CHCF

The Sky's the Limit:
Health Care Prices and Market Consolidation in California

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Introduction

California pays significantly more for common health care services than the rest of the country, and the gap has been widening. This report documents the price differential in a number of ways and also examines the market factors that may drive it. In particular, the research analyzes the impact of market concentration, including hospital consolidation and physician integration, on prices and on premiums under Covered California. Finally, findings of special concern for policymakers and regulators are discussed, along with possibilities for, and impediments to, change.

The research examines prices paid by health insurers to providers in the commercial market from 2012 through 2016 across the United States, with a focus on California. It describes the trends in market concentration and consolidation in the provider and insurer markets, and it analyzes effects on prices and premiums. A brief summary of the research highlights included in this report is as follows.

Section 1. A comparison of prices for selected services (see "Health Care Services Studied" sidebar) shows that California has significantly higher prices than the rest of the country, and this difference has been increasing in the last few years. Fifteen common inpatient and outpatient services were studied. The price gap for the most common hospital admission — uncomplicated childbirth (vaginal delivery without complicating conditions) — grew to $4,165 (or 58%) during the five years of the study. After accounting for wage differences across the country, California prices were still higher; uncomplicated childbirth admission prices were 34% higher in California than in the rest of the country in 2016.

Section 2. Comparison of California inpatient and outpatient prices with other states over the period from 2012 through 2016 showed that California has some of the highest prices for health care services. Across the seven common services analyzed, California was the 7th most expensive state on average in 2016, ranging from 1st to 18th most expensive depending on the service. After adjusting the prices of the

Health Care Services Studied

- ▶ Vaginal delivery without complications
- ▶ Hip or knee replacement
- ▶ Colonoscopy
- ▶ Head CT scan without contrast
- ▶ Cesarean delivery without complications
- ▶ Percutaneous transluminal coronary angioplasty (PTCA)
- ▶ Spinal fusion
- ▶ Primary care office visits (6 types)

Research Highlights

- ▶ California has significantly higher prices for selected health care services than the rest of the country, and this gap has been widening.
- ▶ After adjustment for wage differentials, a large gap remains.
- ▶ Northern California prices and ACA premiums are significantly higher than for Southern California.
- ▶ California was the 7th most expensive state on average in 2016 across seven common services.
- ▶ California was the *most* expensive state for an uncomplicated childbirth admission in 2016 at $11,345. And prices for such admissions are growing fast.
- ▶ The CT scan price gap between California and the rest of the country had grown to 61% in 2016.
- ▶ The price for an established patient visit in California was notably higher than for the rest of the country.
- ▶ Higher levels of horizontal concentration and vertical integration are positively and significantly associated with higher prices and premiums.
- ▶ The percentage of physicians in practices owned by a hospital/health system has increased dramatically. For specialists, the increase has been even faster.
- ▶ ACA premiums were higher in California than in the rest of the country in 2015, but the reverse is now true. Covered California has done markedly better than the majority of states in terms of controlling premium growth.

common services for wage differences across states, California was the 16th most expensive state on average in 2016, ranging from 8th to 31st most expensive depending on the service.

Section 3. Wage-adjusted prices paid across California are examined in detail, revealing that prices for health care services are still significantly higher in Northern California than in Southern California after regional wage differences are accounted for. The wage-adjusted average price for an uncomplicated childbirth was 24% higher in Northern California than in Southern California ($13,855 vs. $11,202). As an example of the significant variation within the state, the 2016 wage-adjusted average price for uncomplicated childbirth in Rating Area 9 (which has Monterey as its largest county) was $22,751 compared with $11,387 in Rating Area 19 (San Diego); this is a difference of $11,364, or 100%.

Section 4. Market power and consolidation in California's health care markets are analyzed. Since hospital markets and health insurance markets were already highly concentrated in 2010[1] — and there was little change in concentration over the study period — the researchers focused on a particular form of vertical integration: the ownership of physician practices by hospitals or hospital systems in the state.

Section 5. The relationship between prices across California and market concentration from 2012 through 2016 is examined using multivariate empirical models. This revealed a significant positive association between higher levels of horizontal concentration/vertical integration and higher health care prices. In addition, Covered California benchmark premiums over the period from 2015 through 2019 were analyzed, along with horizontal and vertical integration measures. The results show a positive and significant association between higher levels of horizontal concentration/vertical integration and higher Covered California premiums.

Section 6. The significance of the findings is discussed, along with advantages and disadvantages of market concentration for Californians.

Section 7. Policies that can be considered by both the state attorney general's office and the legislature to address high health care prices and premiums are suggested.

1. Comparing California Prices and Premiums with the Rest of the United States

About the Data

Prices of health care services were obtained from the IBM MarketScan Commercial Claims and Encounters Database from 2012 through 2016.[2] The database includes health care claims of enrollees who receive their health insurance from employers — mostly large employers. It contains claims for professional services, inpatient and outpatient facilities, and prescription drugs. The claims are based on actual amounts paid by the insurer. Inpatient and outpatient prices were calculated from total claim payments received by providers. The prices include payments from insurance companies and out-of-pocket expenses from consumers. Inpatient procedures were selected based on prior literature from the Agency for Healthcare Research and Quality on the most common and expensive reasons for inpatient hospitalization in the United States and outpatient procedures that reflect a range of common services that patients experience, including office visits, imaging tests, and procedures (such as colonoscopy, which is used for cancer screening).

Inpatient Prices

Prices for many common inpatient procedures are considerably higher in California than in the rest of the country (i.e., all states excluding California). In 2012, the average price of a vaginal delivery without complicating conditions, the most common hospital admission in the data, was $8,882 in California compared with $5,728 in the rest of the country — a difference of $3,154 (or 55%). See Figure 1. By 2016, the price had risen to $11,345 in California (a $2,463, or 28%, increase in four years) compared with $7,177 in the rest of the country (a $1,449, or 25%, increase). Hence, the price gap between California and the rest of the country grew to $4,168 (or 58%) for uncomplicated childbirth.

Another common admission — hip or knee replacement without complicating conditions — showed a similar pattern. The average price for this admission was 19% higher in California in 2012 ($30,339 vs. $25,421) and grew to be 23% higher in 2016 ($33,829 vs. $27,331). See Figure 2.

Prices for three additional common inpatient admissions — cesarean delivery without complicating conditions, spinal fusions, and percutaneous transluminal coronary angioplasty (PTCA) were studied (see Figures B1–B3 in Appendix B). In 2016, California prices were 67%, 18%, and 29% higher, respectively, for these three admissions than in the rest of the country.

For both uncomplicated vaginal delivery and uncomplicated cesarean delivery, the ratio of California prices to those in the rest of the country has changed over time (see Figure B4 in Appendix B). The mean payments behind these inpatient price figures are available in Table B1 in Appendix B.

Figure 1. Vaginal Delivery Without Complicating Conditions, Average Price, California and the Rest of the Country, 2012–2016
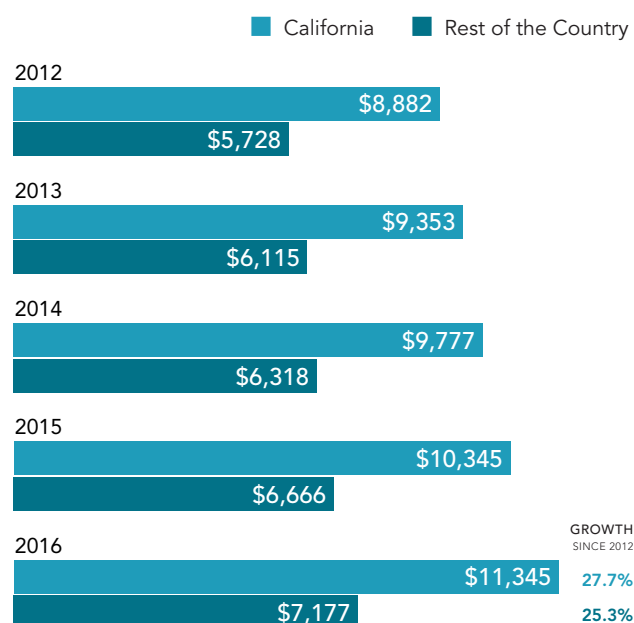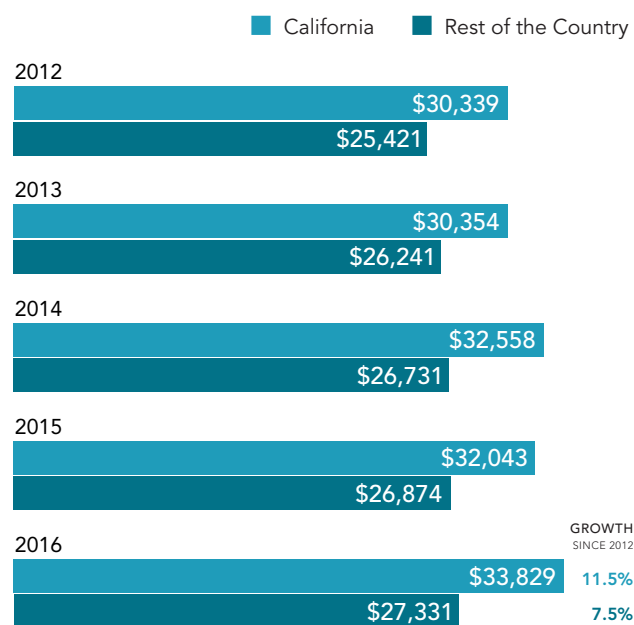

Figure 2. Hip or Knee Replacement Without Complicating Conditions, Average Price, California and the Rest of the Country, 2012–2016

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) codes 775 (Figure 1) and 470 (Figure 2).

To compare health care prices, it is important to adjust for wage differences across geographies because health care prices are affected by wages. After the adjustment, California inpatient prices were still higher than in the rest of the country. Figure 3 shows the wage-adjusted price for vaginal delivery in California and the rest of the country. Although the gap between California and the rest of the United States shrinks in the wage-adjusted version, it was still significant at 34% in 2016.

Wage-adjusted inpatient prices were calculated in order to take into account local, state, and national differences in wages.

Figure 4 shows the wage-adjusted average hip or knee replacement price for California and the rest of the country. Again, the gap shrinks compared with the unadjusted version, but California is still more expensive in the wage-adjusted version (by 7% in 2016).

Wage-adjusted prices for cesarean delivery without complicating conditions, spinal fusions, and PTCA were 43%, 5%, and 9% higher in California than in the rest of the country in 2016 (see Figures B5–B7 in Appendix B).

Figure 3. Vaginal Delivery Without Complicating Conditions, Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
$7,672
$5,810

2013
$8,381
$6,192

2014
$8,725
$6,460

2015
$9,015
$6,808

2016
GROWTH SINCE 2012
$9,751   27.1%
$7,295   25.6%
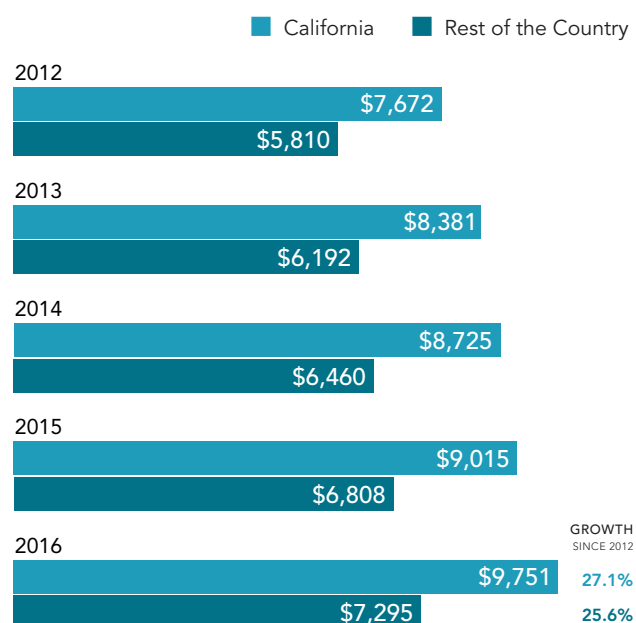
Figure 4. Hip or Knee Replacement Without Complicating Conditions, Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
$27,367
$26,492

2013
$27,646
$27,239

2014
$29,555
$27,768

2015
$28,454
$28,069

2016
GROWTH SINCE 2012
$30,690   12.1%
$28,583   7.9%
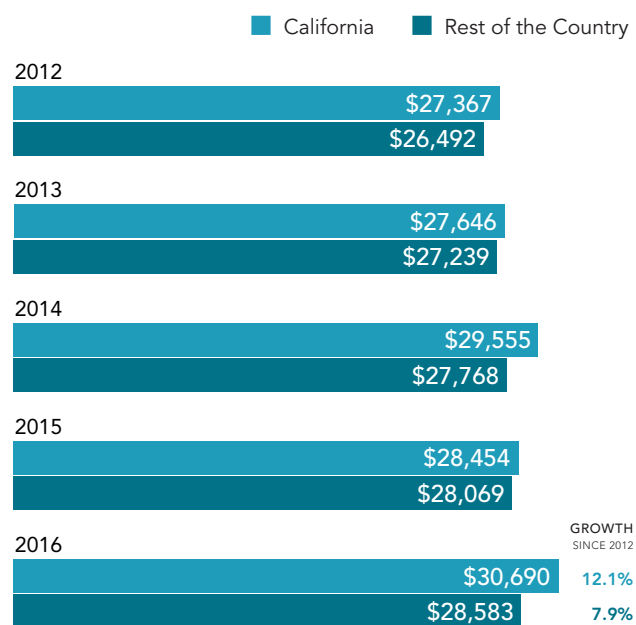
Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG codes 775 (Figure 3) and 470 (Figure 4).

Outpatient Prices

Prices for outpatient procedures, office visits, and imaging studies were also consistently higher in California compared with the rest of the country, but the difference was not as dramatic as the inpatient price differences. Figure 5 shows the average colonoscopy price in California and in the rest of the country. In 2012, the average colonoscopy price in California was $784 compared with $621 in the rest of the country — a difference of $162 (or 26%). By 2016, the average colonoscopy price gap between California and the rest of the country had remained fairly constant: $166, or 23% ($876 in California vs. $710 in the rest of the country).

The price for a new patient primary care office visit (Figure 6) was examined for California and the rest of the country over time. The price gap is less dramatic than it was for a colonoscopy. In 2012, the price of a new patient primary care office visit was $124 in California compared with $114 in the rest of the country — a difference of $10, or 9%. The differential grew slightly over the next few years; in 2016, the price of a new patient primary care office visit was $138 in California compared with $123 in the rest of the country — a difference of $15, or 12%.

Prices of several other outpatient services were examined: established patient primary care office visits, new patient orthopedics office visits, established patient orthopedics office visits, new patient cardiology office visits, and established patient cardiology office visits. Price comparisons between California and the rest of the country are shown in Figures B8 through B12, Appendix B. Of note is the growth in the established patient visit price gap between California and the rest of the country (see Figure B13 in Appendix B).

Figure 5. Colonoscopy
Average Price, California and the Rest of the Country, 2012–2016
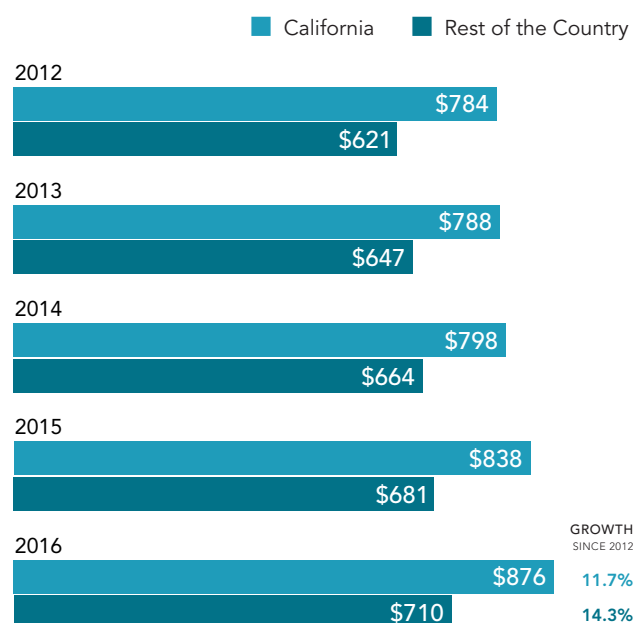
Figure 6. New Patient Primary Care Office Visit
Average Price, California and the Rest of the Country, 2012–2016
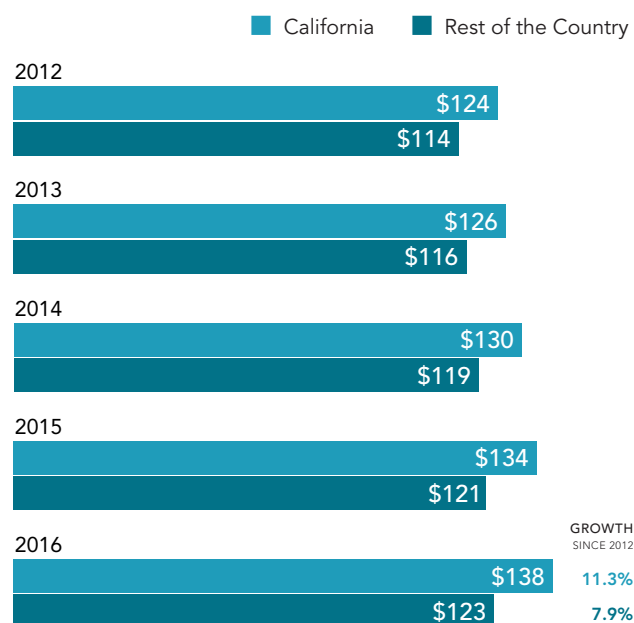
Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, Current Procedural Terminology (CPT) codes 45378 and 45380 (Figure 5) and 99203 (Figure 6).

To look at price differentials for imaging studies, the researchers analyzed CT scans of the head without contrast. The analysis found stark differences between California and other US states. In 2012, the average CT scan price in California was $459 in California compared with $290 in the rest of the country — a difference of $169 (or 58%). See Figure 7. By 2016, the average price gap had grown to $214, or 61% ($567 in California vs. $352 in the rest of the country). All of the outpatient price figures are available in Table B2 in Appendix B.

Figures 8 through 10 display the wage-adjusted price versions of Figures 5 through 7. In 2016, the last year examined, wage-adjusted colonoscopy and prices of CT head scans without contrast were 4% and 36% higher, respectively, in California than in the rest of the country. However, wage-adjusted new primary care visit prices were 6% lower in California than in the rest of the country.

Figure 8. Colonoscopy
Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

Figure 7. Head CT Scan Without Contrast
Average Price, California and the Rest of the Country, 2012–2016

Figure 9. New Patient Primary Care Office Visit
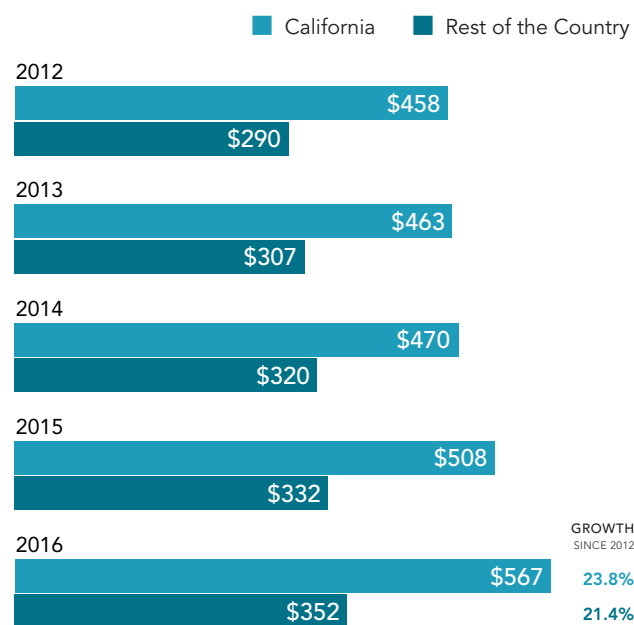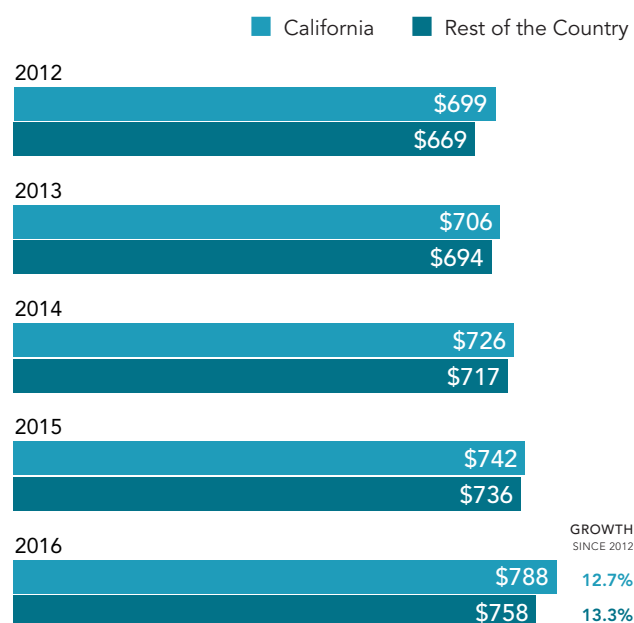Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

Note: *CT* is computed tomography.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT codes 70450 (Figure 7), 45378 and 45380 (Figure 8), and 99203 (Figure 9).
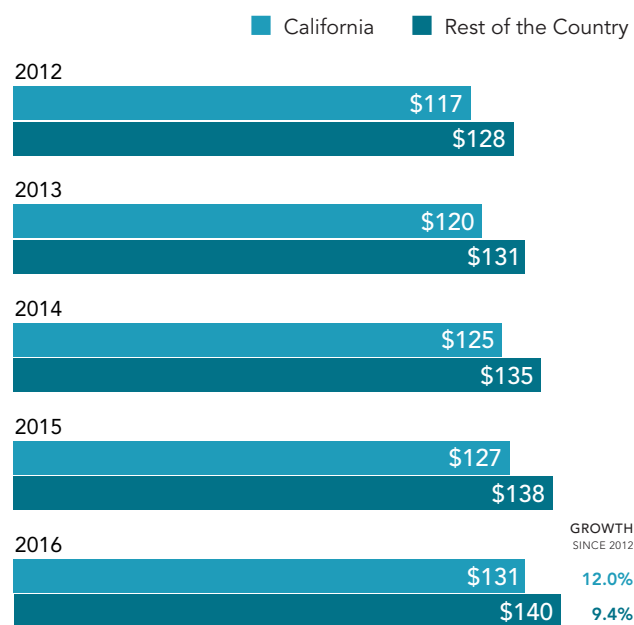
Figure 10. Head CT Scan Without Contrast
Wage-Adjusted Average Price, California and the Rest of the Country
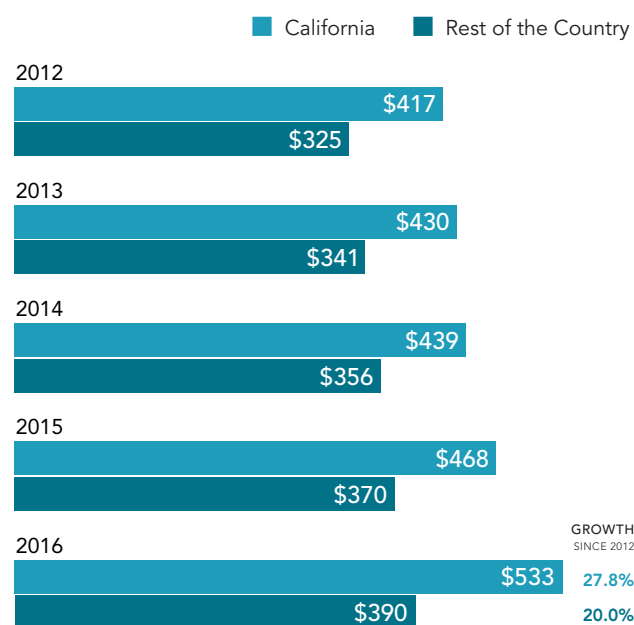
■ California ■ Rest of the Country

2012
$417
$325

2013
$430
$341

2014
$439
$356

2015
$468
$370

2016
GROWTH SINCE 2012
$533 — 27.8%
$390 — 20.0%

Note: *CT* is computed tomography.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT code 70450.

