Effects of Expanded California Health Coverage on Hospitals: Implications for ACA Medicaid Expansions

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Objective. To assess the effects on hospitals of early California actions to expand insurance coverage for low-income uninsured adults after passage of the Affordable Care Act.

Data Sources/Study Setting. Data from the California Office of Statewide Health Planning and Development and the California Department of Health were merged with U.S. census data for 294 short-term general hospitals during the period 2009–2012.

Study Design. A difference-in-difference analysis was conducted with hospitals in counties that did not implement insurance expansions used as a comparison group. Variables examined included payer mix, costs of unreimbursed care, and hospital operating margin. Sensitivity analyses were conducted as well as a triple difference analysis. Effects were estimated for hospitals overall and by ownership type.

Principal Findings. California insurance expansions primarily benefited for-profit hospitals, with these facilities experiencing significant decreases in self-pay patients, increases in county-covered patients, and reductions in charity care. Most models yielded no significant change in payer mix and conflicting changes in unreimbursed care for nonprofit hospitals.

Conclusions. California hospitals that treated the most uninsured prior to insurance expansions did not as a group experience substantial benefit in terms of reduced uninsured burden or better financial performance after program expansions occurred.

Key Words. Medicaid expansions, hospital payer mix, hospital profitability

The Affordable Care Act (ACA) allowed states to expand their Medicaid programs to cover additional poor individuals not eligible for coverage in the past. Some states took advantage of an ACA option to initiate expansions of related programs before January 2014, focusing on those who would become eligible for expanded Medicaid or subsidies through health insurance exchanges (Sommers, Kenney, and Epstein 2014). In particular,

California received approval of a Section 1115 waiver in November 2010 that allowed its counties to receive federal funds for expansions of their existing county indigent programs for individuals with incomes up to 200 percent of the federal poverty level (FPL). Sixteen urban counties and 35 rural counties in CA implemented these coverage expansions between July 2011 and late 2012. This study examines how these expansions affected CA hospitals, assessing changes in hospital payer mix, charity care, bad debt, and financial margins.

We examined these changes for hospitals overall and by their ownership status. Economic theory suggests that differences in payer mix and financial performance should be present across different hospital ownership types (Frank and Salkever 1991; Banks 1993; Davidoff et al. 2000). Also, community benefit reporting requirements for nonprofit hospitals, especially in states like CA, could lead to higher levels of charity care and related activities at nonprofit hospitals (Sutton and Stensland 2004; Bazzoli, Clement, and Hsieh 2010).

Examination of CA program expansions provides important insights, even though these efforts were primarily precursors to subsequent ACA Medicaid expansions. In particular, an understanding of CA experiences can identify areas that should be monitored as national hospital data reflective of the ACA period become available. In part this is because what we observe in CA may lead one to question preconceived notions of potential ACA effects. For example, given the historical role of public and some nonprofit hospitals in serving uninsured populations, it may be believed that these institutions have the most to gain through ACA in improved payer mix and reductions in uninsured financial burden. This belief underlies plans to reduce sources of support that traditionally helped these types of hospitals offset costs of unreimbursed care, including indigent subsidies and Disproportionate Share Hospital payments (Holahan et al. 2012; Cole et al. 2014). However, limited evidence exists on the extent to which nonprofit and public hospitals benefit from insurance expansions, with existing studies focused on Massachusetts hospitals and their experiences through state health reform (Ku et al. 2011; Mohan et al. 2013; Bazzoli and Clement 2014).

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Background on CA Low-Income Health Program

Under CA state law, county governments are considered the provider of last resort for individuals without the means to pay for their health care (Kelch 2005). This law gave counties substantial leeway in defining how to meet this requirement in setting their eligibility criteria, selecting services to be covered, and compensating providers of care (California Healthcare Foundation 2009). In 2005, CA received approval of an initial Medicaid waiver that provided a capped amount of federal funds to expand these indigent programs in 10 counties throughout the state.

The Section 1115 waiver approved for CA in November 2010 was a departure from these earlier activities in that it was more expansive and intended to be more consistent across participating counties (Lytle et al. 2013). The waiver established the Low-Income Health Program (LIHP) and made matching federal funds available to all CA counties that chose to participate, requiring them to provide Medicaid-like services to individuals enrolled in their indigent programs. The LIHP program had two key components. The first required participating counties to cover all individuals aged 19–64 years up to a county-specified income limit no higher than 133 percent of FPL. This group, called the Medicaid Coverage Expansion (MCE) group, would ultimately be absorbed into the state's expanded Medicaid program. The second component of LIHP was optional and allowed counties to expand coverage to uninsured adults up to 200 percent of FPL. The LIHP also allowed counties to implement enrollee cost-sharing provisions that complied with Medicaid cost-sharing limits for the MCE group, and allowed higher cost-sharing for the optional coverage group.

