished over the past few years.

Basic references on the overall issues of wasteful health care expenditures under the current system in the U.S. include the following:

Bentley, T. G., Effros, R. M., Palar, K., & Keeler, E. B. (2008). Waste in the US health care system: a conceptual framework. *Milbank Quarterly*, 86(4), 629-659.

Berwick, D.M. & Hackbarth, A.D. (2012). Eliminating waste in US health care, *Journal of the American Medical Association*, 307(14), 1513-1516. <http://dx.doi.org/10.1001/jama.2012.362>.

Dzau, V. J., McClellan, M. B., McGinnis, J. M., Burke, S. P., Coye, M. J., Diaz, A., & Henney, J. E. (2017). Vital Directions for Health and Health Care: Priorities From a National Academy of Medicine Initiative. *Journal of the American Medical Association*, 317(14), 1461-1470. <http://bit.ly/2qnikIr>

Farrell, D., E. Jensen, B. Kocher, N. Lovegrove, F. Melhem, L. Mendonca, and B. Parish. (2008). *Accounting for the cost of US health care: A new look at why Americans spend more*. Washington, DC: McKinsey Global Institute. <http://bit.ly/2oEed9j>

IOM (Institute of Medicine). (2010). *The Healthcare Imperative: Lowering Costs and Improving Outcomes: Workshop Series Summary*. Washington, DC: The National Academies Press. <http://www.nap.edu/catalog/12750.html>

IOM (Institute of Medicine). (2013). *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*. Washington, DC: The National Academies Press. <http://nap.edu/13444>

Keehan, S. P., Stone, D. A., Poisal, J. A., Cuckler, G. A., Sisko, A. M., Smith, S. D., ... & Lizonitz, J. M. (2017). National health expenditure projections, 2016–25: price increases, aging push sector to 20 percent of economy. *Health Affairs*, 36(3), 553-563.

Kelley, R. (2009). *Where Can \$700 Billion in Waste Be Cut Annually From The US Healthcare System*. Ann Arbor, MI: Thomson Reuters, 24. <http://bit.ly/2pHAY8a>

OECD. (2017). *Tackling Wasteful Spending on Health*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264266414-en>

Price Waterhouse Coopers Health Research Institute. (2008). *The Price of Excess: Identifying Waste in Healthcare Spending*. <http://bit.ly/2qOBh7J>

In addition to the broad system-level studies cited above, the following section provides supportive evidence regarding the magnitude of wasteful healthcare spending in the areas identified by the IOM, including unnecessary services, insufficiently delivered services, missed prevention opportunities and fraud.

A) UNNECESSARY SERVICES

Total excess = 8.4 percent of National Health Expenditures

Unnecessary services refer to the provision of services beyond evidence-established levels. It can be defined as the provision of medical care that has no benefit or for which harms outweigh potential benefits. Overuse is driven by providers' preferences, ignores scientific evidence and occurs systematically because of conflicts of interest and perverse incentives intrinsic to current healthcare reimbursement mechanisms.

References

Baxi S. S., Kale, M. Keyhani, S., Roman, B.R., Yang, A., Derosa, A.P., & Korenstein, D. (2017). Overuse of Health Care Services in the Management of Cancer: A Systematic Review. *Medical Care*, ahead of print.

Brownlee, S., Chalkidou, K., Doust, J., Elshaug, A. G., Glasziou, P., Heath, I., & Korenstein, D. (2017). Evidence for overuse of medical services around the world. *The Lancet*. <http://bit.ly/2qLcBNz>

Chandra, A. Skinner, J.S. & Staiger, D.O. Saving money (and lives), in Olsen, L., Saunders, R. S., & Yong, P. L. (Eds.). (2010). *The healthcare imperative: lowering costs and improving outcomes: workshop series summary*. National Academies Press. <http://www.nap.edu/catalog/12750.html>

Delaune, J., & Everett, W. (2008). *Waste and inefficiency in the US health care system*. Cambridge, MA: New England Healthcare Institute.

Deyo, R. A., Mirza, S. K., Turner, J. A., & Martin, B. I. (2009). Overtreating chronic back pain: time to back off? *The Journal of the American Board of Family Medicine*, 22(1), 62-68.

Jha, A. K., Orav, E. J., Dobson, A., Book, R. A., & Epstein, A. M. (2009). Measuring efficiency: the association of hospital costs and quality of care. *Health Affairs*, 28(3), 897-906.
<http://content.healthaffairs.org/content/28/3/897.full.html>

Korenstein D, Falk R, Howell EA, et al. 2012. Overuse of health care services in the United States: an understudied problem. *Arch Intern Med*, 72:171–8.

B) INEFFICIENTLY DELIVERED SERVICES

Total excess = 5.2 percent of national health expenditures

Inefficiency delivered services include healthcare that is fragmented, disjointed and uncoordinated. It often occurs for example, in the transition from hospital to home and results in wasted resources and poor patient outcomes.

References

Kripalani, S., LeFevre, F., Phillips, C. O., Williams, M. V., Basaviah, P., & Baker, D. W. (2007). Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *Journal of the American Medical Association*, 297(8), 831-841.

Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. *Annals of Internal Medicine*, 158(5_Part_2), 397-403.

Landrigan, C. P., Parry, G. J., Bones, C. B., Hackbarth, A. D., Goldmann, D. A., & Sharek, P. J. (2010). Temporal trends in rates of patient harm resulting from medical care. *New England Journal of Medicine*, 363(22), 2124-2134. <http://bit.ly/2qsyIao>

Medicare Payment Advisory Commission. (2007). *Report to the Congress: promoting greater efficiency in Medicare*. Medicare Payment Advisory Commission (MedPAC).

Rennke, S., Nguyen, O. K., Shoeb, M. H., Magan, Y., Wachter, R. M., & Ranji, S. R. (2013). Hospital-Initiated Transitional Care Interventions as a Patient Safety Strategy: A Systematic Review. *Annals of internal medicine*, 158(5_Part_2), 433-440.

Thorpe, K. E., & Ogden, L. L. (2010). The foundation that health reform lays for improved payment, care coordination, and prevention. *Health Affairs*, 29(6), 1183-1187.

Verhaegh, K. J., MacNeil-Vroomen, J. L., Eslami, S., Geerlings, S. E., de Rooij, S. E., & Buurman, B. M. (2014). Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health affairs*, 33(9), 1531-1539.

Yasaitis, L., E. S. Fisher, J. S. Skinner, and A. Chandra. 2009. Hospital quality and intensity of spending: Is there an association? *Health Affairs (Millwood)* 28(4):w566-w572.

C) MISSED PREVENTION OPPORTUNITIES

Total excess = 2.2 percent of national health expenditures

The IOM focused on the potential costs of missed prevention opportunities. These include the inadequate emphasis on disease and injury prevention (primary prevention), the control or reversal of pre-symptomatic disease (secondary prevention) and better use of effective strategies to prevent disease progression particularly among patients with multiple chronic conditions (tertiary prevention).

References

- Hermosilla, S. C., Kujawski, S. A., Richards, C. A., Muennig, P. A., Galea, S., & El-Sayed, A. M. (2017). An Ounce of Prevention: Deaths Averted From Primary Prevention Interventions. *American Journal of Preventive Medicine*, ahead of print.
- Maciosek, M. V., LaFrance, A. B., Dehmer, S. P., McGree, D. A., Flottemesch, T. J., Xu, Z., & Solberg, L. I. (2017). Updated priorities among effective clinical preventive services. *The Annals of Family Medicine*, 15(1), 14-22.
- Maciosek, M. V., Coffield, A. B., Flottemesch, T. J., Edwards, N. M., & Solberg, L. I. (2010). Greater use of preventive services in US health care could save lives at little or no cost. *Health Affairs*, 29(9), 1656-1660.
- Maciosek, M. V., Coffield, A. B., Edwards, N. M., Flottemesch, T. J., Goodman, M. J., & Solberg, L. I. (2006). Priorities among effective clinical preventive services: results of a systematic review and analysis. *American journal of preventive medicine*, 31(1), 52-61.

