

# The Distribution of Provider Relief Payments Among California Health Systems

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## **Abstract**

California Governor Gavin Newsom issued an executive order on March 19, 2020 that effectively prevented hospitals from performing elective procedures to free capacity for a possible surge of COVID-19 patients (order lifted on April 22, 2020). This report examines the financial status of the largest health systems in California, with a particular focus on their liquid assets for financial solvency. It then reports the amount they have received in CARES Act provider relief payments. Overall, 24% of the estimated reduction in net patient revenue was offset by direct CARES Act grants, but the offset varied widely by hospital. The report then presents the correlation between provider relief payments and a hospital's private insurance share of patient revenue, hospital's operating margin, and the hospital market concentration of the county in which it resides. We find hospitals with a larger share of net patient revenue from private insurers and hospitals residing in highly concentrated hospital markets received larger payments per adjusted patient day. The results suggest that careful monitoring of future relief payments is needed.

## Introduction

Hospitals' financial health has worsened dramatically since the COVID-19 pandemic began. Kaufman Hall's data from over 800 hospitals found that earnings before interest, taxes, depreciation and amortization (EBITDA) operating margins in March 2020 were down 13 percentage points from same time last year (Kaufman Hall, 2020). A report from the American Hospital Association estimated a total financial impact of \$202.6 billion in losses resulting from COVID-19 expenses and lost revenue for hospitals and health systems over the four-month period from March 1 to June 30, 2020 (American Hospital Association, 2020).

California Governor Gavin Newsom issued an executive order on March 19, 2020 that effectively prevented hospitals from performing elective procedures to free capacity for a possible surge of COVID-19 patients (order lifted on April 22, 2020). Researchers have estimated that outpatient services in California dropped by more than 50% and emergency department visits dropped by 40-60% in the 60-day period after the state's shelter-in-place order went into effect on March 19, 2020 (Melnick and Maerki, 2020). The same report estimated total net patient revenue fell by \$3.2 billion per month in the first four months of the pandemic (March - June 2020) -- a 37% reduction from pre-COVID-19 levels.

The Coronavirus Aid, Relief, and Economic Security (CARES) Act and the Paycheck Protection Program and Health Care Enhancement Act provided direct and indirect financial aid to hospitals and health care providers, including accelerated and advanced Medicare payments, Medicare payment increases for COVID-19 patients, the deferral of employer Social Security contributions, as well as -- most importantly for the purposes of this study -- \$175 billion in relief funds in the form of direct grants to hospitals and other health care providers to help alleviate the shortfall in revenues caused by the pandemic.

Payments from the \$50 billion general distribution, the \$12 billion targeted allocation to high impact areas, the \$10 billion targeted allocation to rural providers, and the \$4.9 billion targeted to skilled nursing facilities (\$76.9 billion in total) are being distributed by the Department of Health and Human Services (HHS) through the Health Resources and Services Administration (HRSA). As of July 8, 2020, HRSA has publicly released the provider names and amounts received for \$60.7 billion of the \$76.9 billion (79%) that they are charged with allocating (hereafter, CARES Act payments) (HRSA, 2020). Of this \$60.7 billion, \$4.8 billion has gone to providers with headquarters in California. These CARES Act payments are grants (as opposed to loans) and are the only form of relief payments we analyze in this report.

The purpose of this study is threefold.

- Describe the liquid assets held by the largest (in terms of number of hospitals) health systems in California prior to the COVID-19 pandemic.
- Present the current amount received in CARES Acts payments by each of the largest health systems in California.
- Estimate the association between the CARES Act payment per adjusted patient day received by California hospitals and the share of net patient revenue from private insurers, hospital market concentration, and operating margin.

## **The Financial Position of California Health Systems Prior to COVID-19**

In this section, we report the financial position of the largest health systems in California prior to the COVID-19 pandemic, focusing on cash and cash equivalents and investments because these assets could help weather the economic fallout from COVID-19. The value of cash and cash equivalents is relatively stable, and these assets are used to cover short-term obligations. In contrast, the value of investments is more volatile, particularly during the COVID-19 pandemic, but these assets are generally liquid and can be used as emergency financial reserves. However, these investments are often needed to cover long-term obligations, such as debt payments and retirement benefit payments, but the value of these investments can exceed those obligations.

Tables 1 and 2 report the value of investments and cash/cash equivalents, respectively, held by the largest (in terms of number of hospitals in California<sup>5</sup>) health systems<sup>6</sup> in California with available financial statements.<sup>7</sup> The systems are sorted in the tables by the number of California hospitals in a system, spanning from Kaiser with 32 to St. Joseph's with 6. Despite the table being sorted by number of California hospitals, the investment and cash/cash equivalent figures are for the entire system; hence, non-hospital entities and entities operating outside of California are included.