Implementation of program expansions under the LIHP is summarized in Table 1. Two counties decided not to expand their indigent care programs (Fresno, San Luis Obispo), and three counties that originally intended to expand their programs did not enroll individuals before January 2014 (Merced, Santa Barbara, and Stanislaus). The voluntary nature of LIHP implies that local factors may have influenced county expansion decisions. In particular, hospitals with weak financial condition or substantial low-income populations in their communities may have lobbied for LIHP. Review of pre-LIHP 2009 data does indicate that hospitals in counties that implemented LIHP had lower operating margins than did hospitals in nonimplementing counties. However, no significant differences were present in 2009 uninsured payer proportions, charity care, or bad debt across hospitals in LIHP and non-LIHP counties. Further, the 2009 proportion of people with income less than

Table 1: California County Involvement in County Indigent Care Program Expansions

<i>County</i>	<i>Low-Income Health Plan (LIHP) Implementation Date</i>	<i>Participant in 2005 Expansion (Legacy county)</i>	<i>Implemented LIHP Medicaid Coverage Expansion (MCE)</i>	<i>Implemented Optional Expansion to Income Beyond MCE</i>
Alameda	July 2011	Yes	Yes	Yes
Contra Costa	July 2011	Yes	Yes	Yes
Fresno	—			
Kern	July 2011	Yes	Yes	Yes
Los Angeles	July 2011	Yes	Yes	
Merced*	—			
Monterey	March 2013		Yes	
Orange	July 2011	Yes	Yes	Yes
Placer	August 2012		Yes	
Riverside	January 2012		Yes	
Sacramento	November 2012		Yes	
San Bernardino	January 2012		Yes	
San Diego	July 2011	Yes	Yes	Yes
San Francisco	July 2011	Yes	Yes	Yes
San Joaquin	June 2012		Yes	
San Luis Obispo	—			
San Mateo	July 2011	Yes	Yes	Yes
Santa Barbara*	—			
Santa Clara	July 2011	Yes	Yes	Yes
Santa Cruz	January 2012		Yes	
Stanislaus*	—			
Tulare	March 2013		Yes	
Ventura	July 2011	Yes	Yes	Yes
CMSP counties [†]	January 2012		Yes	

*County originally indicated intent to implement LIHP program but subsequently did not expand and enroll individuals before January 2014.

[†]CMSP is a consolidated indigent care program called the County Medical Service Program that is in place for 35 primarily rural CA counties and is administered through a private insurance company. The CMSP was in place prior to the LIHP expansion and provided a uniform program for all 35 counties.

Sources: Harbage and King (2012) and author reconciliation based on county-level reporting of monthly LIHP enrollment provided to the CA Department of Healthcare Services (<http://www.dhcs.ca.gov>).

200 percent of FPL was smaller in counties that implemented LIHP when compared to nonimplementing counties. Thus, the degree to which hospital circumstances influenced county LIHP decisions is unclear.

The 10 counties that originally participated in the 2005 waiver, which are commonly referred to as “legacy counties,” implemented LIHP expansions beginning in July 2011. Thirty-five primarily rural counties

participating in a consolidated indigent health program called the County Medical Service Program (CMSP) implemented LIHP expansions in January 2012, as did three additional urban counties (Riverside, San Bernardino, and Santa Cruz). Sommers, Kenney, and Epstein (2014) reported a total of 515,000 LIHP enrollees through 2013, with 88.5 percent of these enrollees not previously covered by other CA programs. Overall, there is interesting variation in implementation times and the depth of implementation in terms of the extent to which low-income individuals were covered across the CA counties, allowing for a natural experiment to assess the impact of program expansions on CA hospitals.

DATA AND METHODS

The primary data for the study are the California Office of Statewide Health Planning and Development Annual Hospital Financial Disclosure Reports. Data were extracted for hospital fiscal years 2009 to 2012.¹ Only hospitals that were nonfederal, short-term general medical/surgical hospitals and with financial data reflecting a full fiscal year were selected. Also, given the longitudinal nature of this study, included hospitals had to have at least 2 years of study data. Consistent with other studies of CA hospitals, Kaiser Health System hospitals were excluded because this system reports aggregated and not facility-level information. Overall, 294 hospitals were examined. Additional study data were obtained from the California Department of Health Care Services on new LIHP enrollees per calendar quarter for each participating county. Also, sociodemographic data on each CA county were extracted from the American Community Survey of the U.S. Census Bureau.²

CA data identify for-profit and voluntary nonprofit hospitals, with additional ownership types of state, county, city, joint city/county, and district owned hospitals. Initially, we wanted to examine district hospitals separately from other public ownership types, but there were too few of these hospitals. Given this, we examined three main ownership categories: for-profit, nonprofit, and public. Only 11 hospitals of 294 changed ownership status over the study period, and thus, hospitals were categorized by their 2009 ownership type.