ACA Premiums

Health insurance premiums increase when health care costs increase and have a direct financial impact on consumers. To gain a sense of how health insurance premiums have changed in recent years, the researchers analyzed publicly available Affordable Care Act (ACA) premiums.

ACA premiums in Covered California (the state-based ACA exchange in California) and the rest of the country were studied for the period 2015 through 2019. Specifically, premiums for a 50-year-old individual were examined[3] (see Table 1). Average annual premiums were calculated for the three "metal" tiers of the ACA — bronze, silver, and gold — and the average benchmark premium (the premium of the second-lowest-cost silver plan in a rating area).

The benchmark premium is important because it is used to calculate premium subsidies to enrollees with incomes between 138% and 400% of the federal poverty level.[4] As the benchmark premium increases, so do premium subsidies to subsidy-eligible enrollees.

Table 1. Average Annual ACA Premiums for a 50-Year-Old Individual
Covered California and the Rest of the Country, 2015–2019

	2015	2016	2017	2018	2019	INCREASE 2015–2019	ANNUAL AVG.
Covered California							
Benchmark	$5,626	$5,388	$5,829	$7,177	$7,424	32%	8%
Bronze	$4,476	$4,698	$5,236	$5,706	$6,320	41%	9%
Silver	$5,836	$6,043	$6,924	$8,286	$8,788	51%	11%
Gold	$7,051	$7,426	$8,230	$8,883	$9,618	36%	8%
Rest of the Country*							
Benchmark	$4,525	$4,944	$6,182	$8,256	$8,189	81%	17%
Bronze	$4,465	$4,855	$5,972	$6,879	$6,995	57%	12%
Silver	$5,434	$5,824	$7,115	$9,347	$9,433	74%	15%
Gold	$6,387	$7,084	$9,066	$10,548	$10,299	61%	13%

*This also excludes Idaho and Washington because they changed their rating area definitions during the 2015–2019 period.

Notes: There is one benchmark premium in each rating area. The benchmark premium shown for each year is a simple average across each rating area. There are generally multiple bronze, silver, and gold plans offered in each rating area. Hence, for each rating area the authors first calculated a rating area average premium for each metal tier and then took the average of these rating area average premiums.

Source: Authors' analysis of HIX Compare. Available from hixcompare.org/individual-markets.html.

Bronze, silver, and gold plans have actuarial values (i.e., the percentage of costs covered for the average enrollee) of 60%, 70%, and 80%, respectively. As such, gold plans typically have a higher premium than silver and bronze plans.

During open enrollment 2019, 31% of new enrollees selected bronze plans, 51% selected silver plans, and 12% selected gold plans.[5] The average annual premiums of bronze, silver, and gold plans in a rating area was calculated as a simple average of premiums of the plans offered within the same metal tier in the rating area rather than as an enrollment-weighted premium.[6] The simple averages shown in this report are likely higher than the enrollment-weighted averages because enrollees overwhelming select the plans with the lower premiums within each metal tier.[7]

In 2015, ACA premiums were higher in Covered California than in the rest of the country for each of the four premiums calculated. Since then, premiums have increased rapidly both in Covered California and the rest of the country. In Covered California, ACA premiums increased 32% to 51% across the four premiums analyzed. In the rest of the country, ACA premiums increased even faster, at 57% to 81% across the four premiums. Notably, although ACA premiums were higher in California than in the rest of the country in 2015, the reverse was true in 2019.

Covered California's role as an active purchaser is likely a significant contributor to its ability to control premium growth.[8]

2. Showing the Variation of Prices and Premiums Across the United States

This section shows the variation of health care prices and premiums analyzed in the previous section across the United States, and it also indicates where California falls in these distributions.

Inpatient Prices

Average state prices for the most common type of hospital admission — uncomplicated vaginal delivery — are shown in Figure 11 (see page 12). In 2016, California was the *most* expensive state at $11,345 for this type of admission (see Table B3 in Appendix B).

Uncomplicated hip or knee replacement admission prices are shown in Figure 12 (see page 12). In 2016, California was the 6th most expensive state at $33,829 (see Table B4 in Appendix B).

Price maps for uncomplicated cesarean delivery and PTCA are shown in Figures B14 and B15 in Appendix B. California was the 2nd and 3rd most expensive state for these procedures, respectively, at $16,436 and $39,008 in 2016 (see Tables B5 and B6 in Appendix B).

After adjusting for wage differences, California ranked 8th, 17th, 8th, and 12th across the admissions for uncomplicated vaginal delivery, hip or knee replacement, uncomplicated cesarean delivery, and PTCA. Tables B3 through B6 in Appendix B show the average unadjusted price, average unadjusted price rank, average wage-adjusted price, and average wage-adjusted price rank for each state across these four admissions in 2016.

Figure 11. Vaginal Delivery Without Complicating Conditions, Average Price, by State, 2016

Legend:
- ■ >$8,054
- ■ $6,848–$8,054
- ■ $6,227–$6,847
- ■ <$6,227
- □ No data or suppressed
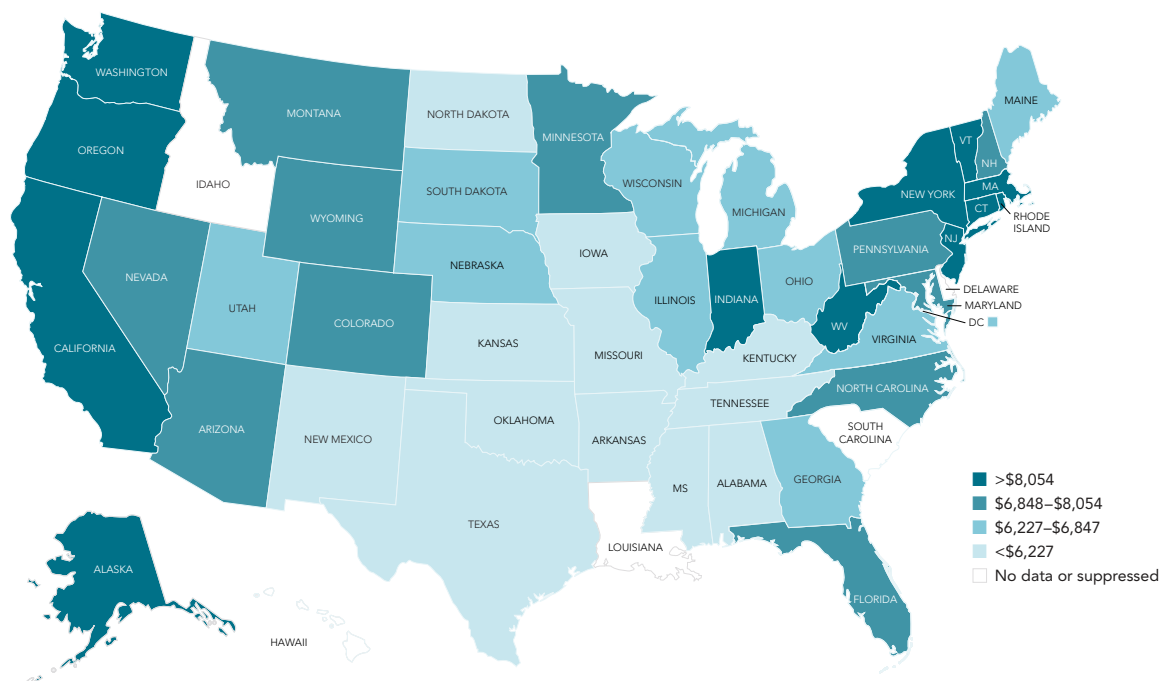
Figure 12. Hip or Knee Replacement Without Complicating Conditions, Average Price, by State, 2016
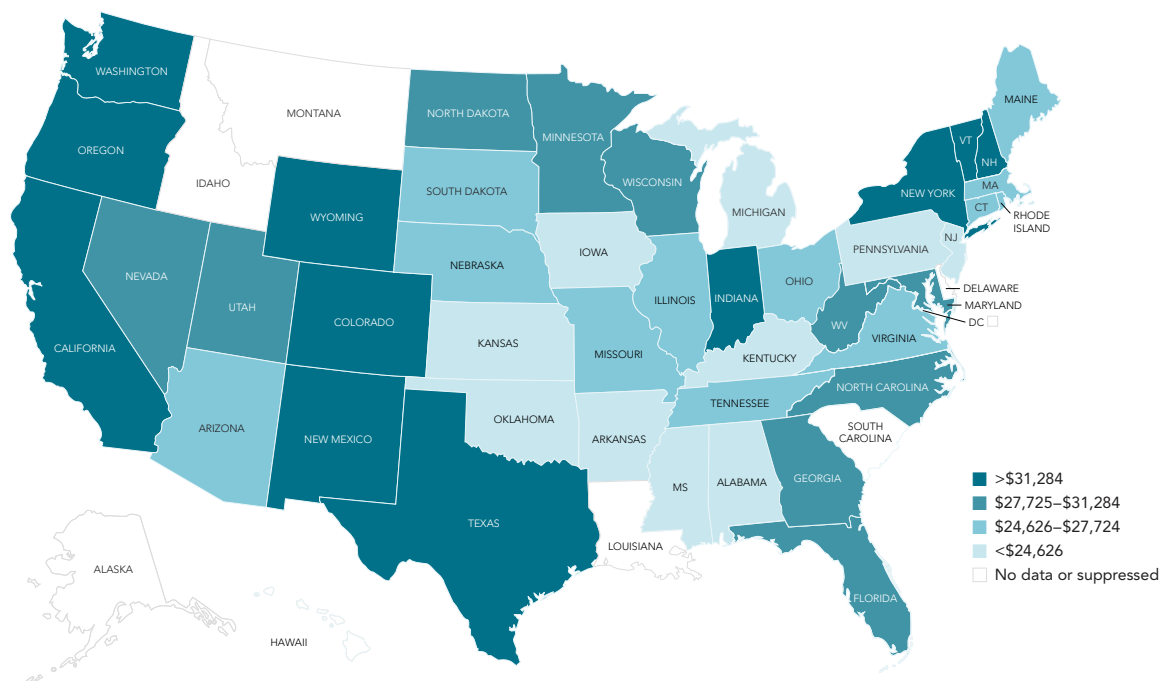
Legend:
- ■ >$31,284
- ■ $27,725–$31,284
- ■ $24,626–$27,724
- ■ <$24,626
- □ No data or suppressed

Note: *No data or suppressed* identifies states with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG codes 775 (Figure 11) and 470 (Figure 12).

Outpatient Prices

The average colonoscopy price by state in 2016 is shown in Figure 13. California ranked 14th in terms of average unadjusted price at $876; after wage adjustment, it ranked 21st. Table B7 in Appendix B shows the average unadjusted colonoscopy price, average unadjusted colonoscopy price rank, average wage-adjusted colonoscopy price, and average wage-adjusted colonoscopy price rank of each state in 2016.

Average prices for new patient primary care office visits for 2016 are shown in Figure 14 (see page 14). California ranked 18th in terms of average unadjusted price at $138. In terms of average wage-adjusted price, California ranked 31st. Table B8 in Appendix B shows the unadjusted average price, unadjusted average price rank, wage-adjusted average price, and wage-adjusted average price rank.

The average price for a CT scan of the head without contrast is shown in Figure 15 for 2016 (see page 14). California ranked 5th in terms of average unadjusted price at $567. After wage adjustment, California ranked 11th. Table B9 in Appendix B shows the unadjusted average price, unadjusted average price rank, wage-adjusted average price, and wage-adjusted average price rank of a CT scan of the head without contrast across each state in 2016.

Figure 13. Colonoscopy, Average Price, by State, 2016
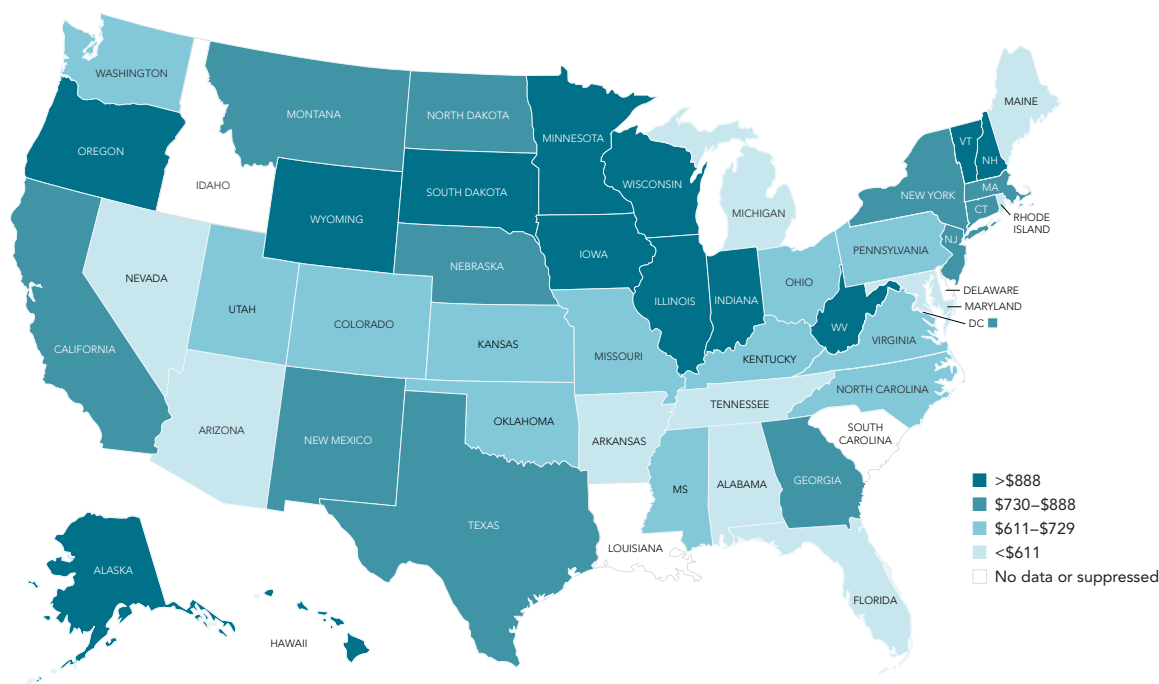
Legend:
- >$888
- $730–$888
- $611–$729
- <$611
- No data or suppressed

Note: *No data or suppressed* identifies states with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT codes 45378 and 45380.

Figure 14. New Patient Primary Care Office Visit, Average Price, by State, 2016
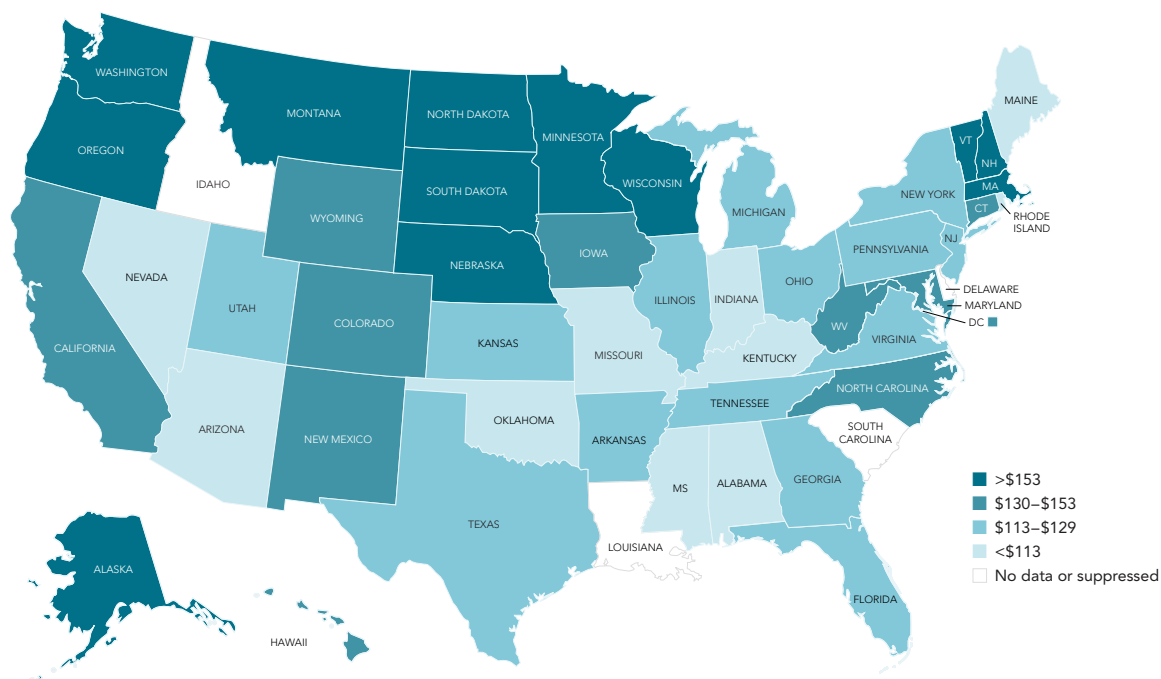
Legend:
- >$153
- $130–$153
- $113–$129
- <$113
- No data or suppressed

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT code 99203.

Figure 15. Head CT Scan Without Contrast, Average Price, by State, 2016

Legend:
- >$480
- $359–$480
- $266–$358
- <$266
- No data or suppressed
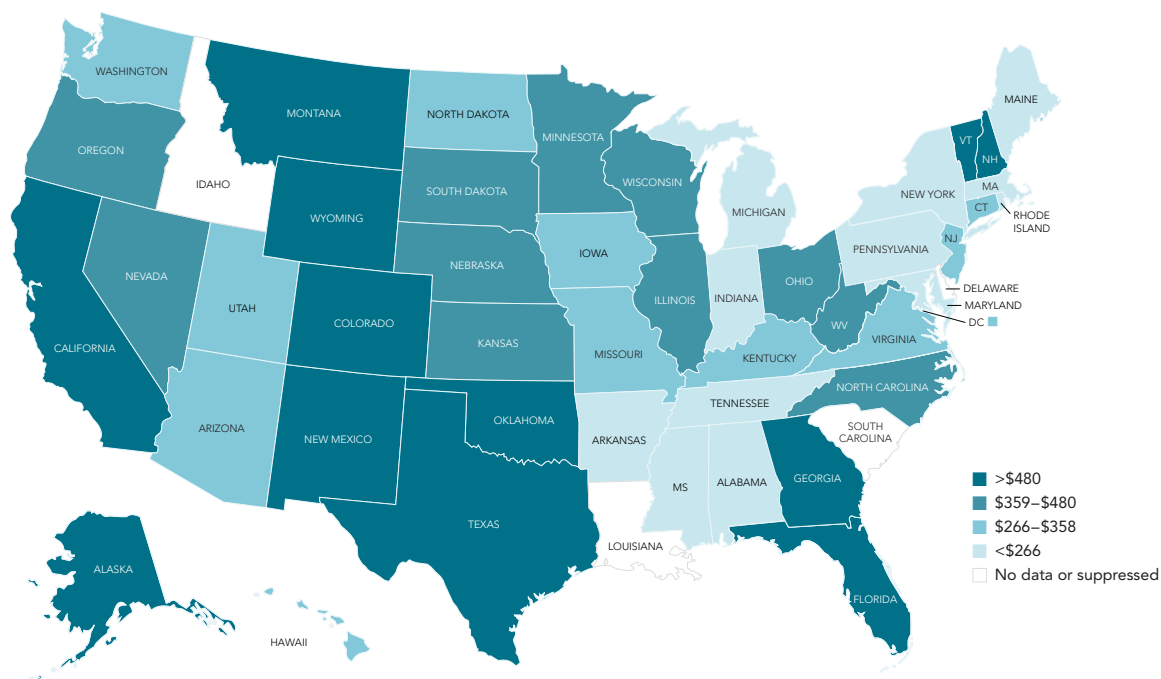
Notes: *CT* is computed tomography. *No data or suppressed* identifies states with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) code 70450.