Table 1 presents the value of investments — both short-term and non-current investments — held by the major health systems, as reported on their most recent audited annual financial statements, usually as of December 31, 2019.<sup>8</sup> Table 1 shows that the value of investments ranges from \$42 billion for Kaiser Permanente to \$52 million for Kindred Healthcare. Kaiser Permanente, the largest health system, holds nearly seven times the value in investments than the next largest system, Sutter Health. When only short-term investments are considered,

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<sup>5</sup> As reported by California's Office of Statewide Health Planning and Development (OSHPD) Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>).

<sup>6</sup> A health system is defined by an organization that owns one or more hospitals.

<sup>7</sup> Some health systems do not publicly release audited financial statements because they are privately owned.

<sup>8</sup> We obtained audited annual financial statements directly from a system's website, or when they were not published there, we obtained them from the Electronic Municipal Market Access (EMMA) website (<https://emma.msrb.org/>).

Kaiser is still the highest with \$9 billion, which puts it about two times above the value of short-term investments of the next highest system.

Table 1. Value of Investments Held by the Largest Health Systems in California

<b>Health system (# of hospitals in California)</b>	<b>Short-term investments (\$ millions)</b>	<b>Non-current investments (\$ millions)</b>	<b>Total investments (\$ millions)</b>
Kaiser Permanente (32)	9,039 <sup>A</sup>	33,245	42,284
Dignity Health (25) <sup>B</sup>	2,564	2,686 <sup>C</sup>	5,250
Sutter Health (25)	5,272	1,082	6,354
Adventist Health (14)	356	1,459	1,815
Tenet Healthcare Corporation (12)	0	980 <sup>D</sup>	980
Kindred Healthcare, Inc. (10)	23 <sup>E</sup>	29 <sup>E</sup>	52
Universal Health Services, Inc. (10)	N/AV <sup>F</sup>	N/AV <sup>F</sup>	N/AV <sup>F</sup>
University of California Medical Centers (8) <sup>G</sup>	345	335 <sup>F</sup>	680
Prime Healthcare Services, Inc. (7) <sup>H</sup>	1	N/AV	N/AV
Prime Healthcare Foundation, Inc. (6)	302	37	340
Sharp Healthcare Corporation (6)	36	350	387
St. Joseph Health System (6)	241 <sup>A</sup>	34 <sup>I</sup>	276

Source: Most recent audited financial reports found through searching a system's website and Electronic Municipal Market Access (EMMA) website <https://emma.msrb.org/>.

Notes: N/AV = not available because the investment amount could not be identified.

<sup>A</sup> In the Kaiser Permanente and St. Joseph Health System financial statements, short-term investments is listed as current investments.

<sup>B</sup> The Dignity Health financial statement is as of June 30, 2018, prior to the merger of Dignity Health and Catholic Health Initiatives (CHI) in 2019 that created CommonSpirit Health. We only include Dignity Health, as CHI did not have hospitals in California.

<sup>C</sup> In the Dignity Health financial statement, a "non-current investments" line item was not included, so we used "long-term assets limited as to use," which primarily included investments.

<sup>D</sup> In the Tenet Healthcare financial statement, the \$980 million investment value is reported in Note 13.

<sup>E</sup> In the Kindred Healthcare financial statement, the investments were reported as insurance subsidiary investments.

<sup>F</sup> In the Universal Health Services financial statement, short-term and non-current investments are not specifically reported.

<sup>G</sup> CARES Act payments were made to the UC Medical Centers' legal name, the Regents of the University of California; Non-current investments include investments and investments in joint ventures.

<sup>H</sup> Prime Healthcare Services, Inc. is for profit, whereas Prime Healthcare Foundation, Inc. is non-profit and is listed separately.

<sup>I</sup> In the St. Joseph Health System financial statement, non-current investments were based on beneficial interest in perpetual trusts and equity investments in joint ventures.

Table 2 presents the value of cash and cash equivalents<sup>9</sup> held by California’s largest health systems. The value of cash and cash equivalents ranges from a low of \$61 million for Universal and St. Joseph’s up to \$3.6 billion for the University of California Medical Centers.

Table 2. Value of Cash and Cash Equivalents Held by the Largest Health Systems in California

<b>Health system (# of hospitals in California)</b>	<b>Cash and Cash Equivalents (\$ millions)</b>
Kaiser Permanente (32)	904
Dignity Health (25)	930
Sutter Health (25)	505
Adventist Health (14)	482
Tenet Healthcare Corporation (12)**	262
Kindred Healthcare, Inc. (10)	160
Universal Health Services, Inc. (10)	61
University of California Medical Centers (8) <sup>A</sup>	3,677
Prime Healthcare Services, Inc. (7) <sup>B</sup>	195
Prime Healthcare Foundation, Inc. (6)	141
Sharp Healthcare Corporation (6)	375
St. Joseph Health System (6)	61

Source: Most recent audited financial reports found through searching a system’s website and Electronic Municipal Market Access (EMMA) website <https://emma.msrb.org/>.

