A New Vision for California's Healthcare System

Drivers of Health Expenditure Growth in California

FORECASTS AND PROGRESS ON DELIVERY SYSTEM INTEGRATION







School of Public Health
UNIVERSITY OF CALIFORNIA, BERKELEY

Berkeley Forum
for Improving California's Healthcare Delivery System

CONTENTS

FIGURES

Berkeley Forum Leadership

The Berkeley Forum, established in January 2012, includes select CEOs of California's health systems, health insurers and physician organizations, along with state regulators and policymakers, that are collaborating to improve the affordability and quality of healthcare for all Californians. The University of California, Berkeley's School of Public Health serves as a neutral facilitator for discussions and the analytic staff for this effort.

PARTICIPANT LIST

Anthem Blue Cross
Pam Kehaly, West Region President

Cedars-Sinai Healthcare System
Tom Priselac, President and CEO
Richard Jacobs, Senior Vice President, System Development and Chief Strategy Officer

California Health and Human Services Agency
Diana S. Dooley, Secretary*

Healthcare Partners
Robert J. Margolis, Co-Chairman and Chief Executive Officer Emeritus

Kaiser Permanente
Bernard Tyson, Chief Executive Officer
Anthony A. Barrueta, Senior Vice President, Government Relations

Sutter Health
Patrick E. Fry, President and Chief Executive Officer
Robert Reed, Chief Financial Officer

USC Health
Thomas Jackiewicz, Senior Vice President and Chief Executive Officer

UC Medical Centers
David Feinberg, Chief Executive Officer, UCLA Health System

AUTHORS

Brent D. Fulton, PhD, MBA
Assistant Adjunct Professor of Health Economics and Policy
Associate Director, Nicholas C. Petris Center on Health Care Markets and Consumer Welfare
School of Public Health
University of California, Berkeley

Eric R. Kessell, PhD, MPH
Policy Analyst, Berkeley Forum for Improving California's Healthcare Delivery System, School of Public Health, University of California, Berkeley

Beth Keolanui, MPH Candidate
Graduate Student Researcher, Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, School of Public Health, University of California, Berkeley

Vishaal Pegany, MPP/MPH Candidate
Graduate Student Researcher, Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, School of Public Health, University of California, Berkeley

Stephen M. Shortell, PhD, MBA, MPH
Chair of the Berkeley Forum
Blue Cross of California Distinguished Professor of Health Policy and Management
School of Public Health and Haas School of Business
Director, Center for Healthcare Organizational and Innovation Research (CHOIR)
University of California, Berkeley

Richard M. Scheffler, PhD
Co-Chair of the Berkeley Forum
Distinguished Professor of Health Economics and Policy
School of Public Health and Goldman School of Public Policy
Director, Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, School of Public Health
University of California, Berkeley

* Participation by Secretary Dooley in the Forum meeting/discussions does not represent any formal endorsement of the report by her state Agency nor in her official individual capacity as an appointed public official at her Agency.

Executive Summary

California's state government, employers and families are concerned about the affordability of healthcare in California. The Affordable Care Act is likely to have opposing effects on healthcare expenditures. On the one hand, the number uninsured in California is expected to decrease from 6.0 million to 2.6 million between 2011 and 2016, leading to increased expenditures (CalSIM, 2014; Hadley et al., 2008). On the other hand, payment and delivery innovations within the Affordable Care Act and private market have the potential to reduce expenditures (McClellan, 2014), but there is a concern that provider consolidation may lead to higher prices (Health Care Cost Institute, 2014; Baker et al, 2014; Robinson, 2011; Berenson et al., 2010).

In this report, we forecast health expenditures in California from 2013–2022 using the Berkeley Forum Healthcare Expenditure Forecasting Model discussed in *A New Vision for California's Healthcare System: Integrated Care with Aligned Financial Incentives* (Scheffler et al., 2013).[1] Then, we disaggregate spending by service type and source of payment. Next, we identify the key factors driving health expenditure growth and discuss each factor's contribution. Finally, we estimate the progress toward the Berkeley Forum Vision of increasing risk-based payments and integrated care. Our principal data sources include the Centers for Medicare & Medicaid Services' (CMS) Office of the Actuary's National Health Expenditure Account historical and forecasted estimates (CMS, 2014a, 2014b, 2011).

We find the following four key results:

- **Health Expenditure Forecasts:** In California, health expenditures per capita are forecasted to increase at a higher rate than they did in the recent recessionary years, but not as fast as the prior period. The moderate growth will occur as the economy recovers, while potential expenditure-reducing payment and delivery innovations scale up. However, the annual growth rate of forecasted health expenditures per capita is about 1.1 percentage points more than the annual growth rate of forecasted domestic product (GDP) per capita; therefore, health expenditures' share of California's economy is forecasted to increase from 14.5% to 16.0% from 2013–2022.
  - 2000–2008: health expenditures per capita of 6.7% versus GDP per capita of 3.6%
  - 2008–2013: health expenditures per capita of 2.8% versus GDP per capita of 1.3%
  - 2013–2022: health expenditures per capita of 5.0% versus GDP per capita of 3.9%
- **Disaggregation of Health Expenditure Forecasts:** Health expenditures per capita are forecasted to increase by 1.6-fold from 2013–2022. Among the nine personal healthcare service types estimated at the state level in California, the growth ranges from 1.5-fold for durable medical equipment to 1.7-fold for both home health care and other professional services, the latter of which includes professional services of various health professionals, such as chiropractors, podiatrists, and optometrists.
- **Factors Driving Health Expenditure Increases:** Real health expenditures per capita (2013$) in California are forecasted to increase from $8,398 to $11,421, an increase of $3,023 (or 36%) from 2013–2022.[2] These expenditure increases are mostly driven by gains in real income per capita (40-60%) followed by medical-specific inflation growing faster than overall economy-wide inflation (23%) and an aging population (14%). Although the number of uninsured in California is forecasted to decrease by 3.4 million, from 6.0 million to 2.6 million, between 2011 and 2016 (CalSIM, 2014), these insurance gains only account for 8% of the increase, because they represent less than 10% of the total population and incur healthcare expenditures when uninsured (Hadley et al., 2008). After accounting for the factors above, the residual increase in expenditures is attributable to a combination of (1) changes in the volume and mix of services because of payment and delivery system innovations; (2) technology that either increases expenditures, because of new treatments becoming available, or decreases expenditures because of increasing productivity, such as coordination of care; and (3) measurement error. Depending on the income elasticity of expenditure that is used, these factors sum to a range from positive 16% (lower-bound income elasticity of 0.6) to negative 4% (upper-bound income elasticity of 0.9), the latter of which means the net effect of the residual actually decreases expenditures.

[1] Scheffler et al. (2013) can be found at http://berkeleyhealthcareforum.berkeley.edu/. This report was published by the *California Journal of Politics and Policy* in 2014 (Scheffler et al., 2014). The journal's issue included an article that discussed the formation of the Berkeley Forum for Improving California's Healthcare Delivery System and the process that led to the Berkeley Forum Vision, which calls for reducing the share of expenditures paid for on a fee-for-service basis while increasing the share of the population receiving care from fully or highly integrated care systems (Bowers et al., 2014a). Furthermore, Bowers et al. (2014b) introduces six commentaries by Berkeley Forum participants and other healthcare leaders that reflect on the Berkeley Forum process that led to its Vision as well as the key healthcare issues that California faces (Bodaken, 2014; Coye & Skootsky, 2014; Halvorson, 2014; Kehaly, 2014; Morrison, 2014; Yegian & Williams, 2014).

[2] Real health expenditures adjust current-year dollar health expenditures for economy-wide inflation, as estimated from the U.S. GDP Implicit Price Deflator trended forward using an univariate ordinary least squares model.

- **Risk-Based Payments and Integrated Care:** Between 2012 and 2014, risk-bearing arrangements are forecasted to increase from 22% to 24% of expenditures and from 44% to 47% of included lives. Between 2012 and 2014, the percentage of Californians receiving care from highly or fully integrated care systems is forecasted to increase from 29% to 30% of the population.

Our work shows that, despite improvements in the trajectory of health spending per capita, it is still on course to outpace economic growth, and will cost another $3,023 in inflation-adjusted dollars per person by 2022. To address expenditure increases in a systematic way, the Berkeley Forum recommends its Vision, which calls for reducing the share of expenditures paid for on a fee-for-service basis while increasing the share of the population receiving care from fully or highly integrated care systems (Scheffler et al., 2013). Forecasted health expenditures and the modest progress towards the Berkeley Forum Vision show that more work needs to be done to ensure healthcare is affordable in the future.