ACA Premiums

Table 2 shows how the benchmark ACA premium for a 50-year-old individual has changed across states from 2015 through 2019. Tables B10 through B12 in Appendix B show the same thing for average bronze, silver, and gold premiums. Covered California had the 28th most expensive average benchmark premium among the states in 2019. Additionally, Covered California has done markedly better than the majority of states in terms of controlling premium growth. Its success in this regard is likely due to a combination of factors, including its role as an active purchaser,[9] its decision to offer standardized benefit designs, and its stable and healthy mix of enrollees.[10]

Table 2. Average Annual Benchmark ACA Premiums for a 50-Year-Old Individual, by State, 2015–2019
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	AVG. ANNUAL
Wyoming	$7,159	$7,493	$8,162	$14,222	$14,105	97%	22%
Nebraska	$4,348	$5,519	$7,805	$11,955	$12,425	186%	31%
Alaska	$8,187	$11,472	$15,116	$11,716	$11,800	44%	13%
Delaware	$4,984	$5,932	$6,945	$9,606	$11,067	122%	22%
Iowa	$3,953	$4,593	$5,655	$11,383	$10,436	164%	33%
North Carolina	$5,190	$6,347	$8,810	$10,127	$10,014	93%	19%
Utah	$3,843	$4,402	$5,791	$9,798	$9,452	146%	28%
West Virginia	$4,845	$5,874	$7,355	$8,632	$9,415	94%	18%
South Carolina	$4,764	$5,057	$6,536	$8,731	$9,283	95%	19%
Virginia	$4,673	$4,853	$5,375	$9,236	$9,240	98%	22%
Arizona	$3,356	$4,601	$9,960	$9,665	$9,100	171%	36%
Maine	$5,355	$5,459	$6,603	$9,896	$9,085	70%	16%
Florida	$4,921	$5,185	$6,149	$9,162	$8,978	82%	18%
Missouri	$4,885	$5,545	$6,804	$9,009	$8,778	80%	17%
Kansas	$3,416	$4,087	$6,149	$8,169	$8,760	156%	28%
Tennessee	$3,576	$4,709	$7,545	$10,149	$8,729	144%	28%
Oklahoma	$3,468	$5,003	$8,431	$8,792	$8,721	151%	29%
Montana	$3,971	$5,363	$6,969	$8,241	$8,695	119%	22%
South Dakota	$4,307	$5,361	$7,194	$7,890	$8,670	101%	20%
Nevada	$4,669	$5,516	$6,001	$9,024	$8,651	85%	18%
Illinois	$4,020	$4,666	$6,713	$8,588	$8,513	112%	22%
Alabama	$4,281	$4,892	$7,241	$8,579	$8,476	98%	20%
Wisconsin	$4,842	$5,092	$5,961	$8,437	$8,454	75%	16%
Colorado	$3,947	$4,866	$5,876	$7,372	$8,359	112%	21%

Table 2. Average Annual Benchmark ACA Premiums for a 50-Year-Old Individual, by State, 2015–2019, *continued*
    (sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	AVG. ANNUAL
Hawaii	$3,351	$4,365	$5,455	$7,329	$8,048	140%	25%
Mississippi	$4,837	$4,550	$5,578	$8,170	$7,826	62%	15%
Texas	$4,072	$4,350	$5,633	$7,630	$7,678	89%	18%
California	$5,626	$5,388	$5,829	$7,177	$7,424	32%	8%
Connecticut	$5,797	$5,794	$6,818	$9,001	$7,396	28%	8%
Georgia	$4,612	$5,233	$6,185	$9,261	$7,379	60%	15%
Pennsylvania	$3,534	$4,003	$5,608	$7,583	$7,354	108%	21%
Kentucky	$4,300	$3,638	$4,524	$6,572	$7,241	68%	16%
Oregon	$3,777	$4,393	$5,344	$6,698	$7,222	91%	18%
Louisiana	$5,023	$5,518	$6,803	$7,667	$7,205	43%	10%
Vermont	$5,234	$5,582	$5,645	$5,689	$7,173	37%	9%
Maryland	$3,944	$4,278	$5,186	$7,319	$6,778	72%	16%
District of Columbia	$4,464	$4,023	$4,851	$5,580	$6,691	50%	11%
Michigan	$4,350	$4,410	$4,814	$6,506	$6,598	52%	12%
North Dakota	$4,899	$5,258	$5,495	$5,264	$6,541	34%	8%
Ohio	$4,447	$4,359	$4,399	$6,068	$6,454	45%	11%
New York	$3,660	$4,464	$4,395	$5,618	$6,394	75%	16%
New Hampshire	$3,988	$4,359	$4,437	$7,657	$6,249	57%	16%
Arkansas	$4,648	$4,855	$4,682	$5,680	$6,097	31%	7%
New Mexico	$3,393	$3,376	$4,091	$6,907	$5,831	72%	18%
New Jersey	$5,277	$5,430	$5,660	$6,684	$5,728	9%	3%
Minnesota	$3,735	$4,699	$7,456	$7,130	$5,697	53%	15%
Indiana	$5,095	$4,379	$4,385	$5,543	$5,343	5%	2%
Rhode Island	$4,355	$4,345	$4,067	$4,814	$5,260	21%	5%
Massachusetts	$3,805	$3,721	$3,592	$4,618	$4,845	27%	7%
AVERAGE	**$4,514**	**$5,034**	**$6,247**	**$8,093**	**$8,075**	**83%**	**17%**

Notes: There is one benchmark premium in each rating area. The benchmark premium shown for each year is a simple average across each rating area in the state. Idaho and Washington are excluded because they changed their rating area definitions during the 2015–2019 period.

Source: Authors' analysis of HIX Compare. Available from hixcompare.org/individual-markets.html.

3. Comparing Prices and Premiums Within California

In addition to varying widely across states, prices and premiums also vary widely within Covered California. Figure 16 shows the state's 19 ACA rating areas. Each consists of one or more counties, with the exception of Rating Areas 15 and 16, which divide Los Angeles County in two using three-digit zip codes. All the price and premium tables and figures shown in this section have been wage adjusted. Covered California's definitions of Northern California as Rating Areas 1 through 14 and Southern California as Rating Areas 15 through 19 are used in what follows.[11]

Inpatient Prices

Figure 17 shows wage-adjusted prices for uncomplicated childbirth across California's 19 rating areas in 2016. Northern California wage-adjusted vaginal delivery prices were on average 24% higher than in Southern California ($13,855 vs. $11,202). As an example of the substantial variation within the state, the 2016 average wage-adjusted vaginal delivery price in Rating Area 9 (which has Monterey as its largest county) was $22,751 compared with $11,387 in Rating Area 19 (San Diego). This is a difference of $11,364, or 100%.

More important than the levels of these prices is how fast they are growing. Wage-adjusted average vaginal delivery prices grew by over 20% from 2012 to 2016 in a number of rating areas, including the following:

Figure 16. Nineteen California ACA Rating Areas

1 Northern counties
2 North Bay counties
3 Greater Sacramento
4 San Francisco County
5 Contra Costa County
6 Alameda County
7 Santa Clara County
8 San Mateo County
9 Central Coast
10 Central Valley
11 Central Valley
12 Central Coast
13 Eastern Region
14 Central Valley
15 Los Angeles (partial)
16 Los Angeles (partial)
17 Inland Empire
18 Orange County
19 San Diego County

Source: *Health Insurance Companies and Plan Rates for 2015* (2014), Covered California, www.coveredca.com (PDF).

Figure 17. Vaginal Delivery Without Complicating Conditions, Wage-Adjusted Average Price, by California ACA Rating Area, 2016

■ >$20,000
■ $15,001–$20,000
■ $10,000–$15,000
■ <$10,000
□ No data or suppressed
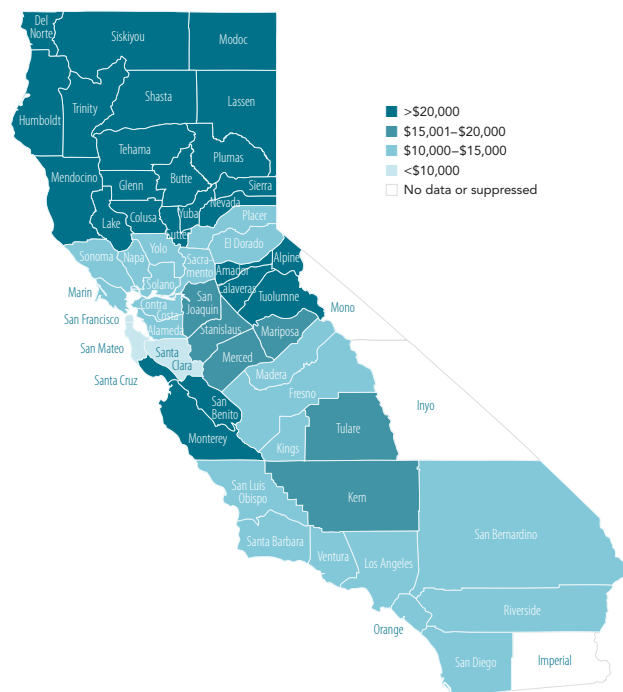
Note: *No data or suppressed* identifies rating areas with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG code 775.

➤ San Francisco (29% increase, $6,389 to $8,268)

➤ Los Angeles (32%, $8,167 to $10,780)

➤ Orange County (40%, $8,692 to $12,144)

➤ San Diego (28%, $8,911 to $11,387)

Outpatient Prices

Wage-adjusted outpatient prices are also substantially higher in Northern California than in Southern California. Northern California wage-adjusted colonoscopy prices were on average 14% higher than in Southern California ($1,007 vs. $884). The 2016 wage-adjusted average colonoscopy price in Rating Area 3 (which has Sacramento as its largest county) was $1,146 compared with $738 in Rating Area 18 (Orange County). This is a difference of $408, or 55%. See Figure 18.

Figure 18. Colonoscopy
Wage-Adjusted Average Price, by California ACA Rating Area, 2016
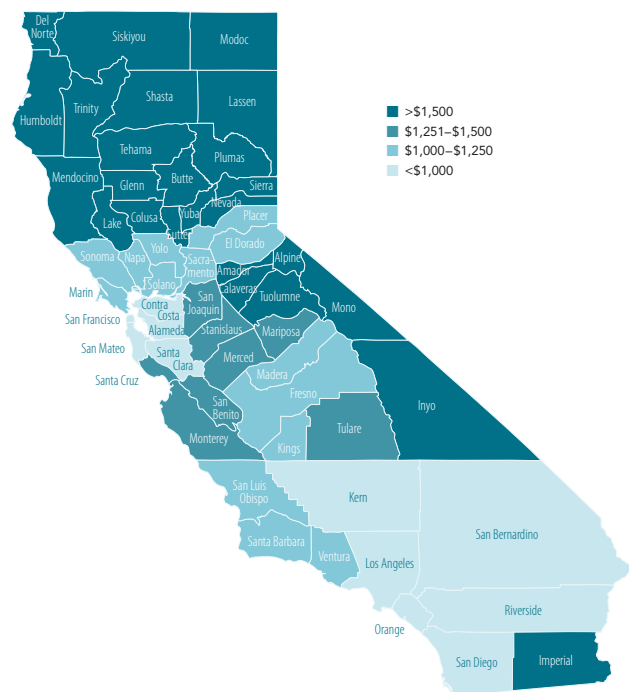
Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, CPT codes 45378 and 45380.

ACA Premiums

Again, the wage-adjusted premiums in Northern California (Rating Areas 1 through 14) are notably higher than those in Southern California (Rating Areas 15 through 19). Table 3 shows the wage-adjusted annual benchmark and the average bronze, silver, and gold ACA premiums for a 50-year-old individual in 2019. Enrollment-weighted and wage-adjusted benchmarks and average bronze, average silver, and average gold premiums were 19%, 19%, 25%, and 22% higher in Northern California, respectively, than in Southern California in 2019.

Table 3. Wage-Adjusted Average Annual ACA Premiums for a 50-Year-Old Individual
by California ACA Rating Area, 2019

	BENCHMARK	BRONZE	SILVER	GOLD
1	$13,331	$11,115	$16,480	$17,767
2	$10,128	$8,345	$12,544	$13,386
3	$9,278	$8,236	$11,187	$12,164
4	$5,382	$4,317	$6,366	$6,965
5	$8,303	$7,045	$10,464	$11,196
6	$7,861	$6,213	$8,491	$9,297
7	$3,535	$3,489	$4,793	$5,343
8	$5,269	$4,439	$6,395	$6,941
9	$11,960	$10,914	$14,327	$15,450
10	$11,328	$10,070	$14,963	$16,043
11	$9,690	$7,405	$10,259	$11,412
12	$8,918	$7,749	$10,116	$11,350
13	$11,893	$11,004	$14,555	$15,642
14	$10,673	$8,082	$11,007	$12,316
15	$5,667	$4,794	$6,438	$7,181
16	$6,090	$5,420	$7,300	$8,100
17	$9,493	$7,906	$10,275	$11,596
18	$7,438	$5,898	$8,222	$9,266
19	$7,236	$6,522	$8,431	$9,237

Source: "HIX Compare Datasets 2014 to 2019," HIX Compare, hixcompare.org.

4. Market Concentration Levels and Trends in California

About the Calculations

To measure horizontal concentration, the researchers used the well-known Herfindahl-Hirschman Index (HHI), which is used in the US Department of Justice and Federal Trade Commission (DOJ/FTC) Horizontal Merger Guidelines. HHI can range from 0 to 10,000.[12]

The Horizontal Merger Guidelines consider markets with HHIs between 1,500 and 2,500 points to be moderately concentrated and markets with HHIs in excess of 2,500 points to be highly concentrated. In the context of mergers, the guidelines assign the highest concern and scrutiny to mergers that would increase the HHI in a market by over 200 points and leave the market with an HHI over 2,500.

Specialist HHI is a weighted average (by number of physicians) of cardiology HHI, hematology/oncology HHI, orthopedics HHI, and radiology HHI. See Appendix A for details.

Following previous studies, HHIs are calculated at the county level.[13] Figure 19 shows the simple average across all 58 California counties. The 2018 HHIs for each county are shown in Table B13 of Appendix B.

Horizontal Concentration and Vertical Integration

Horizontal concentration refers to entities of the same type. For example, hospital HHI increases when two hospitals merge. Figure 19 shows that in 2018 horizontal concentration was highest for hospitals (HHI = 5,695), followed by specialist physicians (HHI = 4,191), insurers (HHI = 3,121), and primary care physicians (HHI = 1,540).

Figure 19. California Health Care Horizontal Concentration Trends, by County Level HHI, 2010–2018
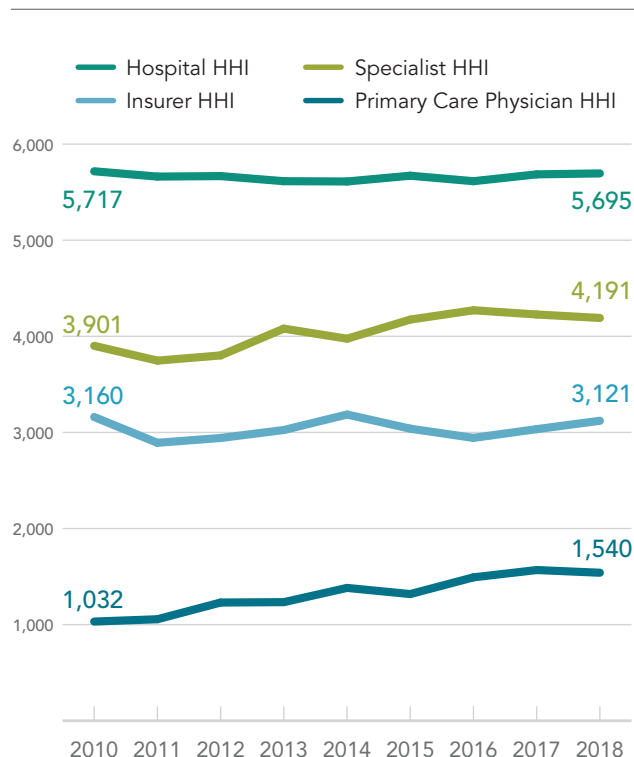
Notes: *HHI* is Herfindahl-Hirschman Index. All measures were calculated at the county level, then averaged across all 58 California counties. *Specialist HHI* is a weighted average (by number of physicians) of cardiology HHI, hematology/oncology HHI, orthopedics HHI, and radiology HHI.

Source: Authors' analysis of data provided by American Hospital Association's Annual Survey (hospital HHI); DRG's Managed Market Surveyor, formerly HealthLeaders-Interstudy (insurer HHI); and SK&A's Office-Based Physicians Database, now IQVIA (primary care physician HHI, specialist HHI, primary care physicians, specialist physicians).

Health care markets have been integrating vertically as well. Vertical integration occurs when entities of different types combine. For instance, when a hospital purchases a physician practice, which is the focus of Figure 20.

Hospital, specialist physician, and insurer markets are highly concentrated according to the DOJ/FTC guidelines, at HHIs over 2,500. The primary care physician market was moderately concentrated at an HHI between 1,500 and 2,500 over the period 2010 through 2018. Although hospital and insurer market concentration remained nearly unchanged over this time, specialist HHI and primary care physician HHI increased by 290 HHI (or 7%) and 509 HHI (or 49%), respectively.

The percentage of physicians in practices owned by a hospital/health system increased dramatically in California during the 2010 through 2018 time period.[14] Figure 20 shows the average percentage of both primary care physicians and specialists in practices owned by a hospital/health system. On average, 24% of primary care physicians were in practices owned by a hospital/health system in 2010. By 2018, the percentage had increased to 42% — an increase of 75%.

The percentage of specialists in practices owned by a hospital/health system rose even faster, from 25% in 2010 to 52% in 2018 — an increase of 108%. The 2018 percentage of physicians in practices owned by a hospital/health system for each California county is shown in Table B14 of Appendix B.

Figure 20. Percentage of Physicians in Practices Owned by a Hospital/Health System in California by Type of Physician, 2010–2018
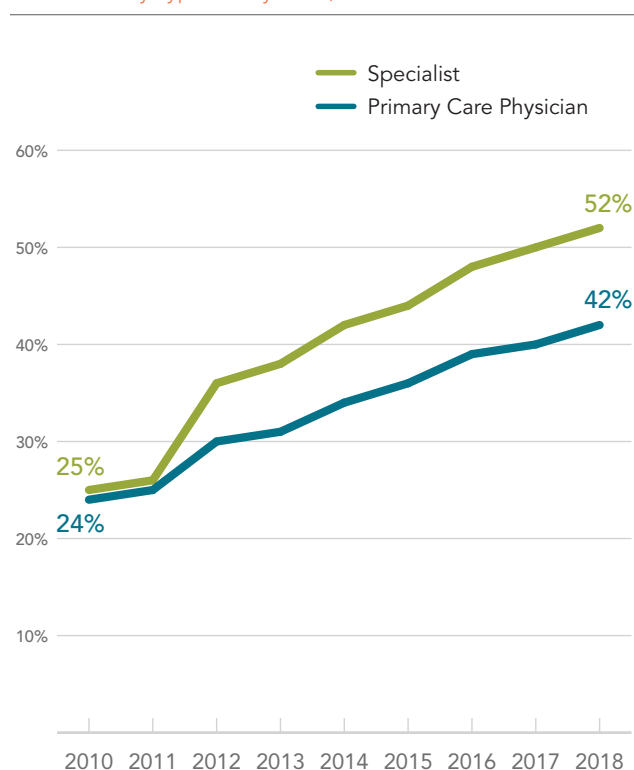
Note: All measures are calculated at the state-level.

Source: Authors' analysis of data provided by the SK&A Office-Based Physicians Database provided by QuintilesIMS (now IQVIA).

On average, 24% of primary care physicians were in practices owned by a hospital/health system in 2010. By 2018, the percentage had increased to 42% — an increase of 75%. … The percentage of specialists rose even faster [during the same time period] — an increase of 108%.

5. Association Between Market Concentration and Health Care Prices and ACA Premiums in California

About the Calculations

Associations between market concentration and prices are based on a multivariate regression analysis of price as a function of vertical integration and horizontal consolidation, and include several controls (see Appendix A for details).

To analyze ACA premiums, the researchers studied the benchmark premium in California rating areas as a function of the following different market variables:

➤ Insurer HHI

➤ Hospital HHI

➤ Primary care HHI

➤ Specialist HHI

➤ Percentage of primary care physicians in practices owned by a hospital/health system

➤ Percentage of specialist physicians in practices owned by a hospital/health system

➤ Average weekly wage of all workers in the economy in the rating area and year dummy variables

Inpatient Prices

The association between cesarean delivery price and horizontal consolidation of hospitals is shown in Figure 21. For cesarean births without complications, a 10% rise in hospital HHI is associated with a 1.3% increase in price. An increase in hospital HHI from 1,500 to 2,500 would be associated with an increase in price of $1,152 ($16,386 to $17,538).