Notes:

<sup>A</sup> CARES Act payments were made to the UC Medical Centers' legal name, the Regents of the University of California.

<sup>B</sup> Prime Healthcare Services, Inc. is for profit, whereas Prime Healthcare Foundation, Inc. is non-profit and is listed separately.

\*\*In Tenet Healthcare’s financial statement for the first quarter of 2020, it reported \$613 million in cash and cash equivalents as of March 31, 2020, and reported \$2.2 billion of excess cash as of May 1, 2020.

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<sup>9</sup> Cash and cash equivalents represent the total cash on hand or in the bank that an organization can easily access; they often include highly liquid investments with maturities of three months or less.

Table 3 combines the information in Tables 1 and 2 to create a measure of days of cash on hand. We define days of cash on hand as shown in Equation 1: cash and cash equivalents plus investments divided by operating expenses in days.<sup>10</sup> Days of cash on hand is a measure of financial solvency, representing the number of days an organization can pay its expenses with existing cash and investments (Upadhyay and Smith, 2016). Because short-term and non-current investments are generally liquid and a portion may consist of a combination of excess working capital and long-term reserves, we also included them in our measure of days of cash on hand. However, these investments are often needed to cover long-term obligations, such as debt payments and retirement benefit payments. Operating expenses equaled total operating expenses less depreciation and amortization. A recent report by S&P Global Ratings analyzed the cash on hand of 142 U.S. non-profit health systems and found the median days of cash on hand to be 213 (S&P Global Ratings, 2019).

$$(1) \frac{\text{Cash and cash equivalents} + \text{Short-term investments} + \text{Non-current investments}}{\text{Operating expenses} / 365}$$

In Table 3, days of cash on hand ranges from a high of 199 days for Kaiser Permanente to a low of 12 days for Kindred Healthcare. All 11 hospital systems we analyzed are below the S&P Global Ratings median of 213.

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<sup>10</sup> Days of cash on hand usually only includes unrestricted cash and investments, but we were not able to uniformly classify these assets as unrestricted versus restricted using the financial statements of the health systems.

Table 3. Days of Cash on Hand at the Largest Health Systems in California

<b>Health system (# of hospitals in California)</b>	<b>Days of Cash on Hand**</b>	<b>% Below Median</b>
Kaiser Permanente (32)	199	7%
Dignity Health (25)	172	19%
Sutter Health (25)	191	10%
Adventist Health (14)	189	11%
Tenet Healthcare Corporation (12)	28	87%
Kindred Healthcare, Inc. (10)	12	94%
Universal Health Services, Inc. (10)	N/AV	N/AV
University of California Medical Centers (8) <sup>A</sup>	125	41%
Prime Healthcare Services, Inc. (7) <sup>B</sup>	N/AV	N/AV
Prime Healthcare Foundation, Inc. (6)	164	23%
Sharp Healthcare Corporation (6)	78	63%
St. Joseph Health System (6)	154	27%
<b>2018 U.S. Not-For-Profit Health Care System Median Days of Cash on Hand (S&amp;P Global Ratings)</b>	<b>213</b>	

Source: Most recent audited financial reports found through searching a system's website and Electronic Municipal Market Access (EMMA) website <https://emma.msrb.org/>.

Notes:

N/AV: not available

<sup>A</sup> CARES Act payments were made to the UC Medical Centers' legal name, the Regents of the University of California.

<sup>B</sup> Prime Healthcare Services, Inc. is for profit, whereas Prime Healthcare Foundation, Inc. is non-profit and is listed separately.

\*\*Days of cash on hand includes cash and cash equivalents and investments.



## Provider Relief Payments to California Health Systems

Of the \$60.7 billion in CARES Act payments that has been allocated, \$4.8 billion was paid to medical providers with headquarters in California. Table 4 shows the total HRSA provider relief payments (as of July 8, 2020) to the largest health systems in California (HRSA, 2020). The payments listed in Table 4 are broken out by whether the payments were directed to a system's hospitals or medical foundations. Payments to systems that span beyond California are multiplied by the share of the system's beds in California. For instance, Dignity Health received \$400 million in CARES Act payments, but only 79% of its hospital beds were in California with the remainder in Arizona and Nevada.<sup>11</sup> Thus, the total payment shown in Table 4 for Dignity Health is \$315 million (79% of \$400 million).<sup>12</sup>

The \$50 billion in general distribution payments -- the large majority of the payments assigned to HRSA to distribute -- was allocated based on net patient revenue. Specifically, the payments were intended to be the lesser of 2% of a provider's 2018 (or most recent complete tax year) net patient revenue or the sum of incurred losses for March and April 2020. Providers had to bill Medicare fee-for-service in order to qualify.