D) FRAUD

Total excess = 3 percent of national health expenditures

Medical fraud is comprised of illegal schemes to divert health care resources for improper payments for goods or services. Fraud can be committed by individual consumers and patients, but the most serious and widespread health care fraud emanates from large-scale illicit behavior by major industry actors, including insurers, health care providers and corporate suppliers.

References

- Berwick, D.M. and A.D. Hackbarth (2012), "Eliminating Waste in US Health Care", *Journal of the American Medical Association*, Vol. 307, No. 14, pp. 1513-1516, <http://dx.doi.org/10.1001/jama.2012.362>.
- Department of Health and Human Services and the Department of Justice. (2017). Health care fraud and abuse control program annual report for fiscal year 2016. <http://bit.ly/2pwo574>

Federal Bureau of Investigation [FBI] (2010-2011), *Financial Crimes Report to the Public 2010-2011*. <http://bit.ly/2qwre44>

Government Accountability Office (2012). *Medicare Program Integrity: CMS Continues to Strengthen the Screening of Providers and Suppliers*, GAO-12-351.

Health Affairs. Health Policy Brief: Eliminating Fraud and Abuse (2012). <http://bit.ly/2rf4AAa>

Iglehart, J. K. (2010). The supercharged federal effort to crack down on fraud and abuse, *Health Affairs* 29, no. 6: 1093-5.

King, Kathleen M. (2012). *Medicare: Important Steps Have Been Taken, but More Could Be Done to Deter Fraud*, Government Accountability Office, GAO-12- 671T.

Paul III, D. P., Clemente, S., McGrady, R., Repass, R. & Coustasse, A. (2016). "Medicare and the ACA: Shifting the paradigm of fraud detection." Presentation at Academy of Business Research Fall 2016 Conference, Atlantic City, NJ. <http://bit.ly/2q6V4hr>

Rosenbaum, S., Lopez, N., & Stifler, S. (2009). *Health care fraud*. Washington, D.C.: Department of Health Policy, School of Public Health and Health Services, The George Washington University. <http://bit.ly/2pLfJZA>

APPENDIX 2.

Converting Tax Credits into Pass-Through Funds within the Affordable Care Act’s 1332 State Innovation Waivers

As part of the Affordable Care Act (ACA), Congress clearly envisioned that any individual or small business premium tax credits, cost-sharing reductions, or small business credits be converted into pass-through funding to states that develop innovative healthcare programs as with health benefits comprehensive as those under required under the ACA. Congress codified this intention in Section 1332 of the ACA, which provides for waivers to states that develop innovative healthcare programs.⁵⁴ State single-payer programs, in particular, were, from the outset, precisely the type of state innovation that would qualify under Section 1332. During reconciliation discussions in the Senate on the ACA, Senator Bernie Sanders, among others, pushed for the inclusion of these state innovation waivers specifically to use in his home-state of Vermont in anticipation of the passage of state single-payer legislation.

On its face, the statute plainly requires that the federal government pay states that receive 1332 waivers an aggregate amount equal to healthcare-related credits or reductions that would have otherwise been provided. Specifically, Section 1332(a)(3) of the statute *requires* that the Secretary of Health and Human Services “provide for an alternative means by which the aggregate amount of such credits or reductions that would have been paid on behalf of participants in the Exchanges established under this title had the State not received such waiver, shall be paid to the State for purposes of implementing the State plan under the waiver.”⁵⁵ Funds calculated under the waiver are further required to be determined annually and “taking into consideration the experience of other States with respect to participation in an Exchange and credits and reductions provided under such provisions to residents of the other States.”⁵⁶

After issuing final regulations on the state innovation waivers in 2012 and opening up the application process to states in late 2015, the Department of Health and Human Services (HHS) has, thus far, granted one Section 1332 waiver—a waiver granted in December 2016 to Hawai’i in December 2016, which includes the payment of aggregated healthcare-related federal tax credits into a state healthcare fund and used pursuant to the approved state healthcare program. Hawai’i’s waiver has two major components: (1) a waiver from the state’s participation in the Small Business Health Options Program (SHOP) exchanges to be replaced by the state’s Prepaid Health Care program, and (2) the state’s receipt of small business tax credits that would have been available under the ACA to be deposited in and used by the state’s Prepaid Health Care Premium Supplementation Fund.⁵⁷ Under the state’s Prepaid Health Care program, the tax credits would be used as supplemental healthcare premium payments for employers who meet the terms of Hawai’i’s Prepaid Health Care Program. As stated in the Specific Terms and

⁵⁴ 42 U.S.C. § 18052.

⁵⁵ Id. at § 18052(a)(3).

⁵⁶ *Ibid.*

⁵⁷ See U.S. Dep’t of Health and Human Servs. & U.S. Dep’t of the Treasury. State of Hawaii – Affordable Care Act Section 1332 State Innovation Waiver Approval Letter and STC (December, 30, 2016), available at <https://www.cms.gov/CCIIO/Programs-and-Initiatives/State-Innovation-Waivers/Downloads/Hawaii-1332-State-Innovation-Waiver-Approval-Letter-and-STCs-Final-123016.pdf>.

Conditions of the waiver issued by the Department of Health and Human Services and the Department of the Treasury, pass-through funds would estimated annually be paid quarterly by the Treasury to the state of Hawai'i. Importantly, where pass-through funds exceed the amount needed to pay premiums under the Hawaiian program, the state is also authorized under the waiver excess funds for the general purposes of implementing the state's waiver-approved program.⁵⁸

⁵⁸ *Ibid.*

Appendix 3.

Impact of Substituting a Payroll Tax for a Gross Receipts Tax for Financing Healthy California

In this Appendix, we evaluate the impact of substituting a payroll tax for the gross receipts tax as a means of partially funding Healthy California.

As we reviewed in the main text, our estimate is that the gross receipts tax at 2.3 percent with an exemption for the first \$2 million of each business firm's receipts, will generate about \$92.6 billion in the 2017 California economy. This \$92.6 billion in revenue amounts to about 87 percent of the \$106.8 in total tax revenue that would be provided by the combination of a 2.3 percent sales tax along with the 2.3 percent gross receipts tax, including the exemptions and credits we have specified for both cases.

In substituting the payroll tax for the gross receipts tax, our approach is to set the payroll tax rate at a level that would be sufficient to generate the same \$92.6 billion in revenue. We are assuming that, to finance Healthy California, the payroll tax, like the gross receipts tax alternative, will be supplemented by the 2.3 percent sales tax. We also assume that the sales tax will operate with the same exemptions as before in combination with the payroll tax, and with the 2 percent of income tax credit for families that presently qualify for MediCal. But we do add one feature to the 2.3 percent sales tax, now operating in combination with the payroll tax as opposed to the gross receipts tax. That is, we extend a 1.5 percent of income tax credit for families that fall within the state's second income quintile—i.e. those with an average income of \$35,800. This additional tax credit for families at this income level compensates them for the payroll taxes they will now be required to pay within this overall Healthy California financing structure.

In considering alternative tax arrangements more generally to the gross receipts/sales tax combination we have presented in the main text, we have also examined the impact of a value-added tax (VAT) as a substitute for a gross receipts tax. However, the impact of a VAT in terms of revenue generation and distributional effects will be virtually the same as that of a sales tax, though its administrative features are distinct. More specifically, a VAT, sometimes termed a "general sales tax," is a tax on the value-addition at each stage of the production and distribution process. A VAT is thus a general tax on sales (meaning all sales, including final consumer goods and services as well as intermediate goods and services) in which businesses obtain a rebate on taxes paid for intermediate inputs and purchases of inventory for re-sale. In contrast, a sales tax is most often a tax on final consumer goods, paid by consumers at the point of purchase. The effective tax base of a VAT and a sales tax is therefore equivalent: the total value of private expenditures on final goods and services should equal the sum of the value-added throughout the production and distribution process. Again, the primary difference between the two taxes is the way the taxes are administered and collected.

