

Private Insurance Payments to California Hospitals Average More Than Double Medicare Payments

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Summary

Private insurers paid hospitals in California on average more than double what Medicare paid them for similar services in 2015 and 2016. Our analysis of financial data filed by hospitals with the California Office of Statewide Health Planning and Development (OSHPD) found substantial variation across hospitals in the relationship of private insurance payments to Medicare. For the 10 percent of California hospitals with the highest ratio of private to Medicare payments, private insurance payments average 364 percent of Medicare and 255 percent of cost; for the 10 percent with the lowest ratio, the average is 89 percent of Medicare and 89 percent of cost. Among hospitals with more than 300 beds, the 10 hospitals with the highest ratio of private to Medicare payments include Stanford University Hospital, UC Davis Medical Center, and Cedars-Sinai Medical Center.

We offer two alternative perspectives on these results. The first perspective is that the ability of hospitals to extract relatively high rates of payment from private insurers reflects market failures stemming from circumstances such as consolidation in the hospital industry, the position of “must-have” hospitals even in markets where there may appear to be competitors, and the pressure that private insurers face from employers and employees to offer broad networks. The second perspective is that high rates of private payment are needed to offset payment shortfalls from Medicare and Medi-Cal, California’s Medicaid program.

Regardless of which perspective one adopts, these data should be helpful in assessing the likely effects of proposals that may affect hospital payments in California, including hospital rate-setting proposals or proposals to create a single-payer system.

Variation across hospitals in the relationship of private insurance payments to Medicare

On average, California hospitals were paid 209 percent as much by private insurers as they were by Medicare for similar services in 2015 and 2016 (Exhibit 1).

Medicare paid an average of 79 percent of cost, and private insurers paid an average of 165 percent of cost, or more than twice as much as Medicare.

There is substantial variation across hospitals in the relationship of private insurance payments to Medicare. For the 10 percent of California hospitals with the highest ratio of private to Medicare payments, private insurance payments average 364 percent of Medicare and 255 percent of cost; for the 10 percent with the lowest ratio, the average is 89 percent of Medicare and 89 percent of cost (Exhibit 2).

Exhibit 1

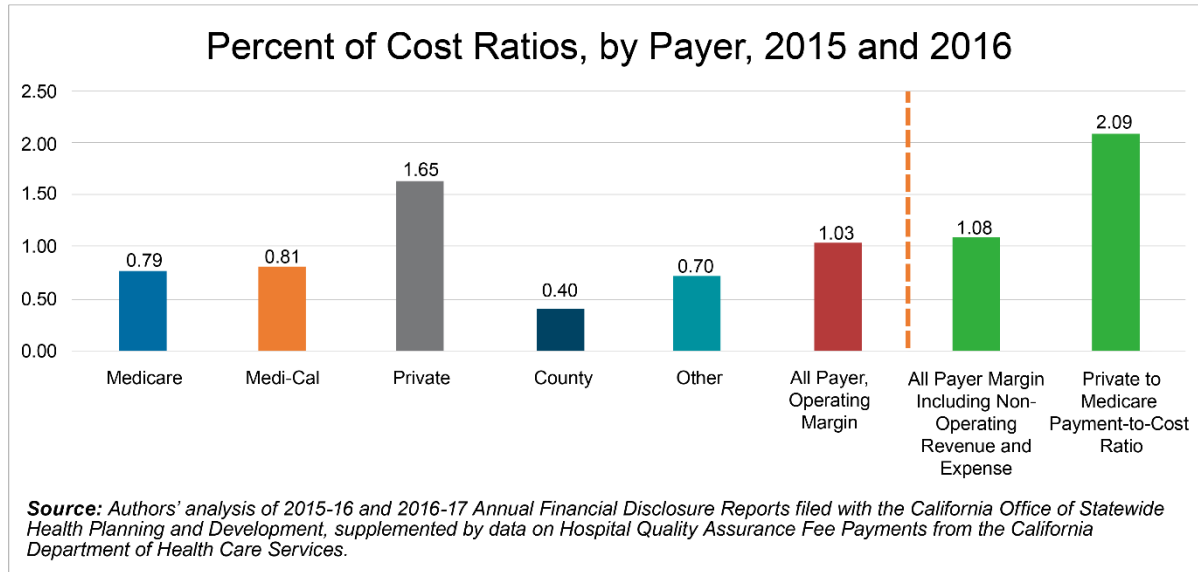
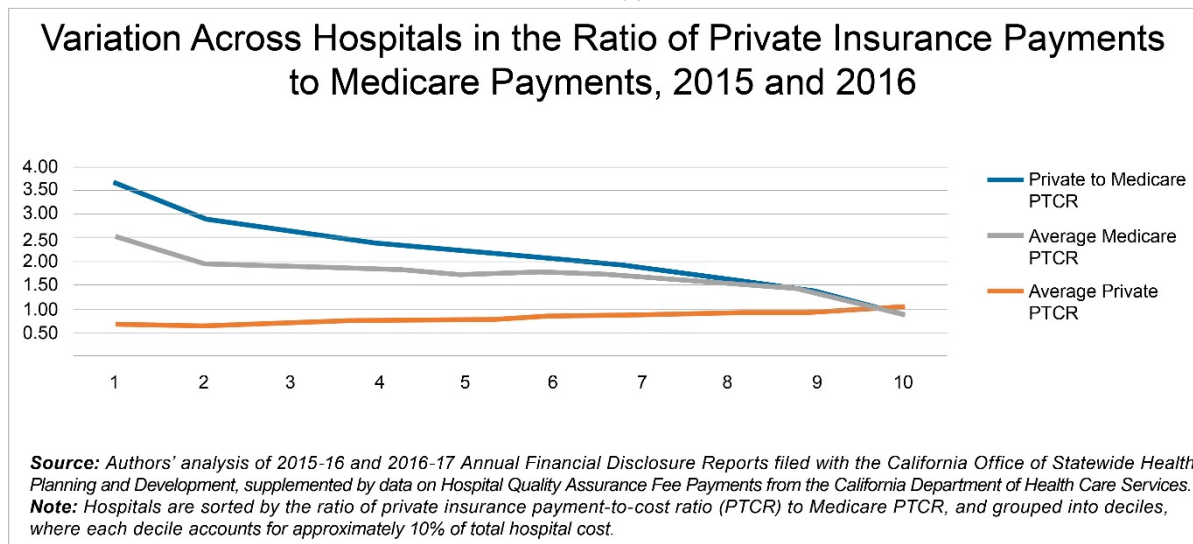


Exhibit 2



Among hospitals with more than 300 beds, the 10 hospitals with the highest ratio of private to Medicare payments include California Pacific Medical Center, Stanford University Hospital, Sharp Memorial Hospital, UC Davis Medical

Center, and Cedars-Sinai Medical Center; among the 10 hospitals with the lowest ratios, five are public hospitals and one is a district hospital (Exhibit 3).