The systems in Table 4 represent the largest systems in California in terms of number of hospitals. The systems are sorted in the table from the system with the most hospitals (Kaiser with 32) to the fewest (St. Joseph's with 6). The Regents of the University of California received the most in CARES Act payments at \$361 million, Sutter Health received the second most at \$317 million, and Dignity Health received the third most at \$315 million. Four systems -- Kaiser, Kindred, Telecare, and Signature -- did not receive any CARES Act payments because they did not bill Medicare on a fee-for-service basis.<sup>13</sup>

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<sup>11</sup> This is prior to the merger of Dignity Health and Catholic Health Initiatives in 2019 that created CommonSpirit Health.

<sup>12</sup> Specifically,  $\$399,715,788 * 0.787309 = \$314,699,837$ .

<sup>13</sup> Table 4 shows only grants. The total amount of loans (attributable to California) received by the systems listed in Table 4 was \$3.9 billion.

Table 4. CARES Act Payments to 10 Largest Health Systems in California

<b>Health system (# hospitals in California)</b>	<b>Grant payment to CA hospitals</b>	<b>Grant payment to CA medical foundations</b>	<b>Total grant payment</b>
Kaiser Permanente (32)	\$0	\$0	\$0
Dignity Health (25)	\$308,529,542	\$6,170,296	\$314,699,837
Sutter Health (25)	\$231,169,995	\$85,666,041	\$316,836,036
Adventist Health (14)	\$88,642,003	\$1,799,710	\$90,441,713
Tenet Healthcare Corporation (12)	\$109,361,005	\$0	\$109,361,005
Kindred Healthcare, Inc. (10)	\$0	\$0	\$0
Universal Health Services, Inc. (10)	\$129,119,020	\$0	\$129,119,020
Regents of the University of California (8)	\$360,856,403	\$0	\$360,856,403
State of California (8)	\$10,698,393	\$0	\$10,698,393
Prime Healthcare Services, Inc. (7)	\$191,032,312	\$0	\$191,032,312
Sharp Healthcare Corporation (6)	\$82,236,971	\$0	\$82,236,971
St. Joseph Health System (6)	\$93,476,147	\$7,343,875	\$100,820,022

Source: COVID Stimulus Watch, Good Jobs First (payments, accessed July 8, 2020); American Hospital Association (AHA) Annual Survey Database (fraction of beds)

Notes: The payment listed was calculated by multiplying the payment to hospitals of a health system by the fraction of a health system's beds in California. The listed payment to Sutter Health's medical foundations includes the payment to Sutter Visiting Nurse Association and Hospice. The table shows only money received as grants. The total amount of loans (attributable to California) received by the systems listed in the table is \$3.9 billion.

## An Analysis of Factors Correlated with Provider Relief Payments

The implication of the decision to allocate funding based on total net patient revenue has been analyzed on a national level by the Kaiser Family Foundation (KFF) (Schwartz and Damico, 2020). The KFF study found that the hospitals in the top 10% based on the percent of patient revenue from private insurance received \$44,321 per hospital bed, more than double the \$20,710 per hospital bed for hospitals in the bottom 10%. The study also found that hospitals with the highest share of private insurance revenue also had higher operating margins (4.2% vs. -9.0%) and provided less uncompensated care as a share of operating expenses (7.0% vs. 9.1%).

In what follows we conduct similar analyses to those in the KFF study, but focus on hospitals in California. Specifically, we estimate a multivariate regression model that regresses a hospital's payment per adjusted patient day on its private insurance share of net patient revenue, hospital market concentration, and operating margin (see the statistical framework section of the appendix for details). For payments that went to a system (rather than individual hospitals), we allocated payments to individual hospitals based on each hospital's share of its system's net patient revenue. Only hospital payments to a system (as opposed to payments to its medical foundation or other entities) are considered, and only general acute care hospitals are included in our analysis. Our analytic sample includes 254 of California's 334 general acute care hospitals.<sup>14</sup>

To compare payments across systems, an appropriate denominator is needed. We used an adjusted patient day, which incorporates both inpatient admissions and outpatient visits into a system-level measure of volume while also controlling for differences in the severity of the cases that each system handles.<sup>15</sup> Data from California's Office of Statewide Health Planning and Development (OSHPD) was used to calculate both system volume and case mix.<sup>16</sup>

Figure 1 shows the correlation between a system's private insurance share of net patient revenue and payment per adjusted patient days (see the statistical framework section of the appendix for the regression coefficient estimates from which the figure was derived). All variables in the model that are not plotted were set to their sample averages. The dotted red line in the figure shows that the average payment per adjusted day to hospitals was \$164. The solid blue line shows how hospital payments varied according to their level of private insurance share of net patient revenue. Hospitals on the low end with a 15% private insurance share (roughly the 25th percentile of the sample) were predicted to receive payments of \$123 -- or \$41 (or 25%) below the overall average of \$164. Hospitals on the high end with a 45% private insurance