Overall Revenue Generated through Payroll and Sales Taxes

Sales tax. Our estimate of the sales tax revenue in this framework will be virtually identical to that which we have reported in the main text. As we saw in the main text, we estimate the tax revenue from the 2.3 percent sales tax with exemptions for housing, utilities, food at home and a range of services at \$14.7 billion. We then subtracted the 2.0 percent tax credit for MediCal eligible families. This entails a loss of \$400 million in overall revenue, bringing the total net revenue from the sales tax in this case to \$14.3 billion. However, in this alternative payroll tax/sales tax framework, we have added a 1.5 percent of income tax credit for families in the second income quintile in which average family income is \$35,800. This additional tax credit generates a revenue loss of about \$800 million.⁵⁹ Our estimate of the net revenue generated by the 2.3 percent sales tax, inclusive of all exemptions and credits, is therefore now \$13.5 billion.

Payroll tax. Payroll taxes are frequently made regressive through the specific design feature of allowing wage income to be taxed only up to a given threshold, with no further taxes on wage income imposed beyond the stipulated cap. For example, the federal Social Security payroll tax presently exempts all wage income above \$118,500 per year. This is obviously a benefit for high wage-earners. But this regressive design feature of the payroll tax can be readily minimized through not including a Social Security-type cap in the tax rate. We therefore propose that the payroll tax to finance Healthy California operate without a cap at any wage level.

Total payroll in California in California as of 2016 was \$1.4 trillion. In order to generate a sufficient level of total revenue, at \$106 billion, will therefore entail a payroll tax rate of 6.6 percent (i.e. $\$1.4 \text{ trillion} \times 0.066 = \92.4 billion). We consider this overall tax rate as falling equally on employees and employers—that is, a payroll tax rate of 3.3 percent each on employers and employees.

In combination, our total revenue estimates from this alternative tax framework of a 2.3 percent sales tax with exemptions and credits and a 6.6 percent payroll tax, divided equally at 3.3 percent between employers and employees, is as follows:

- 2.3 percent sales tax: \$13.5 billion
- 3.3 percent payroll tax on employers and employees: \$92.4 billion

- **TOTAL REVENUE = \$105.9 BILLION**⁶⁰

⁵⁹ The average tax credit for these families, as we show in the main Section 4, will be \$540. This credit will be provided for 1.56 million families. Thus $\$540 \times 1.56 \text{ million families} = \842 million in total tax credits.

⁶⁰ As discussed in the main text, these rates for both the payroll and sales taxes are *effective rates*. That is, they are the rates that are necessary to generate the \$106 billion per year necessary to finance Healthy California, assuming that various public entities continue to provide 68 percent of overall funding for health care in the state. As we have discussed in the main text, that 68 percent share of health care funding would amount to \$225 billion under Healthy California as of 2017. Depending on how the administrative details are worked out with respect to the delivery of public subsidies under Healthy California, it may be that the *nominal* payroll and sales tax rates would be set higher. This would result if some share of the tax subsidy were provided through federal tax rebates. An example of such a situation would be if the nominal state sales tax were set at 3.3 percent rather than 2.3 percent, but that California taxpayers were provided an automatic rebate on their federal taxes equal to 70 percent of their 3.3 percent state sales

Overall then, we see that this combination of sales and payroll taxes will cover the additional \$106 billion in costs necessary to fund Healthy California. As with the gross receipts/sales tax framework discussed in the main text, this assumes that the current share of funding from existing public sector sources will continue virtually intact, at \$225 billion. It is, again, through this combination of existing and newly-established funding sources that California can generate the full \$331 billion in funding necessary to finance Healthy California.

Impact on Individual California Families and Businesses of Alternative Payroll/Sales Tax Framework

As with our discussion in the main text on the gross receipts/sales tax framework, we provide here estimates as to the relative costs of health care in California for both households and businesses under the state's existing system versus what would prevail under Healthy California, as financed through the payroll/sales tax combination, with the payroll tax at 3.3 percent and the sales tax at 2.3 percent, inclusive of exemptions and tax credits.

As with the gross receipts/sales tax framework in the main text, we consider here the impact of Healthy California relative to the existing system for seven representative family types. These are:

- **Low-income families.** a) \$13,000 in family income with Medi-Cal; b) \$35,800 in family income without health insurance.
- **Middle-income families.** \$62,300 in family income with distinct insurance arrangements: a) Underinsured; b) Individually insured; and c) Insured by employer; and
- **High-income families.** a) \$227,600 in family income—top 20 percent income category with high-level private insurance; b) \$340,400 in family income—top 10 percent in family income with high-level private insurance.

We then examine impacts on small, medium and large businesses. These include:

- **Small businesses**—0 – 9 employees which, respectively a) *are not* providing health insurance; and b) *are* providing health insurance to their employees.
- **Medium-sized businesses**—a) 10 – 19 employees; and b) 20 – 99 employees, both of which are providing private health insurance to their employees.
- **Large businesses**—a) 100 – 499 employees; and b) 500+ employees, both of which are providing health insurance to their employees.

tax payment. This would mean that the nominal sales tax would be 3.3 percent but that the effective rate would be 2.3 percent.

We present the results of these comparative exercises in Tables A3.1 – A3.4, including two summary tables—A3.2 for households and A3.4 for

For families under the existing system, we add up payments for insurance premiums and out-of-pocket costs, then subtract all tax subsidies, to obtain figures for the families' net health care spending. We then calculate these net health care spending figures relative to income levels for each of the representative family types.

In estimating the impact of Healthy California on individual families, we again follow the intent of the bill in assuming that California will obtain the necessary federal waivers they are seeking, as we discuss above. This will enable California will continue to receive tax subsidies at roughly its current level from the various federal, state, and municipal programs. In Appendix 4, we document our methodology for deriving the estimates we report.

Estimates for Households

We start in Table A3.1-A with the case of a low-income family, with family income at \$13,000. This family's health insurance is covered by MediCal. As the table shows, this family is paying \$660 per year in out-of-pocket health care costs in addition to its MediCal coverage. This \$660 in spending equals 5.1 percent of the family's income. Under Healthy California, the family's total payments for the single-payer system will be its sales tax plus payroll tax spending minus the 2 percent of income tax credit they receive for being Medi-Cal eligible. As such, their net spending on health care is \$147. On balance, this family lowers its health care costs as a share of income by 3.7 percent in moving from Medi-Cal to Healthy California.

The uninsured family with an income level of \$35,800 derives a modest net benefit through Healthy California. This family pays \$775 in out-of-pocket expenses under the present system, amounting to 2.2 percent of the family's income. Under Healthy California, this family pays \$338 in sales tax plus \$868 in payroll taxes. It then receives a \$540 tax credit, equal to 1.5% of the family's income. Overall, the family's net spending on health care equals 1.9 percent of its income. This represents a decline in its health care spending of 0.3 percent under Healthy California relative to the existing system.

In Table A3.1-B, we consider the situation for middle-income families which are either: 1) underinsured; 2) insured individually; or 3) insured by their employers. We show that the underinsured middle-income family spends \$5,910 in health care, including premiums, out-of-pocket expenditures and tax subsidies under the current system. This amounts to fully 9.5 percent of their income. Health care costs under Healthy California will fall to 3.1 percent of income for this family due to the \$506 sales tax plus the \$1,419 in payroll taxes. In other words, this household saves \$3,985, or 6.4 percent of income, through Healthy California relative to California's existing health care system.