Figure 21. Estimated Price of Cesarean Delivery Without CC at Varying Levels of Hospital Concentration, 2016
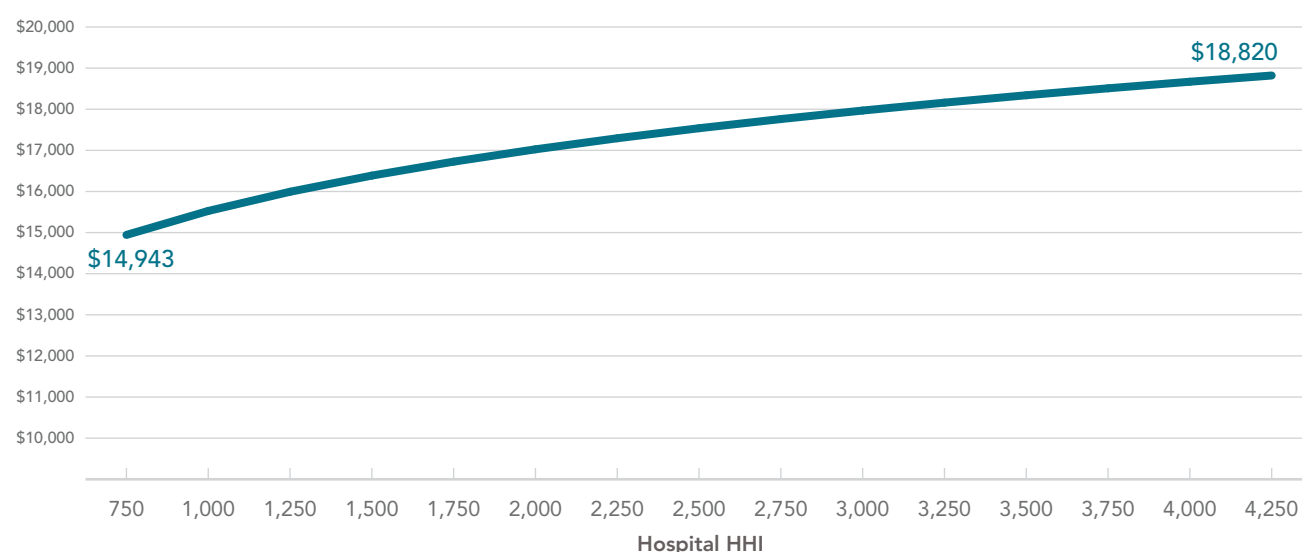
Notes: *CC* is complicating conditions. *HHI* is Herfindahl-Hirschman Index. *Hospital HHI* is at the California rating area level. The regression includes adjustments for patient age, average county wage, year, and health plan type.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables and the SK&A Office-Based Physicians Database provided by QuintilesIMS (now IQVIA).

This finding aligns with recent work by Glenn Melnick and Katya Fonkych that showed prices at hospitals that were members of the largest multihospital systems in California grew substantially more than prices paid to all other California hospitals between 2004 and 2013.[15] No association was found between cesarean delivery prices and vertical integration of physicians.

Outpatient Prices

The research analyzed the relationship between CT scan prices and horizontal and vertical consolidation of radiologists (see Figure 22). Horizontal consolidation occurs when individual physicians join group practices or existing groups merge with each other. Vertical consolidation occurs when physicians align with nonphysician partners. The vertical consolidation analyzed in what follows is the ownership of physician practices by hospitals or hospital systems.

There is a positive and statistically significant association between the price of a CT scan and horizontal concentration of radiologists: a 10% increase in radiologist HHI is associated with a 1.4 increase in price. An increase in radiologist HHI from 1,500 to 2,500 would be associated with an increase in price of $44 ($566 to $610).

Vertical integration of radiologists working in practices owned by hospitals/health systems is also associated with increased prices: a 10% increase in vertical integration is associated with a 1.4 increase in price. For CT scans in 2016, the average percentage of radiologists in practices owned by a hospital/health system was 52%, and the maximum percentage of radiologists in practices owned by a hospital/health system was 87%. Figure 22 shows that an increase in the percentage of hospital-owned radiologists from 52% to 87% is associated with an increase in price of between $34 and $48, depending on the level of radiologist HHI.

Figure 22. Estimated Price of Head CT Scan Without Contrast at Varying Levels of Radiologist Concentration, 2016
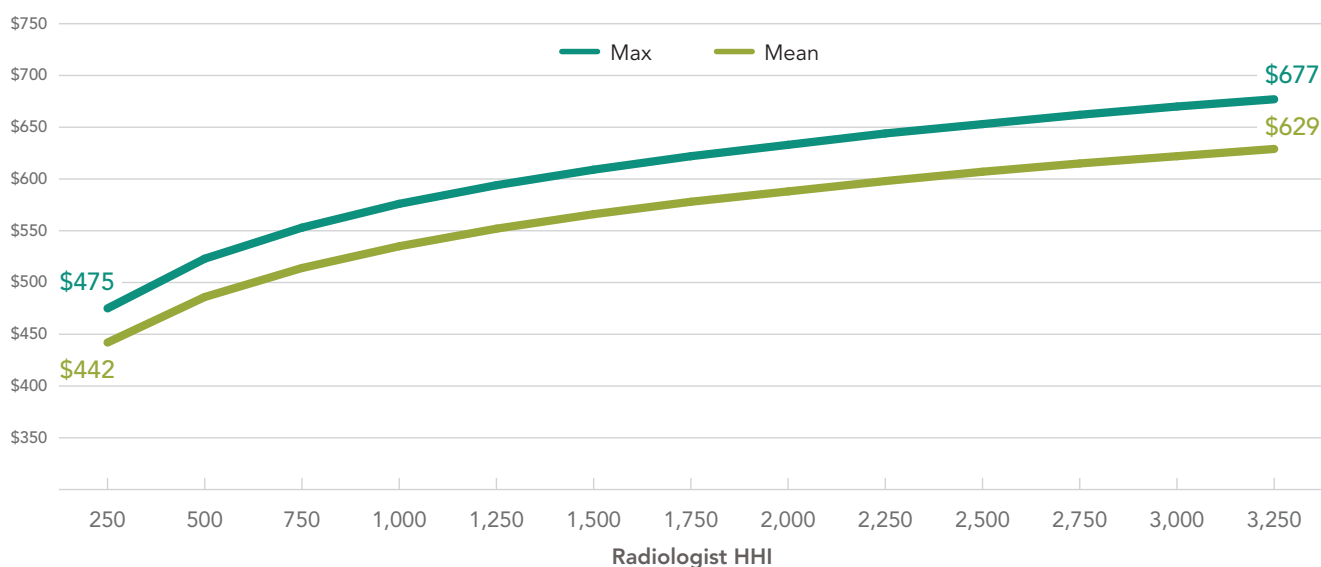
Notes: *CT* is computed tomography. *HHI* is Herfindahl-Hirschman Index. *Radiologist HHI* is at the California rating area level. The regression includes adjustments for patient age, average county wage, year, provider type, and health plan type. The light green line corresponds to the estimated price when vertical integration of radiologist physicians is at the sample mean. The dark green line corresponds to the estimated price when vertical integration of radiologist physicians is at the highest level in the sample. Details of the regression specification are in Appendix B.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables and the SK&A Office-Based Physicians Database provided by QuintilesIMS.

ACA Premiums

Among the six market concentration and vertical integration variables that were analyzed, three showed a positive and statistically significant association with higher premiums: insurer HHI, hospital HHI, and the percentage of primary care physicians in practices owned by hospitals/health systems.[16] The remaining three variables studied — specialist HHI, primary care HHI, and the percent of specialists in practices owned by a hospital/health system — were statistically insignificant (see Table A2 in Appendix A).

Figure 23 shows how annual benchmark premiums are affected by variation in the three statistically significant variables over their range of values in the data. For instance, insurer HHI varies from about 1,500 to 4,000 across ACA rating areas, so premiums are only estimated and shown over that HHI range. When one variable (e.g., insurer HHI) changes, the other continuous variables in the model are held at their sample means and the year is set to 2019.

The steepness of the estimated premium curves shows which variable has the greatest association with premiums: insurer HHI had the greatest impact, followed by hospital HHI, and then the percentage of primary care physicians in practices owned by a hospital/health system.

Another way to examine the association between these variables and premiums is to move along the horizontal axes. The bottom horizontal axis measures HHI for either insurers or hospitals, and the top horizontal axis measures the percentage of primary care physicians in practices owned by a hospital/health system. For instance, when insurer HHI = 1,500 (and the other variables in the model are held at their means), estimated annual benchmark premiums for a 50-year-old individual are $6,540. When insurer HHI increases to 2,500, estimated premiums rise to $7,258. This is an increase of $718, or 11.0%.

Figure 23. Estimated Annual ACA Benchmark Premiums by Horizontal Concentration and Vertical Integration, 2019
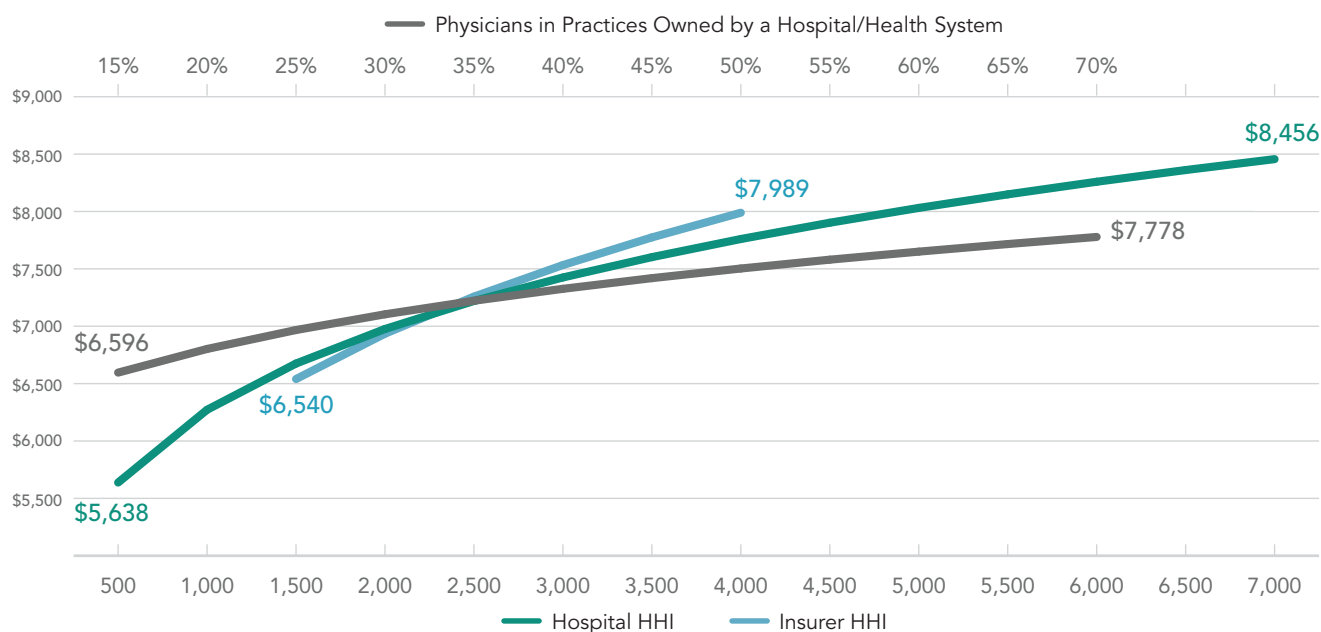
Note: *HHI* is Herfindahl-Hirschman Index.

Source: Authors' analysis of HIX Compare (ACA premiums); American Hospital Association's Annual Survey (hospital HHI); DRG's Managed Market Surveyor, formerly HealthLeaders-Interstudy (insurer HHI); and the SK&A Office-Based Physicians Database provided by QuintilesIMS, now IQVIA (primary care physician HHI, specialist HHI, primary care physicians, specialist physicians).

On the hospital HHI line, estimated annual benchmark premiums for a 50-year-old individual are $6,675 when hospital HHI = 1,500 (and the other variables in the model are held at their means). When hospital HHI increases to 2,500, estimated premiums rise to $7,220 — an increase of $545, or 8.2%.

The figure also shows the impact of increases in the share of primary care physicians in practices owned by a hospital/health system. As that percentage increases from 25% to 35%, the estimated annual benchmark premium for a 50-year-old individual rises from $6,967 to $7,222 — an increase of $255, or 3.7%.

6. Discussion of the Impact of Market Concentration and Vertical Integration

The research documents the association between market power — including horizontal market concentration and vertical hospital-physician integration — and health care prices and premiums in the state. Although horizontal market concentration did not significantly increase among hospitals, primary care physician organizations, specialist physician organizations, and insurers during the study period, nevertheless, many markets were highly concentrated with an HHI greater than 2,500. Vertical integration between hospitals and physician organizations significantly increased between 2010 and 2018. On average, 24% of primary care physicians were in practices owned by a hospital/ health system in 2010. By 2018, the percentage had risen to 42% — an increase of 75%. The percentage of specialists in practices owned by a hospital/health system rose even faster, from 25% in 2010 to 52% in 2018 — an increase of 108%.

There are potential benefits to hospital-physician integration, including reduced transaction costs and technological interdependencies that lead to improved coordination of care. Larger physician organizations, particularly those owned by hospitals/ health systems, have been linked to using more health information technology, electronic medical records, and care management processes, enabling them to more easily adapt to value-based and risk-based reimbursement.[17]

However, such integration can also result in higher prices and health care expenditures, particularly when the hospital or physician organization has significant market share in its market. For example, if a physician organization had market power prior to it being acquired, the acquisition could increase hospital market power if it closed off access to physician services for rival hospitals. This concern was recently discussed by the Federal Trade Commission.[18] In fact, hospitals that have stronger affiliations with physicians have been found to have higher prices themselves.[19] Similarly, if a hospital/health system had market power prior to its acquisition of a physician organization, the acquisition could increase physician market power if it closed off access to hospital services for rival physician organizations. The combined effect of higher hospital and physician prices results in health insurance premiums becoming even more unaffordable.[20]

For those who point to higher quality as a potential result of market concentration, the literature offers little. Recent articles reviewed the empirical literature on the impact of hospital-physician vertical integration and found only modest, inconsistent gains in quality coupled with higher prices and health care expenditures.[21] Post and colleagues reviewed 8 studies on health care quality, 6 on health care prices, and 10 on health care spending. Vertical integration was found to be associated with quality improvement in only 3 of the 8 studies. However, this integration was found to be associated with price increases in 4 of the 6 studies, ranging from 3% to 14%, with the large range being attributed to different payer and patient samples, price measures, and vertical integration definitions. Health care spending was found to increase for 8 of the 10 studies.[22]

7. Potential Policy Responses

Given the evidence that increased concentration leads to higher health care prices and insurance premiums, several articles have explored potential policy responses to enhance market competition: enforce antitrust laws, restrict anti-competitive behaviors, revise anti-competitive reimbursement incentives, reduce barriers to entry, and regulate provider and insurer rates.[23] California's efforts in these areas are discussed below. To fully address each policy area, California might want to consider a health policy commission that examines health care costs and quality in a comprehensive manner, similar to the Massachusetts Health Policy Commission or Rhode Island's Office of the Health Insurance Commissioner.

Enforce Antitrust Laws

As Section 4 makes clear, California health care markets are highly concentrated. Proposed mergers and acquisitions could be scrutinized by the federal and state governments to evaluate whether the net result is pro-competitive or anti-competitive. This is what the US Department of Justice and attorneys general from multiple states did in the proposed Anthem-Cigna and Aetna-Humana insurer mergers, which were ultimately blocked.[24] Such scrutiny includes evaluating whether the pro-competitive effects could be accomplished without the merger, as was ruled in the *St. Luke's* case involving a hospital acquiring a physician group.[25]

This scrutiny can be enhanced at the state level. For example, the Massachusetts Health Policy Commission provides an analysis of proposed health care mergers for the attorney general and the public. In California, former Governor Jerry Brown signed Assembly Bill (AB) 595 in September 2018, requiring health plans to obtain approval from the Department of Managed Health Care for mergers with other health plans or health insurers (regulated by the Department of Insurance).

Compared with the legal framework to analyze horizontal mergers, the framework to analyze vertical integration is not as developed because there have been fewer cases,[26] including in the area of hospital ownership of physician organizations.[27] In fact, the US Department of Justice's Non-Horizontal Merger Guidelines have not been updated since 1984.[28]

Despite this uncertainty, vertical integration has been recently challenged. In August 2017, the Washington State Attorney General's office filed suit against Franciscan Health System to unwind acquisitions and affiliations with physician organizations that had allegedly violated antitrust laws and harmed consumers via anti-competitive health care prices.[29] In March 2019, the case was settled before trial with few details publicly available.[30]

In another case, which was decided in January 2014, the Federal Trade Commission, Idaho Attorney General, and private plaintiffs successfully challenged St. Luke's Health System's acquisition of Saltzer Medical Group in Nampa, Idaho.[31] St. Luke's is a large health system that included three major hospitals and four critical-access hospitals in Idaho as well as 500 physicians who were either directly employed or under a professional services agreement in Idaho and eastern Oregon. Although the acquisition was challenged based on horizontal merger concerns — because St. Luke's post-acquisition share of primary care physician services was nearly 80% in Nampa — that now unwound acquisition is emblematic of the vertical integration between hospitals and physician organizations taking place today. In the decision, US District Chief Judge B. Lynn Winmill stated, "St. Luke's is to be applauded for its efforts to improve the delivery of health care in the Treasure Valley. But there are other ways to achieve the same effect that do not run afoul of the antitrust laws and do not run such a risk of increased costs."[32]

One reason that vertical mergers have been challenged less often than horizontal mergers is because the joint ownership of independent, monopolistic firms in different parts of the supply chain theoretically results in enhancing consumer welfare. The joint firm sets an output price to maximize profits as a whole, which results in a lower price and higher output compared with each independent, monopolistic firm separately setting prices to maximize profits, known as double marginalization.

Some are calling for more vigorous vertical integration antitrust enforcement,[33] including in health care,[34] with a suggested legal and economic framework.[35] Salop argues for more scrutiny because the benefits of removing double marginalization may be overstated and may be outweighed by the closing of access when markets are not competitive, as described above. Hence, this concern increases when both the hospital and acquired physician organization had significant market shares prior to the merger.

However, antitrust enforcement is difficult to implement because many hospital acquisitions of physician organizations involve small practices that would not draw federal or state scrutiny.[36] Moreover, sometimes market concentration and vertical integration increase without a merger. Physicians are independently joining larger physician organizations that are owned or affiliated with hospitals/health systems.[37] Therefore, there may be a role for states to enhance their monitoring of the cumulative impact of mergers, joint ventures, and alliances on markets to determine whether they are pro-competitive or anti-competitive. This monitoring is particularly important in markets that are already highly concentrated.

Restrict Anti-competitive Behaviors

To enhance competition, particularly in markets where providers are already highly concentrated, anti-competitive behaviors could be restricted via legislation or via the courts stemming from litigation and consent decrees. For example, these behaviors include anti-tiering clauses that force insurers to include the provider in the top tier and tying agreements that force insurers to contract with all hospitals in a system.[38,39] In California, Xavier Becerra, the state's attorney general, filed a civil antitrust action against Sutter Health in March 2018.[40] The action argues that Sutter Health has engaged in unlawful anti-competitive practices, such as all-or-nothing and anti-incentive contract terms. For instance, Sutter is alleged to have required health plans to enter agreements that forbid or severely penalized plans that used tiered provider networks or any other incentive for enrollees to choose a competing hospital or provider over a higher-priced Sutter hospital or provider.

Revise Anti-competitive Reimbursement Incentives

Reimbursement policies that reduce competition could be revised. For example, one reason for the increase in the share of primary care physicians working in organizations owned by a hospital is because of the facility fee Medicare pays to hospitals for physician services provided outside the hospital.[41] The facility fee could be adjusted to reflect a site's overhead rate; otherwise it provides an incentive for these acquisitions, which has the potential to reduce competition among hospitals and physician practice organizations.[42]

Reduce Barriers to Market Entry

Reducing barriers to market entry could reduce some the levels of concentration noted in Section 4. When markets are concentrated with positive economic profits, allowing additional firms to enter a market will eventually drive economic profits to zero. However, policies that restrict entry permit these profits to persist. For example, California prohibits nurse practitioners from practicing independently from a physician, which may reduce entry.[43] In contrast, California does not have hospital certificate of need laws, which can be anti-competitive when monopolistic incumbents use the law to block entry.[44]

Regulate Provider and Insurer Rates

If antitrust enforcement is not successful and there are significant barriers to entry into the market — including natural barriers of small markets not being able to support a competitive number of hospitals and specialist physicians — then regulating provider and insurer rates is another option. Seven states began regulating hospital rates in the 1970s and generally had lower hospital spending growth.[45] However, all but two states discontinued this practice because of private insurers' shift to managed care and Medicare's shift to diagnosis-related group reimbursement. Although hospital rate setting may be promising, it is challenging for regulators to set rates that account for changes in technology and input costs, and is subject to regulatory capture, which occurs when regulators become overly influenced by the regulated industry. A few states are beginning to link hospital reimbursement rates for state employee health plans to Medicare rates; however, these negotiations are still challenging because the percentage paid above Medicare varies.

Notwithstanding, to regulate provider and insurer rates in California, Assembly Member Ash Kalra introduced AB 3087, California Health Care Cost, Quality, and Equity Commission, in February 2018. The bill would have established a commission to set health insurance premiums for health plans and reimbursement rates for hospitals, physicians, and other health care providers.[46] Due to staunch opposition from health plans and health care providers, the bill did not advance.

Kalra's bill had come on the heels of a broader effort by California Senators Ricardo Lara and Toni Atkins, who introduced Senate Bill (SB) 562, The Healthy California Act, in February 2017. This bill would have established single-payer health care in the state coupled with universal coverage. The bill passed in the Senate but was tabled in the Assembly because of its high potential cost and, again, because of opposition from health plans and health care providers.[47]

It is not clear whether single-payer health care would lower rates or be subject to industry capture. For example, Medicare's effort to link physician reimbursement increases to per capita gross domestic product (GDP) growth was not successful. The US Department of Defense, the single-payer for defense, generally receives large bipartisan support, partially because its $700 billion budget impacts nearly every congressional district. Notwithstanding, single-payer systems in other developed countries have figured out a way to set lower prices.