Among innovations that could be expanded, accountable care organizations (ACO) and community-based palliative care have great potential to increase value-based care. ACO-like arrangements are increasing, such as Anthem Blue Cross of California and seven healthcare systems recently entering into an ACO-like arrangement known as "Vivity" (Evans, 2014). Although ACOs and ACO-like arrangements have produced savings, the results are not always consistent (e.g., see Kocot et al., 2014; Melnick et al., 2014; Scheffler et al., 2013; Markovich, 2012; Colla et al., 2012). Moreover, there is a concern that provider consolidation may lead to higher prices, potentially increasing the impact of medical-specific inflation on expenditure growth (Health Care Cost Institute, 2014; Baker et al, 2014; Robinson, 2011; Berenson et al., 2010). For more information, see the Berkeley Forum's companion report entitled *Accountable Care Organizations in California: Promise and Performance.*

Increasing the use of community-based palliative care has the potential to better align care with patient preferences while reducing costs, because patients often prefer less intensive treatments. For more information, see the Berkeley Forum's companion report entitled *Honoring Patients' Wishes: Expanding Palliative Care in California.*

These innovations coupled with other payment and delivery system innovations have the potential to help Californians better achieve the triple aim of higher-quality care and better patient outcomes at a lower cost.

Introduction

California's state government, employers and families are concerned about the affordability of healthcare in California. The Affordable Care Act is likely to have opposing effects on health expenditures. On the one hand, the number uninsured in California is expected to decrease from 6.0 million to 2.6 million between 2011 and 2016, leading to increased expenditures (CalSIM, 2014). On the other hand, payment and delivery innovations within the Affordable Care Act and private market have the potential to reduce expenditures (McClellan, 2014), but there is a concern that provider consolidation may lead to higher prices (Health Care Cost Institute, 2014; Baker et al, 2014; Robinson, 2011; Berenson et al., 2010).

In the United States, health expenditures are forecasted to grow at 5.6% in 2014 and are forecasted to grow at an average of 6.0% per year during 2015–2023 (Sisko et. al., 2014). These new forecasts show that health expenditures' share of the nation's gross domestic product (GDP) is forecasted to increase from 17.2% to 19.3% from 2013–2023.

In this report, we focus on forecasting and analyzing health expenditures in California. First, we forecast health expenditures in California from 2013–2022 using the Berkeley Forum Healthcare Expenditure Forecasting Model. Second, we disaggregate spending by service type and source of payment. Third, we identify the key factors driving health expenditure growth and discuss each factor's contribution. Fourth, we estimate the progress toward the Berkeley Forum Vision of increasing risk-based payments and integrated care.

Data and Methods

This section summarizes the data sources and methods we used for this report. Additional details on the data and methods can be found in the appendices of this report as well as the February 2013 Berkeley Forum report, *A New Vision for California's Healthcare System: Integrated Care with Aligned Financial Incentives,* and its appendices (Scheffler et al., 2013).

Data

We used two key health expenditure datafiles from CMS. First, at the United States level, we used CMS's *National Health Expenditure (NHE) Amounts by Type of Expenditure and Source of Funds: Calendar Years 1960–2023* datafile that was released in September 2014, an updated version from Scheffler et al. (2013) (CMS, 2014a; Sisko et al., 2014). This CMS datafile is the most recently published datafile that provides a continuous series of expenditure estimates across service types and sources of payments. Details of CMS's methods and actuarial assumptions are available in its methodology report (CMS, 2014b).[3] Our analysis uses the 1990–2022 period, which is based on historical expenditures for 1990–2012 and forecasted expenditures for 2013–2022. Second, at the California level, we used CMS's *Health Expenditures by State of Residence, 1991–2009* datafile that was released in 2011 and provides historical expenditures for 1990–2009 (CMS, 2011). This datafile will not be updated until 2016, because it is based on information from the Economics Census that is conducted every five years.

In addition, we updated our February 2013 forecast (Scheffler et al., 2013) with data from several sources. We used data from the California Department of Finance to update our population estimates, as of January 2013 (California Department of Finance, 2013). We also updated California GDP estimates from 1997–2013 using the Bureau of Economic Analysis June 2014 data (U.S. Bureau of Economic Analysis, 2014), which is the release that most closely matches the timing of July 2014 national GDP estimates included in the CMS data (CMS, 2014a). In 2013, after the release of the February 2013 Berkeley Forum report (Scheffler et al., 2013), several revisions were made to the Bureau of Economic Analysis's definition of GDP, particularly the expanded inclusion of intellectual property (Broda & Tate, 2014; Smith et al., 2013). Expenditures for research and development as well as for entertainment, literary, and other artistic originals are now recognized as investments that contribute to GDP. In the United States, the revision resulted in the historical estimates of GDP being 3.5% higher on average from 1997–2009 and 3.4% higher on average from 2010–2012 (Broda & Tate, 2014). In California, the revision was even greater. It resulted in the historical estimates of GDP being 4.4% higher on average from 1997–2009 and 6.1% higher on average from 2010–2012.

Methods

To forecast health expenditures in California for 2013–2022, we forecasted personal healthcare expenditures and non-personal health expenditures separately.[4] We compared personal healthcare expenditures per capita between the United States and California from 2000–2009. Although California's personal healthcare expenditures per capita have historically been lower than the United States' average, the growth rate trends between California and the United States were similar from 2000–2009. Therefore, to forecast California's personal healthcare expenditures per capita, we applied CMS's United States personal healthcare expenditures per capita annual growth rates to California for 2010–2022.[5] As CMS does not provide estimates of non-personal health expenditures at the state level, we assumed that California's non-personal health expenditures per capita would be the same as the United States' per capita average. Then, to obtain California's total health expenditures per capita, we added California's forecasted personal healthcare expenditures per capita to the United States non-personal health expenditures per capita. To forecast health expenditures under the Berkeley Forum Vision, which calls for reducing the share of expenditures paid for on a fee-for-service basis while increasing the share of the population receiving care from fully or highly integrated care systems, we calculated the savings by year as a percentage of health expenditures from Scheffler et al. (2013), and applied those percentage savings to health expenditures estimated in this report. This resulted in the same annual savings as a percentage of total health expenditures as in Scheffler et al. (2013).

[3] The Medicare Part B Sustainable Growth Rate Formula (SGR) would result in significant Medicare spending reductions; however, Congress has not allowed the reductions to occur in recent years. Therefore, CMS's forecasts assume that the reductions do not occur (CMS, 2014b).

[4] CMS categorizes health expenditures into two subcategories: health consumption and investment (CMS, 2014b). Health consumption includes personal healthcare, government administration, net cost of health insurance, and government public health activities. Investment categories include research, structures, and equipment. In this report, health expenditures include total health consumption and investment expenditures, but it separates personal healthcare expenditures from non-personal health expenditures. The latter includes government administration, net cost of health insurance, government public health activities, as well as investment in research, structures, and equipment. CMS does not estimate non-personal health expenditures at the state level, so our California estimates are based on United States' estimates, as described in the Methods section of this report.

[5] The latest historical health expenditure estimate for California is for 2009; therefore, we applied the United States per capita growth rate from 2010–2022.

To forecast expenditures by service type and source of payment, again, we applied the United States' per capita growth rates to California, because the per capita growth rate trends between California and the United States were similar by service type and source of payment from 2000–2009. For example, we forecasted California's 2010 home health care expenditures per capita by multiplying the 2009 value by the United States' annual growth rate for home health expenditures in 2010. We used the same approach to forecast expenditures per capita by source of payment.[6] Finally, we used this approach to forecast expenditures per capita by source of payment for the three service types with the highest aggregate expenditures from 2013–2022 (hospital care, physician and clinical services, and retail prescription drugs and other non-durable medical products).[7] These expenditures are forecasted in current-year dollars (also called nominal dollars), meaning they do not control for economy-wide or medical-specific inflation.

To estimate the impact of factors that drive forecasted health expenditure increases, we primarily relied upon the method discussed in Smith et al. (2009). We converted current-year health expenditures per capita to real health expenditures per capita using the U.S. GDP Implicit Price Deflator trended forward using a univariate ordinary least squares model. The real health expenditure per capita increases are influenced by medical-specific inflation, an aging population, insurance coverage, income growth, and a residual that primarily includes a combination of changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error. These factors are inter-related, particularly insurance coverage, income and technology.

Medical-specific inflation is a significant driver of the growth in personal healthcare spending (Health Care Cost Institute, 2014; Truffer et al., 2010; Peterson and Burton, 2007) and has consistently outpaced economy-wide inflation (see Appendix III of this report). Medical-specific inflation refers to the growth in medical-specific prices above and beyond economy-wide inflation (Martin et al., 2014). Medical-specific inflation was estimated from the Personal Health Care Chain-Type Price Index, developed by the CMS Office of the Actuary. California's population is forecasted to age, resulting in higher per capita expenditures (California Department of Finance, 2013; CMS, 2014c). We isolated the aging impact by assuming personal healthcare spending per capita by age-sex group in 2013 stayed the same through 2022, and calculated the expenditure per capita difference between the 2013 population and the older 2022 population. Under the Affordable Care Act, the number of uninsured Californians is expected to decrease from 6.0 million to 2.6 million between 2011 and 2016, resulting in lower out-of-pocket costs and higher expenditures (CalSIM, 2014; Hadley et al., 2008). The share of expenditures accounted for by out-of-pocket payments was based on CMS forecasts for the United States applied to California (CMS, 2014a). We assumed a price elasticity of expenditures of -0.17, based on an estimate from the RAND Health Insurance Experiment (Newhouse, 1993; Keeler, 1988).[8] California's per capita income is forecasted to increase, which will result in higher expenditures. Income elasticity of expenditure estimates were based on a number of studies (e.g., see studies in Getzen, 2000), but principally relied upon Smith et al. (2009)'s range of 0.6 to 0.9.[9]

The residual includes changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error. The volume and mix of services are changing because of payment and delivery system reforms, leading to lower expenditures in some cases (e.g., Markovich, 2012). On the other hand, technology, on net, has historically been cost increasing, because of new treatments (Newhouse, 1992). Technology can be cost-decreasing when it increases productivity, such as with electronic medical records providing clinicians the information they need to better manage care for high-cost patients (Hillestad et al, 2005; Wang et al, 2003).