Table A3.1
Impact of Transition to Healthy California on Families
with Payroll Tax Framework
Family of 3: 2 adults/one child
Figures are for 2015

A) Low-Income Families

	Low-income, with MediCal	Low-income, Uninsured
1. Income	\$13,000	\$35,800
2. Wages/Salaries	\$6,000	\$26,000
3. Non-exempt spending ■ Exemptions for food, housing, utilities, and range of services	\$9,100	\$14,700
<i>Health care spending under existing system</i>		
4. Health insurance premium	\$0	\$0
5. Out of pocket health care costs	\$660	\$775
6. Tax subsidies	\$0	\$0
7. Total net spending (=row 4 + row 5 – row 6)	\$660	\$775
8. Total health spending as share of income (=row 7/row 1)	5.1%	2.2%
<i>Health care spending under Healthy California</i>		
9. Sales tax (= 2.3% of non-exempt spending)	\$209	\$338
10. Payroll tax (=3.3% of wages)	\$198	\$868
11. Tax Credits: --2% income tax credit for families lowest income quintile (up to \$24,548); --1.5% for families in second income quintile (up to \$48,101)	\$260	\$540
12. Total net health care spending (=row 9 + row 10 – row 11)	\$147	\$666
13. Total net spending as share of income (=row 12/row 1)	1.1%	1.9%
<i>Net impact of Healthy California</i>		
14. Change in net income through Healthy California (= row 7 – row 12)	+\$513	+\$109
15. Percentage change in health care costs as share of income (= row 13 – row 8)	-3.7%	-0.3%

B) Middle-Income Families

	<i>Underinsured</i>	<i>Individually Insured</i>	<i>Insured by Employer</i>
1. Income		\$62,300	
2. Wages/Salaries		\$43,000	
3. Non-exempt spending <ul style="list-style-type: none"> ■ Exemptions for food, housing, utilities, and range of services 		\$22,000	
Health care spending under existing system			
4. Health insurance premium	\$4,900	\$9,300	\$4,900
5. Out of pocket health care costs	\$6,230 (10% of income)	\$3,645	\$2,430
6. Tax subsidies	\$5,220	\$6,800	\$5,220
7. Total net spending (=row 4 + row 5 – row 6)	\$5,910	\$6,145	\$2,110
8. Total health spending as share of income (=row 7/row 1)	9.5%	9.9%	3.4%
Health care spending under Healthy California			
9. Sales tax (= 2.3% of non-exempt spending)		\$506	
10. Payroll tax (=3.3% of wages)		\$1,419	
11. Total net spending (=row 9 + row 10)		\$1,925	
12. Total net spending as share of income (=row 11/ row 1)		3.1%	
Net impact of Healthy California			
13. Change in net income through Healthy California (= row 7 – row 11)	+\$3,985	+\$4,220	+\$185
14. Percentage change in health care costs as share of income (= row 12 – row 8)	-6.4%	-6.8%	-0.3%

C) High-Income Families

	Top 20 percent	Top 10 percent
1. Income	\$227,600	\$340,400
2. Wages/Salaries	\$122,200	\$207,500
3. Non-exempt spending ■ Exemptions for food, housing, utilities, and range of services	\$61,920	\$85,400
Health care spending under existing system		
4. Health insurance premium	\$7,350	\$7,350
5. Out of pocket health care costs	\$810	\$810
6. Tax subsidies	\$10,500	\$11,400
7. Total net spending (=row 4 + row 5 – row 6)	-\$2,340	-\$3,240
8. Total health spending as share of income (=row 7/row 1)	-1.0%	-1.0%
Health care spending under Healthy California		
9. Sales tax (= 2.3% of non-exempt spending)	\$1,424	\$1,964
10. Payroll tax (=3.75% of wages)	\$4,033	\$6,847
11. Total net spending (=row 9 + row 10)	\$5,457	\$8,811
12. Total net spending as share of income	2.4%	2.6%
Net impact of Healthy California		
13. Change in net income through Healthy California (= row 7 – row 11)	-\$7,797	-\$12,051
14. Percentage change in health care costs as share of income (= row 12 – row 8)	+3.4%	+3.5%

Sources: See Appendix 4.

The gains are still larger for the individually insured family. Under the existing system in California, this family is spending 9.9 percent of its income on health care. They will also spend 3.1 percent of income, through the sales tax, with Healthy California—a gain of 6.8 percent in health care costs as a share of family income. Even for the middle-income family that receives health insurance an employer within the present system, their health care costs still fall, if by a modest 0.3 percent as a share of income.

Health care costs do rise for high-income families under Healthy California relative to the existing system, as we show in Table A3.1-C. This is despite the fact that these families are

paying, on average, \$7,350 in health care premiums and \$810 in out-of-pocket expenses under the current system. But these families also benefit greatly through having their health care spending count fully against their current income tax payments. We estimate that total tax subsidies for high-income families amount to \$10,500 for top 20 percent families and \$11,400 for top 10 percent families. Because of this, the net cost for these families to receive health insurance is actually negative. They receive a net subsidy equal to about 1 percent of their income. But even with the loss of this subsidy for high-income families under Healthy California, the overall costs of health care for these families will still be only between 2.4 – 2.6 percent of their total income.

In Table A3.2, we summarize the main findings shown in Tables A31-A – C. As with our discussion in the main text, this table conveys clearly the extent to which the costs of health care are presently borne disproportionately by lower- and especially middle-income families relative to high-income families under the current system. It also shows how Healthy California can promote far greater equity in the provision of health care in California, with this payroll tax/sales tax framework in addition to the gross receipts/sales tax framework presented in the main text.

Table A3.2
Impact of Transition to Healthy California on Households
with Payroll Tax Framework:
Summary Figures

	Health Care Spending as Share of Income		3. Change in Health Care Spending as Share of Income (= column 2 – column 1)
	1. Existing System	2. Healthy California	
Low-income families			
\$13,000 in average income with MediCal	5.1%	1.1%	-3.7%
\$35,800 in average income, uninsured	2.2%	1.9%	-0.3%
Middle-income families: \$62,300 in average income			
Underinsured	9.5%	3.1%	-6.4%
Individually insured	9.9%	3.1%	-6.8%
Insured by employer	3.4%	3.1%	-0.3%
High-income families			
Top 20 percent: \$227,600 in average income	-1.0%	+2.4%	+3.4%
Top 10 percent: \$340,400 in average income	-1.0%	+2.6%	+3.5%

Source: Tables A3.1-A – C

Focusing on the comparison between middle- and high-income families in the state, we see first that for middle-income families, the net costs of health care under the present system range between 3.4 and 9.9 percent of the families' income. By contrast, California's high-income families are presently receiving a net subsidy of 1 percent of their income to support their health care coverage.

Under Healthy California, net health care spending for middle-income families falls significantly, to an average of 3.1 percent of these families' income level, including both their sales and payroll tax payments. This represents a reduction in health care spending for California's middle-income families of between 0.3 and 6.8 percent of their income. By contrast, with California's high-income families, health care costs will rise, but still only to an average of between 2.4 and 2.6 percent of income.

Estimates for Businesses

In Tables A3.3-A, we consider the impacts on small businesses, with a range between 0 – 9 employees and \$811,000 in gross receipts, under two scenarios. In the first scenario, the firm is not providing health insurance for its employees under the present system, while, in the second case, the firm is providing insurance coverage to its employees. For firms that are not now providing health insurance, they will face a cost increase of 3.3 percent of their payroll in the form of the payroll tax. Indeed, they are the only firms that will experience a cost increase under Healthy California financed by the payroll tax/sales tax combination. The small firm that has been providing for its workers who receive a windfall through Healthy California within this payroll tax framework. This firm is paying nearly \$25,000 for employees' health insurance under the existing system. That expense is eliminated through Healthy California. The firm will now have to pay only the 3.3 percent payroll tax. As a result, the firm's health care costs fall by 18.7 percent relative to its payroll.

The representative medium-sized firms—with 10 – 19 and 20 – 99 employees respectively, will also experience significantly lower health care costs through Healthy California relative to the existing system. As we see in Table Ae.3-B, the firms with between 10 – 19 employees will see its net health care costs fall by \$87,779, or 14.3 percent of payroll. For the firm with 20 – 99 employees, health care costs fall nearly the same amount, a decline of 12.9 percent.