More recently, Kalra introduced AB 731, Health Care Coverage: Rate Review, which would apply the rate review provisions of the ACA to the large-group market, as the provisions currently apply to only the individual and small-group markets. The ACA requires insurers to file rates with regulators who actuarially review them to determine their reasonableness. However, an insurer can proceed with a rate that the regulator deemed unreasonable. In contrast, if California had prior approval authority, an insurer cannot market a rate that has not been approved. Prior approval authority, which exists in about half the states, and ACA exchange active purchaser states using selective contracting, including Covered California, has been found to be associated with lower growth rates in premiums.[48] Since 2016, when SB 908 (Premium Rate Change: Notice) went into effect, health insurers in California have been required to notify enrollees of unreasonable or unjustified premium increases so that enrollees could shop for coverage. Although this is not prior approval authority, the goals of SB 908 are similar.

8. Conclusion

California's health care system relies on competitive provider and health insurer markets to lower costs and improve quality. But this research shows that prices have in fact been rising disproportionately in the state, which has put upward pressure on health insurance premiums. There are several reasons why health care prices are higher in California, including highly concentrated health care markets and the purchase of physician practices by hospitals and health systems. Prices and premiums in the state are already high compared to other states, and the fast pace of physician integration threatens to send them to even more unaffordable levels.

As discussed, there have been recent efforts to support more robust competition in the state's health care markets, but these generally are met with strong opposition. Nevertheless, given the recent and growing inflation of health care prices that affect all Californians, regulators and policymakers will need to heavily scrutinize the horizontal concentration and vertical integration of physician practices and other efforts that might stymie competition.

Appendix A. Data and Methods

This section provides an overview of the data and methods used in the report "The Sky's the Limit: Health Care Prices and Market Consolidation in California." Five datasets were used for this report: IBM MarketScan Commercial Claims and Encounters Database (health care prices, 2012 through 2016); Covered California's publicly available Affordable Care Act (ACA) premiums (health insurance premiums, 2015 through 2019); the American Hospital Association's Annual Survey Database (hospital market concentration, 2010 through 2018); SK&A's Office-Based Physicians Database provided by IQVIA, formerly IMS Health (physician market concentration and hospital ownership of physician practices, 2010 through 2018); and HealthLeaders-InterStudy Managed Market Surveyor provided by Decision Resources Group (health insurer market concentration, 2010 through 2018).

Two types of health market concentration were measured — horizontal concentration and vertical integration — both of which have been shown to affect health care prices.[49] Horizontal concentration increases when firms in the same part of the supply chain merge (e.g., two hospitals). Vertical integration increases when firms in different parts of the supply chain merge (e.g., a hospital acquires a physician organization). There can be multiple types of health care vertical integration (e.g., a health insurer acquiring a hospital). In this report, the focus is exclusively on vertical integration by way of a hospital acquiring a physician practice. In addition to constructing horizontal concentration and vertical integration measures, regression models are developed to estimate the association of horizontal concentration and vertical integration with health care prices and premiums. In what follows, market concentration refers to both horizontal concentration and vertical integration. Details on the regression methods can be found on pages 32 and 33.

DATA

Health Care Prices

Prices of health care services were obtained from the IBM Health MarketScan Commercial Claims and Encounters Database from 2012 through 2016. The IBM database is a US database that includes health care claims of enrollees who receive their health insurance from employers, mostly large employers. The database is demographically representative of the US and California populations under age 65 and is representative of their types of health plans. Since 1990, IBM data have been used in over 2,000 studies published in peer-reviewed journals.[50] The database includes health care claims for professional services, inpatient and outpatient facilities, and prescription drugs; the health care claims are based on actual amounts paid by the insurer plus any enrollee cost sharing.

Health Insurance Premiums

Publicly available 2015 through 2019 ACA premiums in California were obtained from the Covered California website.[51] ACA premiums can vary by age, family status, and ACA rating area in California. Covered California's 19 rating areas compose one county or a collection of counties, with the exception of Los Angeles County, which is split into two rating areas using three-digit zip codes (see Figure 16 on page 17 for a map of the rating areas).

Health Care Market Concentration

Hospitals. Hospital data are from the American Hospital Association's (AHA) Annual Survey Database. The data include a census of all hospitals in the United States and operating information on hospitals that respond to its survey. For fiscal year 2015, a total of 6,251 hospitals were included in the database. The data include number of admissions that can be used to estimate market concentration, which can be estimated at the zip code or county level, or aggregated to higher levels, such as a Metropolitan Statistical Area (MSA). The data are collected based on a hospital's fiscal year, which usually ends December 31. Therefore, a hospital's number of admissions reflects its market

share as of December 31, which is reported here as January 1 the following year to align with other data in this report. The currently licensed AHA data in this report are from fiscal years 2009 through 2017, which reflect a hospital's market share as of January 1, 2010 to January 1, 2018. Other studies have used this database to estimate hospital market concentration.[52]

Physician organizations. The physician organization data are from the SK&A Office-Based Physicians Database provided by IQVIA (formerly IMS Health). The SK&A data include all physicians based out of an office (e.g., physician office, clinic, outpatient specialty center) but do not include physicians based out of a hospital who do not also operate out of an office (e.g., some emergency medicine physicians and anesthesiologists). The SK&A database is a physician-level database that reports the physician's location (physical address), specialty, and whether the physician works for a physician organization. SK&A updates the data on a rolling basis every six months, and the currently licensed data in this report include the April 1 snapshots from 2010 to 2018. Because SK&A updates its data on a rolling six-month basis, the median update for the April 1 snapshot occurred on January 1, which is the as-of date that is reported. As of January 1, 2016, the database included 602,676 unique physicians working at 276,534 sites owned by 233,897 organizations, typically a medical group, hospital, or health care system. Other studies have used this database to estimate physician organization market concentration.[53]

Health insurers. The health insurer data in this report are from the HealthLeaders-InterStudy Managed Market Surveyor provided by Decision Resources Group. The data include the number of insured lives across health insurers' lines of business, including private commercial, ACA exchanges, and publicly financed commercial (Medicare Advantage and Medicaid managed care), by product type (i.e., health maintenance organization [HMO], point of service plan [POS], preferred provider organization [PPO], and exclusive provider organization [EPO]) at the county level. The currently licensed data in this report are from 2010 to 2018, all years as of January 1, for the following five products (enrollment as of January 1, 2016): commercial PPO/EPO/

POS (125 million), commercial HMO (26 million), ACA exchange plans (11 million), Medicare Advantage (17 million), and Medicaid managed care (51 million). This database has been used in other studies to estimate health insurer concentration.[54]

METHODS

Health Care Prices

Prices were calculated from total claim payments received by providers. This price includes payments from insurance companies and out-of-pocket expenses from consumers.

The authors selected inpatient procedures based on prior literature from the Agency for Healthcare Research and Quality on the most common and expensive reasons for inpatient hospitalization in the United States. Outpatient procedures were selected to reflect the range of common services that patients experience, including office visits, imaging tests, and procedures (such as colonoscopy, which is used for cancer screening). For inpatient prices, the authors identify admission types (e.g., births, knee replacement) using Diagnosis-Related Group (DRG) codes. For outpatient prices, they identify procedure types (e.g., colonoscopy, office visit) using Current Procedural Terminology (CPT) codes. These codes are widely used to classify medical claims. Since prices can vary significantly across medical procedures, prices are calculated within a single diagnostic code or procedure category whenever possible. Codes are combined in a few cases where average prices are very similar (colonoscopy) or where the sample size would otherwise be too small to provide meaningful price measures (e.g., percutaneous transluminal coronary angioplasty [PTCA]). For inpatient prices, all payments associated with an admission are summed together. The average payments therefore correspond to the average cost of a hospital stay. For outpatient prices, payments are calculated at the claim level for the specified procedure type.

The authors impose several sample restrictions to provide representative price measures. First, any claims

that are not fee-for-service are dropped. This excludes encounter records, which generally correspond to capitated managed care plans and often have a reported payment of zero. For prices of inpatient admissions, the authors also restrict to claims where the provider is an acute care hospital. Across all procedures, any claims are dropped where the reported payment is less than $1. Finally, the top 1% and bottom 1% of payments within each year and admission type are dropped to account for outliers.

To adjust health care prices and premiums for wage differences across counties, the Quarterly Census of Employment and Wages (QCEW) from the Bureau of Labor Statistics is used. The QCEW provides the average weekly wage in each county in each year of the sample period. To compare California prices with the rest of the United States, the authors multiply each price by the ratio of the employment-weighted average US wage to the average county wage. This adjustment inflates prices in counties with wages below the average national wage, and it deflates prices in counties with wages above the average national wage. A similar calculation is performed to compare counties within California, using as the baseline the employment-weighted average wage within California.

Health Insurance Premiums

All ACA premiums shown in this report are the annual premiums for a 50-year-old individual. Premiums for other age groups can be calculated by applying the Default Federal Standard Age Curve.[55] Four sets of annual premiums are calculated: the average benchmark annual premium, the average annual bronze premium, the average annual silver premium, and the average annual gold premium. The benchmark premium refers to the premium of the second-lowest-cost silver plan in a rating area. The importance of the benchmark premium is tied to the fact that it is used to calculate premium subsidies to enrollees with incomes between 138% and 400% of the federal poverty level.[56] As the benchmark premium increases, so do premium subsidies to subsidy-eligible enrollees. Bronze, silver, and gold plans have actuarial values (i.e., the percentage of costs coverage for the average

enrollee) of 60%, 70%, and 80%, respectively. As such, gold plans typically have a higher premium than silver and bronze plans. During 2019 open enrollment, 31% of new enrollees selected bronze plans, 51% selected silver plans, and 12% selected gold plans.[57] The average annual premiums of bronze, silver, and gold plans in a rating area were calculated as a simple average of premiums of the plans offered within the same metal tier in the rating area rather than as an enrollment-weighted premium. The simple averages shown in this report are likely higher than the enrollment-weighted averages since enrollees overwhelming select the plans with the lower premiums within each metal tier.[58]

Horizontal Concentration

The well-known Herfindahl-Hirschman Index (HHI) is used to measure insurer, hospital, and physician market concentration. HHI is used in the Horizontal Merger Guidelines of the US Department of Justice and Federal Trade Commission (DOJ/FTC) and can range from 0 to 10,000.[59] The measure is calculated by summing the squared market shares of firms. For example, if a market included two firms, one with 80% market share and the other with 20% market share, the HHI of the market would be 6,800 (or $80^2 + 20^2$). The Horizontal Merger Guidelines consider markets with HHIs between 1,500 and 2,500 points to be moderately concentrated and markets with HHIs in excess of 2,500 points to be highly concentrated. In the context of mergers, the guidelines assign the highest concern and scrutiny to mergers that would increase the HHI in a market by over 200 points and leave the market with an HHI of over 2,500.

Eight HHIs were calculated: insurer HHI, hospital HHI, primary care HHI, specialist HHI, cardiology HHI, hematology/oncology HHI, orthopedics HHI, and radiology HHI.[60] The market shares of health insurers and hospitals were measured using commercial enrollment (both fully insured and self-insured) and inpatient admissions, respectively. Hospital systems were treated as a single firm for the purposes of the market share calculations, and only short-term general hospitals were accounted for when computing market share.[61]

The specialist and primary care physician organization market shares were based on the number of physicians within each group.[62] An HHI was computed for five separate specialties: primary care, cardiology, hematology/oncology, orthopedics, and radiology. The specialist HHI in what follows is a weighted average (based on number of physicians) of the cardiology, hematology/oncology, orthopedics, and radiology HHIs that were calculated. These specialties were chosen because there was ample sample size (at least 10,000 physicians) in the data source and because the four specialty physicians are among the most highly compensated specialties.

In calculating HHIs, a geographic region over which to calculate market shares must be chosen. Following a number of studies, the authors chose counties.[63] HHIs over larger geographic regions are typically lower, while HHIs over smaller regions are typically higher. The rating area HHIs that are shown in what follows were population weighted up to the rating area level from the county HHIs of the counties that compose each rating area.

Vertical Integration

Two measures of vertical integration were calculated: the percentage of primary care physicians in a market who work for foundations owned by a hospital or health system and the percentage of specialist physicians in a market who work for foundations owned by a hospital or health system.[64] The definition of specialist physicians here again includes only cardiologists, hematologists/oncologists, orthopedists, and radiologists. As was the case for HHIs, the rating area vertical integration measures shown in what follows were population weighted up to the rating area level from the county vertical integration measures of the counties that compose each rating area.

Regression Analyses

Linear regression analysis was used to examine the relationship between both California health care prices and insurance premiums and the measures of horizontal concentration and vertical integration described above. To do this for health care prices, each procedure or admission category was matched to the appropriate measures of horizontal and vertical integration (see Table A1).

Table A1. Correspondence of Admission and Procedure Types to Measures of Horizontal and Vertical Integration

	HORIZONTAL CONCENTRATION (HHI)	VERTICAL INTEGRATION
Inpatient Admissions		
All admissions	Hospital	All specialist physicians
Births	Hospital	All specialist physicians
Hip and knee replacement	Hospital	Orthopedic physicians
Spinal fusion	Hospital	Cardiologists
PTCA	Hospital	Cardiologists
Outpatient Procedures		
Colonoscopy	All specialist physicians	All specialist physicians
Primary care office visit	Primary care physicians	Primary care physicians
Orthopedics office visit	Orthopedic physicians	Orthopedic physicians
Cardiology office visit	Cardiologists	Cardiologists
Stress test	Cardiologists	Cardiologists
Chemotherapy	Oncologists	Oncologists
CT scan	Radiologists	Radiologists
MRI	Radiologists	Radiologists

Notes: *Horizontal concentration* is measured with the Herfindahl-Hirschman Index (*HHI*). *Vertical integration* is the percentage of physicians of the reported type who work for foundations owned by a hospital or health system. *PTCA* is percutaneous transluminal coronary angioplasty, *CT* is computed tomography, and *MRI* is magnetic resonance imaging.

Source: Authors' analysis based on review of the literature.

To account for differences in patient histories that could be associated with prices, multivariate regressions at the admission level (for inpatient prices) or claim level (for outpatient prices) were estimated. To do this, all claims of a given type were pooled over the sample period (2012 through 2016). The natural log of price on the natural logs of three explanatory variables were then regressed: vertical integration, horizontal concentration, and the average weekly wage in the provider county. The authors also included controls for year, patient age, and health plan type. Admission or procedure type controls are included in cases where they combined multiple codes into one regression model, and provider controls are included in cases where they combined multiple provider types into one regression model (e.g., for imaging procedures). The regression coefficients represent the percentage change in price corresponding to a percentage change in the explanatory variable.

For admission (claim) *i* in county *c*, rating area *RA* and year *y*, the authors estimate the following equation (Eq 1):

$$
\begin{aligned}
(Eq\ 1) \quad &\ln(Price_{i,RA,y}) \\
&= \beta_0 + \beta_1 \ln(VerticalIntegration_{RA,y-1}) + \beta_2 \ln(HHI_{RA,y-1}) \\
&\quad + \beta_3 \ln(AverageWage_{c,y}) + \delta_y + \delta_{Age} + \delta_{Health\ plan} + \delta_{Code} \\
&\quad + \delta_{Provider\ type} + v_{i,RA,y}
\end{aligned}
$$

The independent variables of interest are *VerticalIntegration* and *HHI*, which are both calculated at the rating area level. These variables are centered at their mean within the sample and are lagged one year. The authors include the county-level average wage as an additional independent variable to control for differences in wages across California, which are associated with health care prices and may be associated with health care consolidation. In addition, they include five sets of binary variables to control for claim and patient characteristics: δ_y is a set of indicator variables for each year; δ_{Age} is a set of indicator variables for patient age; $\delta_{Health\ plan}$ is a set of indicator variables for each health plan type; $\delta_{Provider\ type}$ is a set of indicator variables for provider types; and δ_{Code} is a set of indicator variables for each DRG (inpatient) or CPT (outpatient) code included in the sample. For

each of these sets of variables, one category is omitted as a reference group.

The authors developed similar regression models to examine the relationship between California ACA premiums and the measures of vertical and horizontal concentration. Specifically, they modeled California ACA benchmark premiums (for 50-year-old individuals) as a function of insurer HHI, hospital HHI, primary care HHI, specialist HHI, the percentage of primary care physicians in practices owned by a hospital/health system, the percentage of primary care physicians in practices owned by a hospital/health system, average weekly wage, and year dummy variables. All market concentrations were lagged by one year. Both premiums and the market concentration measures were natural log transformed. The year variables account for secular trends in California ACA premiums. The authors added rating area-level average weekly wages to control its association with prices, which influence premiums.

For benchmark premium *i* in rating area *RA* and year *y*, the authors estimate the following equation (Eq 2). The regression coefficient estimates from this model are shown in Table A2 (see page 34).

$$
\begin{aligned}
(Eq\ 2) \quad &\ln(Premium_{RA,y}) \\
&= \beta_0 + \beta_1 \ln(Hospital\ HHI_{RA,y-1}) \\
&\quad + \beta_2 \ln(Insurer\ HHI_{RA,y-1}) + \beta_3 \ln(Specialist\ HHI_{RA,y-1}) \\
&\quad + \beta_4 \ln(\%\ of\ specialists\ in\ practices\ owned\ by\ a\ hospital/health\ system_{RA,y-1}) \\
&\quad + \beta_5 \ln(Primary\ Care\ HHI_{RA,y-1}) \\
&\quad + \beta_6 \ln(\%\ of\ primary\ care\ physicians\ in\ practices\ owned\ by\ a\ hospital \\
&\quad /health\ system_{RA,y-1}) + \beta_7 \ln(AverageWage_{RA,y}) + \delta_y + v_{RA,y}
\end{aligned}
$$

The models estimated the association between both health care prices and premiums and the authors' measures of consolidation, including both horizontal market concentration and hospital-physician vertical integration. There may be omitted time-varying and time-invariant factors that affect health care prices and premiums that may also be associated with the measures of consolidation, which would bias the results.

Table A2. ACA Premium Model Regression Coefficients

VARIABLES	ln
ln (hospital HHI)	0.154[†]
lagged one year	*−0.0544*
ln (insurer HHI)	0.204[‡]
lagged one year	*−0.057*
ln (specialist HHI)	0.000798
lagged one year	*−0.039*
ln (% of specialists in practices owned by a hospital/health system)	−0.019
lagged one year	*−0.0361*
ln (primary care HHI)	−0.0154
lagged one year	*−0.0345*
ln (% of primary care physicians in practices owned by a hospital/health system)	0.107*
lagged one year	*−0.0532*
ln (average weekly wage)	0.276[‡]
	−0.0506
2014	REF
2015	0.0137*
	−0.00677
2016	−0.0423
	−0.0285
2017	0.0308
	−0.0251
2018	0.242[‡]
	−0.017
2019	0.271[‡]
	−0.0227
Observations	114
R-squared	0.864

*$p < 0.1$
[†] $p < 0.05$
[‡] $p < 0.01$

Notes: The natural log is *ln* (ACA premium). Cluster-robust (by rating area) standard errors are in parentheses. *HHI* is Herfindahl-Hirschman Index, *REF* is reference year.

Source: Authors' analysis of HIX Compare (ACA premiums); American Hospital Association's Annual Survey (hospital HHI); DRG's Managed Market Surveyor, formerly HealthLeaders-Interstudy (insurer HHI); and the SK&A Office-Based Physicians Database provided by QuintilesIMS, now IQVIA (primary care physician HHI, specialist HHI, primary care physicians, specialist physicians).

Appendix B. Additional Figures and Tables

Figure B1. Cesarean Delivery Without CC, Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
$13,704
$8,653

2013
$14,486
$9,103

2014
$14,906
$9,203

2015
$15,346
$9,538

2016
GROWTH SINCE 2012
$16,436 — 19.9%
$9,789 — 13.1%

Figure B2. All Spinal Fusion, Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
$50,693
$40,444

2013
$57,396
$43,477

2014
$52,714
$45,812

2015
$59,921
$47,547

2016
GROWTH SINCE 2012
$63,088 — 24.4%
$53,467 — 32.2%
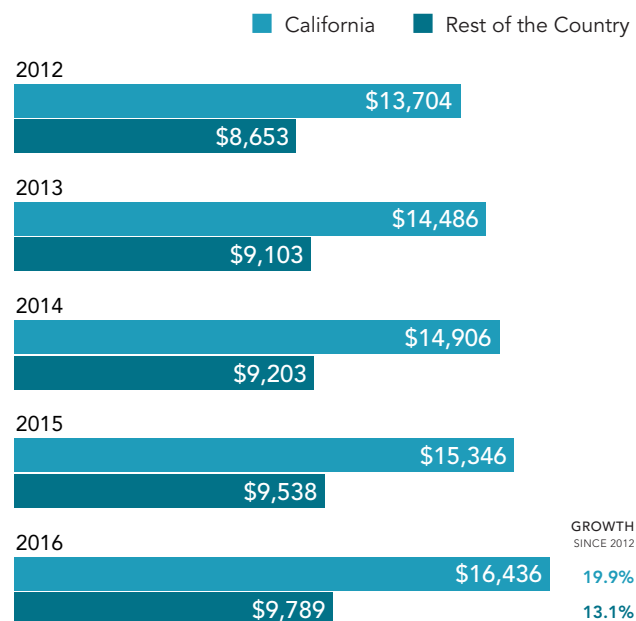
Figure B3. All PTCA, Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
$31,865
$25,687

2013
$36,304
$27,501

2014
$36,002
$28,385

2015
$38,554
$29,257

2016
GROWTH SINCE 2012
$39,008 — 22.4%
$30,102 — 17.2%
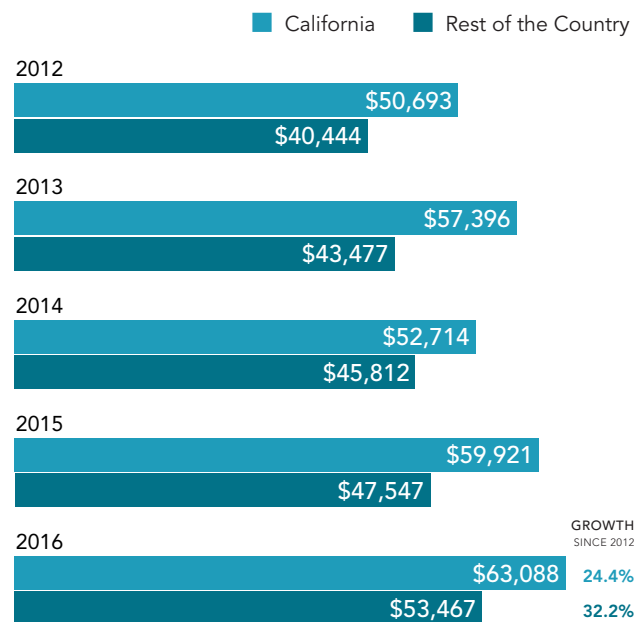
Figure B4. Births Without CC, Ratio of Average California Price to the Rest of the Country, 2012–2016
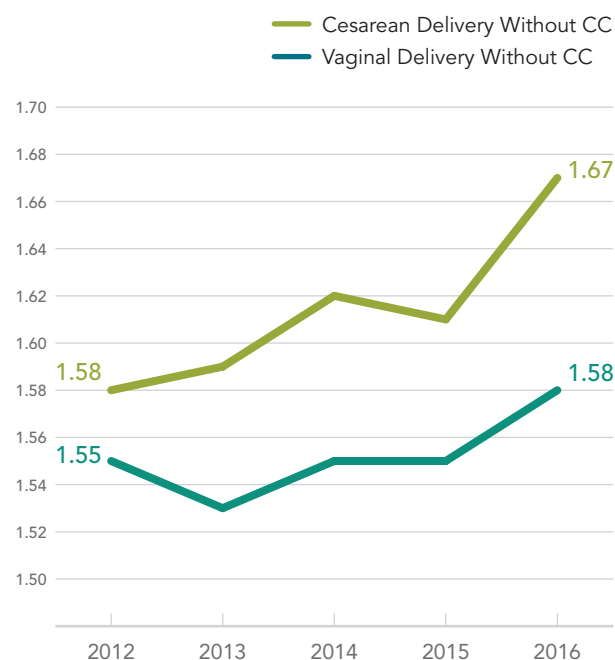
— Cesarean Delivery Without CC
— Vaginal Delivery Without CC

Cesarean Delivery Without CC: 1.58 (2012) … 1.67 (2016)
Vaginal Delivery Without CC: 1.55 (2012) … 1.58 (2016)

Note: *CC* is complicating conditions, *PTCA* is percutaneous transluminal coronary angioplasty.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG codes 766 (Figure B1); 453–460, 471–473 (Figure B2); 246–251 (Figure B3); and 766, 775 (Figure B4).