Exhibit 3

Largest and Smallest Private to Medicare PTCR Ratios, 2015 and 2016

10 Hospitals with the Largest Private to Medicare PTCR Ratios Among Hospitals with at least 300 Beds

	Hospital Name	County	Ownership	Average Staffed Beds	Medicare PTCR	Private PTCR	Private to Medicare PTCR Ratio	Average Cost per Case-Mix Adjusted Admission	All Payer Operating Margin
1	Doctors Medical Center	Stanislaus	Investor	349	0.81	2.44	3.00	\$10,655	1.11
2	California Pacific Medical Center	San Francisco	Non-profit	424	0.64	1.80	2.79	\$19,855	1.08
3	Stanford University Hospital	Santa Clara	Non-profit	477	0.62	1.70	2.76	\$33,981	1.08
4	Mercy San Juan Hospital	Sacramento	Non-profit	317	0.74	2.04	2.74	\$11,420	1.07
5	El Camino Hospital	Santa Clara	Non-profit	365	0.61	1.65	2.73	\$20,014	1.07
6	Sharp Memorial Hospital	San Diego	Non-profit	434	0.70	1.90	2.71	\$9,681	1.27
7	Sharp Grossmont Hospital	San Diego	Non-profit	351	0.81	1.93	2.37	\$10,736	1.06
8	University of California Davis Med Ctr	Sacramento	University of California	499	0.65	1.51	2.31	\$21,101	1.01
9	Cedars-Sinai Medical Center	Los Angeles	Non-profit	885	0.72	1.66	2.31	\$18,567	1.14
10	Eisenhower Medical Center	Riverside	Non-profit	306	0.84	1.89	2.25	\$12,617	0.97

Hospitals with the Smallest Private to Medicare PTCRs

	Hospital Name	County	Ownership	Average Staffed Beds	Medicare PTCR	Private PTCR	Private to Medicare PTCR Ratio	Average Cost per Case-Mix Adjusted Admission	All Payer Operating Margin
1	LAC/USC Medical Center	Los Angeles	Public	532	0.67	0.60	0.89	\$20,288	0.51
2	Riverside County Regional Med Ctr	Riverside	Public	307	1.21	1.19	0.98	\$8,497	1.03
3	San Mateo Medical Center	San Mateo	Public	390	0.70	0.75	1.07	\$39,767	0.90
4	Loma Linda University Medical Center	San Bernardino	Non-profit	354	1.00	1.09	1.08	\$10,305	1.08
5	LAC/Harbor+UCLA Medical Ctr	Los Angeles	Public	309	0.72	0.83	1.14	\$19,625	0.65
6	Community Regional Med Ctr-Fresno	Fresno	Non-profit	733	1.13	1.34	1.18	\$11,149	1.08
7	Kaweah Delta District Hospital	Tulare	District	419	0.91	1.11	1.22	\$10,518	1.01
8	Southern California Hosp At Hollywood	Los Angeles	Investor	338	0.89	1.19	1.33	\$7,902	1.07
9	Citrus Valley Medical Center	Los Angeles	Non-profit	318	1.09	1.51	1.38	\$9,252	1.07
10	Santa Clara Valley Medical Center	Santa Clara	Public	368	0.72	1.01	1.40	\$30,595	0.90

Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development, supplemented by data on Hospital Quality Assurance Fee payments from the California Department of Health Care Services.

Note: Cost per case-mix adjusted admission is computed by dividing the cost per adjusted admission by the hospital's normalized case-mix index. See Appendix for details.

Private insurers pay private non-profit hospitals 223 percent of Medicare rates, somewhat above the 209 percent statewide average (Exhibit 4).¹ Private insurance payments at public hospitals (excluding University of California hospitals) are 144 percent of Medicare, much lower than the statewide average. Private insurer to Medicare payment ratios at investor-owned and University of California hospitals are similar to the statewide average.

Private hospitals account for 61.5 percent of cost statewide, while investor, public, and University of California hospitals account for approximately 10 percent to 12 percent each, and district hospitals for 5 percent (Exhibit 5).

¹ Church-owned hospitals are included with other private non-profit hospitals in this analysis.

Exhibit 4

Selected Hospital Statistics, by Hospital Ownership, 2015 and 2016

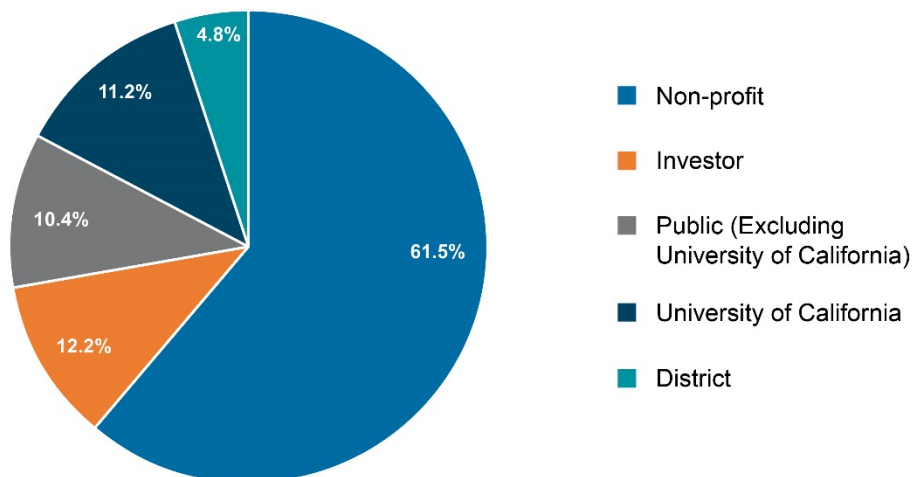
Ownership	Medicare PTCR	Medi-Cal PTCR	Private PTCR	County Indigent PTCR	Other PTCR	All-Payer Operating Margin	All Payer Margin, Including Non-Operating Revenue and Expense	Private PTCR/ Medicare PTCR	Cost per Case-Mix Adjusted Admission
Non-Profit	0.77	0.79	1.72	0.56	0.70	1.05	1.07	2.23	\$16,666
Investor	0.92	0.89	1.88	1.90	0.62	1.10	1.11	2.05	\$10,419
Public, Excluding University of California	0.75	0.82	1.08	0.35	0.50	0.81	1.06	1.44	\$20,822
University of California	0.73	0.76	1.46	0.97	1.09	1.03	1.10	2.00	\$19,715
District	0.83	0.85	1.52	0.69	0.46	1.01	1.07	1.83	\$23,390
Total	0.79	0.81	1.65	0.40	0.70	1.03	1.08	2.09	\$15,992

Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development (OSHDP), supplemented by data on Hospital Quality Assurance Fee payments from the California Department of Health Care Services.