Dependent Variable Construction

The dependent variables measured the number of patients treated by particular payer types, charity care and bad debt costs, and hospital operating

margin. Two service use variables were examined: hospital discharges and outpatient visits. The latter combines emergency treat-and-release visits and all other outpatient visits. The two primary payer categories of interest were other indigent, which in CA refers to uninsured self-pay patients, and county indigent patients. Charity care represents hospital-reported charity care deductions from gross revenues, which is measured on a charge basis. This was converted to costs using a hospital-specific cost-to-charge ratio. Bad debt allowances are also measured on a charge basis, and thus, also adjusted by the hospital cost-to-charge ratio. Operating margin equals net income from hospital operations divided by operating revenues. We focused on operating margin because it best captures the flow of patient revenues and is unaffected by other nonpatient sources of revenue such as investment income. Given the skewed nature of outpatient visits, inpatient discharges, charity care, and bad debt, these were all logged and we added a small number (.0001) to reported values so that institutions with zero values on a given dependent variable could be retained.

Hospital Extent of Exposure to LIHP Expansions

The most important variable to our analysis measured the extent to which a hospital was exposed to LIHP expansions. Construction of this variable was a multistep process that started with consideration of the county in which the hospital was located and the correspondence of the hospital's fiscal year (FY) to the date that the county implemented LIHP expansions. In particular, if a hospital in a legacy county had a FY starting on January 1, 2011, that ran through December 31, 2011, it would have had a half year of exposure to the county LIHP expansion in the hospital's FY 2011 and then a full year of exposure in FY 2012.

Given our examination of annual hospital financial data, we assumed that a hospital had to at least be exposed to half a year of the LIHP expansion for it to have had a material impact on its payer mix and other financial indicators. If a hospital had less than half a year exposure, its LIHP exposure was set to missing for the relevant year. Hospitals in counties that implemented LIHP late in 2012 (e.g., Placer or Sacramento County) typically did not have a minimum of a half year exposure to the program, and so their exposure variable was also coded as missing for 2012. Most CA hospitals had January 1 or July 1 fiscal year start dates but a few had alternative dates (e.g., April 1 or October 1) and in these cases their exposure was coded as a value between .5 and 1

based on the overlap of their fiscal year and their county's LIHP implementation date.

The information in Table 1 makes evident that the extent to which hospitals were exposed to LIHP expansions was not simply a matter of timing but also the depth of the program enrollment implemented in a county. To account for this, quarterly data on the cumulative, unduplicated count of new LIHP enrollees in each participating county were obtained from the CA Department of Health Services. These quarterly data were then averaged over those quarters in which there was overlap between the LIHP implementation period and a given hospital's fiscal year. For example, assuming a hospital had a January 1, 2011, fiscal year start date and LIHP started in July 1 of that year in the hospital's county, the cumulative, unduplicated count of new enrollees in the quarter starting July 1 and in the quarter starting October 1 of that year were averaged and deemed as the number of new LIHP enrollees to which the hospital was exposed. Because CA counties have varying population sizes, this value was divided by the number of individuals with income less than 200 percent of FPL in a county to assess the depth of program expansions. Data for rural counties participating in the CMSP were aggregated, and thus, enrollment for these counties was divided by total low-income population in all the 35 counties. Finally, one needs to account for the fact that hospitals may have had less than a full year of exposure to these new enrollees. Thus, the exposure measure, which was based simply on the overlap between a hospital's FY and its county LIHP implementation period (as discussed in the preceding paragraphs), was multiplied by the number of new LIHP enrollees per low-income population.

Control Variables

Time-variant hospital and market factors were included as control variables. Hospital measures were: total number of staffed and set-up hospital beds, hospital provision of substance abuse services, and hospital provision of burn services. Hospital beds control for hospital size, which could impact volume of services and the amount of unreimbursed care. Burn and substance abuse are costly services commonly used by the uninsured (Zuckerman et al. 2001; Horwitz 2005) and showed variation in provision across time for CA hospitals. Additionally, hospital measures for ED visits and ED psychiatric visits were included in empirical models examining hospital discharges, unreimbursed care, and operating margin as the ED is a frequent point of entry for the uninsured. Finally, an all-payer case mix index was incorporated into the

unreimbursed care and operating margin models as it may affect hospital costs and reimbursement.

