

APPENDIX: METHODOLOGICAL DETAILS

In this study, we compared prices in California hospitals in 2018 to prices in 2012 in order to assess whether the changes are related to system membership. Following extensive literature, we use the American Hospital Association's Annual Survey over the study window 2012 to 2018. Specifically, we identify hospitals located in California based on the variable *mutate*, limiting data to nonfederal facilities (variable *cntrl* < 40) providing general medical and surgical care (variable *serv* = 10).

We linked these hospitals to Hospital Annual Financial Data from California's Office of Statewide Health Planning and Development (OSHPD). Linkage is based on hospital name (*fac_name* for OSHPD and *mname* for AHA) and location (county for OSHPD and *mlocity* for AHA). Where AHA combined facilities under a single AHA identifier (variable *id*) but OSHPD assigned distinct identifiers (variable *oshpd_id*), we treat the facilities as distinct members of a system.^a

In the OSHPD data, we exclude hospitals whose names indicated specialty care based on the following strings: *special*, *cancer*, *ortho*, *surg*, *maternity* and *child*.^b We do not exclude one hospital (Scripps Memorial Hospital with OSHPD ID 370771) whose type of care was reported to be specialty in one year but general in six years (based on the variable *type_care*). A web search did not indicate that this hospital was specialized. We also exclude facilities operated by Kindred Healthcare, which provides specialty care.^c

All analyses are necessarily limited to hospitals that operated and reported financial and utilization data in both 2012 and 2018. A sensitivity analysis excludes hospitals whose status changed in terms of system affiliation (including movements from one system to another^d). This analysis excludes hospitals that were affiliated with systems in 2018

that were not systems in 2012.

We identify for-profit ownership of hospitals based on the OSHPD variable *type_cntrl* = "Investor." Where during the study period (2012 to 2018) for-profit ownership was reported to have changed (from for profit to other or vice versa) in 2013 or later and then changed back in the subsequent year, we treat the reported changes as a reporting error. For example, Garfield Medical Center (OSHPD ID 190315) was reported to be for profit in 2013, non-profit in 2014 and for profit again in 2015.

Table 1 in the white paper reports hospital systems operating in California as of 2018, excluding Kaiser Permanente hospitals (for which financial data were not available). The hospitals affiliated with these systems (identified in Appendix Table 1) represent all California hospitals that belonged to a system over the study window, with the exception of one small hospital that closed. Specifically, Fallbrook Hospital (OSHPD ID 370705) belonged to Community Health Systems, which divested some of its hospitals (including all of its California facilities) into the new system Quorum Health.

Changes are weighted by the number of private discharges in 2018, whether by system or system type.^e Specifically, we combine "traditional" and managed-care discharges whose expected source of payment was "third party" (variables *dis_thrd_tr* and *dis_thrd_mc*, respectively). This group includes employer-sponsored health plans, as well as other sources of third-party coverage (e.g., workers' compensation).

For risk adjustment, we use a fixed set of DRG weights—specifically, version 33.0 for fiscal year 2016. For each hospital in each year, price per discharge is divided by the value of the case-mix index for that hospital in that year.

a. *Citrus Valley Medical Center in AHA (OSHPD ID 6930689) corresponded to Citrus Valley Medical Center–QV Campus (OSHPD ID 190636) and Citrus Valley Medical Center–IC Campus (OSHPD ID 190413). Foothill Presbyterian Hospital (OSHPD ID 190298) was also a member of this system in 2018.*

b. *The exception to this exclusion is UCLA Medical Center and Orthopaedic Hospital (OSHPD ID 190687).*

c. *<https://www.kindredhealthcare.com>.*

d. *For example, the hospitals affiliated with Quorum Health in 2018 were previously affiliated with Community Health Systems.*

e. *As an example, Alecto Healthcare Services had two hospitals. Rather than simply averaging the percentage change in prices for these hospitals, we weighted each change by the number of private discharges in 2018. We calculated median changes similarly.*

Appendix Table 1: Hospital Systems in California in 2018

Notes: "Missing" refers to 2018 financial report. * refers to private discharges in 2018.