For more information on methods and data, see the appendices of this report.

[6] To check our forecasting method, for each year we compared the sum of our disaggregated expenditure forecasts by service type to the forecasted total personal healthcare expenditures, and found the values were essentially equivalent. The sums were only 0.01% to 0.08% higher than the total from 2013–2022. For each year we also compared the sum of our disaggregated expenditure forecasts by source of payment to the forecasted total personal healthcare expenditures, and, again, found the values were essentially equivalent. The sums were only 0.12% to 0.28% higher than the total from 2013–2022.

[7] To check our forecasting method, for each year and for each of the three service types, we compared the sum of our disaggregated expenditure forecasts by source of payment to the forecasted total expenditures for the each service type, and found the following small differences from 2013–2022: hospital care (0.02% to 0.25%), physician and clinical services (-0.81% to -0.2%), and retail prescription drugs and other non-durable medical products (0.91% to 1.87%), where a positive percentage indicates the sum of the parts was greater than the total. To have values be equivalent, we multiplied the forecasted expenditure per capita of each service type by source of payment by the percent difference from the total each year.

[8] The -0.17 elasticity estimate is from Newhouse (1993), Table 4.18 (p. 121).

[9] We select 0.6 as a lower bound and 0.9 as an upper bound, reported by Smith et al. (2009), because their range was estimated using superior methods that removed the potential income-price interaction and their range was consistent with the studies we reviewed. For sources and additional details, see Appendix III of this report.

Results

The results include four sections: total health expenditures, total health expenditures disaggregated by type of service and source of payment, factors that contribute to health expenditure increases, and progress toward the Berkeley Forum Vision.

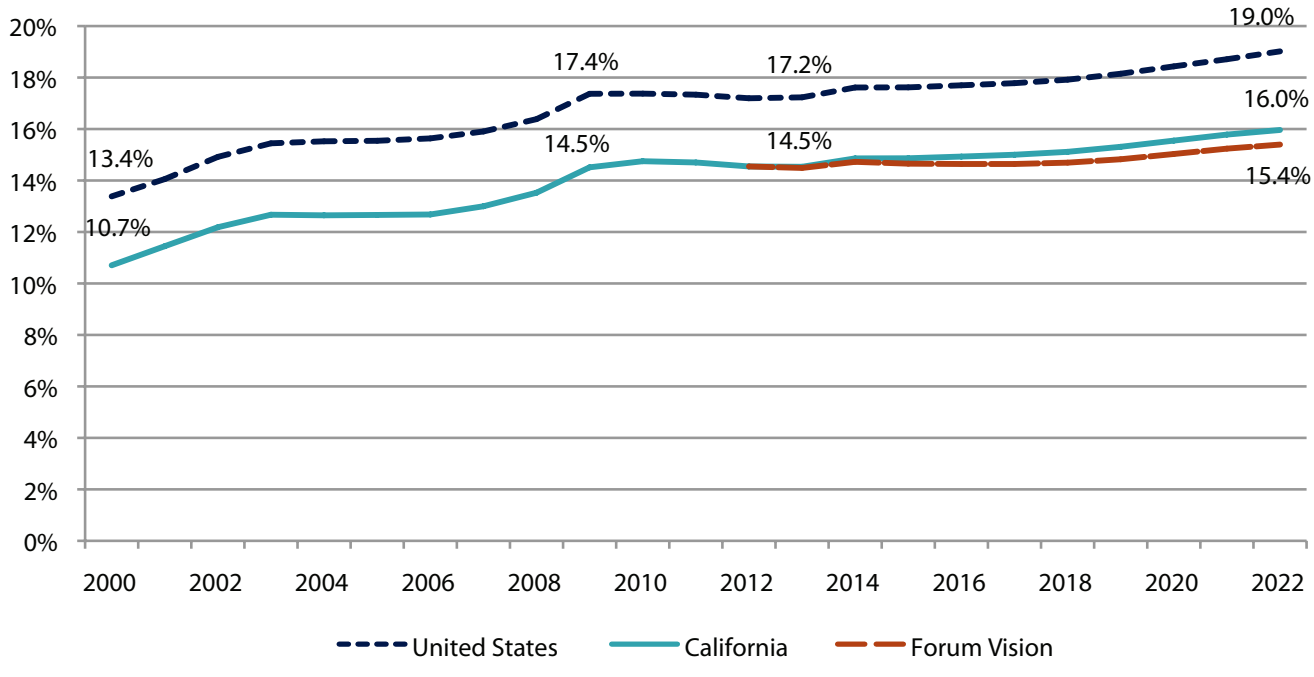
Total Health Expenditures

Figure 1 shows health expenditures as a percentage of GDP in California and the United States from 2000–2022. In 2013, health expenditures represented 14.5% of the California's economy, and that share is expected to increase to 16.0% by 2022. Health expenditures per capita are forecasted to increase at a higher rate than they did in the recent recessionary years, but not as fast as the prior period. The moderate growth will occur as the economy recovers, while potential expenditure-reducing payment and delivery innovations scale up. However, the forecasted growth rate is about 1.1 percentage points more than the forecasted economic growth rate per capita. The annual health expenditure per capita and GDP per capita growth rates follow:

- 2000–2008: health expenditures per capita of 6.7% versus GDP per capita of 3.6%
- 2008–2013: health expenditures per capita of 2.8% versus GDP per capita of 1.3%
- 2013–2022: health expenditures per capita of 5.0% versus GDP per capita of 3.9%

Under the Berkeley Forum Vision, health expenditures as a share of GDP only increase to 15.4% by 2022, equivalent to approximately $770 less per household per year, as compared to the status quo. The savings under the Berkeley Forum forecast are primarily because of more integrated care and less fee-for-service reimbursement. During the entire period, California's health spending as a share of the state economy varies between 2.6 and 3.1 percentage points less than the United States' health spending as a share of the national economy.

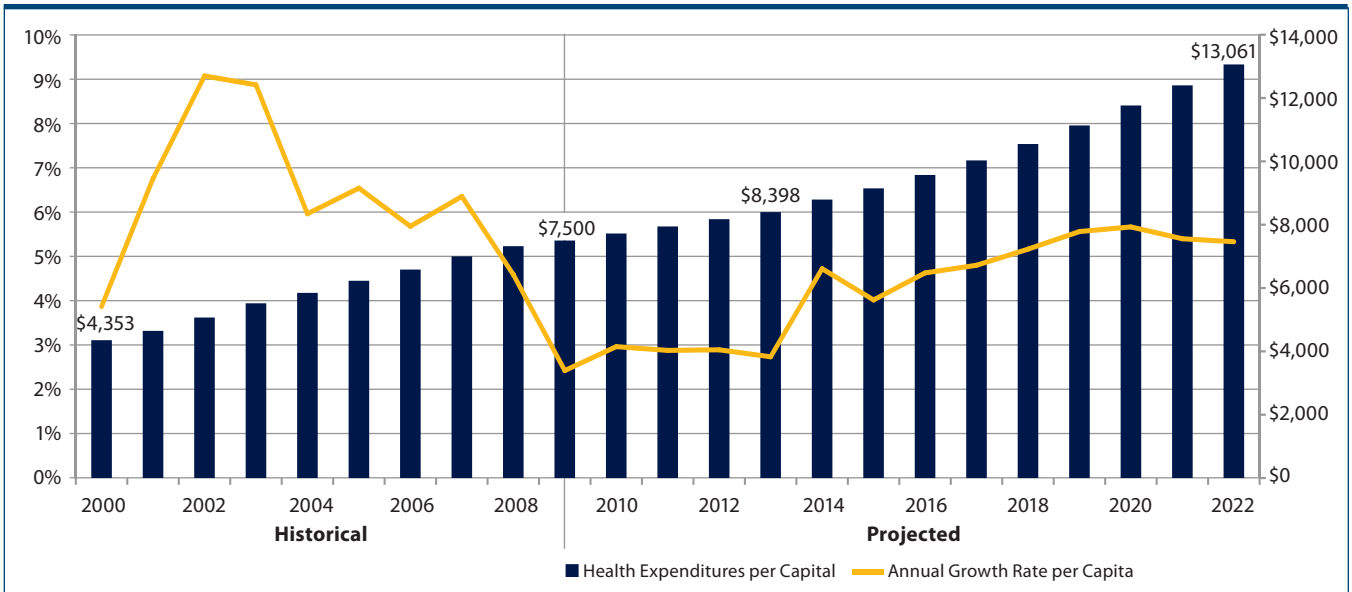
Figure 1: Health Expenditures as a Percentage of Gross Domestic Product in California and the United States, 2000–2022



Notes: United States health expenditures are historical from 2000–2012 and forecasted thereafter. California health expenditures are historical from 2000–2009 and forecasted thereafter.