Market variables were number of hospital beds per 1,000 residents in a county, percent of hospital beds in a county that were public, the Herfindahl–Hirschman Index of hospital competition (based on hospital discharges), managed care patient share, the percent of the county population that was African American, the percent of county population that was Hispanic, and the percent of county population that was low income. These variables are frequently included in analysis of hospital payer mix and unreimbursed care (Thorpe, Seiber, and Florence 2001; Bazzoli et al. 2006; McKay and Meng 2007; Schneider 2007; Alexander et al. 2009). The first four focus on the hospital environment in a community and may affect an individual hospital's supply of care to low-income populations. The last three may affect demand for charity care among individuals in a community.

Empirical Approach

A longitudinal difference-in-difference analysis was used in the study. The basic empirical specification is expressed below with Y_{it} representing any of the dependent variables:

$$Y_{it} = \beta_0 + \beta_1 EE_{it} + \beta_2 EE_{it} * legacy_i + \beta_3 EE_{it} * NFP_i + \beta_4 EE_{it} * Public_i + \beta_5 H_{it} + \beta_6 M_{it} + \alpha_t T_t + \varepsilon_{it}$$

EE_{it} represents the extent of exposure variable, which accounts for a hospital's location in a county that did or did not implement LIHP, the overlap of the hospital's reporting period with the implementation dates for LIHP in the hospital's county, and the number of new LIHP enrollees in a county relative to low-income population in the respective area. This extent of exposure variable is interacted with indicators for a hospital's location in one of the 10 legacy counties, and also the 2009 ownership status of the hospital of either nonprofit (*NFP*) or public (omitted category of for-profit status). The legacy county interaction was included because information from the CA Department of Health Care Services indicated that counts of new LIHP enrollees in the 10 legacy counties may be confounded by individuals who actually enrolled between November 2010 and July 2011. Thus, to some degree, the value of dependent variables in the pre-LIHP period for legacy hospitals will be affected by this early enrollment. In addition, a version of the model was estimated that excluded the nonprofit and public hospital interactions to assess

the overall impact of the LIHP program across all hospitals in nonlegacy counties.

The model also contains variable vectors H_{it} and M_{it} for the time-variant hospital and market control variables. γ_i is a hospital-specific error component and ε_{it} is a random error. T_t represents dummy variable indicators for the study years. Table 2 reports descriptive statistics on all study variables across hospital-year observations.

Table 2: Means and Standard Deviations of Study Variables: Across All Hospital-Year Observations

	<i>Hospitals Affected by LIHP Expansions</i>		<i>Hospitals Not Affected by LIHP Expansions</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Dependent variables				
County indigent discharges	286.26	975.20	270.79	509.79
County indigent outpatient visits	7,320.49	28,523.11	4,411.01	10,980.94
Self-pay inpatient discharges	188.54	474.18	202.04	317.30
Self-pay outpatient visits	3,149.30	7,333.35	4,407.68	6,685.63
Charity care costs (in 000s, 2009 \$)	4,560.02	8,625.76	5,710.23	8,358.97
Bad debt costs (in 000s, 2009 \$)	3,605.46	5,100.49	4,965.71	4,697.08
Operating margin	0.01	0.13	0.05	0.08
Extent of LIHP exposure	0.01	0.02	—	—
Hospital control variables				
Staffed and set-up beds	169.58	140.42	192.50	162.84
All-payer case mix index*	1.24	0.35	1.19	0.28
Proportion with burn unit	0.07	0.25	0.07	0.26
Proportion with substance abuse services	0.13	0.33	0.10	0.30
ED visits (in 000s)*,†	27.77	20.50	35.96	22.47
ED psychiatric visits (in 000s)*,†	0.27	1.46	0.05	0.32
Market control variables				
Managed care market share	0.38	0.20	0.45	0.12
Herfindahl–Hirschman Index	0.21	0.26	0.34	0.18
Hospital beds per 1,000 population	1.60	0.70	1.51	0.42
Proportion of beds with public ownership	0.17	0.20	0.17	0.24
Proportion of population—African American	0.06	0.04	0.05	0.03
Proportion of population—Hispanic	0.36	0.14	0.40	0.15
Proportion of population with income less than 200%	0.36	0.08	0.41	0.08
Federal poverty level				
No. of hospital-year observations	1,008		157	

*Variable included as a control variable in charity care, bad debt, and operating margin regressions.