** NO indicates a hospital belonged to a system but data on price growth was not available.

*** YES indicates opening, closure or change in system affiliation (including movements from one system to another).

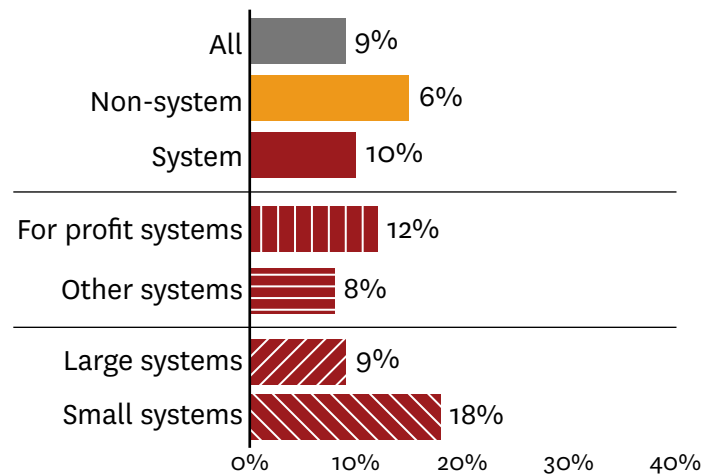
System	OSHPD ID	Name	County	Discharges*	Main exhibits**	Status change***
Adventist Health	40875	Adventist Health Feather River	Butte	242	Yes	No
	100797	Adventist Health Reedley	Fresno	215	Yes	No
	150788	Adventist Health Bakersfield	Kern	4878	Yes	No
	150808	Adventist Health Tehachapi Valley	Kern	25	Yes	No
	164029	Adventist Health Hanford	Kings	1456	Yes	No
	171049	Adventist Health Clearlake	Lake	119	Yes	No
	190323	Adventist Health Glendale	Los Angeles	2874	Yes	No
	190878	Adventist Health White Memorial	Los Angeles	1828	Yes	No
	231396	Adventist Health Ukiah Valley	Mendocino	576	Yes	No
	234038	Adventist Health Howard Memorial	Mendocino	220	No	Yes
	281078	Adventist Health St. Helena	Napa	930	Yes	No
	390923	Adventist Health Lodi Memorial	San Joaquin	1257	Yes	Yes
	554011	Adventist Health Sonora - Greenley	Tuolumne	844	Yes	No
	560525	Adventist Health Simi Valley	Ventura	1345	Yes	No
	580996	Rideout Memorial Hospital	Yuba	1947	Yes	No
AHMC Healthcare	190017	Alhambra Hospital Medical Center	Los Angeles	516	Yes	No
	190200	San Gabriel Valley Medical Center	Los Angeles	1456	Yes	No
	190315	Garfield Medical Center	Los Angeles	1126	Yes	No
	190352	Greater El Monte Community Hospital	Los Angeles	186	Yes	No
	190547	Monterey Park Hospital	Los Angeles	344	Yes	No
	190883	Whittier Hospital Medical Center	Los Angeles	1197	Yes	No
	301098	AHMC Anaheim Regional Medical Center	Orange	1783	Yes	No
	331293	Parkview Community Hospital	Riverside	1304	Yes	No
Alameda Health System	10735	Alameda Hospital	Alameda	177	Yes	Yes
	10846	Highland Hospital	Alameda	877	Yes	Yes
	13619	San Leandro Hospital	Alameda	161	Yes	Yes
Alecto Healthcare Services	10967	St. Rose Hospital	Alameda	446	Yes	No
	190534	Olympia Medical Center	Los Angeles	400	Yes	No
Avanti Hospitals	190197	Community Hospital Of Huntington Park	Los Angeles	153	Yes	No
	190256	East Los Angeles Doctor's Hospital	Los Angeles	99	Yes	No
	190521	Memorial Hospital Of Gardena	Los Angeles	357	Yes	No