SOURCE: Berkeley Forum analysis using Centers for Medicare and Medicaid Services (2014a, 2011). See Appendix III: "California Cost Curve, Healthcare Expenditures and Premium Projections (Methodology)" in Scheffler et al. (2013) for sources and additional details.

Figure 2: Health Expenditures per Capita and Growth Rates in California, 2000–2022



Notes: The reported expenditures are in nominal (current-year) dollars. Health expenditures are historical from 2000–2009 and forecasted thereafter.

SOURCE: Berkeley Forum analysis using Centers for Medicare and Medicaid Services (2014a, 2011). See Appendix III: "California Cost Curve, Healthcare Expenditures and Premium Projections (Methodology)" in Scheffler et al. (2013) for sources and additional details.

In comparison to the February 2013 Berkeley Forum report (Scheffler et al., 2013), our updated estimates of health expenditures as a percentage of GDP are lower by approximately one percentage point from 2013–2022. For example, under the status quo scenario in the February 2013 report, health expenditures represented 15.3% of California's economy in 2013, increasing to 17.1% in 2022 (versus 14.5% and 16.0%, respectively, in this report). Our updated estimates are lower because our updated health expenditure per capita estimates for 2013–2022 decreased by 4.2% on average, while our revised GDP per capita estimates increased by 6.4% on average. The health expenditure decrease is partially due to the slow economic recovery after the December 2007 to June 2009 recession as well as potential structural changes in the health sector (e.g., see Dranove et al, 2014; Martin et al, 2014; Cutler & Sahni, 2013; Chandra et al, 2013 discussed below). Most of the GDP increase was due to the revised measurement method (e.g., expanded inclusion of intellectual property), not actual GDP growth (Broda & Tate, 2014). Although a portion of the GDP growth due to the revised measurement method occurred in the health sector, CMS's health expenditure estimates did not directly account for this revision, because their estimates are based on a separate expenditure model maintained by the Office of the Actuary (CMS, 2014b).

Figure 2 shows historical and forecasted health expenditures per capita and annual growth rates from 2000–2022. From 2013–2022, health expenditures per capita are forecasted to increase from $8,398 to $13,061, or 5.0% per year.[10] This growth rate is less than the 2008–2013 growth rate of 2.8%, which was lower principally due to the December 2007 to June 2009 recession (National Bureau of Economic Research, 2012). However, it is lower than the 2000–2008 period prior to the recession, which had a growth rate of 6.7%. On an aggregate basis, health expenditures are expected to increase from $320 billion to $540 billion from 2013–2022.[11]

For more information on our methods and additional results, see Appendix I of this report.

Disaggregating Health Expenditures by Service Type and Source of Payment

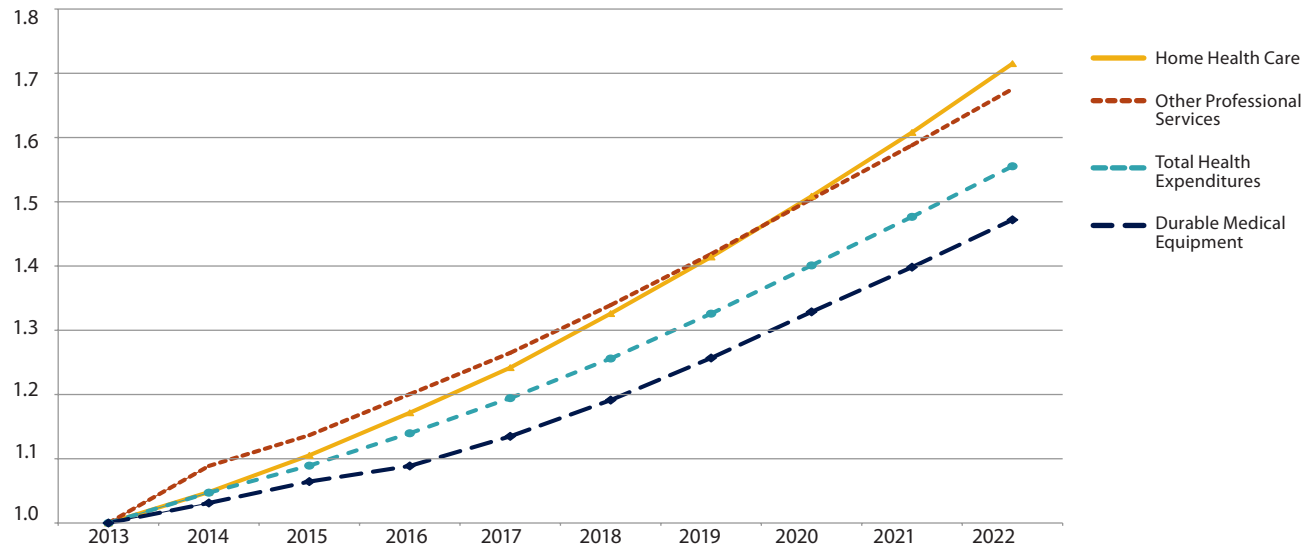
CMS forecasts health expenditures by service type for personal healthcare expenditures and also forecasts non-personal health expenditures.[12] CMS breaks personal healthcare expenditures into the following nine service types for state-level estimates, whereby hospital care,

[10] The 2022 estimate is less than our prior forecast of $13,755 (Scheffler et al., 2013).

[11] California population was 34.0 million in 2000 and is forecasted to grow to 41.4 million in 2022.

[12] In the United States, personal healthcare expenditures account for 84% of total health expenditures from 2000–2012 as well as during the forecasted period 2013–2022. CMS does not estimate non-personal health expenditures at the state level, so our California estimates are based on United States' estimates, as described in the Methods section and Appendix I of this report. In California, personal healthcare expenditures are estimated to have accounted for 82% of total health expenditures from 2000–2009 and accounted for 78% of total health expenditures from 2010–2022. California's percentages are lower than the United States', because of California's lower historical and forecasted personal healthcare expenditures per capita.

Figure 3: Growth of Forecasted Health Expenditures per Capita by Service Type in California, 2013–2022



Notes: Current-year dollar expenditures by service type are normalized to 1.0 in 2013. California health expenditures are historical from 2000–2009 and forecasted thereafter. The growth rates in this figure are the same as the growth rates of the United States, because California's forecasted growth rates are based on the United States' forecasted growth rates.

SOURCE: Berkeley Forum analysis using Centers for Medicare and Medicaid Services (2014a, 2011)

physician and clinical services, and retail prescription drugs and other non-durable medical products account for the majority of these expenditures:

- Hospital care
- Physician and clinical services
- Other professional services
- Dental services
- Other health, residential, and personal care
- Nursing care facilities and continuing care retirement communities (hereafter "Nursing home care")
- Home health care
- Retail prescription drugs and other non-durable medical products[13]
- Durable medical equipment

Non-personal health expenditures include government administration, net cost of health insurance, government public health activities, and investment in research, structures, and equipment.[14]

For more information on our methods and additional results, see Appendix II of this report.

Figure 3 shows the expenditure growth rates of three service types from 2013–2022, to show the range of growth rates among the nine service types.[15] Expenditures are normalized to 1.0 in 2013. Total health expenditures are forecasted to increase 1.6-fold from 2013–2022. Among the three personal healthcare service types highlighted below, the growth rates range from 1.5-fold for durable medical equipment to 1.7-fold for home health care. Other professional services[16] increase nearly 1.7-fold and is the second-largest increase for personal healthcare expenditures by service type. These larger forecasted increases are partially due to the advancement of in-home healthcare technologies and the aging of the population. The variable growth

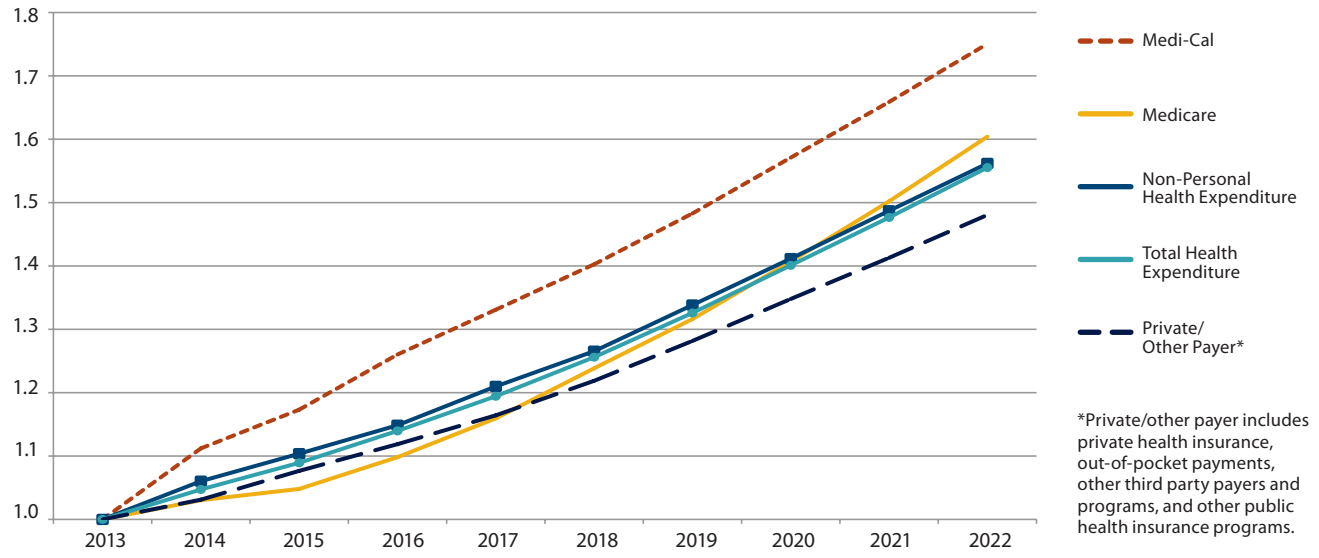
[13] Personal healthcare expenditures at the national level are separated into 10 service types, whereby retail prescription drugs and other non-durable medical products are separately estimated.