Notes: Hospital ownership as reported to OSHDP on Annual Financial Disclosure Reports, with University of California hospitals separated from the 'Public' ownership category as reported to OSHDP. Adjusted admissions combine inpatient admissions and outpatient visits. Cost per adjusted admission is computed by dividing the normalized average case-mix index for each group of hospitals. PTCR is payment-to-cost ratio. See Appendix for details.

Exhibit 5

Distribution of Total Cost, by Hospital Ownership, 2015 and 2016



Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development, supplemented by data on Hospital Quality Assurance Fee Payments from the California Department of Health Care Services.

Note: Church-owned hospitals are included with other private non-profit hospitals in this analysis.

Perspectives on these findings

We offer two perspectives on the result that private insurer payments to hospitals average 209 percent of Medicare with substantial variation in the relationship between private insurance and Medicare payments.

The first perspective is that the ability of hospitals to extract relatively high rates of payment from private insurers reflects market failures, stemming from circumstances such as consolidation in the hospital industry, the position of “must-have” hospitals even in markets where there may appear to be competitors, and the pressure that private insurers face from employers and employees to offer broad networks. In this

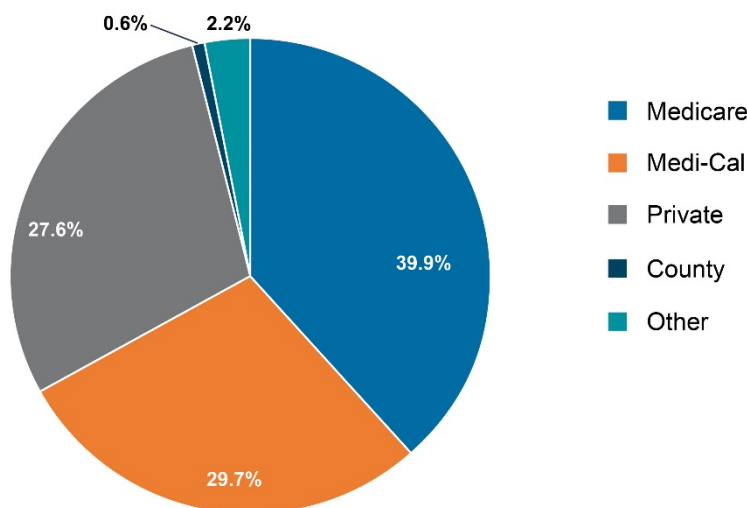
perspective, relatively high payment rates extracted from private insurers allow hospitals to spend more money – that is, have higher costs – than they would if private payments were lower. High rates of private payments lead to higher costs, which then cause Medicare and Medi-Cal payments to be below cost. In this perspective, if private payments were lower, hospital costs would be lower, and Medicare and Medi-Cal payment-to-cost ratios (PTCRs) would be closer to 1.0. A robust body of research provides support for this perspective (MedPAC, 2018; MedPAC, 2011; White and Wu 2014; White 2013; Clemens and Gottlieb 2017, Frakt 2015; Cooper et al. 2017; Boghosian 2017).

The second perspective is that high rates of private payment are needed to offset payment shortfalls from Medicare and Medi-Cal. As shown in Exhibit 6, private payers account for 27.6 percent of total hospital cost. The surplus from private payers is, largely, offset by deficits from public payers and the remaining uninsured, resulting in a small positive margin, on average. As was shown in

Exhibit 1, margins on hospital operations average 3.4 percent; including nonoperating income, margins average 8 percent.² In this perspective, in order to stay in business hospitals are forced to negotiate relatively high rates of payments from private payers. If they are unsuccessful in doing so, their total operating margin would be negative, and eventually, they would be forced to close.

Exhibit 6

Distribution of Total Cost, by Payer, 2015 and 2016



Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development, supplemented by data on Hospital Quality Assurance Fee Payments from the California Department of Health Care Services.

These alternative perspectives reflect differing views of how hospitals function. In one view, hospitals are continually working to minimize their costs. In this view, if a hospital spends \$1 billion on operations that represents the least that it could spend to deliver an acceptable quality of care. In this view, the hospital must find a way to generate revenues that are at least \$1 billion in order to stay in business.

In the second view, hospital costs adjust to all the revenue that is available. That is, if a hospital can generate \$1 billion in revenue, then it will spend \$1 billion on operations (or close to it); if it is only able to generate \$900 million in revenue, then it will spend \$900 million. Clearly some aspects of care delivery will be different in a \$900 million hospital than in a \$1 billion hospital, but, in this second view, patient outcomes and patient safety might well be similar in the two institutions.

In future analyses, we intend to provide evidence that will be helpful in assessing these alternative perspectives.

Regardless of which perspective one adopts, these data should be helpful in assessing the likely effects of proposals that may affect hospital payments in California, including hospital rate-setting proposals or proposals to create a single payer. Further, we hope that they are helpful to the public, hospital board members, and others interested in understanding hospital pricing in California. Hospital-specific results are available at:

<https://www.westhealth.org/resource/hospital-pricing-data-file/>

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² Non-operating revenue includes items such as charitable donations, income from unrestricted investments, revenue from rental of physician offices, gains on the sale of hospital property, and, for public and district hospitals, county appropriations and special district augmentation revenue. Non-operating expenses include items such as the cost of operating physician office buildings, the cost of maintaining restricted funds, and losses on the sale of hospital property.

Appendix A

Data and methods

The analysis uses data from the Annual Financial Disclosure Reports (AFDRs) filed by hospitals with the California Office of Statewide Health Planning and Development (OSHPD). Each hospital in California is required to provide data on costs and utilization, following detailed instructions supplied by OSHPD.³

The reports include data separately for six payers: Medicare, Medi-Cal, other third party (that is, private insurance), county indigent, other indigent, and other. For the first four of these payers, data are reported separately both for “traditional” and for “managed care.” In our analyses, we combine traditional and managed care, because our focus is on the relationship in payment rates among major payers, and not in distinctions in payment between traditional and managed care.

In our analyses of payment-to-cost ratios (PTCRs), we combine outpatient and inpatient services. The OSHPD data would allow us to construct separate estimates of inpatient and outpatient cost for each payer (that is, the denominator of the PTCR statistic), but do not provide separate estimates of inpatient and outpatient net revenue by payer (the numerator of the statistic).⁴

Because our focus is on acute care general hospitals, we exclude psychiatric, rehabilitation, substance abuse, and long-term care hospitals. We exclude 33 Kaiser Foundation hospitals because they are exempt from most financial data filing requirements. We exclude children’s hospitals because Medicare accounts for only 5 percent of cost at these hospitals, compared to approximately 40 percent at other hospitals, and our focus is on the relationship between private insurer and Medicare payment rates. We also exclude duplicate records for hospitals that had more than one record, and a few hospitals with missing or non-credible data on

key items. Excluded hospitals account for approximately 15 percent of total hospital costs in California (neither the numerator nor denominator of the 15 percent statistic includes Kaiser hospitals).