	190766	Coast Plaza Hospital	Los Angeles	232	Yes	No
Banner Health	184008	Banner Lassen Medical Center	Lassen	298	Yes	No
Cedars-Sinai	190422	Torrance Memorial Medical Center	Los Angeles	5104	Yes	Yes
	190500	Marina Del Rey Hospital	Los Angeles	1442	Yes	Yes
	190555	Cedars-Sinai Medical Center	Los Angeles	20854	Yes	Yes
Citrus Valley Health Part	190298	Emanate Health Foothill Presbyterian Hospital	Los Angeles	1377	Yes	No
	190413	Emanate Health Inter-Community Hospital	Los Angeles	Missing	No	No
	190636	Emanate Health Queen Of The Valley Hospital	Los Angeles	3426	Yes	No
Community Med Centers	100005	Clovis Community Medical Center	Fresno	5401	Yes	No
	100717	Community Regional Medical Center - Fresno	Fresno	6314	Yes	No
Community Memorial Health System	560473	Community Memorial Hospital Of San Buenaventura	Ventura	4098	Yes	No
	560501	Ojai Valley Community Hospital	Ventura	43	Yes	No
Cottage Health	420483	Goleta Valley Cottage Hospital	Santa Barbara	542	Yes	No
	420514	Santa Barbara Cottage Hospital	Santa Barbara	5630	Yes	No
	420522	Santa Ynez Valley Cottage Hospital	Santa Barbara	9	Yes	No
Dignity Health	50932	Mark Twain Medical Center	Calaveras	122	Yes	No
	150722	Bakersfield Memorial Hospital	Kern	2756	Yes	No
	150761	Mercy Hospital - Bakersfield	Kern	5200	Yes	No
	190053	St. Mary Medical Center - Long Beach	Los Angeles	1128	Yes	No
	190125	California Hospital Medical Center	Los Angeles	963	Yes	No
	190522	Glendale Memorial Hospital And Health Center	Los Angeles	892	Yes	No
	190568	Northridge Hospital Medical Center	Los Angeles	3293	Yes	No
	240942	Mercy Medical Center - Merced	Merced	1907	Yes	No
	291023	Sierra Nevada Memorial Hospital	Nevada	754	Yes	No
	340947	Mercy General Hospital	Sacramento	2793	Yes	No
	340950	Mercy San Juan Hospital	Sacramento	3046	Yes	No
	340951	Methodist Hospital - Sacramento	Sacramento	1329	Yes	No
	344029	Mercy Hospital - Folsom	Sacramento	1922	Yes	No
	361323	Community Hospital Of San Bernardino	San Bernardino	687	Yes	No
	361339	St. Bernardine Medical Center	San Bernardino	2231	Yes	No
	380960	St. Francis Memorial Hospital	San Francisco	971	Yes	No
380965	St. Mary's Medical Center - San Francisco	San Francisco	1076	Yes	No	