[14] CMS categorizes health expenditures into two subcategories: health consumption and investment (CMS, 2014b). Health consumption includes personal healthcare, government administration, net cost of health insurance, and government public health activities. Investment categories include research, structures, and equipment. In this report, health expenditures include total health consumption and investment expenditures, but it separates personal healthcare expenditures from non-personal health expenditures. The latter includes government administration, net cost of health insurance, government public health activities, as well as investment in research, structures, and equipment. CMS does not estimate non-personal health expenditures at the state level, so our California estimates are based on United States' estimates, as described in the Methods section of this report.

[15] The growth rates of all nine service types are shown in Appendix I of this report.

[16] Other Professional Services does not include physician and clinical services nor dental services, but includes professional services of various health professionals, such as chiropractors, podiatrists, and optometrists.

Figure 4: Growth of Forecasted Health Expenditures per Capita by Source of Payment in California, 2013–2022



Notes: Current-year dollar expenditures by source of payment are normalized to 1.0 in 2013. California health expenditures are historical from 2000–2009 and forecasted thereafter. The growth rates in this figure are the same as the growth rates of the United States, because California's forecasted growth rates are based on the United States' forecasted growth rates.

SOURCE: Berkeley Forum analysis using Centers for Medicare and Medicaid Services (2014a, 2011)

rates across service types will lead to the service types representing different shares of health expenditures over time. Furthermore, increases for a particular service type may lead to decreases in other service types, so expenditures should also be examined as a whole.

In addition to disaggregating personal healthcare expenditures by service type, personal healthcare expenditures are disaggregated by source of payment, including Medicare, Medi-Cal and private/other payer.[17] Figure 4 shows the growth of total health spending by source of payment for personal healthcare expenditures in California from 2013–2022, with expenditure levels normalized to 1 in 2013.[18] Non-personal health expenditures are included as a separate category. Overall, total health expenditures per capita are forecasted to increase 1.6-fold. Medi-Cal expenditures per capita are forecasted to grow the most, by nearly 1.8-fold, by 2022. Medicare expenditures are forecasted to increase 1.6-fold, while private/other payers are forecasted to grow the least, by 1.5-fold.

Identifying Factors that Contribute to Health Expenditure Increases

Earlier in the report, we forecast that health expenditures per capita will increase from $8,398 to $13,061. Consistent with Smith et al. (2009), we converted these current-year dollar amounts into real 2013 dollars using the U.S. GDP Implicit Price Deflator, which resulted in a real increase from $8,398 to $11,421, or $3,023, totaling 36%.[19] Similar to Smith et al. (2009), we estimated how the following five factors contributed to this $3,023 real increase:

- **Medical-Specific Inflation:** CMS's Personal Health Care Chain-Type Price Index includes both medical-specific inflation as well as overall economy-wide inflation. We isolated the medical-specific inflation by removing economy-wide inflation (as estimated from the U.S. GDP Implicit Price Deflator). Medical-specific inflation is forecasted to increase an additional 6.6% beyond economy-wide inflation.

[17] At the state level, CMS only estimates personal healthcare expenditures by source of payment for Medicare and Medicaid (CMS, 2011). The remainder, which we call "private/other payer," mostly includes private health insurance, but also includes out-of-pocket payments, other third party payers and programs, and other public health insurance programs (i.e., Department of Defense and Department of Veterans' Affairs), all which are only estimated separately at the United States level.

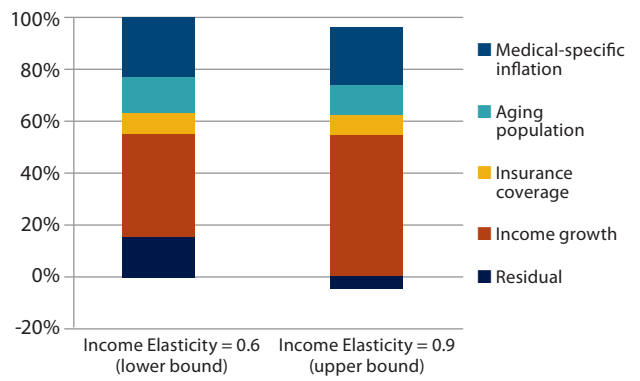
[18] Personal healthcare expenditures account for 82% of health expenditures from 2000–2009. Non-personal health expenditures accounts for the remaining 18%. On forecasted expenditures from 2010–2022, personal health expenditures account for 78% of health expenditures while non-personal health expenditures accounts for 22%.

[19] Real health expenditures adjust current-year dollar health expenditures for economy-wide inflation, as estimated from the U.S. GDP Implicit Price Deflator trended forward using an univariate ordinary least squares model.

- **Aging Population:** California's population is forecasted to age because people are living longer and more of the Baby Boom generation is aging into Medicare eligibility. Between 2013 and 2022, the California Department of Finance forecasts that the share of people aged 65+ is expected to increase from 12.1% to 15.2% of the population (California Department of Finance, 2013).
- **Insurance Coverage:** The Affordable Care Act is forecasted to reduce the number of uninsured by approximately 3.4 million, from 6.0 million to 2.6 million, between 2011 and 2016 (CalSIM, 2014). This coverage expansion contributes to the forecasted decrease in the share of healthcare expenditures paid for out-of-pocket, which is estimated to decrease from 13.8% to 11.8%.
- **Income Growth:** GDP per capita, a proxy for income, is forecasted to increase from $57,785 to $71,547, or 24%, in real terms, based on the forecasted U.S. GDP Implicit Price Deflator. This increase in income leads to more health spending.
- **Residual:** After accounting for the factors above, the residual includes changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error. The volume and mix of services may change because of payment and delivery system innovations. Changes in technology could increase expenditures because of new treatments becoming available, or decrease expenditures because of productivity gains, such as through improved coordination of care and information systems.

Figure 5 shows how each of these factors contributes to real health expenditure per capita increase of $3,023 between 2013 and 2022, for income elasticity of expenditures being 0.6 and 0.9. For either income elasticity, medical-specific inflation contributes 23.4%, population aging contributes 13.7%, and insurance coverage contributes 7.5%. When income elasticity is assumed to equal 0.6, income growth contributes 39.7% and the residual is 15.7%; and when income elasticity is assumed to equal 0.9, income growth contributes 59.5% and the residual is -4.2%, which means the residual contributes to expenditure *decreases*. A negative residual could mean that cost-increasing technologies are more than offset by cost-decreasing technologies coupled with a lower cost volume and mix of services; however, other explanations are possible. As a residual category, it contains any measurement error, and to the extent error exists in other factor estimates, it will also be reflected here.

Figure 5: Factors' Contribution to Real Health Expenditure Growth in California, 2013–2022



Notes: The residual includes changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error.

SOURCE: Berkeley Forum Analysis

COMPARISON TO OTHER STUDIES

The lower-bound income elasticity results are mostly consistent with recent United States and California estimates (Martin et al., 2014; Wilson, 2014; Smith et al., 2009). Martin and colleagues analyzed United States health spending per capita from 2008–2012 and found that medical-specific and overall economy-wide inflation accounted for between 50% and 80% of the growth. This is higher than our estimate of 23%, but their estimate includes both medical-specific and economy-wide inflation, while ours only includes the former.[20] Population aging accounts for one-sixth of their growth, consistent with our estimate of 14%. Their non-price factors, which include our insurance coverage, income growth, and the residual, accounted for less than our estimates, likely because their period of analysis included the December 2007 to June 2009 recession when income growth was negative, while our period of analysis forecasts positive income growth.

Smith et al. (2009), who analyzed United States real health spending per capita from 1960–2007, separated insurance coverage, income growth and the residual. Insurance coverage expansion accounted for 8% to 11% of growth in their study, consistent with our 8% estimate. Given that the out-of-pocket share of expenditures decreased from 55% to 14%, one would have thought insurance would have had a greater impact in their study. However, real spending per capita increased approximately nine-fold over their period—versus 1.4-fold during our period—

[20] In their analysis, Martin et al. (2014) collectively refer to medical-specific inflation and overall economy-wide inflation as "medical price growth." Since we already account for overall economy-wide inflation by converting current-year (nominal) dollars into real dollars, we only examine medical-specific inflation as one of the contributing factors to health expenditure increases.

so an 8% to 11% impact is still significant. Their income effects were estimated to be between 29% and 43%, lower than our 40% to 60% estimate.