The firms now employing 100 – 499 employees also benefit greatly, paying 14.4 percent less on health care costs relative to payroll through Healthy California relative to the existing system. The largest firms as well, i.e. those that employ over 500 employees, will achieve a major income gain through Healthy California as financed by the payroll/sales tax framework, of 11.0 percent.

Table A3.3 Impact of Transition to Healthy California on Businesses with Payroll Tax Framework
Figures are for 2015

A. Small businesses: Firms with 0-9 employees with and without health benefits

	<i>0-9 employees (no health benefits)</i>	<i>0-9 employees (with health benefits)</i>
1. Average number of workers in firm	3	3
2. Average payroll	\$139,300	\$139,300
3. Average gross receipts	\$811,100	\$811,100
<i>Health care spending under existing system</i>		
4. Average cost of health insurance per worker	\$0	\$9,000
5. Average firm spending on health insurance (= row 1 x 4)	\$0	\$27,000
6. Business health care tax subsidy (=7.65% x row 5)	\$0	\$2,065
7. Total net health care spending (= row 5 - row 6)	\$0	\$24,935
8. Total net spending as share of payroll (= row 7/row 2)	0%	22.0%
<i>Health care spending under Healthy California</i>		
9. Payroll tax (= 3.3% of payroll)	\$4,600	\$4,600
<i>Net impact of Healthy California</i>		
11. Change in health care spending through Healthy California (= row 9 – row 7)	\$4,600	-\$20,335
12. Percentage change in health care spending as share of payroll (= 3.3% - row 8)	3.3%	-18.7%

B. Medium businesses: Firms with 10-19 employees; and with 20-99 employees

	10-19 employees	20-99 employees
1. Average number of workers in firm	13	38
2. Average payroll	\$614,300	\$1.9 million
3. Average gross receipts	\$3.11 million	\$10.0 million
Health care spending under existing system		
4. Average cost of health insurance per worker	\$9,000	\$9,000
5. Average firm spending on health insurance (= row 1 x 4)	\$117,000	\$342,000
6. Business health care tax subsidy (=7.65% x row 5)	\$8,950	\$26,160
7. Total net health care spending (= row 5 - row 6)	\$108,050	\$315,840
8. Total net spending as share of payroll (= row 7/row 2)	17.6%	16.2%
Health care spending under Healthy California		
9. Payroll tax (= 3.3% of payroll)	\$20,271	\$64,332
Net impact of Healthy California		
11. Change in health care spending through Healthy California (= row 9 – row 7)	-\$87,779	-\$251,508
12. Percentage change in health care spending as share of payroll (= 3.3% - row 8)	-14.3%	-12.9%

C. Large businesses: Firms with 100 – 499 employees; and with 500+ employees

	100 – 499 employees	500+ employees
1. Average number of workers in firm	150	1143
2. Average payroll	\$8.8 million	\$81.4 million
3. Average gross receipts	\$46.5 million	\$487.3 million
Health care spending under existing system		
4. Average cost of health insurance per worker	\$11,000	\$11,000
5. Average firm spending on health insurance (= row 1 x 4)	\$1.65 million	\$12.57 million
6. Business health care tax subsidy (=7.65% x row 5)	\$126,225	\$961,800
7. Total net health care spending (= row 5 - row 6)	\$1.5 million	\$11.6 million
8. Total net spending as share of payroll (= row 7/row 2)	17.4%	14.3%
Health care spending under Healthy California		
9. Payroll tax (= 3.3% of payroll)	\$289,555	\$2.7 million
Net impact of Healthy California		
11. Change in health care spending through Healthy California (= row 9 – row 7)	-\$1.2 million	-\$8.9 million
12. Percentage change in health care spending as share of payroll (= 3.3% - row 8)	-14.4%	-11.0%

Source: See Appendix 4.

Table A3.4 provides a summary of the main impacts on the transition to Healthy California for small, medium, and large businesses under the payroll/sales tax framework. Again, we see in column 3, small firms that do not provide health care coverage for their employees under the existing system will face a cost increase of 3.3 percent to cover their new payroll tax obligations. But all other firms receive substantial reductions in overall costs—ranging between 11 – 18.7 percent of their overall payroll costs.

Table A3.4.
Impact of Transition to Healthy California on Businesses through
Payroll/Sales Tax Framework:
Summary Figures

	Health Care Spending as Share of Payroll		3. Change in Health Care Spending as Share of Payroll (= column 2 – column 1)
	1. Existing System	2. Healthy California	
Small businesses—0 – 9 employees			
No health benefits	0	3.3%	+3.3%
With health benefits	22.0%	3.3%	-18.7%
Medium-sized businesses			
10- 19 employees	17.6%	3.3%	-14.3%
20 – 99 employees	16.2%	3.3%	-12.9%
Large businesses			
100 – 499 employees	17.4%	3.3%	-14.4%
500+ employees	14.3%	3.3%	-11.0%

Source: See Tables A3.3-A-C.

The fact that, under this payroll/sales tax framework, the small firms who are not now providing health care coverage face a cost increase while all other firms receive substantial reductions in costs suggests that a temporary subsidy could be introduced to support the small firms in transition from providing no coverage to having to pay the 3.3 percent payroll tax. Such an additional tax design feature was not necessary under the gross receipts/sales tax framework. This is because the equity feature of the gross receipts tax was introduced through the simple inclusion of an exemption of the first \$2 million in gross receipts that applied to all firms.

Generally speaking, the payroll tax/sales tax framework, as with the gross receipts/sales tax framework, yields a substantially more equitable distribution of the costs of providing health care in California through Healthy California in contrast with the financing utilized at present to support health care in California. Nevertheless, as we have seen, the gross receipts/sales tax framework does more readily lend itself to a simpler framework for producing equitable outcomes at all income levels and across all business types.

APPENDIX 4.

Sources for Estimates on Net Impacts of Healthy California on Individual Households and Businesses

Business Health Care Spending and Related Subsidies

Employment and payroll by firm size:

- (1) 2015 Geography Area Series: County Business Patterns by Employment Size Class, U.S. Census Bureau, and
- (2) U.S. Small Business Administration, Employer Firms, Establishments, Employment, Annual Payroll and Estimated Receipts by Firm Size, and State, 2007.

Business spending on health care:

Average family premiums, as well as, average employee contributions to health insurance by firm size are published by the California Health Care Foundation. These looked look similar to the Kaiser Family Foundation figures for the U.S. overall.

Employers' receive tax subsidies when they provide part of their workers' compensation through health insurance. The IRS instructs employers (<https://www.irs.gov/pub/irs-pdf/p15.pdf>) that if they pay the cost of an accident or health insurance plan for their employees, including an employee's spouse and dependents, their payments are not to be treated as wages and are not subject to Social Security, Medicare, and FUTA taxes, or federal income tax with- holding. Our estimates of tax subsidies for firms are equal to the taxes they would have had to pay if their spending on their workers' benefits were included in payroll. We estimate these tax subsidy amounts at the rate of 7.65% of healthcare spending.

Household Spending and Tax Subsidies

Family income, household spending, wages and salaries:

- (1) Consumer Expenditure Survey of the Department of Labor,
- (2) Congressional Budget Office
- (3) U.S. Census Bureau

Health care spending:

To estimate the health care spending of the uninsured and underinsured, we use the definition of underinsured provided by a report published by the Commonwealth (see: http://www.commonwealthfund.org/~media/files/publications/issue-brief/2015/may/1817_collins_problem_of_underinsurance_ib.pdf).

For health care spending by those with insurance through their employers (middle and high income households), we use estimates based on the average premiums published by the California Health Care Foundation. We estimated platinum health insurance plans for both of the high income households by comparing the rates for different metal plans on in the individual market and applying the premium difference to the average premium of middle income households (see: <https://www.healthpocket.com/healthcare-research/infostat/2017-obamacare-premiums-deductibles#.WR3Pz3e-LA4>).