The most recent data file that OSHPD has made available is for reporting years 2016-17. Although the file is titled “2016-17,” there is almost no data in the file from 2017. For approximately 50 percent of the hospitals, the reporting period is January 1, 2016 to December 31, 2016. For an additional 40 percent, the reporting period is from July 1, 2015 to June 30, 2016; with one exception, all of the remaining hospitals have end dates in between July 1, 2016 and December 30, 2016, with only one hospital having an end date in 2017, and that end date is in February 2017. For ease of exposition, we refer to the data from OSHPD’s 2016-17 file as 2016 data, although approximately 23 percent of the data cover 2015, and less than 0.1 percent are from 2017. The distribution of end dates in the 2015-16 file is similar.

We combine data from OSHPD’s 2016-17 file with data from the 2015-16 file to increase stability of the estimates. We refer to the combined data as 2015 and 2016, understanding that approximately 12 percent of the data is from 2014.

Stability of the estimates could be increased further if we used additional years of data. However, there are two disadvantages to including data from 2014-15 and earlier years in the analysis. First, the estimates would be more heavily influenced by older data, and less likely to reflect current revenue and costs. Second, as discussed below, we have not identified a source of data for the amounts paid by hospitals for the Hospital Quality Assurance Fee (HQAf) prior to January 1, 2014; this limitation would limit our ability to accurately estimate PTCRs for Medi-Cal for earlier years.

³ Data and documentation can be accessed at: <https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>

⁴ The AFDRs do provide data on gross revenues by payer, separately for inpatient and outpatient, but data on net revenue (that is, net payment) for Medicare managed care and other “other third party” (that is, privately insured) managed care are only available for combined inpatient and outpatient. For other third party, managed care accounts for the large majority of revenue, and traditional for only a small amount. Given the dominance of managed care in other third party, we do not limit the analysis to “traditional” patients. We did not construct estimates of net revenue separately for inpatient and outpatient services because the ratio of net payment to gross charges was not likely to be the same for both inpatient and outpatient services.

Estimating costs of services for each payer

The simplest approach to estimating the cost of services for each payer would be to allocate total hospital costs to each payer in proportion to the fraction of total charges accounted for by each payer. That is, if total hospital costs are \$1 billion, and total hospital charges are \$4 billion, and Medicare patients are charged \$1.6 billion, or 40 percent of total charges, then this approach would estimate that the cost of services delivered to Medicare patients was \$400 million.

We use an approach similar to this simple approach, but one that recognizes that the cost-to-charge ratio

(CCR) differs across departments within a hospital. Our approach calculates CCRs for each department and allocates departmental-level costs to each payer according to the proportion of charges to each payer in each department. We then sum the results across departments.

The OSHPD reports provide estimates of the cost of hospital services in each of 75 revenue centers. Revenue centers include units such as surgical ICU, labor and delivery services, clinical laboratory services, and diagnostic radiology. A full list of revenue centers is shown in Exhibit A-1.

Exhibit A-1

Cost-to-Charge Ratios by Revenue Center, 2015-16 and 2016-17

Revenue Centers	Total Cost	Total Charge	Cost to Charge Ratio	Private Percent of Charges	Medicare Percent of Charges	Medi-Cal Percent of Charges	County Percent of Charges	Other Percent of Charges
Medical Surgical ICU	\$8,096,147,345	\$25,585,970,271	0.32	20.1%	50.7%	27.7%	0.2%	1.3%
Coronary Care	\$1,722,619,749	\$5,586,935,328	0.31	22.4%	54.7%	21.8%	0.1%	0.9%
Pediatric ICU	\$436,252,126	\$1,610,950,361	0.27	32.7%	0.9%	65.7%	0.4%	0.4%
Neonatal ICU	\$2,689,730,083	\$10,581,248,622	0.25	42.1%	0.1%	56.6%	0.1%	1.1%
Psychiatric ICU	\$40,924,493	\$152,581,706	0.27	20.6%	29.7%	46.7%	0.2%	2.8%
Burn Care	\$226,805,617	\$753,430,717	0.30	29.1%	22.2%	46.0%	0.2%	2.5%
Other ICU	\$457,295,374	\$1,843,098,878	0.25	22.9%	47.6%	29.9%	0.5%	0.7%
Definitive Observation	\$3,766,175,107	\$13,959,499,868	0.27	14.1%	60.4%	24.4%	0.1%	1.1%
Medical/Surgical Acute	\$22,571,300,605	\$67,380,719,270	0.33	19.2%	50.2%	29.2%	0.3%	1.2%
Pediatric Acute	\$1,025,445,155	\$2,474,561,516	0.41	34.8%	1.1%	62.2%	1.0%	0.9%
Psychiatric Acute - Adult	\$2,104,951,729	\$5,212,841,204	0.40	22.8%	35.9%	39.3%	0.3%	1.7%
Psychiatric Acute - Adolescent and Child	\$55,091,804	\$135,913,082	0.41	66.6%	0.0%	32.3%	0.6%	0.5%
Obstetrics Acute	\$2,639,626,874	\$6,527,940,065	0.40	44.1%	1.1%	51.7%	0.2%	3.1%
Alternate Birthing Center	\$1,149,415,949	\$3,162,082,553	0.36	44.5%	0.5%	51.7%	0.0%	3.4%
Chemical Dependency Services	\$70,296,767	\$161,401,973	0.44	63.7%	29.3%	2.5%	0.0%	4.5%
Physical Rehab Center	\$1,229,001,732	\$3,225,359,136	0.38	26.6%	55.7%	17.1%	0.1%	0.5%
Hospice Inpatient Services	\$7,234,339	\$16,992,513	0.43	87.1%	12.1%	0.7%	0.0%	0.1%
Other Acute Care	\$182,064,225	\$791,213,368	0.23	8.8%	48.1%	40.9%	1.1%	1.1%
Nursery Acute	\$870,117,187	\$2,599,887,532	0.33	41.7%	0.1%	54.7%	0.1%	3.7%
Sub-Acute Care	\$591,275,306	\$1,601,502,315	0.37	4.9%	24.3%	70.3%	0.0%	0.4%
Sub-Acute Care - Pediatric	\$23,095,089	\$29,938,693	0.77	2.8%	3.7%	93.5%	0.0%	0.0%
Skilled Nursing Care	\$1,082,501,086	\$2,010,022,472	0.54	5.5%	35.7%	57.4%	0.2%	1.3%
Psychiatric Long-term Care	\$12,493,391	\$47,057,350	0.27	0.0%	0.0%	0.0%	0.0%	100.0%
Intermediate Care	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residential Care	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Long-term Care	\$24,283,194	\$40,700,963	0.60	1.2%	0.0%	98.0%	0.0%	0.8%
Other Daily Hospital Services	\$0	\$0	-	-	-	-	-	-
Emergency Services	\$11,579,307,074	\$60,831,560,378	0.19	23.3%	28.7%	41.9%	0.6%	5.5%
Medical Transportation Services	\$144,954,038	\$373,008,392	0.39	19.9%	45.1%	30.0%	1.9%	3.1%
Psychiatric Emergency Rooms	\$328,990,257	\$584,343,242	0.56	35.3%	15.0%	40.2%	5.3%	4.2%
Clinics	\$7,611,247,927	\$12,915,871,196	0.59	33.8%	32.1%	29.2%	2.8%	1.9%
Satellite Clinics	\$2,387,994,726	\$2,914,774,683	0.82	29.8%	28.1%	39.9%	2.0%	1.8%
Satellite Ambulatory Surgery Clinics	\$68,128,280	\$273,451,850	0.25	52.7%	37.0%	7.4%	0.0%	2.9%
Outpatient Chemical Dependency Services	\$66,904,592	\$98,769,584	0.68	76.6%	8.5%	0.4%	0.0%	14.5%
Observation Care	\$1,172,692,389	\$3,837,538,885	0.31	23.8%	54.0%	20.4%	0.1%	1.7%
Partial Hospitalization - Psychiatric	\$131,422,838	\$367,900,771	0.36	19.5%	78.6%	1.0%	0.0%	0.9%
Home Health Care	\$678,451,473	\$695,669,160	0.98	18.9%	65.6%	13.5%	0.0%	1.9%
Hospice Outpatient Services	\$268,890,298	\$328,693,512	0.82	5.2%	83.9%	9.7%	0.1%	1.1%