EXAMINING THE RESIDUAL

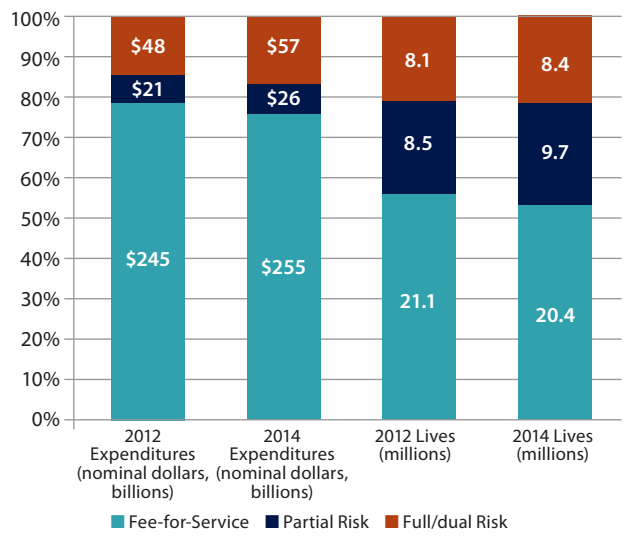
After the accounting for the factors above, the remaining residual is a combination of changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error. Depending on the income elasticity of expenditure that is used, these factors sum to a range from positive 16% (lower-bound income elasticity of 0.6) to negative 4% (upper-bound income elasticity of 0.9), the latter of which means their net effect decreases expenditures. This residual is much smaller than the 27% to 48% residual estimated by Smith et al. (2009), which they attributed to a technology-income interaction and a technology residual. However, they analyzed United States health expenditures in a much earlier period, from 1960–2007. There is some evidence that expenditure-reducing structural changes may be occurring within the health sector that partially offset cost-increasing technology.

Health expenditure growth in the U.S. slowed from 2009–2012 (Martin et al., 2014), and researchers continue to debate the influence of the December 2007 to June 2009 recession versus structural changes on this slower growth. There is some agreement that part of the national trend in slower growth is likely due to expenditure-reducing structural changes, however the estimates range from 30% to 55%. Dranove et al. (2014) conclude that the recession primarily explained 70% of the observed slower growth, with the remaining 30% explained by structural changes. The implications of their findings suggest that, absent any other changes, health spending will begin to increase under the economic recovery. However, the researchers note that the different estimates of the impact of the recession depend on how researchers define the timing and severity of the recession. Cutler and Sahni examine the slower growth from 2003–2012, and conclude that the recession only explained 37% of the slowdown, 8% was due to Medicare payment reductions, while 55% was unexplained (Cutler and Sahni, 2013). Cutler and Sahni attribute a larger role to this unexplained portion, and indicate that it was likely due to greater provider efficiency, increased consumer cost-sharing, and a slower development of medical technology and pharmaceuticals. In a similar study, Chandra et al. (2013) do not quantify the role of the recession, but find that the following factors were responsible for the slowdown: higher out-of-pocket prices for health care due to increased high-deductible health plan enrollment and the loss of private insurance coverage; states restricting Medicaid benefits and reducing provider reimbursements; and slower deployment of new technology. Additionally, Martin et al. (2014) note that health spending as a share of GDP tends to stabilize about 2-3 years after a recession but increases when the economy recovers. However, they caution that it is premature to determine whether there truly has been a structural shift occurring in the health sector.

One innovation that may be generating some of savings is ACO and ACO-like arrangements; however, more evidence is needed before we understand which type of ACO arrangement is best for a given situation. The proliferation of ACOs in California, as well as other financial risk sharing between health plans and providers, has sometimes led to expenditure reductions through changes in utilization and service mix (e.g., see Melnick et al., 2014; Scheffler et al., 2013; Markovich, 2012). In a number of instances, the savings are realized through lower utilization and a less expensive service mix, such as the shift from inpatient care to outpatient visits, as well as the use of generic drugs over brand names. ACOs induce changes in care delivery by allowing provider organizations the opportunity to share in savings if they meet quality and cost targets. For example, in 2009, Blue Shield of California launched an ACO with Dignity Health and Hill Physicians to serve California Public Employees' Retirement System (CalPERS) enrollees that resulted in 7.3% savings in annual expenditures over the first two years, as compared to a comparison group comprised of all other CalPERS beneficiaries (Markovich, 2012). Approximately half of the expenditure reductions were from decreased utilization, with the other half due to patients utilizing lower-cost facilities. These savings have continued, totaling $105 million in gross savings generated between 2010 and 2013 (Melnick, 2014). The ACO model continues to gain acceptance in the commercial market, with Anthem Blue Cross of California and seven healthcare systems recently entering into an ACO-like arrangement known as "Vivity,"which seeks to better coordinate care, reduce costs, and ultimately lower premiums (Evans, 2014).

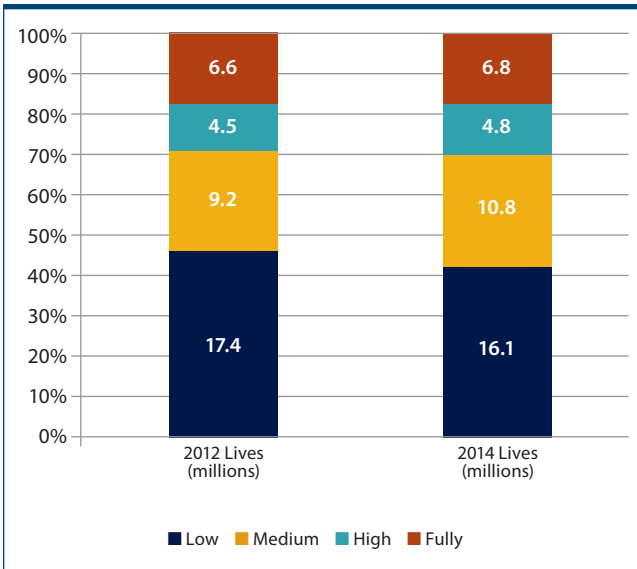
Outside of California, numerous studies of ACOs have shown their potential to deliver considerable reductions in health expenditures, but, again, more evidence is needed (e.g. Mostashari et al., 2014; Peterson & Muhlestein, 2014; Toussaint et al., 2013; Colla et al., 2012). For example, a study of 10 physician groups across the United States from 2006–2009 showed that dually eligible beneficiaries enrolled in ACO-like organizations had significant savings, with an average of $532 in annual savings (Colla et al., 2012). However, the same study showed that non-dually eligible beneficiaries, who comprised 85% of Medicare beneficiaries in the study, saved an average of only $59 annually. This highlights the fact that ACOs and ACO-like organizations do not necessarily produce significant savings for all patients. Another example is Bellin ThedaCare, an ACO that serves many counties of Wisconsin. In 2012, it was able to deliver sizeable gains in affordability—a 4.6% improvement in the year-over-year total cost of care—as well as gains in quality (Toussaint, 2013). This was accomplished by managing high-cost

Figure 6: Financial Reimbursement Risk by Expenditures and Lives in California, 2012 and 2014



SOURCES: Berkeley Forum Analysis.
Also see Appendix II: California's Delivery System Integration and Payment Systems (Methodology) in Scheffler et al. (2013).

Figure 7: Delivery System Integration by Lives in California, 2012 and 2014



SOURCES: Berkeley Forum Analysis.
Also see Appendix II: California's Delivery System Integration and Payment Systems (Methodology) in Scheffler et al. (2013).

patients, such as by decreasing the use of brand name drugs and increasing the number of outpatient visits. Finally, within Medicare, the original 32 Pioneer ACOs have produced mixed results, with only some meeting savings benchmarks. Because of these mixed results, only 19 are still participating, but some have switched to the lower risk Medicare Shared Savings Program (MSSP) (Kocot et al., 2014). Although we cannot quantify the value of these numerous initiatives for California, the combined effect of these new care models provide evidence of the potential for improved quality and reduced total health expenditures, but more work needs to be done to ensure consistent cost reductions and quality improvements across provider organizations.

Progress Toward the Berkeley Forum Vision

The Berkeley Forum Vision is to reduce fee-for-service reimbursement from 78% to 50% of expenditures by 2022 and to increase the share of people receiving care from fully or highly integrated systems from 29% to 60% by 2022.

To provide an update as to how California is advancing toward that Vision, as we did in Scheffler et al. (2013), we categorized healthcare spending according to the degree to which providers were at financial risk for expenditures. Full/dual risk refers to a payment arrangement in which providers accept risk for both professional and hospital services. Partial risk refers to a payment arrangement in which providers accept risk for only professional services. Fee-for-service conveys no financial risk to the provider beyond the service being provided. We also estimated the number of lives covered in each of the risk categories. Finally, we estimated the number of lives by integration level based on medical group size in California. For more information, see Appendix II: California's Delivery System Integration and Payment Systems (Methodology) in Scheffler et al. (2013).

Figure 6 shows the share of expenditures and share of lives in California that are subject to full/dual risk, partial risk and fee-for service. Between 2012 and 2014, risk-bearing arrangements are estimated to have increased from 22% to 24% of expenditures and from 44% to 47% of included lives.