System	OSHPD ID	Name	County	Discharges*	Main exhibits**	Status change***
Dignity Health	391042	St. Joseph's Medical Center Of Stockton	San Joaquin	4080	Yes	No
	400466	Marian Regional Medical Center, Arroyo Grande	San Luis Obispo	Missing	No	No
	400480	French Hospital Medical Center - San Luis Obispo	San Luis Obispo	1276	Yes	No
	410891	Sequoia Hospital	San Mateo	3378	Yes	No
	420493	Marian Medical Center	Santa Barbara	2921	Yes	No
	440755	Dominican Hospital	Santa Cruz	2378	Yes	No
	450949	Mercy Medical Center - Redding	Shasta	2935	Yes	No
	470871	Mercy Medical Center Mt. Shasta	Siskiyou	202	Yes	No
	500967	Oak Valley District Hospital	Stanislaus	119	Yes	Yes
	521041	St. Elizabeth Community Hospital	Tehama	508	Yes	No
	560508	St. John's Pleasant Valley Hospital	Ventura	439	Yes	No
	560529	St. John's Regional Medical Center	Ventura	2834	Yes	No
571086	Woodland Memorial Hospital	Yolo	1114	Yes	No	
HCA Healthcare	331312	Riverside Community Hospital	Riverside	4636	Yes	No
	430705	Regional Medical Center of San Jose	Santa Clara	1975	Yes	No
	430779	Good Samaritan Hospital - San Jose	Santa Clara	8023	Yes	No
	560492	Los Robles Hospital And Medical Center	Ventura	5667	Yes	No
John Muir Health	70988	John Muir Medical Center - Walnut Creek	Contra Costa	6822	Yes	No
	71018	John Muir Medical Center - Concord Campus	Contra Costa	1484	Yes	No
Keck Medicine of USC	190818	USC Verdugo Hills Hospital	Los Angeles	2306	Yes	Yes
	194219	Keck Hospital of USC	Los Angeles	4169	Yes	Yes
KPC Health	301140	Chapman Global Medical Center	Orange	644	Yes	No
	301258	South Coast Global Medical Center	Orange	159	Yes	No
	301566	Orange County Global Medical Center	Orange	1430	Yes	No
Loma Linda University Health	334589	Loma Linda University Medical Center - Murrieta	Riverside	2130	Yes	No
	361246	Loma Linda University Medical Center	San Bernardino	5272	Yes	No
LA County DHS	191227	LAC/Harbor - UCLA Medical Center	Los Angeles	1934	Yes	No
	191228	LAC/USC Medical Center	Los Angeles	3190	Yes	No
	191231	LAC/Olive View - UCLA Medical Center	Los Angeles	1260	Yes	No
MemorialCare	190475	Community Hospital Long Beach	Los Angeles	824	No	No
	190525	MemorialCare Long Beach Medical Center	Los Angeles	4893	Yes	No
	300225	Orange Coast Memorial Medical Center	Orange	4054	Yes	No
	301317	MemorialCare Saddleback Medical Center	Orange	4808	Yes	No
NantWorks	190754	St. Francis Medical Center	Los Angeles	1841	Yes	Yes
	190762	St. Vincent Medical Center	Los Angeles	1203	Yes	Yes
	410817	Seton Medical Center	San Mateo	1842	Yes	Yes
	430837	O'Connor Hospital	Santa Clara	2464	Yes	Yes
	434138	St. Louise Regional Hospital	Santa Clara	712	Yes	Yes
Palomar Health	370755	Palomar Health Downtown Campus	San Diego	6603	Yes	No
	370977	Pomerado Hospital	San Diego	1788	Yes	No
Physicians for Healthy Hospitals	331194	Hemet Valley Medical Center	Riverside	986	Yes	No
	334018	Menifee Valley Medical Center	Riverside	884	Yes	No
PIH Health	190243	Pih Hospital - Downey	Los Angeles	1536	Yes	Yes
	190631	Presbyterian Intercommunity Hospital	Los Angeles	4692	Yes	Yes
Prime Healthcare	190148	Centinela Hospital Medical Center	Los Angeles	1091	Yes	No
	190673	San Dimas Community Hospital	Los Angeles	956	Yes	No
	301283	Garden Grove Hospital and Medical Center	Orange	293	Yes	No
	301379	West Anaheim Medical Center	Orange	574	Yes	No
	370652	Alvarado Hospital	San Diego	1306	Yes	No
	370759	Paradise Valley Hospital	San Diego	451	Yes	No
450940	Shasta Regional Medical Center	Shasta	689	Yes	No	
Prime Healthcare Foundation	190280	Encino Hospital Medical Center	Los Angeles	1717	Yes	Yes
	190328	Glendora Community Hospital	Los Angeles	60	Yes	Yes
	190708	Sherman Oaks Hospital	Los Angeles	442	Yes	Yes
	301209	Huntington Beach Hospital	Orange	406	Yes	Yes
	301234	La Palma Intercommunity Hospital	Orange	329	Yes	Yes
361166	Montclair Hospital Medical Center	San Bernardino	220	Yes	Yes	
Prospect Medical Holdings	190110	Southern California Hospital at Culver City	Los Angeles	Missing	No	Yes
	190198	Los Angeles Community Hospital	Los Angeles	317	Yes	Yes
	190380	Southern California Hospital at Hollywood	Los Angeles	1500	Yes	Yes
Providence Health	121051	Redwood Memorial Hospital	Humboldt	181	Yes	Yes
	121080	St. Joseph Hospital - Eureka	Humboldt	1153	Yes	Yes
	190385	Providence Holy Cross Medical Center	Los Angeles	4431	Yes	No