Exhibit A-1

Cost-to-Charge Ratios by Revenue Center, 2015-16 and 2016-17 continued from page 7

Revenue Centers	Total Cost	Total Charge	Cost to Charge Ratio	Private Percent of Charges	Medicare Percent of Charges	Medi-Cal Percent of Charges	County Percent of Charges	Other Percent of Charges
Adult Day Health Care Services	\$27,694,270	\$22,097,744	1.25	34.2%	29.5%	18.4%	0.0%	17.9%
Other Ambulatory Services	\$172,744,341	\$349,696,564	0.49	43.6%	36.8%	16.6%	0.0%	2.9%
Labor & Delivery Services	\$3,067,950,399	\$7,766,570,807	0.40	42.4%	0.6%	53.5%	0.2%	3.5%
Surgery & Recovery Services	\$13,160,350,231	\$78,650,794,803	0.17	38.4%	39.2%	20.5%	0.3%	1.6%
Ambulatory Surgery Services	\$1,031,932,226	\$5,052,402,078	0.20	46.8%	31.8%	17.6%	0.0%	3.8%
Anesthesiology	\$1,716,919,350	\$13,401,078,265	0.13	38.5%	35.5%	23.8%	0.6%	1.6%
Medical Supplies sold to patients	\$14,501,570,978	\$42,159,342,818	0.34	31.0%	47.7%	19.7%	0.3%	1.4%
Durable Medical Equipment	\$13,866,726	\$23,782,965	0.58	25.2%	49.3%	21.3%	0.1%	4.0%
Clinical Laboratory Services	\$8,681,601,230	\$67,432,965,793	0.13	23.1%	43.1%	29.8%	0.3%	3.7%
Pathological Laboratory Services	\$968,189,312	\$3,336,828,814	0.29	39.5%	34.4%	21.3%	0.9%	3.7%
Blood Bank	\$1,182,725,464	\$3,089,616,581	0.38	27.5%	40.9%	26.3%	0.5%	4.7%
Echocardiology	\$327,948,554	\$2,900,591,499	0.11	23.9%	55.1%	19.3%	0.1%	1.6%
Cardiac Catheterization Services	\$2,701,451,683	\$20,247,288,861	0.13	26.9%	58.3%	13.4%	0.1%	1.4%
Cardiology Services	\$1,475,531,608	\$9,799,033,184	0.15	22.2%	51.9%	23.3%	0.3%	2.3%
Electromyography	\$15,095,877	\$74,325,551	0.20	30.0%	48.0%	20.1%	0.0%	1.9%
Electroencephalography	\$301,258,886	\$1,004,683,279	0.30	34.5%	36.3%	27.8%	0.3%	1.1%
Radiology - Diagnostic	\$5,490,516,056	\$23,395,174,281	0.23	29.5%	41.3%	25.9%	0.5%	2.8%
Radiology - Therapeutic	\$1,728,607,913	\$9,610,022,143	0.18	38.5%	44.9%	14.4%	0.1%	1.5%
Nuclear Medicine	\$840,762,883	\$4,417,118,686	0.19	26.5%	52.1%	19.4%	0.2%	1.6%
MRI	\$1,009,043,645	\$9,702,222,055	0.10	37.2%	40.5%	20.2%	0.3%	1.9%
Ultrasonography	\$942,543,139	\$7,540,377,745	0.12	29.9%	28.5%	38.1%	0.3%	3.1%
Computed Tomographic Scanner	\$2,108,205,606	\$36,035,509,468	0.06	25.7%	40.3%	29.5%	0.2%	4.2%
Drugs Sold to Patients	\$14,492,682,423	\$76,611,164,396	0.19	28.7%	43.6%	25.4%	0.3%	1.7%
Respiratory Therapy	\$3,481,689,111	\$24,426,542,174	0.14	16.0%	51.5%	31.6%	0.1%	1.1%
Pulmonary Function Services	\$237,424,514	\$1,441,410,501	0.16	26.3%	44.0%	28.1%	0.4%	1.1%
Renal Dialysis	\$940,991,294	\$3,610,533,430	0.26	11.9%	64.3%	23.3%	0.1%	0.6%
Lithotripsy	\$11,556,395	\$122,472,472	0.09	46.7%	33.7%	18.9%	0.0%	0.7%
Gastro-Intestinal Services	\$1,246,515,308	\$5,162,477,865	0.24	33.5%	43.5%	21.6%	0.3%	0.8%
Physical Therapy	\$2,165,596,172	\$6,460,461,266	0.34	28.8%	52.0%	18.0%	0.3%	1.0%
Speech Language Pathology	\$271,164,035	\$958,815,977	0.28	20.4%	57.0%	21.7%	0.2%	0.9%
Occupational Therapy	\$569,942,918	\$1,948,593,129	0.29	28.1%	50.4%	20.1%	0.5%	1.0%
Other Physical Medicine	\$123,564,400	\$266,905,734	0.46	40.5%	24.5%	31.7%	1.5%	1.8%
Electroconvulsive Therapy	\$5,849,606	\$20,065,719	0.29	41.9%	47.3%	10.7%	0.0%	0.0%
Psychiatric/Psychological Testing	\$25,349,953	\$28,583,155	0.89	37.5%	38.4%	22.0%	0.0%	2.0%
Psychiatric Individual/Group Therapy	\$83,756,283	\$296,718,033	0.28	52.5%	40.7%	6.0%	0.0%	0.9%
Organ Acquisition	\$882,271,628	\$1,102,331,087	0.80	40.5%	44.4%	13.0%	0.0%	2.1%
Other Ancillary Services	\$1,643,319,015	\$4,551,517,251	0.36	30.1%	47.0%	18.0%	0.4%	4.5%

Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development, supplemented by data on Hospital Quality Assurance Fee payments from the California Department of Health Care Services.