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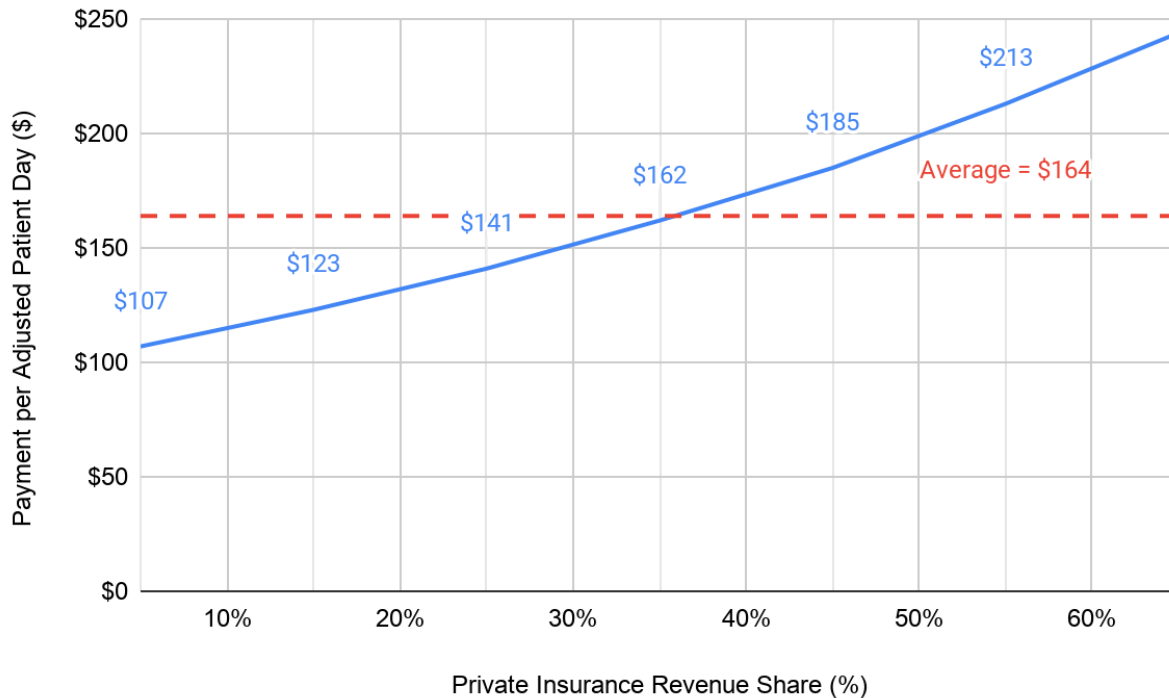
<sup>14</sup> Notably all Kaiser hospitals are excluded as the system did not receive CARES Act payments.

<sup>15</sup> Specifically, adjusted patient days = inpatient days \* (gross patient revenue / gross inpatient revenue) \* case mix index.

<sup>16</sup> OSHPD's Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>) and Case Mix data (<https://data.chhs.ca.gov/dataset/case-mix-index>).

share (roughly the 75th percentile of the sample) were predicted to receive payments of \$185 -- or \$21 (or 13%) above the overall average of \$164.

Figure 1. Correlation between Private Insurance Share and Payment per Adjusted Patient Day



Source: Authors' analysis of the HRSA Provider Relief Fund Dataset (<https://data.cdc.gov/Administrative/HHS-Provider-Relief-Fund/kh8y-3es6>, Accessed July 8, 2020) and OSHPD's Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>) and Case Mix data (<https://data.chhs.ca.gov/dataset/case-mix-index>).