For health care spending by those with insurance through the individual market ("middle income households" in our representative case), we used the State of California's Covered California website to find the costs of the average Silver Plan.

Health Care Subsidies:

For households with employer sponsored insurance (ESI) – this includes middle income and high income household examples:

Households receive tax subsidies when they receive part of their compensation through their employer-sponsored health insurance (ESI). These tax subsidies result from the exclusion of the value of their health insurance from their taxable income. For details on these and the data underlying our estimates of tax subsidies for our examples of middle income insured households with ESI and middle income under-insured households see, "Tax Subsidies for Private Health Insurance, <http://kff.org/report-section/tax-subsidies-for-private-health-insurance-i-federal-and-state-tax-exclusions-for-esi/>".

Those insured in the individual market, and with household incomes below 400% of the federal poverty line can get a tax subsidy primarily through a Premium Tax Credit. We use the Tax Policy Center's estimate of these subsidies (see: <http://www.taxpolicycenter.org/model-estimates/distribution-affordable-care-act-taxes-dec-2016/t16-0290-current-law-distribution>). See: <http://kff.org/health-reform/state-indicator/average-monthly-advance-premium-tax-credit-aptc/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>

For full details on all the calculations presented in Section 4 of this study, please refer to the extended Appendix 4, which is posted online at the website of the Political Economy Research Institute: www.peri.umass.edu.

REFERENCES

Alt. Lowell E. Jr. (2006) *Energy Utility Rate Setting*, Lulu.com.

Anderson, Gerald F., Reinhardt, Uwe, Hussey, Peter S., and Petrosyan, Varduhi (2003) It's the Prices Stupid: Why the United States is So Different from Other Countries," *Health Affairs*, 22:3, pp. 89 – 105.

Aron-Dine, Aviva, Einav, Liran and Finkelstein, Amy (2013). The RAND Health Insurance Experiment, Three Decades Later. *Journal of Economic Perspectives* 13(1): 197-222.

Aspinall, S. L., Sales, M. M., Good, C. B., Calabrese, V., Glassman, P. A., Burk, M. and Valentino, M.A. (2016). Pharmacy Benefits Management in the Veterans Health Administration Revisited: A Decade of Advancements, 2004-2014. *Journal of Managed Care and Specialty Pharmacy*, 22(9): 1058-1063.

Barnett, Jessica C. and Vornovitsky, Marina S. (2016). Current Population Reports, P60-257(RV), Health Insurance Coverage in the United States: 2015, U.S. Government Printing Office, Washington, DC.

Baxi S. S., Kale, M., Keyhani, S., Roman, B.R., Yang, A., Derosa, A.P., and Korenstein, D. (2017). Overuse of Health Care Services in the Management of Cancer: A Systematic Review. *Medical Care*, ahead of print.

Berwick, D.M. and Hackbarth, A.D. (2012). Eliminating waste in US health care, *Journal of the American Medical Association*, 307(14): 1513-1516. <http://dx.doi.org/10.1001/jama.2012.362>.

Bentley, T. G., Effros, R. M., Palar, K., & Keeler, E. B. (2008). Waste in the US health care system: a conceptual framework. *Milbank Quarterly*, 86(4), 629-659.

Brot-Goldberg, Zarek, C., Chandra, Amitabh, Handel, Benjamin R. and Kolstad, Jonathan T. (2015). What Does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. Faculty Research Working Paper Series. Harvard Kennedy School, Cambridge, MA.

Brownlee, S., Chalkidou, K., Doust, J., Elshaug, A. G., Glasziou, P., Heath, I., Nagpal Somil, Saini, Vikas, Srivastava, Divya, Chalmers, Kelsey and Korenstein, D. (2017). Evidence for overuse of medical services around the world. *The Lancet*, ahead of print. <http://bit.ly/2qLcBNz>

Casalino, L. P., Nicholson, S., Gans, D. N., Hammons, T., Morra, D., Karrison, T., and Levinson, W. (2009). What does it cost physician practices to interact with health insurance plans? *Health Affairs*. 28(4):533-543.

CBIZ Inc. (2015) "The Gross Receipts Tax: The Not-Income and Not-Sales Tax," April 14, <https://www.cbiz.com/insights-resources/details/articleid/2586/the-gross-receipts-tax-the-not-income-and-not-sales-tax-article>.

Chandra, A. Skinner, J.S. and Staiger, D.O. (2010). Saving money (and lives) in Olsen, L., Saunders, R. S., and Yong, P. L. (eds.) *The healthcare imperative: lowering costs and improving outcomes: workshop series summary*. National Academies Press. <http://www.nap.edu/catalog/12750.html>

Clemans-Cope, Lisa, John Holahan, and Rachel Garfield (2016). *Medicaid Spending Growth Compared to Other Payers: A Look at the Evidence*. Issue Brief (April), Kaiser Family Foundation.

Collins, Sara R., Rachel Nuzum, Sheila D. Rustgi, Stephanie Mika, Cathy Schoen, and Karen Davis (2009). *How health care reform can lower the costs of insurance administration*. Issue Brief (July), Commonwealth Fund, New York.

Collins, Sara R., Rasmussen, Petra W., Beutel, Sophie and Doty, Michelle M. (2015). *The Problem of Underinsurance and How Rising Deductibles Will Make It Worse*. Issue Brief (May), Commonwealth Fund, New York.

Congressional Budget Office (2005). *Prices for Brand-Name Drugs Under Selected Federal Programs*. Congressional Budget Office, Washington, DC. <http://bit.ly/2qmIHij>

Coughlin, Teresa A., Holahan, John, Caswell, Kyle and McGrath, Megan. (2014). *Uncompensated Care for Uninsured in 2013: A Detailed Examination*. The Kaiser Commission on Medicaid and the Uninsured, May.

Delaune, J., and Everett, W. (2008). *Waste and inefficiency in the US health care system*. New England Healthcare Institute, Cambridge, MA.

Department of Health and Human Services and the Department of Justice. (2017). *Health care fraud and abuse control program annual report for fiscal year 2016*. <http://bit.ly/2pwo574>

Deyo, R. A., Mirza, S. K., Turner, J. A., and Martin, B. I. (2009). Overtreating chronic back pain: time to back off? *The Journal of the American Board of Family Medicine*, 22(1): 62-68.

Dzau, Victor J., McClellan, Mark B., McGinnis, J. Michael, Burke, Sheila P.; Coye, Molly J., Diaz, Angela, Daschle, Thomas A., Frist, William H., Gaines, Martha, Hamburg, Margaret A., Henney, Jane E., Kumanyika, Shiriki, Leavitt, Michael O., Parker, Ruth M., Sandy, Lewis G., Schaeffer, Leonard D., Steele Jr, Glenn D., Thompson, Pamela and Zerhouni, Elias (2017). Vital directions for health and health care: Priorities from a National Academy of Medicine Initiative. *Journal of the American Medical Association*, 317(14): 1461-1470. <http://bit.ly/2qnikIr>

Farrell, D., Jensen, E., Kocher, B., Lovegrove, N., Melhem, F., Mendonca, L. and Parish, B. (2008). *Accounting for the cost of US health care: A new look at why Americans spend more*. McKinsey Global Institute, Washington, DC. <http://bit.ly/2oEed9j>

Federal Bureau of Investigation [FBI] (2011), *Financial Crimes Report to the Public 2010-2011*. <http://bit.ly/2qwre44>

Finkelstein, Amy, Taubman, Sarah, Wright, Bill, Bernstein, Mira, Gruber, Jonathan, Gruber, Newhouse, Joseph P., Allen, Heidi, Baicker, Katherine, Oregon Health Study Group (2012) "The Oregon Health Insurance Experiment: Evidence from the First Year," *Quarterly Journal of Economics*, 127(3): 1057 – 1106.