For each revenue center, the report includes data on direct costs of operations, as well as the indirect costs allocated to the department. Indirect costs are allocated to revenue centers using formulas established by OSPHD, using factors such as gross charges, square footage, and full-time equivalent (FTE) staff count.

We estimate the CCR for each revenue center by dividing total cost in the revenue center by gross charges.⁵ The average cost to charge ratio for each revenue center is shown in Exhibit A-1. Across all hospital services, the average CCR is 0.23 – that is, costs are approximately 23

percent of charges. The CCRs in some revenue centers are much higher than average (e.g., acute psychiatric services at 0.40 and skilled nursing facility services at 0.54), and in others, much lower than average (e.g., cardiac catheterization at 0.13, MRI at 0.10, and CT scan at 0.06).

We estimate the cost of services for each payer by multiplying the CCR in each revenue center by the gross charges for each payer in each revenue center, and then summing across revenue centers. On average, our department-level approach results in estimated costs for each payer that are similar to the estimates that would be

⁵ Additional detail is provided in Appendix B.

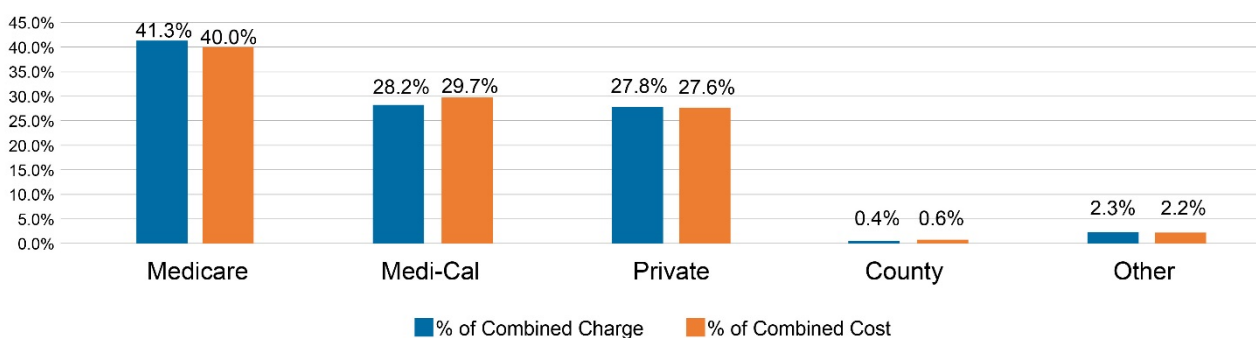
made with the approach of simply using gross charges for the entire hospital and ignoring distinctions across revenue centers. For example, using the simple approach, Medicare accounts for 41.3 percent of all charges, and thus would be allocated 41.3 percent of all hospital costs. Using our department-level approach, Medicare is allocated 40 percent of all hospital costs (Exhibit A-2). Conversely, Medi-Cal accounts for 28.2 percent of charges, but 29.7 percent of costs. The two methods produce virtually identical results for private payers. However, even though the two approaches produce similar results on average, they do produce different results at a few hospitals. For example, at St. Vincent's Medical Center, Medicare accounts for approximately 67 percent of total charges, but approximately 62 percent of costs using our revenue center estimation approach.

We follow a convention used by OSHPD in calculating the CCR and extend this convention to our calculation of operating margin. In constructing "pivot tables," OSHPD subtracts "other operating revenue" from "total operating expenses" to compute the numerator of the CCR.⁶ The OSHPD rationale for subtracting "other operating revenue" from the numerator is that the other operating revenue is incidental to the activities that generate operating expenses. For example, rebates and refunds are classified as other operating revenue, which have the effect of reducing expenses. We follow a similar convention in our analysis and increase the estimated costs for each payer from the revenue center approach described above by the ratio of

(total operating expenses minus other operating revenue)/(total costs summed across all revenue centers). This ratio averages approximately 1.029 in the 2015-16 and 1.022 in the 2016-17 data. It is not identically equal to 1.0 for three reasons, one of which we understand, and the other two of which are less clear. The main reason the ratio is not identically 1.0 is that operating expenses include "purchased inpatient services" and "purchased outpatient services," and these costs are not allocated to revenue centers, and thus not included in our revenue center approach. On average, these two costs average 1.5 percent of total operating costs. Second, for some hospitals, the total operating costs on page 10, where the costs by revenue center are reported are slightly smaller (on average, 0.7 percent) than the total operating expenses minus other operating revenue from page 8. Third, for some hospitals in the 2015-16 data (although not in the 2016-17 data), the sum of costs across revenue centers, plus the costs for purchased inpatient and outpatient services, is less than the total operating costs listed on page 10, with an average difference of approximately 0.6 percent in the 2015-16 data. It is not clear what accounts for the small differences between page 10 and page 8 estimates of total operating costs, nor for the small differences between the sum of costs by revenue center (plus purchased inpatient and outpatient services) and the total operating costs reported on page 10 in the 2015-16 data. In any case, we use the ratio adjustment described here to assure that total costs across all payers are equal to total operating expense minus other operating revenue as reported on page 8.

Exhibit A-2

Percent of Combined Hospital Charges vs. Percent of Combined Hospital Costs, By Payer, 2015 and 2016



Source: Authors' analysis of 2015-16 and 2016-17 Annual Financial Disclosure Reports filed with the California Office of Statewide Health Planning and Development, supplemented by data on Hospital Quality Assurance Fee Payments from the California Department of Health Care Services.

⁶ Available at: <https://data.chhs.ca.gov/dataset/hospital-annual-financial-data-selected-data-pivot-tables>.

Our approach to calculating total operating margin differs very slightly from the approach used by OSHPD. OSHPD divides total operating revenue by total operating cost, where total operating revenue includes both patient and “other” revenue (that is, non-patient revenue). In our analyses, following the convention that OSHPD and we use to calculate the cost to charge ratios, we subtract other operating revenue from both the numerator and the denominator of the all payer margin statistic. In practice, this has no effect on the absolute size of the margin, and only a negligible effect on the margin as a percentage of cost. Further, as described below, we subtract the Hospital Quality Assurance Fee (HQAF) from both the numerator and denominator and subtract intergovernmental transfer (IGT) payments from the numerator.