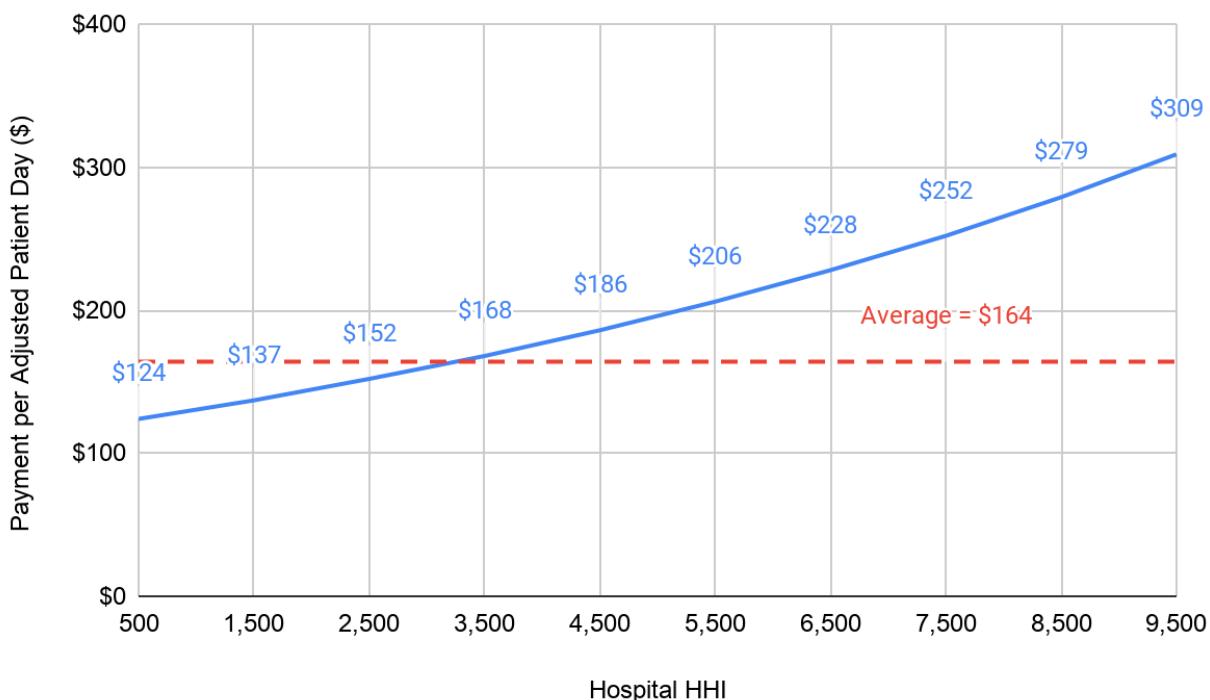
Notes: The values shown in the figure were calculated from the regression coefficients shown in the statistical framework section of the appendix. The range of the horizontal axis roughly matches the range observed in the data. All independent variables in the model other than private insurance revenue share are set to their sample averages. The predicted values resulting from the model were exponentiated in order to report the payments in levels. Adjusted patient days = inpatient days \* (gross patient revenue / gross inpatient revenue) \* case mix index.

Figure 2 shows the correlation between hospital market concentration (measured at the county-level) and payment per adjusted patient days (see the statistical framework section of the appendix for the regression coefficient estimates from which the figure was derived).

The Herfindahl-Hirschman Index (HHI) is a frequently used measure of market concentration that ranges from 0 to 10,000. It is calculated by summing the squared market shares of firms in a market. Each system's share of admissions in a county served as the market shares for our calculations. For instance, a market with two hospitals that each account for 50% of a market's admissions would have an HHI of 5,000 ( $50^2+50^2$ ).

The U.S. Department of Justice and Federal Trade Commission (DOJ/FTC) consider markets with HHIs below 1,500 to be unconcentrated, between 1,500 and 2,500 to be moderately concentrated, and above 2,500 to be highly concentrated (DOJ/FTC, 2010). Figure 2 shows that payments per adjusted day varied considerably by hospital HHI. Hospitals in unconcentrated markets with an HHI of 1,500 (roughly the 25th percentile of the sample) were predicted to receive payments of \$137 -- or \$27 (or 16%) below the overall average of \$164. Hospitals in highly concentrated markets with an HHI of 4,500 (roughly the 75th percentile of the sample) were predicted to receive payments of \$186 -- or \$22 (or 13%) above the overall average of \$164.