Frakt, Austin B., Pizer, Steven D., Feldman, Roger (2012). Should Medicare adopt the Veterans Health Administration formulary? *Health Economics* 21(5): 485-95.

Frank, R. G. (2001). Prescription drug prices: why do some pay more than others do? *Health Affairs*, 20(2), 115-128.

Frankford, David M. (2016) It's the Prices, Advanced Capitalism, and the Need for Rate Setting—Stupid. *The Journal of Law, Medicine, and Ethics*, 44, pp. 569 – 75.

Friedman, Gerald (2015). "Economic analysis of the New York Health Act." Accessed at http://www.infoshare.org/main/Economic_Analysis_New_York_Health_Act_-_GFriedman_-_April_2015.pdf

Gagnon, M. A., and Wolfe, S. (2015). *Mirror, Mirror on the Wall: Medicare Part D pays needlessly high brand-name drug prices compared with other OECD countries and with U.S. government programs*. Policy Brief, School of Public Policy and Administration, Carleton University, Canada.

Garabedian, L. F., Ross-Degnan, D., Soumerai, S. B., Choudhry, N. K., & Brown, J. S. (2016). Impact of Massachusetts Health Reform on Enrollment Length and Health Care Utilization in the Unsubsidized Individual Market. *Health Services Research*. <http://bit.ly/2rnEICH>

General Accountability Office (GAO) (2014). *Medicaid Payment: Comparisons of Selected Services under Fee-for-Service, Managed Care, and Private Insurance*. Washington, DC.

Gold, R., Bailey, S. R., O'Malley, J. P., Hoopes, M. J., Cowburn, S., Marino, M., ... DeVoe, J. E. (2014). Estimating demand for care after a Medicaid expansion: lessons from Oregon. *The Journal of Ambulatory Care Management*, 37(4), 282–292.

Good C.B., & Valentino, M. (2007). Access to affordable medications: the Department of Veterans Affairs pharmacy plan as a national model. *Am J Public Health*; 97(12): 2129-31.

Government Accountability Office (2012). *Medicare Program Integrity: CMS Continues to Strengthen the Screening of Providers and Suppliers*, GAO-12-351. Washington, DC.

Gruber, J. (2006). *The role of consumer copayments for health care: lessons from the RAND health insurance experiment and beyond*. Menlo Park, CA: Henry J. Kaiser Family Foundation. <http://bit.ly/2qGcTAY>

Gunja, M. Z., Collins, S. R., Doty, M. M., & Beutel, S. (2017). *Insurance Coverage, Access to Care, and Medical Debt Since the ACA: a Look at California, Florida, New York, and Texas*. Issue brief, Commonwealth Fund, 7, 1. <http://bit.ly/2rnEICH>

Hermosilla, S. C., Kujawski, S. A., Richards, C. A., Muennig, P. A., Galea, S., & El-Sayed, A. M (2017). An ounce of prevention: deaths averted from primary prevention interventions. *American Journal of Preventive Medicine*, ahead of print.

Health Affairs (2012). Health Policy Brief: Eliminating Fraud and Abuse, July 31. <http://bit.ly/2rf4AAa>

Hsiao, William C., Kappel, Steven and Gruber, Jonathan (2011). *Health System Reform Design: Achieving Affordable Universal Health Care in Vermont*. Research Report, Vermont State Legislature.

Hsiao, W. C., Knight, A. G., Kappel, S., & Done, N. (2011). What other states can learn from Vermont's bold experiment: embracing a single-payer health care financing system. *Health Affairs*, 30(7), 1232-1241.

Hsu, John, Price, Mary, Vogeli, Christine, Brand, Richard, Chernew, Michael E., Chagutura, Sreekanth K., Weil, Eric, and Ferris, Timothy G. ((2017) Bending the Spending Curve by Altering Care Delivery Patterns: The Role of Care Management within a Pioneer ACO. *Health Affairs* 36, no 5, pp. 876 – 884.

Iglehart, J. K. (2010). The supercharged federal effort to crack down on fraud and abuse, *Health Affairs* 29(6): 1093-5.

Jha, A. K., Orav, E. J., Dobson, A., Book, R. A., and Epstein, A. M. (2009). Measuring efficiency: the association of hospital costs and quality of care. *Health Affairs*, 28(3): 897-906.

Jiwani, Aliya, Himmelstein, David, Woolhandler, Steffie, and Kahn, James G (2014). Billing and insurance-related administrative costs in United States' health care: synthesis of micro-costing evidence. *BMC Health Services Research* 14(556).

Johnson, E.M. (2014) "Physician-Induced Demand," *Encyclopedia of Health Economics*, Volume 3, pp. 77 – 82.

Joynt, K. E., Chan, D. C., Zheng, J., Orav, E. J., & Jha, A. K. (2015). The Impact of Massachusetts Health Care Reform on Access, Quality, and Costs of Care for the Already-Insured. *Health Services Research*, 50(2), 599-613.

Kahn, James (2010). Excess billing and insurance-related administrative costs. In Yong, Pierre L., Saunders, Robert S. and Olsen, Leigh Anne (eds.) *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. National Academies Press, Washington, D.C.:142–150.

Kahn, James, Kronick, R., Kreger, M., Gans, D.N. (2005). The cost of health insurance administration in California: estimates for insurers, physicians, and hospitals. *Health Affairs*, 24(6):1629–1639.

Keehan, Sean P., Stone, Devin A., Poisal, John A., Cuckler, Gigi A., Sisko, Andrea M., Smith, Sheila D., Madison, Andrew J. Christian J. Wolfe and Joseph M. Lizonitz (2017). National health expenditure projections, 2016–25: price increases, aging push sector to 20 percent of economy. *Health Affairs*, 36(3): 553-563.

Keeler, Emmett B., and Rolph, John E. (1988). The demand for episodes of treatment in the health insurance experiment. *Journal of Health Economics* 7(4): 337-67.

Kellerman, Arthur L. (2012) 'Socialized' or Not, We Can Learn from the VA, RAND Corporation, The RAND BLOG, August 8, <https://www.rand.org/blog/2012/08/socialized-or-not-we-can-learn-from-the-va.html>

Kelley, R. (2009). *Where Can \$700 Billion in Waste Be Cut Annually From The US Healthcare System*. Ann Arbor, MI: Thomson Reuters, 24. <http://bit.ly/2pHAY8a>

Kesselheim, A. S., Avorn, J., and Sarpatwari, A. (2016). The high cost of prescription drugs in the United States: origins and prospects for reform. *Jama*, 316(8): 858-871. <http://bit.ly/2qU4EBB>

King, Kathleen M. (2012). *Medicare: Important Steps Have Been Taken, but More Could Be Done to Deter Fraud*, Government Accountability Office, GAO-12- 671T.

Kominski, G. F., Nonzee, N. J., & Sorensen, A. (2016). The Affordable Care Act's Impacts on Access to Insurance and Health Care for Low-Income Populations. *Annual Review of Public Health*, (0).

<http://bit.ly/2pDb5Ln>

Korenstein D, Falk R, Howell EA, Bishop, T. and Keyhani, S. (2012). Overuse of health care services in the United States: an understudied problem. *Arch Intern Med*, 172(2):171–8.

Kripalani, S., LeFevre, F., Phillips, C. O., Williams, M. V., Basaviah, P., and Baker, D. W. (2007). Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *Journal of the American Medical Association*, 297(8): 831-841.

Ku, Leighton. (2009). Medical and dental utilization and expenditures under Medicaid and private health insurance, *Medical Care Research and Review* 66(4): 456-71.

Kwan, J. L., Lo, L., Sampson, M., and Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. *Annals of Internal Medicine*, 158(5-2): 397-403.