Figure B5. Cesarean Delivery Without CC
Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
- $12,033
- $8,775

2013
- $12,964
- $9,213

2014
- $13,305
- $9,440

2015
- $13,599
- $9,791

2016

GROWTH SINCE 2012
- $14,378 — 19.5%
- $10,020 — 14.2%

Figure B6. All Spinal Fusion
Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
- $44,155
- $40,900

2013
- $50,651
- $43,708

2014
- $46,563
- $46,059

2015
- $52,308
- $48,197

2016

GROWTH SINCE 2012
- $56,417 — 27.8%
- $53,645 — 31.2%
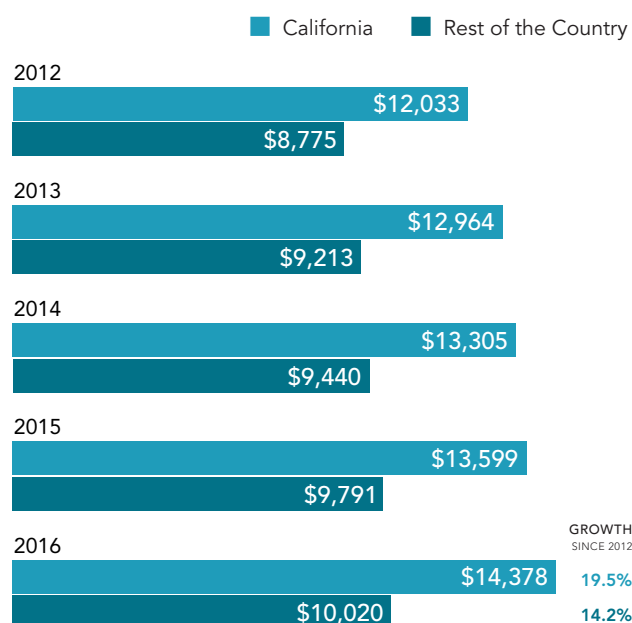
Figure B7. All PTCA
Wage-Adjusted Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
- $28,863
- $26,773

2013
- $32,195
- $28,486

2014
- $32,983
- $29,735

2015
- $34,492
- $30,810

2016

GROWTH SINCE 2012
- $34,655 — 20.1%
- $31,806 — 18.8%
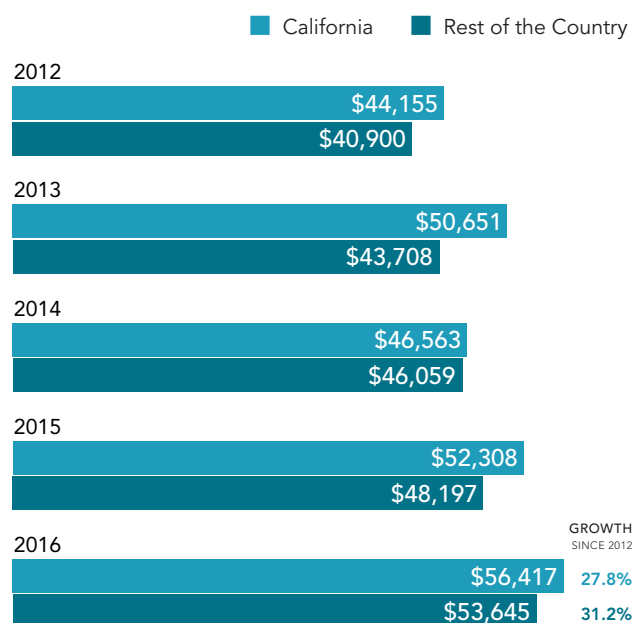
Figure B8. Established Patient Primary Care Office Visit
Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
- $86
- $75

2013
- $89
- $78

2014
- $92
- $80

2015
- $96
- $82

2016

GROWTH SINCE 2012
- $99 — 14.0%
- $83 — 10.5%
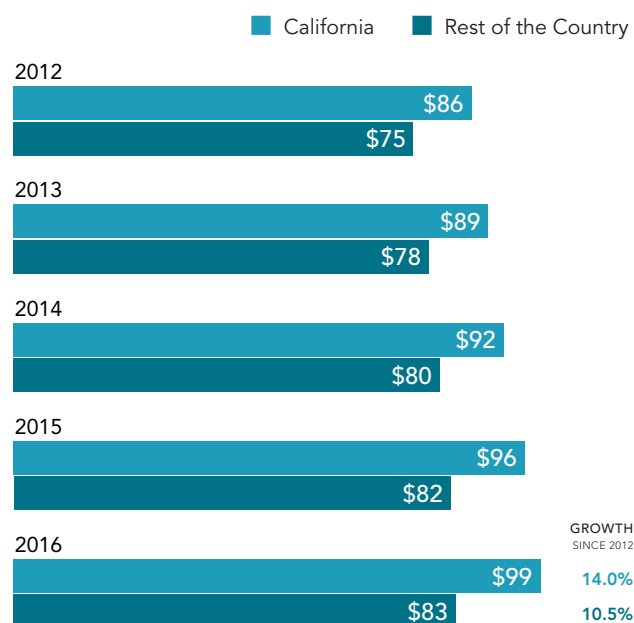
Note: *CC* is complicating conditions, *PTCA* is percutaneous transluminal coronary angioplasty.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG codes 766 (Figure B5); 453–460, 471–473 (Figure B6); 246–251 (Figure B7); and Outpatient Services Tables, CPT code 99213 (Figure B8).

Figure B9. New Patient Orthopedics Office Visit
Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
California: $135
Rest of the Country: $122

2013
California: $138
Rest of the Country: $124

2014
California: $138
Rest of the Country: $125

2015
California: $144
Rest of the Country: $128

GROWTH SINCE 2012

2016
California: $149 — 10.8%
Rest of the Country: $130 — 6.9%
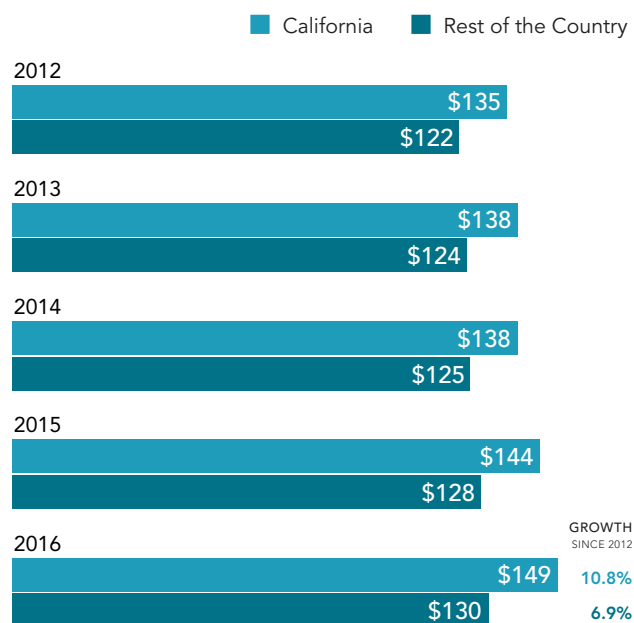
Figure B11. New Patient Cardiology Office Visit
Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
California: $123
Rest of the Country: $115

2013
California: $128
Rest of the Country: $119

2014
California: $132
Rest of the Country: $122

2015
California: $139
Rest of the Country: $124

GROWTH SINCE 2012

2016
California: $145 — 18.1%
Rest of the Country: $126 — 9.3%
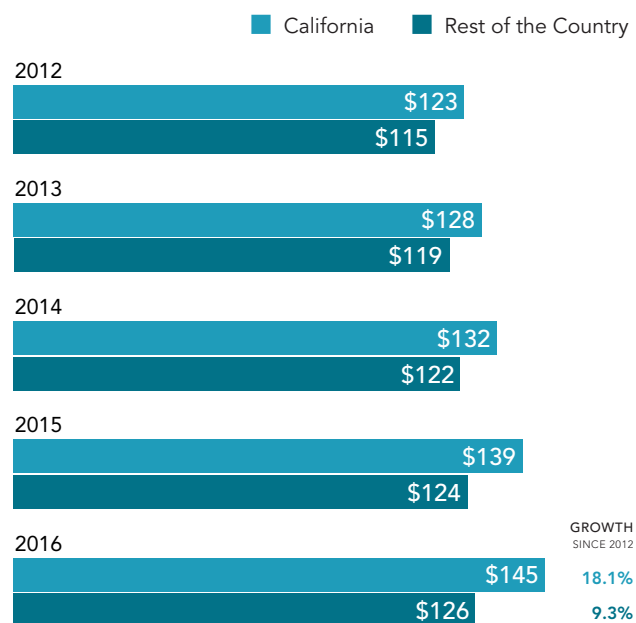
Figure B10. Established Patient Orthopedics Office Visit
Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
California: $83
Rest of the Country: $77

2013
California: $86
Rest of the Country: $79

2014
California: $87
Rest of the Country: $81

2015
California: $91
Rest of the Country: $83

GROWTH SINCE 2012

2016
California: $95 — 14.5%
Rest of the Country: $84 — 10.0%
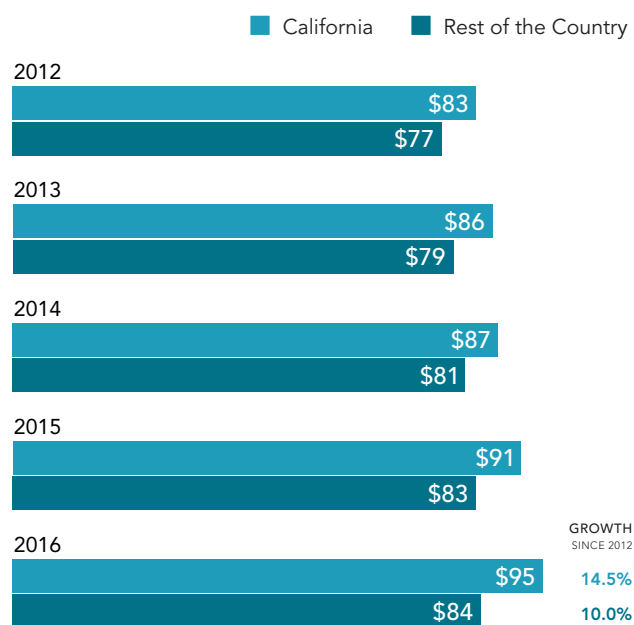
Figure B12. Established Patient Cardiology Office Visit
Average Price, California and the Rest of the Country, 2012–2016

■ California ■ Rest of the Country

2012
California: $78
Rest of the Country: $72

2013
California: $80
Rest of the Country: $74

2014
California: $83
Rest of the Country: $76

2015
California: $88
Rest of the Country: $78

GROWTH SINCE 2012

2016
California: $91 — 17.8%
Rest of the Country: $80 — 11.7%
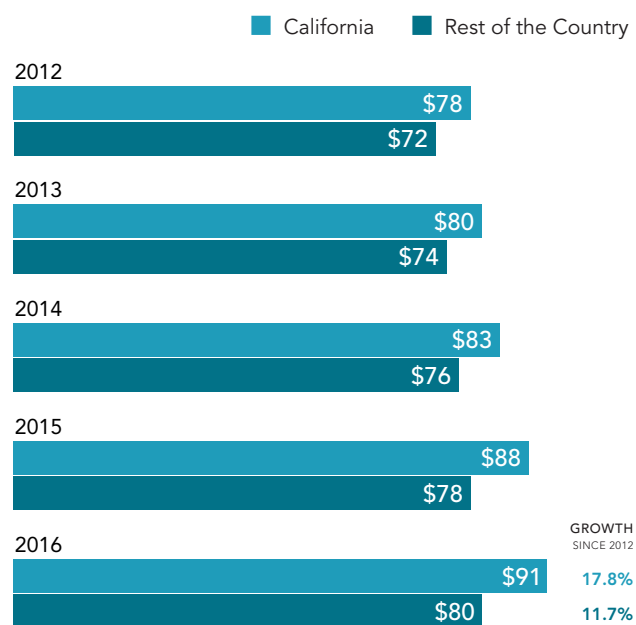
Sources: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT codes 99203 (Figure B9); 99213 (Figure B10); 99203 (Figure B11); and 99213 (Figure B12).

Figure B13. Established Patient Office Visits (Low Complexity), by Type
Ratio of Average California Price to the Rest of the Country, 2012–2016
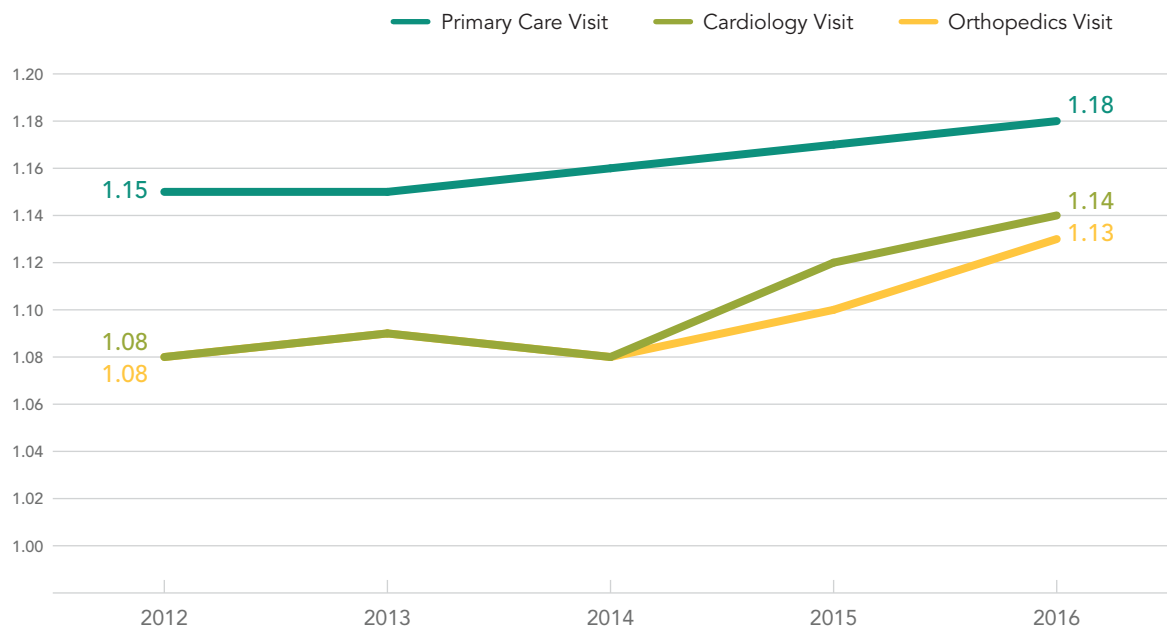
— Primary Care Visit   — Cardiology Visit   — Orthopedics Visit

Sources: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, CPT code 99213.

Figure B14. Cesarean Delivery Without Complicating Conditions, Average Price, by State, 2016
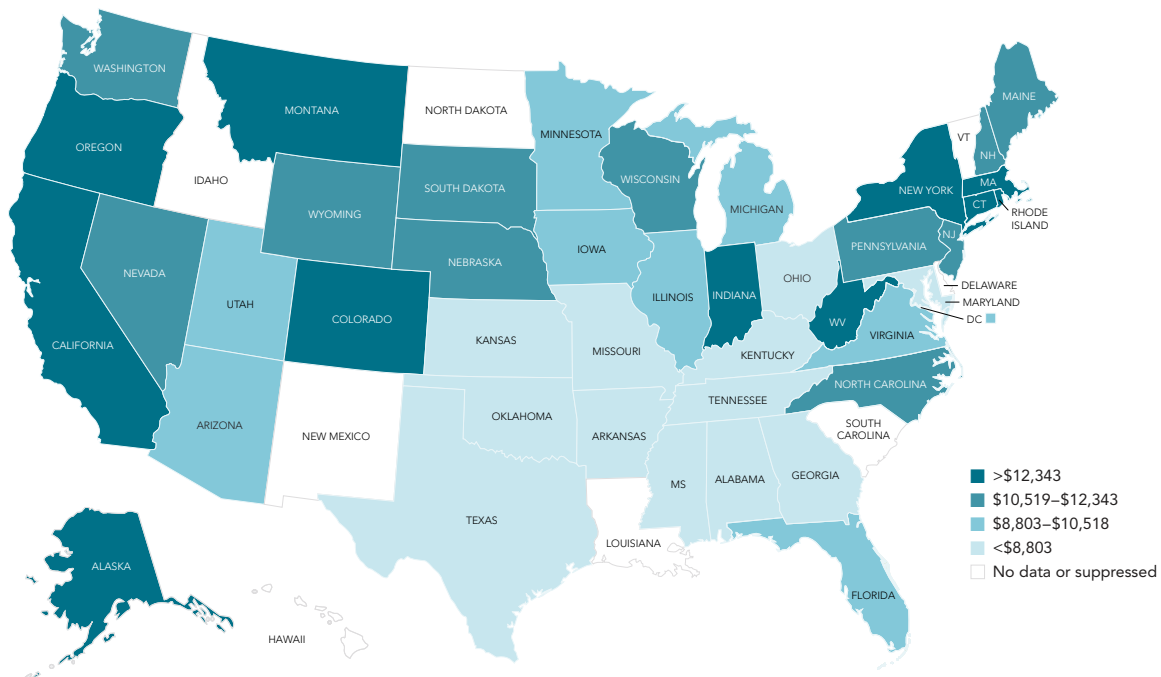
Legend:
- >$12,343
- $10,519–$12,343
- $8,803–$10,518
- <$8,803
- No data or suppressed

Note: *No data or suppressed* identifies states with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG code 766.

Figure B15. All Percutaneous Transluminal Coronary Angioplasty, Average Price, by State, 2016
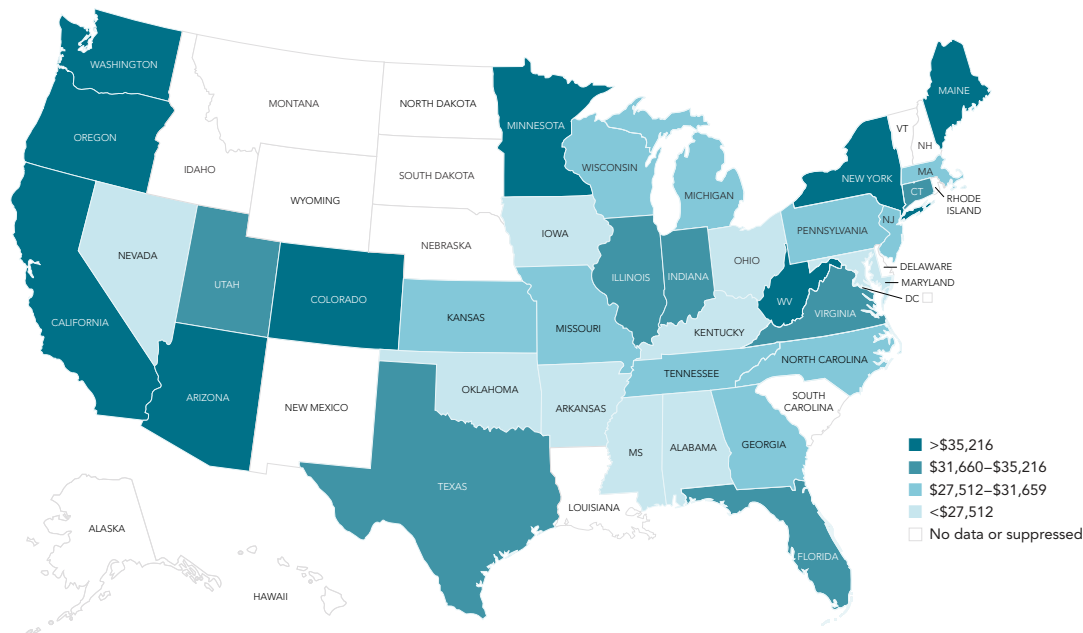
Legend:
- >$35,216
- $31,660–$35,216
- $27,512–$31,659
- <$27,512
- No data or suppressed

Note: *No data or suppressed* identifies states with insufficient observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, DRG codes 246–251.