Figure 2. Correlation between Hospital HHI and Payment per Adjusted Patient Day

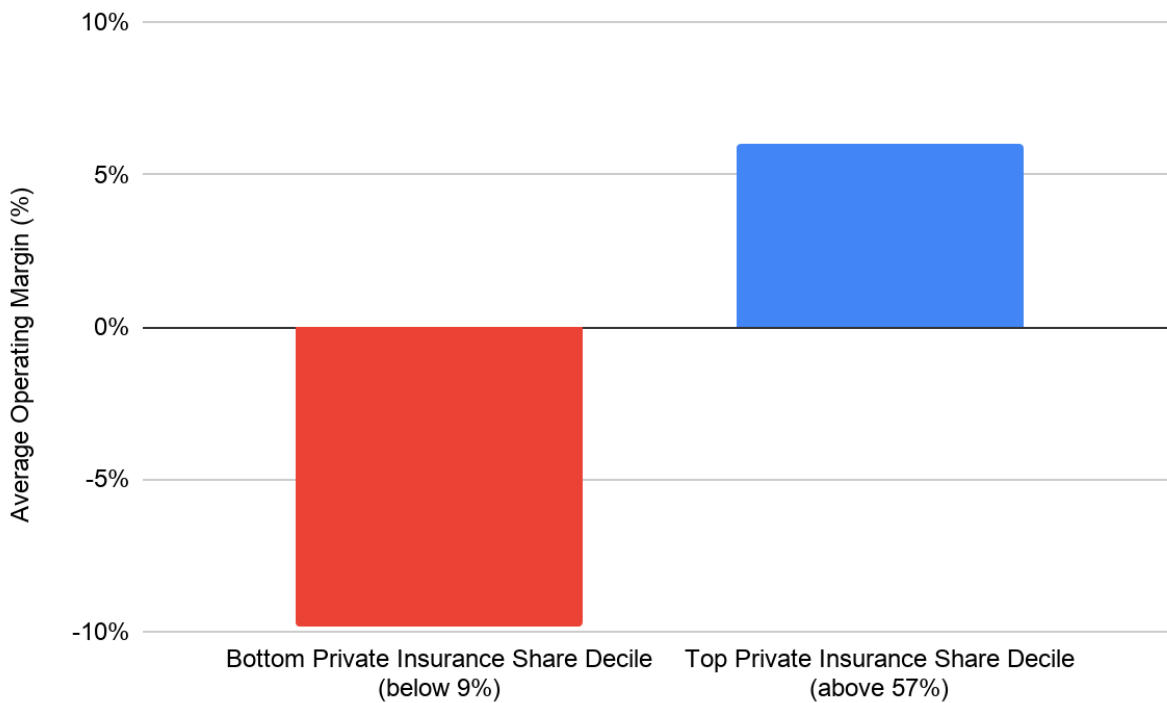


Source: Authors' analysis of the HRSA Provider Relief Fund Dataset (<https://data.cdc.gov/Administrative/HHS-Provider-Relief-Fund/kh8y-3es6>, Accessed July 8, 2020), OSHPD's Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>) and Case Mix data (<https://data.chhs.ca.gov/dataset/case-mix-index>), and the American Hospital Association's Annual Survey Database. Notes: HHI=Herfindahl-Hirschman Index. The values shown in the figure were calculated from the regression coefficients shown in the statistical framework section of the appendix. The range of the horizontal axis roughly matches the range observed in the data. All independent variables in the model other than hospital HHI are set to their sample averages. The predicted values resulting from the model were exponentiated in order to report the payments in levels. Adjusted patient days = inpatient days \* (gross patient revenue / gross inpatient revenue) \* case mix index.

We did not find a statistically significant association between payment per adjusted patient day and a system's operating margin (see the statistical framework section of the appendix for the regression coefficient estimate). That is, a hospital's operating margin does not provide any additional explanatory power beyond what is provided by a hospital's private insurance share of

net patient revenue and the hospital market concentration of the county in which it resides. We do, however, observe the same pattern in the data that the aforementioned KFF study found (Schwartz and Damico, 2020). That is, hospitals with larger private insurance shares of net patient revenue also had larger operating margins. Specifically, hospitals in the top decile in terms of private insurance share (i.e., above 57%) had an average operating margin of 6%, whereas hospitals in the bottom decile share (i.e., below 9%) had an average operating margin of -10% (Figure 3).

Figure 3. Average Operating Margin of Hospitals in the Top and Bottom Decile of Private Insurance Share of Net Patient Revenue



Source: Authors' analysis of OSHPD's Hospital Annual Financial Data FY 2018-2019.

Melnick and Maerki (2020) estimate that the net patient revenues of general hospitals in California fell by 37% over the first four months of the pandemic. Applying 37% to four months of net patient revenue for each of the hospitals in our sample leads to a total loss of \$11.4 billion over the first four months of the pandemic. This estimate of \$11.4 billion should be viewed as a ballpark estimate as we are assuming every hospital in our sample would experience the same 37% reduction in net patient revenue.

As the total hospital-portion of CARES Act payments received by the 254 hospitals in our sample was \$2.7 billion, we estimate CARES Act payments covered only 24% (2.7 billion divided by 11.4 billion) of the total net patient revenue loss. However, there was considerable variation across the hospitals in our sample. The median percent of the decrease in net patient revenue covered was 20%, while the 25th percentile was 16% and the 75th percentile was 29%.

## Discussion

California Governor Gavin Newsom's executive order on March 19, 2020 prevented hospitals from delivering elective procedures so that they could act in the public interest to expand their capacity to treat COVID-19 patients (order lifted on April 22, 2020). Not surprisingly, the order had a significant impact on hospital finances. A "ballpark" estimate suggests that the 254 general hospitals in our sample experienced a decrease in net patient revenue of \$11.4 billion through the end of June. As of July 8, 2020, these hospitals received \$2.7 billion of CARES Act payments, accounting for 24% of the decrease in net patient revenue on average. However, we found significant variation in the amount of the decrease that was covered: the median percent of the decrease in net patient revenue covered was 20%, while the 25th percentile was 16% and the 75th percentile was 29%.

Based on financial reports prior to the pandemic, we found California health systems varied widely in the days of cash on hand. Days of cash on hand ranged from a high of 199 days for Kaiser Permanente to a low of 12 days for Kindred Healthcare. All 11 health systems we analyzed were below the S&P Global Ratings 2018 U.S. not-for-profit health care system median days of cash on hand of 213.