†Variable included in hospital discharge, charity care, bad debt, and operating margin regressions.

Empirical models were estimated using fixed effects so that the results can be interpreted as within-hospital changes based on changes in various explanatory variables. Huber–White corrected standard errors were generated given the clustering of observations in hospitals and counties, and also to obtain correct inference statistics given the logging of dependent variables in several models (Manning 1998).

For the analysis of changes in outpatient visits and hospital discharges, a difference-in-difference-in-difference (i.e., triple difference) analysis is possible by looking at a payer group other than the uninsured and county indigent. A triple difference analysis can control for unmeasured factors that may be affecting a hospital's volume of services over time that are independent of the LIHP expansion. Potential payer categories available for a triple difference analysis were private health insurance, Medicaid, or Medicare, but key to such an analysis is that the payer category must be unaffected by LIHP. This means that private health insurance and Medicaid were problematic because existing evidence suggests that early ACA Medicaid expansions created both private insurance “crowd-out” effects and Medicaid “woodwork” effects (Sommers, Kenney, and Epstein 2014). Thus, we examined changes in Medicare volume over time in our triple difference analysis, which is an appealing group given that LIHP expansions focused specifically on nonelderly adults.

Sensitivity Analysis

A variety of sensitivity analyses were undertaken. First, given potential selection issues arising from certain CA counties choosing not to implement LIHP, models were reestimated excluding hospitals in Fresno and San Luis Obispo Counties. This analysis did include as comparison hospitals those located in counties that initially indicated intent to expand but did not and also hospitals in counties that implemented the LIHP in 2013, which is after our final year of data.

In a second sensitivity analysis, we examined a simpler variable for LIHP implementation that just took into account the overlap of a hospital's fiscal year and the timing of LIHP expansion in a county without considering the depth of new enrollment. Other sensitivity analysis used a longitudinal negative binomial model for outpatient visits and inpatient discharge analysis, which has appeal because these are in essence counts. However, these measures do not have a limited range of values as one would normally expect in count models. Finally, we examined models that had charity care and bad debt measured as a percent of hospital total expenses rather than a continuous measure.

RESULTS

Table 3 provides descriptive data on changes in the dependent variables for for-profit, nonprofit, and public hospitals in areas affected by LIHP expansions. Also reported are changes in Medicare patient outpatient visits and discharges given the use of these data in the triple difference analysis. Overall, for-profit hospitals experienced expected trends given county program expansions, namely substantial growth in county-covered outpatient visits and discharges coupled with declines in self-pay outpatient visits. Nonprofit and public hospitals also experienced growth in county-covered outpatient visits and discharges, but to a smaller degree than for-profit hospitals. Self-pay outpatient visits and discharges grew for nonprofit hospitals despite the LIHP expansions. Public hospitals had an increase in self-pay outpatient visits but a slight decline in discharges. Charity care and bad debt costs as a percent of hospital total expenses declined slightly for for-profit hospitals, increased slightly for nonprofit hospitals, and were unchanged for public hospitals. All hospital types had increases in operating margin, but these could be affected by the improving economy between 2009 and 2012 in addition to the LIHP expansions.

Table 4 presents results from the multivariate analysis of payer-specific outpatient visits and discharges. The first set of columns reports results for a model that included just the LIHP extent of exposure variable, its interactions, year dummy variables, and a hospital fixed effect. The second set of columns is for models that had these variables plus all hospital and market control variables. The final set of columns report the triple difference findings. Rather than reporting regression coefficients, the table reports the estimated percent changes in a given dependent variable that results from a 10 percent increase in LIHP enrollees in nonlegacy counties. In these counties, there was an average of 50,000 new LIHP enrollees in any given year, and thus, a 10 percent increase represented 5,000 new enrollees. P-values reported in the table were derived from STATA's NLCOM command. Appendix Table S1 reports coefficient estimates and significance levels of the difference-in-difference model that included hospital and market control variables.