Figure 7 shows the share of lives in California receiving care from low, medium, high and fully integrated care systems. Between 2012 and 2014, the share of Californians receiving care from high or fully integrated care systems increased from 29% to 30%.

The changes seen in the two figures above are consistent with the Berkeley Forum Vision and are being driven by ACOs and bundled payments as well as the transition of Medi-Cal from fee-for-service reimbursement to managed care. Furthermore, CalSIM estimated the number of uninsured dropped from 6.0 million in 2011–2012 to 3.8 million in 2014, resulting in more expenditures and lives covered by risk-bearing arrangements. Despite the positive direction of these modest shifts, there is more progress that needs to be made to achieve the Berkeley Forum Vision of 50% of expenditures being

risk-based and 60% of lives receiving care in full or highly integrated systems.

While the Berkeley Forums Vision focuses on risk sharing and integration, other organizations have similar foci, but use different metrics. For example, Catalyst for Payment Reform has developed a scorecard to measure the share of payments that are value-oriented, that is, payment methods that are designed to spur efficiency and reduce unnecessary spending, such as shared savings and other incentives. Among private payers, Catalyst estimates that value-oriented payments in California have increased from 42% to 55% between 2013 and 2014 (Catalyst for Payment Reform, 2014, 2013). Although value-oriented payment methods are a step in the right direction, Catalyst has set a goal that 20% of payments will have been *proven* to improve value by 2020. The Integrated Healthcare Association (IHA) runs California's Pay for Performance (P4P) program on behalf of eight health plans, which tie payments to physicians using quality and resource use measures (Integrated Healthcare Association, 2014). The program includes over 8 million people enrolled in commercial health maintenance organization and point of service plans, and the 8 million represent 21% of California's population. Some of the program's quality measures are available on California's Office of the Patient Advocate website,[21] in order for consumers to be able to choose among providers based on the quality of care.

Conclusion

California's state government, employers and families are concerned about the affordability of healthcare in California. Our work shows that, despite improvements in the trajectory of health spending per capita, health spending is still on course to outpace economic growth and will cost another $3,023 in inflation-adjusted dollars per person by 2022. Income growth is the primary driver of this increase (40-60%), followed by medical-specific inflation (23%). Neither aging (14%) nor increases in insurance coverage (8%) are the primary drivers.[22] The residual, which includes a combination of changes in the volume and mix of services, changes in the use of cost-increasing and cost-decreasing technology, and measurement error, accounts for up to 16% of the increase, but might, in combination, actually decrease expenditures by 4%.

To address expenditure increases in a systematic way, the Berkeley Forum recommends its Vision, which calls for reducing the share of expenditures paid for on a fee-for-service basis while increasing the share of the population receiving care from fully or highly integrated care systems. Forecasted health expenditures and the modest progress towards the Berkeley Forum Vision shows that more work needs to be done to ensure healthcare is affordable.

Among innovations that could be expanded, accountable care organizations (ACO) and community-based palliative care have great potential to increase value-based care. The number of ACOs has increased from 26 to 67 (or 158%), between August 2012 and February 2014. As of February 2014, 2.4% of the total state population, including 10.6% of Medicare fee-for-service beneficiaries and 2.3% of the privately insured population were attributed to an ACO (Fulton et al., 2014).[23] Moreover, ACO-like arrangements are increasing, such as Anthem Blue Cross of California and seven healthcare systems recently entering into an ACO-like arrangement known as "Vivity" (Evans, 2014). Although ACOs and ACO-like arrangements have produced savings, the results are not always consistent (e.g., see Kocot et al., 2014; Melnick et al., 2014; Scheffler et al., 2013; Markovich, 2012; Colla et al., 2012). Moreover, there is a concern that provider consolidation may lead to higher prices, potentially increasing the impact of medical-specific inflation on expenditure growth (Health Care Cost Institute, 2014; Baker et al, 2014; Robinson, 2011; Berenson et al., 2010). For more information, see the Berkeley Forum's companion report entitled *Accountable Care Organizations in California: Promise and Performance*.

Increasing the use of community-based palliative care has the potential to better align care with patient preferences while reducing costs, because patients often prefer less intensive treatments. For more information, see the Berkeley Forum's companion report entitled *Honoring Patients' Wishes: Expanding Palliative Care in California*.

These innovations coupled with other payment and delivery system innovations have the potential to help Californians better achieve the triple aim of higher-quality care and better patient outcomes at a lower cost.

[21] California's Office of the Patient Advocate website may be found at http://www.opa.ca.gov/Pages/ReportCard.aspx.

[22] Although the aging of the population only accounts for 13.7% of forecasted expenditure growth per capita, its impact is large, considering that the population does not dramatically age over a ten-year period. The share of the population aged 65+ is only forecasted to increase by approximately three percentage points, from 12.4% to 15.7% of the population. The share of the population aged 85+, which has very high health expenditures per capita, is only forecasted to increase slightly, from 1.7% to 1.8% of the population.

[23] This percentage of lives covered by an ACO is estimated from data collected by Cattaneo & Stroud (Cattaneo & Stroud, 2012–2014), which focuses its data collection on California. However, because of the difficulty of estimating lives attributable to an ACO, estimates vary. Leavitt Partners, as part of its national data collection effort, estimates that 5.2% of California lives are covered by an ACO (Petersen, 2014).

BIBLIOGRAPHY

Baker, L., Bundorf, M. K., Kessler, D. (2014). Vertical integration: hospital ownership of physician practices is associated with higher prices and spending. *Health Affairs*, *33*(5), 756-763.

Berenson, R., Ginsburg, P., Kemper, N. (2010). Unchecked provider clout in California foreshadows challenges to health reform. *Health Affairs, 29*(4), 699-705.

Bodaken, B. (2014). Increasing the impact and sustainability of California accountable care organizations. *California Journal of Politics and Policy, 6*(2), 245-247.

Bowers, L., Scheffler, R., Shortell, S., Fulton, B. (2014a). The Berkeley Forum—A roadmap for improving healthcare in California. *California Journal of Politics and Policy, 6*(2), 207-224.

Bowers, L., Scheffler, R., Shortell, S., Fulton, B. (2014b). Introduction: six comments on the Forum. *California Journal of Politics and Policy, 6*(2), 225-226.

Broda, J., Tate, R. (2014). Comprehensive revision of gross domestic product by state: advance statistics for 2013 and revised statistics for 1997–2012. *Survey of Current Business*.

California Department of Finance. (2013). State of California, Department of Finance, Report P-3: State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060 (January Version). Sacramento, CA: California Department of Finance.

CalSIM version 1.91 Statewide Data Book 2015–2019. (2014). UCLA Center for Health Policy Research and UC Berkeley Center for Labor Research and Education, 2014 (May).

Catalyst for Payment Reform (CPR). (2014). *California Scorecard on Payment Reform*. http://www.catalyzepaymentreform.org/images/documents/california2014scorecard.pdf. Accessed in October 2014.

Cattaneo and Stroud, Inc. (2012–2014). *ACO Activities in California*. http://www.cattaneostroud.com. Accessed in Spring-Summer 2014.

Centers for Medicare & Medicaid Services. (2014a). *National Health Expenditure (NHE) Amounts by Type of Expenditure and Source of Funds: Calendar Years 1960–2023*. Baltimore, MD: Centers for Medicare & Medicaid Services. [September data file] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html. Accessed on September 3, 2014.

Centers for Medicare and Medicaid Services. (2014b). *Projections of National Health Expenditures: Methodology and Model Specification*. Baltimore, MD: Centers for Medicare & Medicaid Services. (September). http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/ProjectionsMethodology.pdf Accessed on September 3, 2014.

Centers for Medicare & Medicaid Services (2014c). *Age and Gender Tables: Table 7 Total Personal Health Care Per-capita Spending by Gender and Age Group, Calendar Years 2002, 2004, 2006, 2008, 2010 Level (dollars).* Baltimore, MD: Centers for Medicare & Medicaid Services. http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/2010GenderandAgeTables.pdf. Accessed on July 14, 2014.

Centers for Medicare & Medicaid Services. (2011). *Health Expenditures by State of Residence, 1991–2009*. [2011 datafile] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence.html. Accessed on March 21, 2014.

Chandra, A., Holmes, J., Skinner, J. (2013). *Is This Time Different? The Slowdown in Healthcare Spending* (No. w19700). Cambridge, MA: National Bureau of Economic Research.

Colla, C., Wennberg, D., Meara, E., Skinner, J., Gottlieb, D., Lewis, V., Snyder, C., Fisher, E. (2012). Spending differences associated with the Medicare physician group practice demonstration. *Journal of the American Medical Association, 308*(10), 1015-1023.

Coye, M., Skootsky, S. (2014). A healthcare provider's view of progress on the ground. *California Journal of Politics and Policy, 6*(2), 241-244.

Cutler, D. M., Sahni, N. R. (2013). If slow rate of health care spending growth persists, projections may be off by $770 billion. *Health Affairs*, *32*(5), 841-850.

Dranove, D., Garthwaite, C., Ody, C. (2014). Health spending slowdown is mostly due to economic factors, not structural change in the health care sector. *Health Affairs*, *33*(8), 1399-1406.