Our approach assumes that if a given payer (e.g. Medicare) accounts for 40 percent of charges in a particular revenue center, then it also accounts for 40 percent of costs in that revenue center. If the CCRs vary across services within a revenue center, then this assumption may not hold. For example, suppose that the CCR in radiology is 25 percent, that the total costs of the radiology revenue center are \$20 million, and that Medicare accounts for 40 percent of the charges in the revenue center. Our approach will estimate \$8 million in radiology costs for Medicare patients. For the sake of simplicity, suppose that there are only two services delivered in radiology (e.g., X-rays and MRIs), that each service accounts for \$10 million in cost, that total charges for X-rays are \$20 million, total charges for MRIs \$60 million, and that Medicare accounts for 70 percent of X-rays and only 30 percent of MRIs.⁷ Then total charges to Medicare are \$32 million, or 40 percent of the total \$80 million in charges. Properly estimated, the cost of radiology services delivered to Medicare patients is \$10 million (that is, 70 percent of \$10 million plus 30 percent of \$10 million), but our approach would estimate Medicare costs at \$8 million.

The possibility of heterogeneity in CCRs across services within departments is a theoretical cause for concern, but seems unlikely to be a large concern in practice. As shown above, the department-level approach, which allows for heterogeneity in CCRs and Medicare penetration *across* departments, produces results that are quite similar to the very simple approach of just using gross charges for the entire

hospital for most hospitals. Given that heterogeneity in CCRs *across* departments doesn’t seem to affect the results very much, we would be surprised if heterogeneity in CCRs across services *within* departments would have much effect on our results.

To the extent that heterogeneity in CCRs across services *within* departments does matter, we would expect that it would cause our estimates of the ratio of Private to Medicare PTCR to be biased downwards. That is, when we estimate that, on average, private insurers pay at 209 percent of Medicare rates, if we were able to account for heterogeneity of CCRs across services within departments, it is likely that the 209 percent estimate would increase. Because at least a few private payers pay a percentage of charge, while Medicare and Medi-Cal payments are not at all influenced by charges, it seems likely that, to the extent that CCRs vary within departments, that charges would be higher (and CCRs lower) on services that are disproportionately utilized by private payers. As in our simple X-ray/MRI example above, that heterogeneity would result in an underestimate of costs for Medicare, and an overestimate of costs for private payers. As a result, the PTCR for Medicare that we estimate will be higher than it would be if heterogeneity were accounted for, and the PTCR for private payers will be lower than it should be, with the result that the ratio we estimate for the private to Medicare PTCR will be lower than it should be. We emphasize, however, that this is an extreme example, and we do not think that heterogeneity of PTCRs across services within departments will have much effect on our results.

Adjusting for Medi-Cal Hospital Quality Assurance Fee payments

We make two adjustments to the Annual Financial Disclosure Report data to account for special circumstances regarding Medi-Cal reimbursement.⁸

First, the private hospitals included in our analysis are estimated to have paid HQAFs of approximately \$3.5 billion in 2015, and approximately the same amount in 2016. The proceeds from these fees are used by the California Department of Health Care Services (DHCS) as state matching funds to increase Medi-Cal payments to hospitals above the level that they would be in the absence of the HQAF program. The HQAF program increases the matching funds provided by the federal

⁷ MRI is a separate revenue center; this example is meant to be illustrative only.

⁸ For a fuller discussion of Medi-Cal financing, see Navigant (2017).

government, and thus increases net revenues to hospitals.

OSHPD instructs hospitals to include the HQAF payments, like other tax payments, as a general administrative expense. As described above, administrative expenses, like other indirect costs, are allocated to departmental direct cost centers. As a result, if the payer mix at a hospital is 40 percent Medicare, 30 percent Medi-Cal, and 25 percent private insurance, approximately 40 percent of the HQAF fee payment will be allocated as a cost to Medicare, 30 percent to Medi-Cal, and 25 percent to private insurers.

We think that a more sensible approach would recognize that the HQAF payment is specific to Medi-Cal and not spread the cost of that payment to other payers. We see two reasonable choices for how to account for the HQAF payment. First, we could subtract the HQAF payment from Medi-Cal net revenue before computing the Medi-Cal PTCR, and adjust the denominators of the PTCRs for each payer to remove the portion of the HQAF payment that was allocated to that payer. Second, we could allocate the entire HQAF payment as a cost to Medi-Cal, and, as in the first approach, adjust Medicare and private payer costs upwards. The first approach treats the HQAF payment as an adjustment to revenue; if a hospital receives \$60 million in revenue from Medi-Cal but makes an HQAF payment of \$20 million, the first approach adjusts the Medi-Cal revenue to \$40 million. The second approach treats the HQAF payment as a Medi-Cal specific cost of providing services. The two approaches will have similar, although not identical, effects on the estimated Medi-Cal PTCR. If, for example, a hospital's HQAF payment is \$20 million, and, ignoring the HQAF payment, Medi-Cal net revenue is \$60 million and the estimated cost of delivering services to Medi-Cal patients is \$70 million, in the first approach the Medi-Cal PTCR will be $\$40 \text{ million} / \$70 \text{ million} = 0.57$, while in the second approach it will be $\$60 / \$90 = 0.67$. Although either approach is defensible, we adopt the first approach, treating the HQAF payment as an adjustment to revenue, because it makes sense to us to focus on net Medi-Cal revenue as the difference between revenue received from the Medi-Cal program minus the amount that the hospital paid for the HQAF program.

There are two difficulties in operationalizing the adjustment for HQAF payments – one conceptual and one operational. The conceptual problem is that the timing of HQAF payments differs from the timing of increased Medi-Cal payments. Hospitals make HQAF payments in one fiscal year, but may not receive increased Medi-Cal reimbursement (including the federal match) until subsequent years. As a result, the Medi-Cal PTCRs will fluctuate substantially from year to year. The operational problem is that the Annual Financial Disclosure Reports do not include data on how much each hospital paid to the HQAF program; those amounts are simply included as one of many costs subsumed under “general administrative expense.”

However, DHCS has made available data on projected HQAF payments by each hospital for state fiscal years 2014-15, 2015-16 and 2016-17.⁹ In the absence of information about the timing of the HQAF payment, we assume that the payment was made in equal amounts throughout the state fiscal year, and estimate the amount of the HQAF payment in each hospital's fiscal year. For example, for a hospital with a fiscal year from July 1, 2015 through June 30, 2016, we estimate that the HQAF payment for that year was equal to the projected HQAF payment for state FY 2015-16. As a second example, for a hospital with a fiscal year from January 1, 2015 through December 31, 2015, we estimate that the HQAF payment was equal to one-half of the HQAF payment for state FY 2014-15 plus one-half of the HQAF payment for state FY 2015-16.

Having estimated the HQAF payment for each private hospital for the 2015-2016 and 2016-2017 OSHPD data files (corresponding, largely, to 2015 and 2016), we then adjust the PTCRs for each payer as described above – that is, by first multiplying the estimated HQAF payment by the share of costs accounted for by each payer, adding the result to the estimated cost for each payer, and subtracting the estimated HQAF payment from the net Medi-Cal patient revenue. The result of the adjustment for the HQAF payments is to increase the estimated PTCR for Medicare and private insurers, and to decrease the PTCR for Medi-Cal.