Table B1. Mean Payments, Selected Inpatient Procedures, California and the Rest of the Country, 2012–2016

	YEAR	CALIFORNIA	REST OF THE COUNTRY	RATIO		YEAR	CALIFORNIA	REST OF THE COUNTRY	RATIO
Vaginal delivery without CC (DRG 775)	2012	$8,882.46	$5,728.42	1.55	**All spinal fusion** (DRG 453–460, 471–473)	2012	$50,693.39	$40,443.87	1.25
	2013	$9,353.41	$6,114.88	1.53		2013	$57,395.51	$43,477.37	1.32
	2014	$9,777.26	$6,317.52	1.55		2014	$52,713.53	$45,812.30	1.15
	2015	$10,345.23	$6,666.41	1.55		2015	$59,921.41	$47,547.37	1.26
	2016	$11,345.10	$7,177.00	1.58		2016	$63,088.30	$53,466.65	1.18
Growth (2012–2016)		**27.72%**	**25.29%**		**Growth** (2012–2016)		**24.45%**	**32.20%**	
Cesarean delivery without CC (DRG 766)	2012	$13,704.35	$8,653.10	1.58	**All PTCA** (DRG 246–251)	2012	$31,865.25	$25,686.78	1.24
	2013	$14,485.62	$9,103.45	1.59		2013	$36,303.58	$27,500.79	1.32
	2014	$14,905.99	$9,203.14	1.62		2014	$36,001.82	$28,385.46	1.27
	2015	$15,345.76	$9,537.50	1.61		2015	$38,554.06	$29,256.64	1.32
	2016	$16,435.74	$9,789.44	1.68		2016	$39,008.14	$30,102.26	1.30
Growth (2012–2016)		**19.93%**	**13.13%**		**Growth** (2012–2016)		**22.42%**	**17.19%**	
Hip or knee replacement without CC (DRG 470)	2012	$30,339.36	$25,421.28	1.19					
	2013	$30,354.43	$26,241.19	1.16					
	2014	$32,557.71	$26,730.91	1.22					
	2015	$32,042.62	$26,873.77	1.19					
	2016	$33,828.80	$27,331.16	1.24					
Growth (2012–2016)		**11.50%**	**7.51%**						

Notes: *CC* is complicating conditions, *DRG* is diagnosis-related group, *PTCA* is percutaneous transluminal coronary angioplasty.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables.

Table B2. Mean Payments, Selected Outpatient Procedures, California and the Rest of the Country, 2012–2016

	YEAR	CALIFORNIA	REST OF THE COUNTRY	RATIO		YEAR	CALIFORNIA	REST OF THE COUNTRY	RATIO
Head CT scan without contrast (CPT 70450)	2012	$458.46	$290.08	1.58	**New orthopedics visit** (CPT 99203)	2012	$134.77	$121.52	1.11
	2013	$463.41	$307.32	1.51		2013	$138.19	$123.95	1.11
	2014	$469.75	$319.65	1.47		2014	$137.80	$125.34	1.10
	2015	$508.22	$332.14	1.53		2015	$144.44	$127.60	1.13
	2016	$566.59	$352.14	1.61		2016	$149.38	$129.85	1.15
Growth (2012–2016)		**23.59%**	**21.40%**		**Growth** (2012–2016)		**10.84%**	**6.85%**	
Colonoscopy (CPT 45378, 45380)	2012	$784.42	$620.50	1.26	**Established orthopedics visit** (CPT 99213)	2012	$82.94	$76.66	1.08
	2013	$788.35	$646.75	1.22		2013	$85.98	$79.08	1.09
	2014	$798.13	$663.87	1.20		2014	$87.14	$80.74	1.08
	2015	$838.46	$680.80	1.23		2015	$90.95	$82.57	1.10
	2016	$875.94	$710.35	1.23		2016	$94.96	$84.32	1.13
Growth (2012–2016)		**11.67%**	**14.48%**		**Growth** (2012–2016)		**14.50%**	**10.00%**	
New primary care visit (CPT 99203)	2012	$123.92	$113.61	1.09	**New cardiology visit** (CPT 99203)	2012	$122.97	$115.45	1.07
	2013	$125.72	$116.18	1.08		2013	$128.26	$119.50	1.07
	2014	$130.33	$118.88	1.10		2014	$131.71	$121.76	1.08
	2015	$134.22	$121.25	1.11		2015	$138.55	$123.78	1.12
	2016	$138.48	$123.38	1.12		2016	$145.27	$126.23	1.15
Growth (2012–2016)		**11.75%**	**8.60%**		**Growth** (2012–2016)		**18.14%**	**9.34%**	
Established primary care visit (CPT 99213)	2012	$86.38	$75.28	1.15	**Established cardiology visit** (CPT 99213)	2012	$77.51	$71.55	1.08
	2013	$89.39	$77.73	1.15		2013	$80.12	$73.81	1.09
	2014	$92.39	$79.77	1.16		2014	$82.63	$76.40	1.08
	2015	$96.03	$81.87	1.17		2015	$87.56	$78.13	1.12
	2016	$98.51	$83.19	1.18		2016	$91.27	$79.94	1.14
Growth (2012–2016)		**14.04%**	**10.50%**		**Growth** (2012–2016)		**17.76%**	**11.73%**	

Notes: *CT* is computed tomography. *CPT* is current procedural terminology.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables.

Table B3. Vaginal Delivery Without Complicating Conditions, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
California	1	$11,345	8	$9,751	Georgia	27	$6,619	45	$5,599
New York	2	$11,213	7	$9,969	Utah	28	$6,579	21	$7,565
Alaska	3	$11,115	3	$11,394	Ohio	29	$6,555	26	$7,002
Vermont	4	$10,767	1	$12,413	Maine	30	$6,551	11	$8,544
Rhode Island	5	$10,252	6	$10,443	Illinois	31	$6,507	43	$5,871
Oregon	6	$9,901	4	$10,878	Michigan	32	$6,406	38	$6,334
Connecticut	7	$9,736	17	$7,802	District of Columbia	33	$6,392	46	$3,830
West Virginia	8	$9,497	2	$11,994	Nebraska	34	$6,339	14	$8,012
Massachusetts	9	$9,491	37	$6,342	Kansas	35	$6,189	23	$7,285
Indiana	10	$8,929	5	$10,656	Texas	36	$6,137	44	$5,705
New Jersey	11	$8,392	24	$7,241	Iowa	37	$6,078	32	$6,614
Washington	12	$8,096	20	$7,589	North Dakota	38	$5,935	33	$6,529
Wyoming	13	$7,928	10	$9,097	Missouri	39	$5,844	36	$6,399
Pennsylvania	14	$7,820	22	$7,299	Oklahoma	40	$5,779	28	$6,809
New Hampshire	15	$7,744	18	$7,701	New Mexico	41	$5,478	25	$7,108
Arizona	16	$7,446	15	$8,007	Alabama	42	$5,458	35	$6,424
Montana	17	$7,434	9	$9,649	Kentucky	43	$5,355	34	$6,485
Florida	18	$7,335	12	$8,523	Tennessee	44	$5,335	41	$6,014
Colorado	19	$7,272	27	$6,969	Arkansas	45	$4,625	42	$5,922
Maryland	20	$7,025	31	$6,630	Mississippi	46	$4,420	40	$6,184
North Carolina	21	$6,930	30	$6,753	Delaware				
Nevada	22	$6,918	16	$7,949	Hawaii				
Minnesota	23	$6,886	39	$6,264	Idaho				
South Dakota	24	$6,847	13	$8,517	Louisiana				
Virginia	25	$6,673	29	$6,782	South Carolina				
Wisconsin	26	$6,667	19	$7,604					

Note: Prices are only shown for states with a sufficient number of observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) code 766.

Table B4. Hip or Knee Replacement Without Complicating Conditions, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Wyoming	1	$40,284	3	$47,652	Arizona	27	$26,029	25	$28,400
Vermont	2	$39,544	2	$49,489	Ohio	28	$25,815	26	$27,617
New York	3	$38,548	22	$30,251	Maine	29	$25,773	13	$32,414
New Mexico	4	$38,456	1	$50,530	Missouri	30	$25,471	27	$27,414
Oregon	5	$34,231	8	$35,237	Illinois	31	$25,107	38	$23,194
California	6	$33,829	19	$30,690	Tennessee	32	$24,779	29	$27,035
New Hampshire	7	$33,533	9	$34,573	Kentucky	33	$24,472	22	$29,233
Colorado	8	$32,911	16	$31,185	Michigan	34	$24,071	35	$24,621
Texas	9	$32,693	19	$30,340	New Jersey	35	$23,758	42	$20,569
Washington	10	$31,849	21	$29,887	Pennsylvania	36	$23,472	39	$22,827
Indiana	11	$31,540	4	$38,240	Oklahoma	37	$22,698	31	$26,208
Nevada	12	$30,158	8	$34,684	Iowa	38	$22,201	32	$25,455
North Carolina	13	$30,147	18	$30,439	Maryland	39	$21,686	41	$20,770
Florida	14	$29,985	6	$35,645	Kansas	40	$20,736	34	$24,900
West Virginia	15	$29,570	5	$36,899	Alabama	41	$20,466	33	$25,014
Wisconsin	16	$29,298	11	$33,319	Mississippi	42	$20,316	28	$27,083
Utah	17	$28,781	12	$32,774	Arkansas	43	$17,307	40	$21,782
Minnesota	18	$28,727	30	$27,017	Alaska				
North Dakota	19	$28,576	14	$32,208	Delaware				
Georgia	20	$28,080	36	$24,400	District of Columbia				
Connecticut	21	$27,724	37	$23,942	Hawaii				
Nebraska	22	$27,462	10	$34,190	Idaho				
Massachusetts	23	$26,921	43	$18,184	Louisiana				
Virginia	24	$26,861	24	$28,602	Montana				
Rhode Island	25	$26,595	23	$28,788	South Carolina				
South Dakota	26	$26,408	15	$31,842					

Note: Prices are only shown for states with a sufficient number of observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) code 470.

Table B5. Cesarean Delivery Without Complicating Conditions, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Alaska	1	$19,186	1	$19,866	Illinois	27	$9,442	36	$8,585
California	2	$16,436	8	$14,378	Michigan	28	$9,408	30	$9,357
Oregon	3	$14,973	7	$14,987	Georgia	29	$9,298	39	$7,942
New York	4	$14,666	19	$11,105	Virginia	30	$9,179	33	$9,043
Connecticut	5	$13,488	21	$10,857	Iowa	31	$9,050	23	$10,425
Montana	6	$13,476	2	$18,082	District of Columbia	32	$8,822	43	$5,286
Rhode Island	7	$13,447	10	$14,048	Kansas	33	$8,773	22	$10,594
Massachusetts	8	$13,243	35	$8,704	Oklahoma	34	$8,720	24	$10,418
Indiana	9	$12,698	5	$15,160	Ohio	35	$8,559	31	$9,154
West Virginia	10	$12,612	3	$15,739	Maryland	36	$8,506	40	$7,816
Colorado	11	$12,547	13	$12,281	Texas	37	$8,116	41	$7,498
New Hampshire	12	$12,138	14	$12,155	Missouri	38	$8,114	34	$8,912
Wyoming	13	$12,116	9	$14,130	Kentucky	39	$8,076	28	$9,929
South Dakota	14	$12,067	6	$15,074	Tennessee	40	$7,332	37	$8,321
Washington	15	$11,947	18	$11,301	Mississippi	41	$6,511	32	$9,055
New Jersey	16	$11,732	27	$10,078	Arkansas	42	$6,374	38	$8,262
Maine	17	$11,680	4	$15,500	Alabama	43	$6,230	42	$7,410
Wisconsin	18	$11,370	12	$13,021	Delaware				
Pennsylvania	19	$11,138	26	$10,294	Hawaii				
Nebraska	20	$10,935	11	$13,985	Idaho				
North Carolina	21	$10,586	25	$10,344	Louisiana				
Nevada	22	$10,532	15	$12,104	New Mexico				
Minnesota	23	$10,518	29	$9,911	North Dakota				
Florida	24	$10,331	16	$11,832	South Carolina				
Arizona	25	$10,089	20	$10,859	Vermont				
Utah	26	$10,016	17	$11,423					

Note: Prices are only shown for states with a sufficient number of observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) code 766.

Table B6. Percutaneous Transluminal Coronary Angioplasty, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Colorado	1	$40,295	4	$39,478	Nevada	27	$27,455	17	$31,503
Maine	2	$39,462	1	$50,299	Ohio	28	$26,590	22	$29,506
California	3	$39,008	12	$34,655	Oklahoma	29	$25,804	25	$29,047
Oregon	4	$38,633	5	$38,721	Alabama	30	$22,283	28	$26,370
New York	5	$38,142	11	$35,141	Kentucky	31	$21,160	29	$25,342
West Virginia	6	$38,106	2	$47,359	Iowa	32	$19,289	32	$21,926
Minnesota	7	$36,055	16	$31,619	Maryland	33	$18,798	35	$17,965
Arizona	8	$36,050	7	$38,644	Mississippi	34	$16,969	31	$22,806
Washington	9	$35,236	14	$32,240	Arkansas	35	$16,302	33	$20,499
Connecticut	10	$35,195	23	$29,468	Alaska				
Utah	11	$34,002	6	$38,666	Delaware				
Illinois	12	$33,417	18	$30,585	District of Columbia				
Florida	13	$33,287	3	$39,704	Hawaii				
Virginia	14	$32,061	9	$35,267	Idaho				
Texas	15	$31,706	21	$29,863	Louisiana				
Indiana	16	$31,681	8	$37,732	Montana				
Georgia	17	$31,659	27	$27,787	Nebraska				
Wisconsin	18	$30,996	10	$35,203	New Hampshire				
Massachusetts	19	$30,142	34	$20,433	New Mexico				
Michigan	20	$29,927	19	$30,132	North Dakota				
North Carolina	21	$29,607	24	$29,371	Rhode Island				
Kansas	22	$28,953	13	$34,101	South Carolina				
New Jersey	23	$28,646	30	$24,479	South Dakota				
Pennsylvania	24	$28,440	26	$27,961	Vermont				
Tennessee	25	$28,245	15	$32,087	Wyoming				
Missouri	26	$27,569	20	$30,007					

Note: Prices are only shown for states with a sufficient number of observations.

Source: Authors' analysis of the IBM MarketScan Database Inpatient Services Tables, Diagnosis-Related Group (DRG) codes: 246–251.

Table B7. Colonoscopy, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Alaska	1	$1,706	1	$1,744	Colorado	27	$712	29	$717
Wisconsin	2	$1,403	2	$1,608	North Carolina	28	$686	26	$728
Vermont	3	$1,224	3	$1,425	Virginia	29	$686	30	$715
Hawaii	4	$1,143	5	$1,288	Washington	30	$684	40	$610
South Dakota	5	$1,112	4	$1,354	Missouri	31	$679	22	$778
Wyoming	6	$1,094	8	$1,246	Ohio	32	$677	24	$761
Indiana	7	$1,041	6	$1,256	Oklahoma	33	$648	25	$757
Minnesota	8	$1,013	13	$938	Kentucky	34	$645	19	$799
West Virginia	9	$975	7	$1,255	Kansas	35	$632	27	$727
Oregon	10	$957	10	$1,085	Utah	36	$622	34	$706
Iowa	11	$927	11	$1,076	Mississippi	37	$599	20	$793
New Hampshire	12	$908	14	$929	Tennessee	38	$591	37	$658
Illinois	13	$899	18	$850	Alabama	39	$587	32	$710
California	14	$876	22	$788	Michigan	40	$549	42	$577
New Mexico	15	$863	9	$1,095	Florida	41	$547	38	$643
New York	16	$837	18	$804	Rhode Island	42	$541	44	$556
Connecticut	17	$828	36	$673	Nevada	43	$540	39	$620
District of Columbia	18	$825	46	$494	Arizona	44	$523	43	$565
North Dakota	19	$807	16	$894	Maine	45	$493	35	$697
New Jersey	20	$801	33	$707	Arkansas	46	$477	41	$589
Massachusetts	21	$796	45	$545	Maryland	47	$475	47	$465
Nebraska	22	$774	15	$925	Delaware				
Georgia	23	$768	23	$764	Idaho				
Montana	24	$767	12	$1,005	Louisiana				
Texas	25	$759	28	$717	South Carolina				
Pennsylvania	26	$729	31	$713					

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, Current Procedural Terminology (CPT) codes 45378, 45380.

Table B8. New Patient Primary Care Office Visit, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Alaska	1	$251	1	$262	Utah	27	$126	20	$150
Minnesota	2	$214	8	$195	Pennsylvania	28	$122	37	$122
Oregon	3	$210	2	$232	Arkansas	29	$121	16	$157
Wisconsin	4	$199	3	$226	Kansas	30	$119	24	$142
North Dakota	5	$190	6	$201	Texas	31	$119	38	$121
South Dakota	6	$175	5	$220	New Jersey	32	$119	45	$108
New Hampshire	7	$172	10	$178	Ohio	33	$118	32	$131
Montana	8	$167	4	$223	Michigan	34	$118	35	$126
Washington	9	$167	19	$152	New York	35	$115	40	$117
Vermont	10	$166	9	$189	Tennessee	36	$114	23	$144
Nebraska	11	$162	7	$198	Florida	37	$114	25	$141
Massachusetts	12	$155	46	$106	Missouri	38	$112	26	$140
District of Columbia	13	$151	47	$90	Oklahoma	39	$112	29	$136
Wyoming	14	$150	12	$172	Indiana	40	$110	30	$136
Iowa	15	$150	13	$168	Maine	41	$109	17	$157
North Carolina	16	$144	18	$154	Mississippi	42	$109	21	$150
West Virginia	17	$139	11	$177	Rhode Island	43	$107	41	$114
California	18	$138	31	$131	Kentucky	44	$106	33	$131
Colorado	19	$137	28	$137	Nevada	45	$104	39	$119
Maryland	20	$136	34	$126	Arizona	46	$102	43	$111
Hawaii	21	$132	15	$158	Alabama	47	$90	42	$114
Connecticut	22	$131	44	$110	Delaware				
New Mexico	23	$130	14	$168	Idaho				
Virginia	24	$129	22	$146	Louisiana				
Georgia	25	$129	27	$138	South Carolina				
Illinois	26	$129	36	$125					

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, Current Procedural Terminology (CPT) code 99203.

Table B9. Head CT Scan Without Contrast, Average Price, by State, 2016

	UNADJUSTED		WAGE-ADJUSTED			UNADJUSTED		WAGE-ADJUSTED	
	RANK	PRICE	RANK	PRICE		RANK	PRICE	RANK	PRICE
Alaska	1	$773	2	$810	Connecticut	27	$342	37	$279
New Mexico	2	$682	1	$855	North Dakota	28	$334	29	$367
Wyoming	3	$639	3	$766	Hawaii	29	$326	28	$380
Vermont	4	$602	4	$739	Iowa	30	$321	27	$382
California	5	$567	11	$533	Washington	31	$316	34	$313
Georgia	6	$562	12	$527	Utah	32	$315	30	$355
Texas	7	$537	13	$515	New Jersey	33	$280	40	$261
Florida	8	$508	6	$602	Arizona	34	$268	35	$306
Colorado	9	$499	14	$511	District of Columbia	35	$267	45	$160
Montana	10	$498	5	$650	Indiana	36	$265	33	$323
Oklahoma	11	$488	7	$589	Maine	37	$260	31	$354
New Hampshire	12	$483	15	$504	Pennsylvania	38	$260	38	$268
Wisconsin	13	$476	10	$568	Mississippi	39	$246	32	$349
Nebraska	14	$452	8	$588	Tennessee	40	$231	39	$266
West Virginia	15	$441	9	$573	Alabama	41	$228	36	$285
North Carolina	16	$437	17	$470	Rhode Island	42	$207	42	$217
Minnesota	17	$433	23	$422	Massachusetts	43	$182	46	$136
Nevada	18	$427	16	$490	Michigan	44	$180	43	$196
Illinois	19	$415	25	$399	New York	45	$176	44	$165
Oregon	20	$375	20	$441	Arkansas	46	$173	41	$225
South Dakota	21	$367	18	$470	Maryland	47	$116	47	$110
Kansas	22	$367	21	$441	Delaware				
Ohio	23	$360	24	$415	Idaho				
Missouri	24	$358	22	$430	Louisiana				
Kentucky	25	$349	19	$447	South Carolina				
Virginia	26	$346	26	$396					

Note: *CT* is computed tomography.

Source: Authors' analysis of the IBM MarketScan Database Outpatient Services Tables, Current Procedural Terminology (CPT) code 70450.