Evans, M. (2014). "Reform Update: Anthem's Vivity alliance with seven L.A. systems aims at Kaiser." *Modern Healthcare.* http://www.modernhealthcare.com/. Accessed in October 2014.

Fulton B.D., Pegany V., Keolanui B., Scheffler R.M. (2014). *Growth of Accountable Care Organizations in California: Number, Characteristics, and State Regulation.* Berkeley, CA: Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, School of Public Health, University of California, Berkeley, 2014 (working paper).

Getzen, T. E. (2000). Health care is an individual necessity and a national luxury: applying multilevel decision models to the analysis of health care expenditures. *Journal of Health Economics*, *19*(2), 259-270.

Hadley J., Holahan J., Coughlin T., Miller D. (2008). Covering the uninsured in 2008: current costs, sources of payment, and incremental costs. *Health Affairs 27*(5), w399-w415.

Halvorson, G. (2014). The way we buy care in this country is flawed, dysfunctional, and often perverse. *California Journal of Politics and Policy, 6*(2), 233-236.

Health Care Cost Institute. (2014). *2013 Health Care Cost and Utilization Report.* Washington, DC: Health Care Cost Institute. http://www.healthcostinstitute.org/2013-health-care-cost-and-utilization-report. Accessed in October 2014.

Hillestad, R., Bigelow, J., Bower, A., Girosi, F., Meili, R., Scoville, R., Taylor, R. (2005). Can electronic medical record systems transform health care? Potential health benefits, savings, and costs. *Health Affairs*, *24*(5), 1103-1117.

Integrated Healthcare Association. (2014). *Pay for Performance (P4P) Program Fact Sheet*. http://www.iha.org/pdfs_documents/p4p_california/P4P-Fact-Sheet-September–2014.pdf. Accessed in October 2014.

Keeler, B., Buchana, J., Rolph, J., Hanley, J., Reboussin, D. (1988). *The Demand for Episodes of Medical Treatment in the Health Insurance Experiment*. Santa Monica, CA: The RAND Corporation. http://www.rand.org/content/dam/rand/pubs/reports/2006/R3454.pdf. Accessed in July 2014.

Kehaly, P. (2014). Creating a consensus to improve health care. *California Journal of Politics and Policy, 6*(2), 231-232.

Kocot, S.L., White R., Katikaneni P., McClellan, M.B. (2014). *A More Complete Picture of Pioneer ACO Results*. Washington, DC: The Brookings Institution. http://www.brookings.edu/blogs/up-front/posts/2014/10/09-pioneer-aco-results-mcclellan#recent_rr/. Accessed October 16, 2014.

Markovich, P. (2012). A global budget pilot project among provider partners and blue shield of California led to savings in first two years. *Health Affairs 31*(9), 1969-1976.

Martin, A.B., Hartman, M., Whittle, L., Catlin, A., and the National Health Expenditure Accounts Team. (2014). National health spending in 2012: rate of health spending growth remained low for the fourth consecutive year. *Health Affairs, 33*(1), 67-77.

McClellan, Rivlin. (2014). *Improving Health While Reducing Cost Growth: What is Possible?* Washington, DC: The Brookings Institution. http://www.brookings.edu/~/media/events/2014/04/11%20health%20care%20spending/improving_health_reducing_cost_growth_mcclellan_rivlin.pdf. Accessed August 2014.

Melnick, G., Green, L. (2014). *Four Years Into A Commercial ACO For CalPERS: Substantial Savings And Lessons Learned*. Health Affairs Blog. http://healthaffairs.org/blog/2014/04/17/four-years-into-a-commercial-aco-for-calpers-substantial-savings-and-lessons-learned/. Accessed in September 2014.

Morrison, I. (2014). The value of a multi-stakeholder regional collaborative. *California Journal of Politics and Policy, 6*(2), 227-229.

Mostashari, F., Sanghavi, D., McClellan, M. (2014). Health reform and physician-led accountable care: the paradox of primary care physician leadership. *Journal of the American Medical Association*, *311*(18), 1855-1856.

National Bureau of Economic Research. (2012). *US Business Cycle Expansions and Contractions: 2012*. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/cycles.html. Accessed in August 2014.

Newhouse, J.P., and The Insurance Experiment Group. (1993). *Free for All? Lessons from the RAND Health Insurance Experiment*. Cambridge, MA: Harvard University Press.

Newhouse, J. P. (1992). Medical care costs: how much welfare loss? *The Journal of Economic Perspectives, 6*(30), 3-21.

Petersen, M., Gardner P., Tu, T., Muhlestein, D. (2014). *Growth and Dispersion of Accountable Care Organizations: May 2014 Update*. Salt Lake City, UT: Leavitt Partners. http://leavittpartners.com/wp-content/uploads/2014/06/Growth-and-Dispersion-of-Accountable-Care-Organizations-June–2014.pdf

Peterson, C. L., Burton, R. (2007). U.S. health care spending: Comparison with other OECD countries (RL34175) [Electronic copy]. Washington, DC: Congressional Research Service. http://digitalcommons.ilr.cornell.edu/key_workplace/311/.

Robinson, J. (2011). *More Evidence of the Association Between Hospital Market Concentration And Higher Prices And Profits*. Washington, DC: National Institute for Health Care Management.

Scheffler, R., Bowers, L., Fulton, B., Connors, C., Shortell, S., Morrison, I. (2014). A new vision for California's healthcare system: integrated care with aligned financial incentives. *California Journal of Politics and Policy*, 6(2), 249-334.

Scheffler, R., Bowers, L., Fulton, B., Connors, C., Shortell, S., Morrison, I. (2013). *A New Vision for California's Healthcare System: Integrated Care with Aligned Financial Incentives*. Berkeley, CA: School of Public Health, University of California, Berkeley. http://berkeleyhealthcareforum.berkeley.edu/. Accessed in February 2013.

Sisko, A. M., Keehan, S. P., Cuckler, G. A., Madison, A. J., Smith, S. D., Wolfe, C.J., et al. (2014). National Health Expenditure Projections, 2013–23: Faster Growth Expected With Expanded Coverage And Improving Economy. *Health Affairs*, 33(10): Web First.

Smith, S., Holdren, A.E. (2013). Preview of the 2013 Comprehensive Revision of the National Income and Product Accounts. *Survey of Current Business, 92*(3), 13-39.

Smith, S., Newhouse, J.P., Freeland M. (2009). Income, insurance, and technology: why does health spending outpace economic growth. *Health Affairs, 28*(5), 1276-1284.

Toussaint, J., Milstein, A., Shortell, S. (2013). How the Pioneer ACO model needs to change: Lessons from its best-performing ACO. *Journal of the American Medical Association, 310*(13), 1341-1342.

Truffer, C. J., Keehan, S., Smith, S., Cylus, J., Sisko, A., Poisal, J. A., et al. (2010). Health spending projections through 2019: the recession's impact continues. *Health Affairs*, *29*(3), 522-529.

U.S Bureau of Economic Analysis. (2014). *Regional Data: GDP and Personal Income (June 2014 Forecast)*. http://www.bea.gov/iTable/index_regional.cfm. Accessed in September 2014.

Wang, S. J., Middleton, B., Prosser, L. A., Bardon, C. G., Spurr, C. D., Carchidi, P. J., et al. (2003). A cost-benefit analysis of electronic medical records in primary care. *The American journal of medicine*, *114*(5), 397-403.

Wilson, K. (2014). *Health Care Costs 101: Slow Growth Persists*. Oakland, CA: California HealthCare Foundation. http://www.chcf.org/publications/2014/07/health-care-costs-101. Accessed in July 2014.

Yegian, J., Williams, T. (2014). Status, challenges, and opportunities of the delegated model in California. *California Journal of Politics and Policy, 6*(2), 237-239.

Acknowledgments

We are grateful for the insightful comments received on a draft version of this report from the following people: Timothy T. Brown, PhD, Associate Adjunct Professor of Health Economics, School of Public Health, and Associate Director for Research, Berkeley Center for Health Technology, University of California, Berkeley; Anne B. Martin, Economist, Office of the Actuary, Centers for Medicare & Medicaid Services; and Katherine B. Wilson, MPH, Author of *California HealthCare Foundation's Health Care Costs 101*. The reviewers provided comments on the draft report as individuals, not as representatives of their respective organizations.

FUNDING

We acknowledge funding support by the Forum participants, provided as a gift to the University of California, Berkeley School of Public Health. The research and analyses for this report were conducted independently by faculty and staff, who take responsibility for its contents.

Berkeley Forum

for Improving California's Healthcare Delivery System

Berkeley Forum

for Improving California's Healthcare Delivery System

http://berkeleyhealthcareforum.berkeley.edu

UNIVERSITY OF CALIFORNIA, BERKELEY SCHOOL OF PUBLIC HEALTH
http://sph.berkeley.edu

THE NICHOLAS C. PETRIS CENTER
http://petris.org

CENTER FOR HEALTHCARE ORGANIZATIONAL AND INNOVATION RESEARCH
http://choir.berkeley.edu/

A NEW VISION FOR CALIFORNIA'S HEALTHCARE SYSTEM