⁹ California Department of Health Care Services, Hospital Quality Assurance Fee Program, <https://www.dhcs.ca.gov/provgovpart/pages/hqaf.aspx>.

Adjusting for Intergovernmental Transfers

Public hospitals do not make HQAF payments, but do have a variety of other kinds of special arrangements with Medi-Cal. First, some hospitals make intergovernmental transfers (IGTs) in which they send funds to DHCS. The IGT payments are then matched by the federal government, and DHCS pays the hospital the amount of the IGT plus the amount of the federal match. OSHPD instructs hospitals to report IGT payments in the AFDR as an “equity transfer,” and this equity transfer does not directly affect either revenues or costs. Following the reasoning discussed above, in our estimates we subtract the IGT amount from Medi-Cal revenues before estimating the Medi-Cal PTCR.¹⁰

In addition, public hospitals fund the state share of the Medi-Cal payment they receive by making a “Certified Public Expenditure” (CPE). If, for example, a public hospital certifies that it has spent \$300 million to care for Medi-Cal patients, then the federal government will make a matching payment of \$150 million (assuming that all of the patients were “old eligibles” at a 50 percent match rate). Unlike IGTs, in which funds are transferred from the hospital to DHCS before being matched and then sent back to the hospital, the \$300 million that the hospital has certified as a public expenditure is not transferred to DHCS. The matching funds from the federal government are paid by DHCS to the hospital, and OSHPD instructs hospitals to report those matching funds (as well as any IGT payments and their federal match) as Medi-Cal revenue. If hospitals are following OSHPD instructions correctly, no adjustment to the PTCRs is needed for CPEs.

As described in a report to the California Department of Health Care Services written by Navigant (2017), public hospitals (including University of California hospitals) receive other sources of Medi-Cal revenue that are not direct payment for the care of Medi-Cal beneficiaries. These other funding sources are not counted as Medi-Cal revenue. If they were included as Medi-Cal revenue, Medi-Cal PTCRs would be larger than the estimates we report.

Cost per adjusted admission

Following a protocol used by OSHPD in the “pivot tables,” we calculate the number of adjusted admissions in two steps. First, for each hospital, we calculate the ratio of outpatient charges per visit to inpatient charges per admission. Second, we multiply this ratio by the number of outpatient visits, and add the product to the number of inpatient admissions to estimate the number of “adjusted admissions.”¹¹

To estimate cost per adjusted admission, we divide total operating expense minus other operating revenue by the number of adjusted admissions.

Cost per case-mix adjusted admission

OSHPD uses hospital discharge data to estimate a DRG-based “case mix index” for each hospital.¹² For hospitals in our analysis in the 2016-17 reporting year, the statewide average case mix index is 1.37. We divide each case-mix value by 1.37, normalizing the values in 2016-17 to 1.0. We then divide the cost per adjusted admission by the normalized case-mix value for each hospital to estimate the cost per case-mix adjusted admission.¹³

¹⁰ Data on IGTs are reported on page 7, row 105. In addition, UC Davis, LA County/USC, and Hazel Hawkins Memorial Hospital reported data on page 7, row 110 that appear to be IGT payments, and we treat these row 110 entries in the same way as the row 105 entries. Hospitals may differ in how they report IGT payments to OSHPD, and it is possible that IGT payments made by public hospitals, including UCs, are underreported. To the extent that IGT payments are underreported, then the Medi-Cal PTCR and overall margin will be biased upwards.

¹¹ A more sensible approach, we think, would be to divide the estimated cost per outpatient visit by the estimated cost per admission and multiply that ratio by the number of outpatient visits, rather than use charges per outpatient visit divided by charges per admission, as OSHPD does. However, we adopt the OSHPD convention to make our results comparable to statistics on the number of adjusted admissions published by OSHPD.

¹² <https://data.chhs.ca.gov/dataset?tags=oshpd&tags=acuity&tags=case+mix+index>

¹³ The case mix statistic calculated by OSHPD assumes that resource use for a given DRG does not vary by payer. To the extent that, for example, Medicare beneficiaries may use more resources per admission in a given DRG than the privately insured, then the case-mix statistic will underestimate the case mix at hospitals with disproportionately large fractions of Medicare patients and overestimate it at hospitals that serve relatively few Medicare patients.

Appendix B

This appendix supplied details on the methods used to estimate the cost to each payer. In the OSHPD Annual Financial Disclosure Report, page 10, column 9, row “x” provides the net cost for each revenue center “x.” These costs were added to the Adjustment for Professional Component from page 10, column 13, row x. The sum of columns 9 and 13 were then divided by page 10, column 11, row x, “Gross Revenue.”

$$\text{Cost-to-Charge Ratio} = \frac{(10_9_x + 10_13_x)}{10_11_x}$$

**Using a page_column_row format*

Page 12 provides the gross revenue for each payer at each revenue center. The cost to charge ratio that was calculated from page 10 was then applied to each payer’s gross revenue, including both inpatient and outpatient services.

For example, Medicare costs were estimated by adding the inpatient and outpatient revenue at each revenue center for both Medicare Traditional and Medicare Managed and multiplying this sum by the cost to charge ratio.

$$\text{Medicare Costs Revenue Center } X = (12_1_x + 12_2_x + 12_3_x + 12_4_x) * (\text{Cost-to-Charge Ratio } X)$$

The total cost for each payer was then calculated using the sum of all costs at each revenue center.

$$\text{Medicare Total Costs} = \sum \text{Medicare Costs Revenue Center } X$$

This was calculated for all payers including Medicare, Medi-Cal, private, county indigent, other indigent, and other, for both their fee-for-service plans and managed care.

Payments for each payer were calculated by using the sum of net patient revenues (NPRs) for inpatient and outpatient services, for fee-for-service, and managed care plans. These amounts were found on page 12 line 460.

For example:

$$\text{Medicare NPR} = (12_1_460 + 12_2_460 + 12_3_460 + 12_4_460)$$

The PTCR was then calculated for each payer by dividing the net patient revenue by total cost:

$$\text{Medicare PTCR} = \frac{\text{Medicare NPR}}{\text{Medicare Total Cost}}$$

PTCRs were calculated for each payer at the hospital level.

As described in Appendix A, three additional adjustments were made to the PTCRs. First, a ratio adjustment was made to align the total cost from page 10 with total operating costs, minus other revenue, from page 8. Second, payments for IGTs were subtracted from net Medi-Cal revenue. Third, estimated HQAF payments were allocated to each payer based on the proportion of costs accounted for by each payer, subtracted from the denominator of the PTCR estimates, and the entire HQAF payment was subtracted from net Medi-Cal revenue.

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