The findings for hospitals overall suggest no significant impact of LIHP on hospital self-pay and county indigent care provision. However, for-profit hospitals experienced a significant change, with the model including hospital and market controls indicating a 24 percent increase in county indigent out-

Table 3: Payer Mix and Other Financial Changes for Hospitals Affected by LIHP Implementation

	For-Profit Hospitals			Private Nonprofit Hospitals			Public Hospitals		
	2009	2012	% Change*	2009	2012	% Change*	2009	2012	% Change*
County indigent									
Outpatient visits	506	749	48.02%	2,289	2,884	25.99%	30,392	32,157	5.81%
Discharges	59	119	101.69%	164	219	33.54%	805	964	19.75%
Self-pay									
Outpatient visits	867	573	-33.91%	2,946	4,484	52.21%	4,499	4,977	10.62%
Discharges	89	91	2.25%	184	207	12.50%	290	285	-1.72%
Medicare									
Outpatient visits	16,430	15,609	-5.00%	54,717	60,369	10.33%	29,218	27,740	-5.06%
Discharges	2,839	2,809	-1.06%	4,718	4,832	2.42%	1,840	1,886	2.50%
Charity care %	1.82%	1.48%	-0.34	1.85%	2.19%	0.34	2.03%	2.02%	-0.01
of expense									
Bad debt % of expense	2.96%	2.70%	-0.26	1.71%	1.76%	0.05	3.88%	3.87%	-0.01
Operating margin	3.38%	4.57%	1.19	3.80%	4.28%	0.48	-10.81%	-8.72%	2.09
No. of hospitals	66			135			48		

*Equals percent change (i.e., change in value from 2009 to 2012 divided by 2009 value) for outpatient visits and discharges; equals percentage point difference (i.e., change in value from 2009 to 2012) for charity care, bad debt, and profit margins.

LIHP, Low-Income Health Program.

Table 4: Estimated Change in Service Use for an Increase of 5,000 LIHP Enrollees in County: Hospitals in Nonlegacy Counties

	<i>Unadjusted Relative Change: Difference-in- Difference</i>		<i>Adjusted Relative Change: Difference-in- Difference</i>		<i>Adjusted Relative Change (Less Relative Change for Medicare): Triple Difference Model</i>	
	<i>Estimated % Change</i>	<i>p-Value</i>	<i>Estimated % Change</i>	<i>p-Value</i>	<i>Estimated % Change</i>	<i>p-Value</i>
County indigent						
Hospitals overall						
Outpatient visits	0.86%	.84	2.31%	.58	18.69%*	.10
Discharges	1.06%	.81	2.63%	.51	11.69%	.23
For-profit hospitals						
Outpatient visits	14.40%	.20	24.27%*	.06	45.95%*	.09
Discharges	18.44%*	.09	29.13%***	.01	35.08%	.11
Nonprofit hospitals						
Outpatient visits	0.80%	.87	2.11%	.65	18.45%	.11
Discharges	0.67%	.89	2.21%	.63	10.77%	.27
Public hospitals						
Outpatient visits	-2.37%	.78	-0.45%	.96	37.20%*	.10
Discharges	-1.45%	.78	1.08%	.84	28.91%	.11
Self-pay						
Hospitals overall						
Outpatient visits	-4.73%	.14	-4.75%	.20	10.29%	.21
Discharges	-5.56%	.14	-4.85%	.19	6.98%	.29
For-profit hospitals						
Outpatient visits	-20.98%***	.00	-24.00%***	.00	-16.08%	.12
Discharges	-18.18%***	.00	-19.73%***	.00	-17.00%**	.05
Nonprofit hospitals						
Outpatient visits	-3.56%	.29	-3.86%	.31	8.48%	.28
Discharges	-4.95%	.20	-4.69%	.22	5.10%	.43
Public hospitals						
Outpatient visits	-5.70%	.25	-5.65%	.29	-0.37%	.97
Discharges	-4.79%	.36	-2.99%	.58	3.00%	.75

Note. Estimated change equals exponentiated coefficient on main effect plus relevant ownership interaction times an increase in 5,000 enrollees as a percent of low-income population. Models estimated as fixed effects with log of outpatient visits or discharges as the dependent variable. *p*-value derived in STATA using NLCOM command for estimated percent change.

p* ≤ .10; *p* ≤ .05; ****p* ≤ .01.

patient visits and a 29 percent increase in county indigent hospital discharges, *ceteris paribus*. These increases are large but are consistent with that observed in Table 3. For-profit hospitals also experienced a 24 percent drop in self-pay outpatient visits and a nearly 20 percent drop in self-pay discharges. As a group, nonprofit and public hospitals experienced relatively lit-

the change in county indigent and self-pay patient service use, with none of the estimated percent changes being significant in the difference-in-difference models.