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Providence Health	190470	Providence Little Company Of Mary MC - Torrance	Los Angeles	5804	Yes	No
	190517	Providence Tarzana Medical Center	Los Angeles	4437	Yes	No
	190680	Providence Little Company Of Mary MC - San Pedro	Los Angeles	1536	Yes	No
	190756	Providence St. John's Health Center	Los Angeles	4813	Yes	Yes
	190758	Providence St. Joseph Medical Center	Los Angeles	4286	Yes	No
	281047	Queen of The Valley Medical Center	Napa	1405	Yes	Yes
	301205	Hoag Memorial Hospital Presbyterian	Orange	10416	Yes	Yes
	301262	Mission Hospital Regional Medical Center	Orange	6744	Yes	Yes
	301337	Mission Hospital Laguna Beach	Orange	Missing	No	Yes
	301340	St. Joseph Hospital - Orange	Orange	6957	Yes	Yes
	301342	St. Jude Medical Center	Orange	4800	Yes	Yes
	361343	St. Mary Medical Center - Apple Valley	San Bernardino	2189	Yes	Yes
	491001	Petaluma Valley Hospital	Sonoma	367	Yes	Yes
	491064	Santa Rosa Memorial Hospital	Sonoma	2101	Yes	Yes
Quorum Health	364430	Barstow Community Hospital	San Bernardino	312	No	Yes
	370705	Fallbrook Hospital District	San Diego	0	No	Yes
	444013	Watsonville Community Hospital	Santa Cruz	530	Yes	Yes
Scripps Health	370744	Scripps Mercy Hospital	San Diego	5584	Yes	No
	370771	Scripps Memorial Hospital - La Jolla	San Diego	8393	Yes	No
	371394	Scripps Memorial Hospital - Encinitas	San Diego	4301	Yes	No
Sharp HealthCare	370689	Sharp Coronado Hospital And Healthcare Center	San Diego	631	Yes	No
	370694	Sharp Memorial Hospital	San Diego	14240	Yes	No
	370714	Sharp Grossmont Hospital	San Diego	4095	Yes	No
	370875	Sharp Chula Vista Medical Center	San Diego	2501	Yes	No
Stanford Health Care	14050	Valleycare Medical Center	Alameda	2542	Yes	Yes
	430905	Stanford University Hospital	Santa Clara	9593	Yes	No
Sutter Health	10739	Alta Bates Summit Medical Center - Alta Bates Campus	Alameda	5400	Yes	No
	10937	Alta Bates Summit Medical Center - Summit Hawthorne	Alameda	2036	Yes	No
	14233	Eden Medical Center	Alameda	2046	No	No
	34002	Sutter Amador Hospital	Amador	396	Yes	No
	70934	Sutter Delta Medical Center	Contra Costa	1159	Yes	No
	84001	Sutter Coast Hospital	Del Norte	370	Yes	No
	171395	Sutter Lakeside Hospital	Lake	246	Yes	No
	214034	Novato Community Hospital	Marin	319	Yes	No
	240924	Memorial Hospital Los Banos	Merced	251	Yes	No
	310791	Sutter Auburn Faith Hospital	Placer	433	Yes	No
	311000	Sutter Roseville Medical Center	Placer	6594	Yes	No
	341051	Sutter Medical Center - Sacramento	Sacramento	7755	Yes	No
	380929	California Pacific Medical Center	San Francisco	8943	Yes	No
	380964	California Pacific Medical Center - St Lukes Campus	San Francisco	358	No	No
	391056	Sutter Tracy Community Hospital	San Joaquin	1010	Yes	No
	410852	Mills-Peninsula Medical Center	San Mateo	5305	Yes	No
	481094	Sutter Solano Medical Center	Solano	597	Yes	No
	494106	Sutter Santa Rosa Regional Hospital	Sonoma	1728	No	No
	500939	Memorial Hospital Modesto	Stanislaus	3941	Yes	No
574010	Sutter Davis Hospital	Yolo	1211	Yes	No	
Tahoe Forest Health System	291053	Tahoe Forest Hospital	Nevada	598	Yes	No
Tenet Healthcare	74017	San Ramon Regional Medical Center	Contra Costa	1984	Yes	No
	190240	Lakewood Regional Medical Center	Los Angeles	1372	Yes	No
	301175	Fountain Valley Regional Hospital And Mc - Euclid	Orange	2603	Yes	No
	301248	Los Alamitos Medical Center	Orange	2348	Yes	No
	301297	Placentia Linda Hospital	Orange	700	Yes	No
	331164	Desert Regional Medical Center	Riverside	4430	Yes	No
	331216	John F. Kennedy Memorial Hospital	Riverside	834	Yes	No
	362041	Hi-Desert Medical Center	San Bernardino	292	Yes	Yes
	392287	Doctors Hospital Of Manteca	San Joaquin	700	Yes	No
	400524	Sierra Vista Regional Medical Center	San Luis Obispo	2142	Yes	No
	400548	Twin Cities Community Hospital	San Luis Obispo	1091	Yes	No
	500852	Doctors Medical Center - Modesto	Stanislaus	3961	Yes	No
	500867	Emanuel Medical Center	Stanislaus	1397	Yes	Yes
	Trinity Health	100899	St. Agnes Medical Center	Fresno	3961	Yes
Universal Health Services	196405	Palmdale Regional Medical Center	Los Angeles	1566	Yes	No
	331152	Corona Regional Medical Center - Main	Riverside	1807	Yes	No