Table B10. Bronze ACA Premiums for a 50-Year-Old Individual, Average Annual, by State, 2015–2019
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	ANNUAL AVG.
Wyoming	$6,506	$6,891	$7,385	$9,944	$9,843	51%	12%
Nebraska	$4,449	$5,092	$7,371	$10,129	$9,573	115%	23%
West Virginia	$4,174	$5,065	$7,056	$8,267	$9,025	116%	22%
Iowa	$4,279	$4,687	$6,241	$10,078	$8,944	109%	23%
Oklahoma	$3,576	$4,374	$7,164	$7,272	$8,872	148%	27%
Kansas	$3,517	$4,282	$5,986	$7,290	$8,183	133%	24%
North Carolina	$4,751	$5,861	$7,884	$8,057	$8,068	70%	15%
Alaska	$7,946	$10,492	$12,108	$9,060	$8,060	1%	3%
Missouri	$4,517	$5,239	$6,285	$8,166	$7,972	76%	16%
Virginia	$4,141	$4,585	$5,217	$7,886	$7,896	91%	19%
Mississippi	$4,265	$4,639	$5,866	$7,916	$7,801	83%	17%
Florida	$4,982	$5,270	$6,034	$7,025	$7,780	56%	12%
Delaware	$4,230	$4,883	$6,272	$7,971	$7,779	84%	17%
South Dakota	$4,122	$4,744	$6,344	$7,286	$7,580	84%	17%
Montana	$3,831	$4,670	$6,506	$6,855	$7,386	93%	19%
Arizona	$4,506	$4,601	$8,146	$7,730	$7,375	64%	17%
Nevada	$4,771	$5,215	$5,976	$7,511	$7,372	55%	12%
Illinois	$4,093	$4,578	$6,342	$7,215	$7,360	80%	17%
Louisiana	$4,658	$5,302	$6,889	$8,128	$7,300	57%	13%
Georgia	$4,543	$5,136	$6,220	$8,277	$7,284	60%	14%
Maine	$4,967	$5,017	$6,033	$7,238	$7,229	46%	10%
Wisconsin	$5,074	$5,501	$6,222	$7,384	$7,216	42%	9%
Colorado	$4,611	$5,027	$5,821	$7,570	$7,213	56%	13%
Utah	$3,683	$4,525	$5,112	$6,824	$6,881	87%	18%
Texas	$4,191	$4,125	$5,753	$6,599	$6,634	58%	13%
Pennsylvania	$3,849	$4,054	$5,199	$6,352	$6,553	70%	15%
Tennessee	$3,560	$4,433	$6,292	$7,160	$6,471	82%	18%
South Carolina	$4,852	$4,942	$6,054	$6,269	$6,439	33%	8%
North Dakota	$4,428	$4,693	$4,962	$5,113	$6,429	45%	10%
Hawaii	$2,863	$3,723	$4,748	$5,872	$6,363	122%	22%

Table B10. Bronze ACA Premiums for a 50-Year-Old Individual, Average Annual, by State, 2015–2019, *continued*
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	INCREASE ANNUAL AVG.
California	**$4,476**	**$4,698**	**$5,236**	**$5,706**	**$6,320**	**41%**	**9%**
Connecticut	$4,485	$4,421	$5,197	$6,097	$6,264	40%	9%
Maryland	$3,653	$4,019	$5,247	$6,770	$6,240	71%	15%
District of Columbia	$3,394	$3,833	$4,159	$5,203	$6,194	83%	16%
Alabama	$3,782	$4,555	$5,624	$5,902	$6,115	62%	13%
Oregon	$3,574	$4,323	$5,304	$5,621	$6,102	71%	15%
Ohio	$4,549	$4,852	$5,217	$5,567	$6,098	34%	8%
Kentucky	$3,703	$4,110	$4,942	$5,572	$5,993	62%	13%
Minnesota	$3,538	$4,427	$6,922	$7,013	$5,776	63%	16%
Michigan	$4,427	$4,284	$4,683	$5,486	$5,767	30%	7%
New York	$4,255	$4,691	$5,254	$5,820	$5,704	34%	8%
Vermont	$4,601	$4,765	$5,119	$5,645	$5,684	24%	5%
New Jersey	$5,500	$5,819	$5,766	$6,260	$5,637	2%	1%
Massachusetts	$4,279	$4,320	$4,765	$5,315	$5,597	31%	7%
Arkansas	$4,091	$4,892	$4,551	$5,237	$5,579	36%	9%
New Mexico	$3,450	$3,456	$4,475	$5,766	$5,565	61%	14%
Indiana	$4,937	$4,797	$5,496	$5,462	$5,456	11%	3%
New Hampshire	$4,251	$4,206	$4,415	$6,776	$5,447	28%	9%
Rhode Island	$3,815	$3,916	$3,680	$4,906	$4,695	23%	6%
AVERAGE	**$4,341**	**$4,817**	**$5,909**	**$6,910**	**$6,921**	**63%**	**13%**

Notes: There are generally multiple bronze plans offered in each rating area. Hence, for each rating area the authors first calculated a rating area average bronze premium and then took the average of these rating area average premiums. Idaho and Washington are excluded because they changed their rating area definitions during the 2015–2019 period.

Source: Authors' analysis of HIX Compare. Available from hixcompare.org/individual-markets.html.

Table B11. Silver ACA Premiums for a 50-Year-Old Individual, Average Annual, by State, 2015–2019
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	ANNUAL AVG.
Wyoming	$7,548	$8,026	$8,633	$14,258	$14,193	88%	20%
Nebraska	$5,636	$6,409	$8,998	$12,427	$13,248	135%	25%
Iowa	$5,178	$5,830	$7,183	$12,015	$12,228	136%	26%
Oklahoma	$4,640	$5,920	$9,294	$9,877	$12,184	163%	29%
Alaska	$9,711	$13,148	$15,330	$11,956	$11,884	22%	7%
Delaware	$5,439	$6,246	$7,691	$9,843	$11,511	112%	21%
North Carolina	$6,011	$7,255	$9,381	$10,843	$10,985	83%	17%
Florida	$5,977	$6,081	$7,204	$11,142	$10,938	83%	18%
Virginia	$5,059	$5,403	$6,122	$10,415	$10,682	111%	23%
Utah	$4,543	$5,470	$6,569	$10,673	$10,567	133%	25%
West Virginia	$5,004	$6,254	$8,256	$9,674	$10,518	110%	21%
Maine	$6,228	$6,127	$7,216	$10,921	$10,452	68%	16%
Wisconsin	$6,095	$6,656	$7,429	$10,017	$10,088	66%	14%
Louisiana	$6,036	$6,760	$8,384	$10,761	$10,035	66%	14%
Missouri	$5,630	$6,227	$7,309	$10,093	$9,936	76%	16%
Kansas	$4,168	$5,111	$6,902	$8,909	$9,928	138%	25%
Montana	$4,630	$5,841	$8,064	$9,166	$9,881	113%	21%
Tennessee	$4,688	$5,802	$8,254	$11,698	$9,875	111%	23%
South Dakota	$4,909	$5,809	$7,819	$9,390	$9,739	98%	19%
Illinois	$5,070	$5,554	$7,634	$9,772	$9,686	91%	19%
Colorado	$5,751	$6,268	$7,250	$8,742	$9,608	67%	14%
South Carolina	$5,395	$5,470	$6,887	$8,830	$9,593	78%	16%
Arizona	$5,500	$5,414	$10,182	$9,863	$9,535	73%	20%
Georgie	$5,556	$5,979	$6,934	$10,279	$9,168	65%	15%
Nevada	$5,586	$6,309	$6,700	$9,279	$9,074	62%	14%
Maryland	$4,650	$4,910	$5,932	$9,060	$8,867	91%	19%
Alabama	$4,746	$5,383	$7,518	$8,998	$8,864	87%	18%
California	$5,836	$6,043	$6,924	$8,286	$8,788	51%	11%
Mississippi	$5,577	$5,187	$6,139	$8,768	$8,700	56%	13%
Pennsylvania	$4,664	$4,847	$6,400	$8,926	$8,677	86%	18%

Table B11. Silver ACA Premiums for a 50-Year-Old Individual, Average Annual, by State, 2015–2019, *continued*
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	INCREASE ANNUAL AVG.
Texas	$5,216	$5,076	$6,893	$8,585	$8,609	65%	14%
Hawaii	$3,447	$4,540	$5,967	$8,246	$8,598	149%	26%
Connecticut	$6,124	$6,244	$7,102	$9,359	$8,403	37%	9%
Kentucky	$4,661	$5,057	$5,712	$7,447	$8,309	78%	16%
Ohio	$5,632	$5,920	$6,048	$7,449	$8,217	46%	10%
Michigan	$5,373	$5,516	$6,055	$7,931	$8,174	52%	12%
North Dakota	$5,355	$5,815	$6,060	$6,026	$7,905	48%	11%
Oregon	$4,488	$5,246	$6,444	$7,352	$7,830	74%	15%
New York	$5,112	$5,665	$6,409	$7,343	$7,826	53%	11%
New Jersey	$6,047	$6,353	$6,778	$8,736	$7,678	27%	7%
Vermont	$5,462	$5,713	$6,038	$6,330	$7,607	39%	9%
New Mexico	$4,234	$4,447	$5,353	$7,633	$7,486	77%	17%
New Hampshire	$5,518	$5,275	$5,538	$8,326	$7,372	34%	10%
Massachusetts	$4,947	$4,783	$5,267	$6,602	$7,085	43%	10%
District of Columbia	$4,455	$4,602	$5,336	$5,972	$7,021	58%	12%
Arkansas	$5,256	$5,801	$5,576	$6,845	$6,623	26%	7%
Rhode Island	$4,761	$4,865	$4,808	$5,789	$6,402	34%	8%
Minnesota	$4,279	$5,647	$8,072	$7,803	$6,341	48%	13%
Indiana	$6,057	$5,595	$5,714	$6,230	$6,068	0%	0%
AVERAGE	**$5,345**	**$5,875**	**$7,137**	**$9,079**	**$9,245**	**76%**	**16%**

Notes: There are generally multiple bronze plans offered in each rating area. Hence, for each rating area the authors first calculated a rating area average silver premium and then took the average of these rating area average premiums. Idaho and Washington are excluded because they changed their rating area definitions during the 2015–2019 period.

Source: Authors' analysis of HIX Compare. Available from hixcompare.org/individual-markets.html.

Table B12. Gold ACA Premiums for a 50-Year-Old Individual, Average Annual, by State, 2015–2019
(sorted from highest to lowest 2019 premium)

	2015	2016	2017	2018	2019	INCREASE 2015–2019	ANNUAL AVG.
Tennessee	$5,965	$7,989	$12,905	$15,644	$15,716	163%	29%
Utah	$5,338	$6,424	$10,128	$12,273	$13,382	151%	27%
Missouri	$6,604	$7,528	$9,569	$13,601	$13,010	97%	20%
West Virginia	$6,063	$7,532	$10,025	$12,028	$12,917	113%	21%
Wyoming	$9,103	$9,564	$10,149	$11,734	$12,142	33%	8%
North Carolina	$7,078	$8,785	$11,820	$11,676	$11,770	66%	15%
Maine	$7,778	$8,083	$9,946	$11,542	$11,664	50%	11%
Iowa	$6,301	$7,068	$9,561	$13,362	$11,657	85%	19%
Arizona	$6,021	$5,976	$12,624	$12,188	$11,353	89%	25%
Georgia	$6,512	$7,430	$9,112	$13,900	$11,343	74%	18%
Florida	$6,739	$7,304	$9,765	$11,531	$11,298	68%	15%
Alaska	$11,471	$15,076	$18,112	$13,056	$11,272	-2%	2%
Delaware	$6,198	$7,417	$9,353	$11,841	$11,270	82%	17%
Nebraska	$6,307	$7,663	$10,607	$13,823	$11,184	77%	18%
Connecticut	$6,714	$6,849	$7,982	$11,259	$11,052	65%	14%
Oklahoma	$5,859	$6,997	$11,622	$11,042	$11,021	88%	20%
South Dakota	$6,193	$7,200	$9,839	$10,484	$11,019	78%	16%
New Jersey	$7,630	$8,129	$11,973	$13,009	$10,956	44%	12%
Louisiana	$6,888	$7,828	$10,294	$11,829	$10,772	56%	13%
Mississippi	$6,288	$6,705	$7,556	$11,062	$10,665	70%	16%
Montana	$5,597	$7,305	$10,246	$10,398	$10,657	90%	19%
Colorado	$6,569	$7,471	$9,194	$10,687	$10,605	61%	13%
Virginia	$6,205	$6,856	$8,045	$13,799	$10,425	68%	19%
Alabama	$5,502	$6,708	$9,662	$9,902	$10,212	86%	18%
Wisconsin	$7,271	$7,883	$9,077	$10,637	$10,151	40%	9%
Illinois	$6,060	$6,816	$9,271	$10,327	$9,958	64%	14%
Kentucky	$5,389	$6,228	$7,131	$9,104	$9,919	84%	17%
Nevada	$6,309	$7,705	$9,895	$10,852	$9,914	57%	13%
South Carolina	$6,444	$6,977	$8,507	$9,455	$9,651	50%	11%
California	$7,051	$7,426	$8,230	$8,883	$9,618	36%	8%

| | 2015 | 2016 | 2017 | 2018 | 2019 | INCREASE | |
						2015–2019	ANNUAL AVG.
Kansas	$4,895	$6,045	$8,498	$9,702	$9,582	96%	19%
Ohio	$6,473	$6,988	$7,090	$8,643	$9,579	48%	11%
New York	$6,067	$6,674	$7,716	$8,487	$9,467	56%	12%
Pennsylvania	$5,411	$5,895	$8,413	$8,818	$8,989	66%	15%
Texas	$6,229	$6,240	$8,620	$9,087	$8,954	44%	11%
Michigan	$6,576	$7,007	$7,962	$8,902	$8,935	36%	8%
Oregon	$5,316	$6,295	$7,567	$8,061	$8,671	63%	13%
New Hampshire	$6,707	$6,719	$7,100	$10,420	$8,667	29%	9%
Hawaii	$4,105	$5,538	$7,117	$8,009	$8,523	108%	21%
Massachusetts	$6,398	$6,702	$7,239	$8,019	$8,450	32%	7%
North Dakota	$6,111	$6,815	$7,576	$7,746	$8,387	37%	8%
Indiana	$7,339	$6,718	$7,134	$7,975	$8,216	12%	3%
District of Columbia	$5,431	$5,948	$6,726	$7,449	$8,164	50%	11%
Arkansas	$6,044	$6,640	$6,630	$7,333	$7,969	32%	7%
Maryland	$5,003	$5,869	$7,775	$9,057	$7,878	57%	13%
Vermont	$6,553	$6,570	$6,946	$7,363	$7,547	15%	4%
Rhode Island	$5,701	$5,960	$6,328	$6,599	$7,341	29%	7%
Minnesota	$5,064	$6,348	$9,840	$9,584	$7,019	39%	13%
New Mexico	$5,095	$5,234	$6,313	$7,287	$6,972	37%	9%
AVERAGE	**$6,326**	**$7,125**	**$9,077**	**$10,397**	**$10,120**	**63%**	**14%**

Notes: There are generally multiple bronze plans offered in each rating area. Hence, for each rating area the authors first calculated a rating area average gold premium and then took the average of these rating area average premiums. Idaho and Washington are excluded because they changed their rating area definitions during the 2015–2019 period.

Source: Authors' analysis of HIX Compare. Available from hixcompare.org/individual-markets.html.

	HOSPITAL HHI	INSURER HHI	PRIMARY CARE HHI	SPECIALIST HHI		HOSPITAL HHI	INSURER HHI	PRIMARY CARE HHI	SPECIALIST HHI
Alameda	2,561	3,116	841	1,189	Placer	5,001	2,348	1,650	3,699
Amador	10,000	3,047	3,376	4,806	Plumas	3,964	3,656	3,265	6,220
Butte	3,979	4,102	397	3,638	Riverside	1,287	2,296	229	701
Calaveras	10,000	3,193	2,423	7,949	Sacramento	2,668	3,303	1,227	1,833
Colusa		2,688	1,981		San Benito	10,000	3,142	979	7,946
Contra Costa	2,989	3,292	1,055	1,926	San Bernardino	1,192	2,551	571	1,064
Del Norte	10,000	4,023	2,178	7,333	San Diego	1,939	1,505	820	1,098
El Dorado	5,909	1,917	1,414	5,980	San Francisco	2,534	1,967	773	2,591
Fresno	4,344	2,405	579	2,342	San Joaquin	1,743	3,268	479	1,606
Glenn	10,000	3,926	2,077	10,000	San Luis Obispo	4,482	3,350	341	2,491
Humboldt	6,720	3,810	539	7,230	San Mateo	2,581	2,122	1,004	2,202
Imperial	5,001	2,390	1,085	3,688	Santa Barbara	4,456	2,523	926	1,877
Inyo	6,885	3,479	2,231		Santa Clara	1,820	2,162	906	1,541
Kern	2,971	2,430	375	1,689	Santa Cruz	6,237	2,103	1,733	3,454
Kings	10,000	2,847	1,111	4,103	Shasta	5,142	4,225	642	2,806
Lake	5,108	3,079	2,698	6,508	Sierra		3,622	10,000	
Lassen	10,000	3,895	1,172	10,000	Siskiyou	5,138	3,450	969	4,348
Los Angeles	509	2,013	228	313	Solano	4,816	4,707	1,311	2,340
Madera	10,000	3,028	1,124	5,949	Sonoma	2,643	3,571	906	2,415
Marin	4,435	2,143	836	3,521	Stanislaus	5,142	2,715	652	1,735
Mariposa	10,000	3,100	2,727	10,000	Sutter		3,984	1,870	6,318
Mendocino	7,230	3,745	691	4,297	Tehama	10,000	4,086	4,136	5,111
Merced	7,753	3,580	678	2,180	Trinity	10,000	4,281	2,639	
Modoc	7,874	3,543	2,800		Tulare	7,150	3,771	331	2,041
Mono	10,000	4,323	5,078	10,000	Tuolumne	10,000	3,823	3,464	9,616
Monterey	3,001	3,417	242	2,250	Ventura	2,113	2,102	218	1,214
Napa	5,197	3,522	1,320	4,674	Yolo	5,023	1,926	1,822	5,472
Nevada	6,197	3,099	633	3,969	Yuba	10,000	4,524	1,527	10,000
Orange	1,798	1,679	511	668	**AVERAGE**	**5,695**	**3,121**	**1,540**	**4,191**

Notes: *HHI* is Herfindahl-Hirschman Index. All measures are calculated at the county level and then averaged across all 58 California counties. *Specialist HHI* is a weighted average (by number of physicians) of cardiology HHI, hematology/oncology HHI, orthopedics HHI, and radiology HHI. Blank spaces indicate that the authors were not able to calculate an HHI for the county (e.g., the county did not contain a short-term community hospital).

Source: Authors' analysis of data provided by American Hospital Association's Annual Survey (hospital HHI); DRG's Managed Market Surveyor, formerly HealthLeaders-Interstudy (insurer HHI); and SK&A's Office-Based Physicians Database, now IQVIA (primary care physician HHI, specialist HHI, primary care physicians, specialist physicians).

Table B14. Percentage of Physicians in Practices Owned by a Hospital/Health System, by Type and California County, 2018

	PRIMARY CARE PHYSICIANS	SPECIALIST PHYSICIANS		PRIMARY CARE PHYSICIANS	SPECIALIST PHYSICIANS
Alameda	58%	47%	Placer	70%	77%
Amador	60%	50%	Plumas	86%	100%
Butte	20%	49%	Riverside	23%	39%
Calaveras	61%	62%	Sacramento	70%	78%
Colusa	20%		San Benito	14%	83%
Contra Costa	62%	48%	San Bernardino	41%	57%
Del Norte	33%	40%	San Diego	56%	63%
El Dorado	57%	82%	San Francisco	53%	69%
Fresno	18%	15%	San Joaquin	42%	33%
Glenn	10%	100%	San Luis Obispo	21%	25%
Humboldt	20%	66%	San Mateo	53%	57%
Imperial	40%	26%	Santa Barbara	8%	12%
Inyo	64%		Santa Clara	60%	67%
Kern	32%	28%	Santa Cruz	61%	41%
Kings	44%	42%	Shasta	25%	22%
Lake	63%	48%	Sierra	0%	
Lassen	56%	65%	Siskiyou	42%	49%
Los Angeles	36%	47%	Solano	66%	80%
Madera	31%	73%	Sonoma	51%	56%
Marin	38%	25%	Stanislaus	37%	49%
Mariposa	45%	100%	Sutter	52%	77%
Mendocino	32%	80%	Tehama	67%	25%
Merced	5%	9%	Trinity	42%	
Modoc	60%		Tulare	11%	14%
Mono	81%	100%	Tuolumne	75%	98%
Monterey	15%	39%	Ventura	29%	33%
Napa	40%	82%	Yolo	80%	96%
Nevada	42%	55%	Yuba	10%	100%
Orange	43%	41%	**AVERAGE**	**43%**	**56%**

Notes: *HHI* is Herfindahl-Hirschman Index. All measures are calculated at the county level and then averaged across all 58 California counties. *Specialist HHI* is a weighted average (by number of physicians) of cardiology HHI, hematology/oncology HHI, orthopedics HHI, and radiology HHI. Blank spaces indicate that the authors were not able to calculate an HHI for the county (e.g., the county did not contain a short-term community hospital).

Source: Authors' analysis of data provided by American Hospital Association's Annual Survey (hospital HHI); DRG's Managed Market Surveyor, formerly HealthLeaders-Interstudy (insurer HHI); and SK&A's Office-Based Physicians Database, now IQVIA (primary care physician HHI, specialist HHI, primary care physicians, specialist physicians).

Endnotes

1. California's hospital and health insurance markets are above the US Department of Justice and Federal Trade Commission's guidelines for a highly concentrated market.

2. IBM Analytics (2017), The IBM MarketScan Databases for Health Services Researchers, Ann Arbor, MI. The database is demographically representative of the US and California populations with employer-sponsored coverage. IBM data have been used in more than 1,100 studies published in peer-reviewed journals since the1990s.

3. Premiums for other age groups can be calculated by applying the Default Federal Standard Age Curve from the Centers for Medicare & Medicaid Services, Center for Consumer Information and Insurance Oversight, www.cms.gov (PDF).

4. US citizens and permanent residents with incomes below 138% of the federal poverty level qualify for Medi-Cal in California.

5. The remaining 7% of new enrollees selected platinum plans (4%) and minimum coverage plans (3%). Platinum plans have an actuarial value of 90%, whereas minimum coverage plans have an actuarial value below 60%. Minimum coverage plans are typically only available to people 30 years old or younger.

6. An enrollment-weighted premium is the average premium across health plans weighted for the number of enrollees in each health plan.

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