The triple difference analysis found relatively larger increases in county-covered care for all ownership categories when compared to the difference-in-difference results. This suggests that hospitals in LIHP expansion areas had larger within-hospital declines in Medicare service use (or potentially smaller increases) when compared to within-hospital changes for hospitals in non-LIHP areas. Findings for changes in self-pay use also reflect this. Additionally, the estimates of relative change from the triple difference models are more imprecise when compared to the simpler difference-in-difference findings, owing most likely to wide variation in within-hospital Medicare changes across facilities. Nevertheless, the triple difference findings provide additional support that for-profit hospitals largely experienced positive payer changes with LIHP expansions, with significant increases in county indigent use and decreases in self-pay use. As in other models, nonprofit hospitals as a group experienced no significant change in study measures, and there is weak evidence of an increase in public hospital county-covered outpatient visits in the triple difference model.

Table 5 reports findings for charity care, bad debt, and operating margin, focusing again on the estimated changes in the dependent variables for a 5,000 LIHP increase in nonlegacy counties. For hospitals overall, the LIHP expansion resulted in a significant decline in charity care and a marginally significant increase in bad debt. The ownership specific estimates, however, indicate that although this was the case for nonprofit hospitals, for-profit hospitals experienced a significant and substantial decline in charity care with no significant change in bad debt. No significant results were present for operating margin for hospitals overall or by ownership type.

Results from sensitivity analysis indicated that key findings were robust. When hospitals in counties that did not intend to implement LIHP were eliminated, the difference-in-difference models indicated as before that for-profit hospitals experienced significant increases in county-covered hospital care, significant declines in self-pay use, and significant declines in charity care expenses. Nonprofit and public hospitals did not experience significant change in any of these measures, and nonprofit hospitals still had a significant increase in bad debt. Similar results were also obtained when the simpler LIHP exposure variable not accounting for differences in the extent of enrollment across counties. However, these

Table 5: Estimated Changes in Measures Noted for an Increase of 5,000 LIHP Enrollment in County Hospitals in Nonlegacy Counties

	<i>Unadjusted Relative Change: Difference-in-Difference</i>		<i>Adjusted Relative Change: Difference-in-Difference</i>	
	<i>Estimated Change</i>	<i>p-Value</i>	<i>Estimated Change</i>	<i>p-Value</i>
Hospitals overall				
Charity care expenses	−4.80%*	.06	−6.81%**	.05
Bad debt expenses	3.10%*	.10	2.44%*	.10
Operating margin	−0.001	.60	0.000	.94
For-profit hospitals				
Charity care expenses	−20.09%***	.01	−26.46%***	.00
Bad debt expenses	5.68%	.43	−3.64%	.52
Operating margin	0.0183	.40	0.003	.25
Nonprofit hospitals				
Charity care expenses	−4.20%*	.10	−6.28%*	.08
Bad debt expenses	2.79%*	.07	2.47%*	.08
Operating margin	−0.001	.56	0.000	.92
Public hospitals				
Charity care expenses	−3.29%	.41	−6.35%	.16
Bad debt expenses	4.02%	.16	3.28%	.25
Operating margin	−0.001	.62	−0.001	.78

Note. Estimated change is a percent change for charity care and bad debt expenses and a percentage point change for operating margin. Values for estimated change are derived by exponentiating coefficient on main effect plus relevant ownership interaction times an increase in 5,000 enrollees as a percent of low-income population. Models estimated as fixed effects with log of charity care costs, log of bad debt costs, or operating margin as the dependent variable. *p*-value derived in STATA using NLCOM command for estimated percent change.

p* ≤ .10; *p* ≤ .05; ****p* ≤ .01.

models had weaker estimated effects on county-covered care, which may arise given that there was substantial variation in the depth of new enrollment across counties. When dependent variables were defined as the percent of hospital expenses that were charity care or bad debt, the charity care variable exhibited a significant decline only for for-profit hospitals. Finally, when a negative binomial model was used, the pattern of results was quite similar: For-profit hospitals experienced a significant decline in self-pay discharges and increases in county-covered discharges and outpatient visits. No significant change was found for nonprofit hospitals in self-pay or county indigent use. For public hospitals, self-pay discharges did appear to decline significantly, which is in contrast to Table 4, but self-pay outpatient visits and county-covered use measures did not change significantly.

DISCUSSION AND CONCLUSIONS

The findings from this study suggest that county indigent program expansions in CA led to favorable payer shifts and lower charity care costs at for-profit hospitals, but similar changes were not present for hospitals overall or for non-profit and public hospitals. Indeed, any benefit that nonprofit hospitals might have experienced due to marginal declines in charity care levels were in part offset by marginal increases in bad debt. This is interesting given that LIHP allowed counties to implement cost-sharing provisions that may have led some newly covered individuals to generate bad debt when they previously generated charity care for nonprofit hospitals. Alternatively, this may be an accounting artifact because LIHP established more specific income eligibility thresholds that affected charity care policies at nonprofit hospitals. Overall, the study results are interesting in light of the statistics in Table 3, namely that hospitals with the least involvement providing care to the uninsured or to county indigent patients before the LIHP expansions (namely for-profit hospitals) appear to have benefited the most from these expansions.