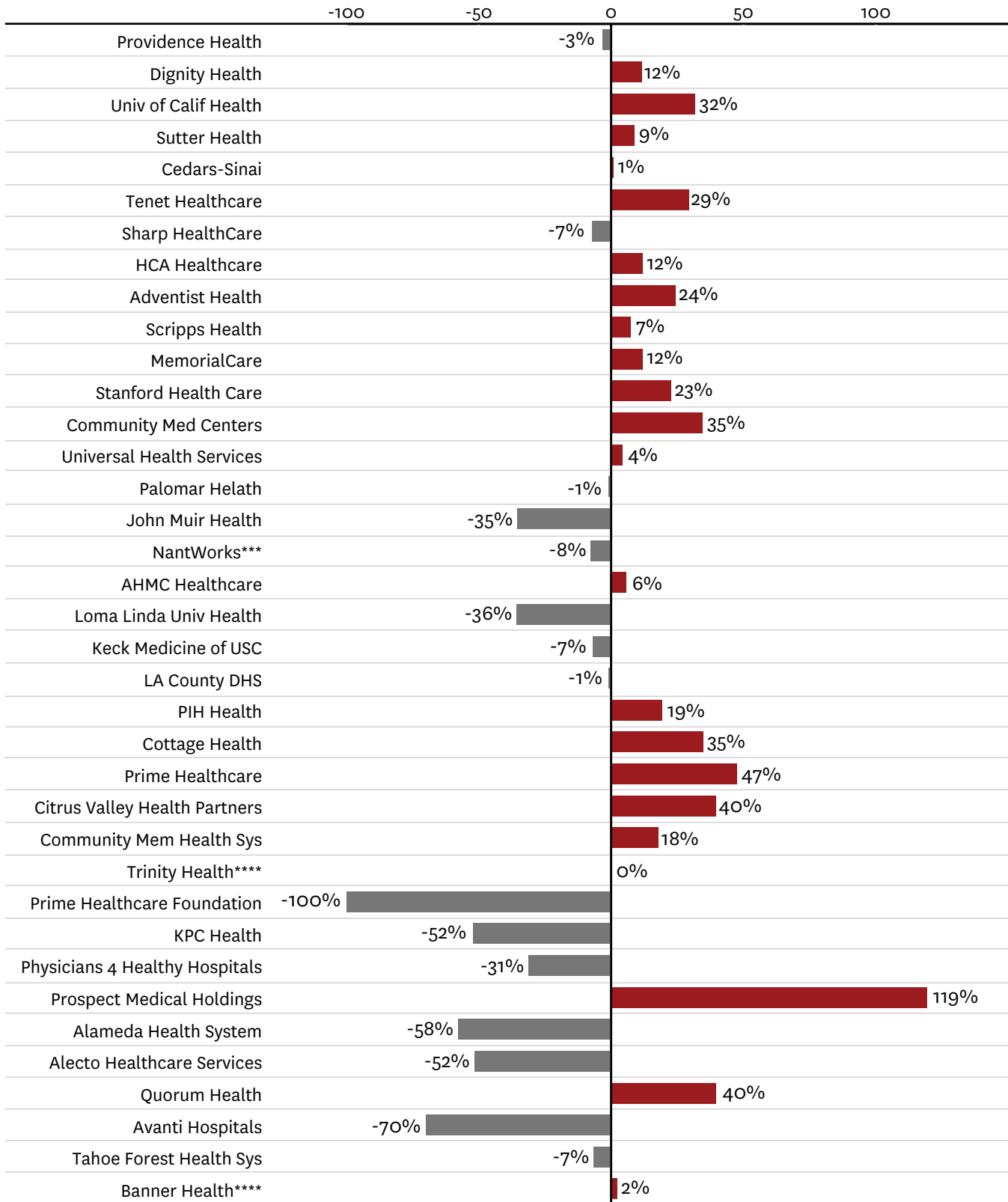
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Universal Health Services	334068	Southwest Healthcare System - Murrieta	Riverside	4708	Yes	No
	334564	Temecula Valley Hospital	Riverside	2128	No	No
University of California Health	190687	Santa Monica - UCLA Medical Center and Orthopaedic Hospital	Los Angeles	6149	Yes	No
	190796	Ronald Reagan UCLA Medical Center	Los Angeles	9434	Yes	No
	301279	University Of California Irvine Medical Center	Orange	6056	Yes	No
	341006	University Of California Davis Medical Center	Sacramento	9420	Yes	No
	370782	University Of California San Diego Medical Center	San Diego	7788	Yes	No
	381154	UCSF Medical Center	San Francisco	13372	Yes	No