Our analysis shows that the size of the provider relief payments per adjusted patient day varied significantly, which was correlated with a hospital's share of net patient revenue from private insurers and the hospital market concentration in the county that the hospital operates in. This result could be due to hospitals in highly concentrated markets being able to extract higher prices from private insurers, which leads to higher patient revenue and larger CARES Act payments, because the formula used to allocate the \$50 billion general distribution was based on a hospital's net patient revenue.<sup>17</sup> Previous work in California has shown that hospitals with

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<sup>17</sup> As a reminder, the \$50 billion in general distribution payments -- the large majority of the payments assigned to HRSA to distribute -- was allocated based on net patient revenue. Specifically, the payments were intended to be the lesser of 2% of a provider's 2018 (or most recent complete tax year) net patient revenue or the sum of incurred losses for March and April 2020.

more market power can negotiate higher reimbursement rates from private insurers (Scheffler et al., 2019; Scheffler et al., 2018).

Although the full financial impact of the governor's order to shut down elective procedures will not be known for several more months, it seems clear that the distribution of funds favored hospitals with a high private insurance share of patient revenue and those located in highly concentrated markets. Federal and state policymakers, regulators, and legislators should carefully monitor the allocation of these funds for equity concerns in addition to ensuring adequate hospital capacity for surges in COVID-19 cases and a second wave of the virus.



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## Appendix

### Statistical Framework

Figures 1 and 2 in the main report were produced using the regression coefficient estimates from the following model.

$$(1) \ln(\text{payment per adj. patient day})_{ic} = \beta_0 + \beta_1 \text{PrivInsShare}_{ic} + \beta_2 \text{HospHHI}_c + \beta_3 \text{OM}_{ic} + \epsilon_{ic},$$

Where  $\ln(\text{payment per adj. patient day})_i$  is the natural log of the payment per adjusted patient day received by hospital  $i$  in county  $c$ ,  $\text{PrivInsShare}_{ic}$  is the share of a hospital's net patient revenue that comes from private insurers,  $\text{HospHHI}_c$  is the hospital market concentration of the county in which the hospital resides, and  $\text{OM}_{ic}$  is the operating margin of the hospital.

We defined an adjusted patient day as inpatient days multiplied by the ratio of gross patient revenue to gross inpatient revenue multiplied by a system's case mix index. Multiplying inpatient days by the ratio of gross patient revenue to gross inpatient revenue is used to include outpatient visits in the measure of a system's volume while multiplying by a system's case mix index is used to account for differences in the severity of the cases that each system handles. Data from California's Office of Statewide Health Planning and Development (OSHPD) was used to calculate both system volume and case mix.<sup>18</sup>

The coefficient estimates that result from estimating equation (1) are shown in Table A1. The estimates for both the private insurance and hospital HHI variables are positive and statistically significant. The private insurance coefficient is interpreted as a 1 percentage point increase in a hospital private insurance share of net patient revenue is correlated with a 1.36% increase in its payment per adjusted patient day. The hospital HHI coefficient can be interpreted as a 1,000 point increase in the hospital HHI of the county in which a hospital resides is correlated with a 10% increase in a hospital's payment per adjusted patient day.

The model has the same standard limitations for models estimated on a single cross-section of data. First, these estimates should be viewed as correlations rather than a statement of any causal relationship between the independent variables and payments per adjusted patient day. Second, omitted variable bias is a concern as is often the case for cross-sectional models. For instance, the estimates would be biased if omitted variables are correlated with both the independent variables and payments per adjusted day.

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<sup>18</sup> OSHPD's Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>) and Case Mix data (<https://data.chhs.ca.gov/dataset/case-mix-index>).

Table A1. Payment per Adjusted Patient Day Regression Coefficient Estimates

	ln(payment per adj. patient day (\$))
PrivInsShare (%)	0.0136*** (0.0048)
HospHHI	0.00010*** (0.000033)
OM (%)	-0.0061 (0.0068)
No. of Obs.	254
R2	0.068

Source: Authors' analysis of the HRSA Provider Relief Fund Dataset (<https://data.cdc.gov/Administrative/HHS-Provider-Relief-Fund/kh8y-3es6>, Accessed July 8, 2020), OSHPD's Hospital Annual Financial Data FY 2018-2019 (<https://data.chhs.ca.gov/dataset/hospital-annual-financial-disclosure-report-complete-data-set>) and Case Mix data (<https://data.chhs.ca.gov/dataset/case-mix-index>), and the American Hospital Association's Annual Survey Database. Notes: ln=natural log. HHI=Herfindahl-Hirschman Index. Adjusted patient days = inpatient days \* (gross patient revenue / gross inpatient revenue) \* case mix index. Robust standard error in parentheses. \*\*\* p<0.01 \*\* p<0.05 \*p<0.1