Landrigan, C. P., Parry, G. J., Bones, C. B., Hackbarth, A. D., Goldmann, D. A., and Sharek, P. J. (2010). Temporal trends in rates of patient harm resulting from medical care. *New England Journal of Medicine*, 363(22): 2124-2134. <http://bit.ly/2qsyIao>

Lesser, Jonathan A., and Giacchino, Leonardo R. (2013) *Fundamentals of Energy Regulation* 2nd edition, Public Utilities Reports.

Maciosek, M. V., Coffield, A. B., Edwards, N. M., Flottemesch, T. J., Goodman, M. J., and Solberg, L. I. (2006). Priorities among effective clinical preventive services: results of a systematic review and analysis. *American Journal of Preventive Medicine*, 31(1): 52-61.

Maciosek, M. V., Coffield, A. B., Flottemesch, T. J., Edwards, N. M., and Solberg, L. I. (2010). Greater use of preventive services in US health care could save lives at little or no cost. *Health Affairs*, 29(9): 1656-1660.

Maciosek, M. V., LaFrance, A. B., Dehmer, S. P., McGree, D. A., Flottemesch, T. J., Xu, Z., and Solberg, L. I. (2017). Updated priorities among effective clinical preventive services. *The Annals of Family Medicine*, 15(1): 14-22.

Medicare Payment Advisory Commission. (2007). *Report to the Congress: promoting greater efficiency in Medicare*. Medicare Payment Advisory Commission (MedPAC).

Medicare Payment Advisory Commission. (2017). *Medicare Payment Policy. Report to Congress*. Washington, DC.

Murray, R. and Berenson, R.A. (2015). Hospital Rate Setting Revisited: Dumb Price Fixing or a Smart Solution to the Providing Pricing Power and Delivery Reform. Urban Institute, <http://www.urban.org/research/publication/hospital-rate-setting-revisited-dumb-price-fixing-or-smart-solution-provider-pricing-power-and-delivery-reform>.

National Center for Health Statistics. (2017). Health insurance coverage: Early release of estimates from the National Health Interview Survey, January-September 2016. <http://bit.ly/2qcZCU9>

Neuman, P., Stollo, M. K., Guterman, S., Rogers, W. H., Li, A., Rodday, A. M. C., and Safran, D. G. (2007). Medicare prescription drug benefit progress report: findings from a 2006 national survey of seniors. *Health Affairs*, 26(5): 630-643.

OECD. (2017). *Tackling Wasteful Spending on Health*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264266414-en>

Office of the Attorney General Martha Coakley (2011) *Examination of Health Care Cost Trends and Cost Drivers: Report for Annual Public Hearing*, June 22, <http://www.mass.gov/ago/docs/healthcare/2011-hcctd-full.pdf>

Paul III, D. P., Clemente, S., McGrady, R., Repass, R. and Coustasse, A. (2016). Medicare and the ACA: Shifting the paradigm of fraud detection. Presentation at Academy of Business Research Fall 2016 Conference, Atlantic City, NJ. <http://bit.ly/2q6V4hr>

Phillips, Charles F. (1993) *The Regulation of Public Utilities*, 3rd edition, Public Utility Reports.

Pines, Jesse, Selevan, Jeff, McStay, Frank, George, Meaghan, and McClellan, Mark (2015) "Kaiser Permanente-California: A Model for Integrated Care for the Ill and Injured," Center for Health Policy, Brookings Institution.

Price Waterhouse Coopers Health Research Institute. (2008). *The Price of Excess: Identifying Waste in Healthcare Spending*. <http://bit.ly/2qOBh7J>

Rennke, S., Nguyen, O. K., Shoeb, M. H., Magan, Y., Wachter, R. M., and Ranji, S. R. (2013). Hospital-Initiated Transitional Care Interventions as a Patient Safety Strategy: A Systematic Review. *Annals of internal medicine*, 158(5-2): 433-440.

Rosenbaum, S., Lopez, N., and Stifler, S. (2009). *Health care fraud*. Washington, D.C.: Department of Health Policy, School of Public Health and Health Services, The George Washington University. <http://bit.ly/2pLrJZA>

Rosenthal, Elisabeth (2017) *An American Sickness: How Healthcare Became Big Business and How You can Take it Back*, New York: Penguin Press.

Sakowski, J. A., Kahn, J. G., Kronick, R. G., Newman, J. M. and Luft, H. S. (2009). Peering into the black box: Billing and insurance activities in a medical group. *Health Affairs*. 28(4):544-554.

Schkelle, Paul G., Asch, Steven, Glassman, Peter, Matula, Sierra, and Trivedi, Amal (2010) Comparison of Quality of Care in VA and Non-VA Settings: A Systematic Review," Department of Veterans Affairs Health Services Research & Development Service, Evidence Based Synthesis Program, <https://www.hsrd.research.va.gov/publications/esp/quality.pdf>;

Schulman, Kevin A., and Richman, Barak D. (2016) Reassessing ACOs and Health Care Reform, *Journal of the American Medical Association (JAMA)*. August 16, pp 707-08.

Smith, Mark, Saunders, Robert, Stuckhardt, Leigh and McGinnis, J. Michael (eds.) (2013). Best Care at Lower Cost: The Path to Continuously Learning Health Care in America. The National Academies Press: Institute of Medicine, Washington, DC. <http://nap.edu/13444>

Song, Zirul and Fisher, Elliot S. (2016). The ACO Experiment in Infancy—Looking Back and Looking Forward, *Journal of the American Medical Association (JAMA)*, August 16, pp. 705-06.

Sorensen, Andrea, Nonzee, Narissa J. and Kominski, Gerald F. (2016). Public funds account for over 70 percent of health care spending in California. *Health Policy Brief*, August. UCLA Center for Health Policy Research, Los Angeles, CA.

Thorpe, K. E., and Ogden, L. L. (2010). The foundation that health reform lays for improved payment, care coordination, and prevention. *Health Affairs*, 29(6): 1183-1187.

Veghte, B., Schreur, E., and Bradley, A. (2017). Reining in Prescription Drug Prices, in Veghte, Benjamin W., Elliot Schreur and Bradley, Alexandra L. (eds.) 2017. *Report to the New Leadership and the American People on Social Insurance and Inequality*. National Academy of Social Insurance, Washington, DC: 98-110. <http://bit.ly/2qUveLA>

Verhaegh, K. J., MacNeil-Vroomen, J. L., Eslami, S., Geerlings, S. E., de Rooij, S. E., and Buurman, B. M. (2014). Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health affairs*, 33(9): 1531-1539.

Wennberg J.E., Fisher, E.S. and Skinner, J.S. (2002). Geography and the debate over Medicare reform. *Health Affairs*, Web Exclusives: 96–114.
<http://content.healthaffairs.org/content/early/2002/02/13/hlthaff.w2.96.citation>

Wherry, L. R., & Miller, S. (2016). Early Coverage, Access, Utilization, and Health Effects Associated With the Affordable Care Act Medicaid Expansions: A Quasi-experimental Study Medicaid Expansions and Coverage, Access, Utilization, and Health Effects. *Annals of internal medicine*, 164(12), 795-803.

Woolhandler, S., Campbell, T., and Himmelstein, D. (2003). Costs of health care administration in the United States and Canada. *New England Journal of Medicine* 349, no. 8 (2003): 768–775.

Woolhandler, S. and Himmelstein, D. (2014). Administrative work consumes one-sixth of u.s. physicians' working hours and lowers their career satisfaction. *International Journal of Health Services*, Vol. 44, No. 4, pp. 635-642.

Woolhandler, S. and Himmelstein, David U. (2017). The Affordable Care Act: How Nixon's Health Reform Proposal became Democrats' Albatross, *International Journal of Health Services*, forthcoming.

Yasaitis, L., Fisher, E. S., Skinner, J. S. and Chandra, A. (2009). Hospital quality and intensity of spending: Is there an association? *Health Affairs* 28(4):566-572.

Yong, Pierre L., Saunders, Robert S. and Olsen, Leigh Anne (eds.) (2010). *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Institute of Medicine, National Academies Press: Washington, D.C.

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