Appendix Figure 1: Median Changes in Risk-Adjusted Price Per Private Discharge, 2012-2018, by System Status and Type of System



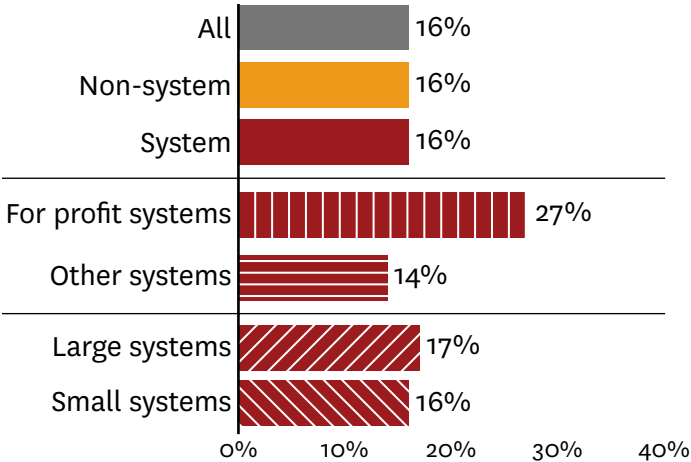
Note: Weighted by each hospital's number of private discharges in 2018. Changes are nominal (that is, not inflation adjusted). Large systems include hospitals with private discharges at or above 2018 median (n=7,402).

Appendix Figure 2: Median Changes in Risk-Adjusted Price Per Private Discharge, 2012-2018, by System



Note: In decreasing order (left to right) of systemwide number of private discharges in 2018. Weighted by each hospital's number of private discharges in 2018. Changes are nominal (that is, not inflation adjusted).

Appendix Figure 3: Changes in Average Risk-Adjusted Price Per Private Discharge, 2012-2018, by System Status, Excluding Hospitals That Changed System Affiliation



Note: Weighted by each hospital's number of private discharges in 2018. Changes are nominal (that is, not inflation adjusted). A change in system affiliation entailed a hospital joining a system, leaving a system or switching between systems. Large systems include hospitals with private discharges at or above 2018 median (n=7,402).