There are several limitations in our analysis. First, we are studying short-run changes in a transitional program that was meant to set the stage for subsequent state Medicaid expansions. It may be that such a temporary change had limited effect both on county efforts to enroll eligible individuals and for individuals to use their new coverage. However, analysis by Lo et al. (2014) of the LIHP program found that newly covered individuals increased their hospital use in the immediate term, most likely due to pent-up demand. Another limitation is that counties voluntarily decided to participate in LIHP. Although a sensitivity analysis was conducted that excluded hospitals in counties that initially decided not to participate in the program, one cannot rule out that potential selection issues have an impact on the findings.

Finally, as noted, the study focuses strictly on one state, and thus generalizing to what might happen nationally under ACA is problematic. However, it is noteworthy that some of the findings for CA hospitals parallel results on hospital experience through Massachusetts (MA) health care reform (Ku et al. 2011; Mohan et al. 2013; Bazzoli and Clement 2014). Research on MA hospitals found that the two major safety net institutions in the state did experience substantial improvement in payer mix but other public and nonprofit hospitals with lesser safety net roles did not. Additionally, MA results suggest limited improvement in hospital financial condition even when favorable payer changes occurred. Taken together, the primary implication from existing

research is that one cannot presume that expanded insurance coverage will lead to stronger financial footing for those institutions with a historical role in serving uninsured and low-income populations.

Study results also have implications for patients who gain coverage through insurance expansions. An interesting observation from Table 4 is that for-profit hospitals were highly responsive to our modeled 10 percent increase in LIHP enrollment, expanding discharges to those in county indigent programs by 29 percent and outpatient visits by 24 percent in our adjusted difference-in-difference models. This suggests that newly covered individuals may find they have more options for hospital care available to them, especially at for-profit facilities, than when uninsured. Early industry studies of for-profit hospitals in Medicaid expansion states support this observation. Specifically, a PwC Health Research Institute (2014) issue brief reported that an executive for a for-profit hospital system indicated that local education and outreach activities were being undertaken by system hospitals to increase awareness among the uninsured about exchange health plans and their potential eligibility for Medicaid expansions. However, on the flip side, for-profit facilities in CA had sharp declines in self-pay use for the LIHP enrollment increase examined, which suggests that self-insured patients might have become more concentrated in nonprofit and public hospitals after the insurance expansion. As data become available nationally on hospital service provision after the ACA insurance expansions, it will be important to assess if the CA findings observed for LIHP are borne out more broadly.

For hospitals, our findings suggest that they should not simply expect improvements in their financial circumstances as more patients become covered. As just noted, newly covered patients may have more local alternatives for their care, and there will be the need for institutions to find ways to retain and attract individuals who they may have considered a captive audience when uninsured. Additionally, the CA experience suggests that depending on how insurance expansions play out, there may not be major reductions for certain hospitals in uninsured care, even in a state like CA that expanded Medicaid. Of course, different communities will have different experiences, and trends in payer mix and service provision will need to be monitored with continuing ACA implementation.

For policy makers and researchers, careful tracking of the financial circumstances of hospitals will also be important. Health reform in the United States is intended to affect not only the insurance status of individuals but also intends to reshape the health delivery system. Key delivery organizations, like hospitals, need a strong financial base if they are to be

successful at implementing change. Our findings, like those of studies in MA, make clear that the financial implications of health care reform for hospitals will be complex. This is especially the case given the changes that will be occurring to state Medicaid DSH funding starting in 2018, and the decisions states will need to make on how to reallocate a smaller pool of DSH funds to hospitals based on their Medicaid and uncompensated caseloads and financial circumstances.

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NOTES

1. Information on these financial reports and access to them are available at <http://www.oshpd.ca.gov/hid/Products/Hospitals/AnnFinanData/CmplteDataSet/index.asp>. Specifically, we used data from the 35th to 38th reporting periods.
2. For large CA counties, annual data were extracted from the American Community Survey, whereas data from the 3-year files were obtained for midsize counties, and 5-year files for small counties. Study data were specifically extracted from http://factfinder.census.gov/faces/nav/jsf/pages/download_center.xhtml.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Table S1. Difference-in-Difference Multivariate Regression Models.