

Appendices: For Online Publication Only

APPENDIX A: DATA

Appendix A1: Datasets and Sources

Health Care Cost Institute (HCCI) Data: The project draws on data from the Health Care Cost Institute (HCCI). The HCCI data includes claims from beneficiaries with employer-sponsored coverage from Aetna, Humana, and UnitedHealthcare. More details on HCCI can be found at www.healthcostinstitute.org. We post a sample hip replacement episode composed of multiple claims online at www.healthcarepricingproject.org. This illustrates how we aggregate claims up to the episode level and calculate a price.

The data begins with sheets of membership data, inpatient facilities data, outpatient data, physician data, and pharmacy data. We use this to construct our inpatient and procedure samples.

The data include claims for individuals with fully- and self-insured plans that receive employer-sponsored insurance. This includes insurance products in the national, large, and small group markets. The data include more than forty million covered lives per year and covers 27.6% of individuals in the US with employer-sponsored insurance (see Table 1 and Figure A1).

The most prominent alternative source of insurance claims data is the MarketScan database from Truven Health Analytics. MarketScan includes claims for individuals employed at about sixty large employers. Unlike HCCI, these data do not include individuals who receive insurance coverage in the small group market (i.e. individuals employed at medium and small sized firms) and only cover a subset of large firms (Hansen and Chang 2011).¹ As a consequence, MarketScan contains information on fewer people than HCCI in a selected part of the market. Chernew et al. (2010) report that the data contain between 16.9 million and 22.9 million covered lives per year between 1996 through 2006. In contrast, the HCCI data contain between 42.9 and 45.1 million lives per year.

While the MarketScan database is useful for many research applications, it has drawbacks for the type of analysis we undertake in this project. First, as mentioned previously, the MarketScan data do not cover the small group market. Second, the database has very thin coverage in a number of markets. For example, while the smallest HRR in the HCCI data has 4,402 unique individuals, MarketScan includes HRRs with fewer than two hundred individuals. Third, the MarketScan data do not include geographic information below the three-digit zip code level. In this paper, we use five-digit zip code level data to define hospital markets and to merge in local area characteristics. Fourth, the MarketScan data do not include a unique hospital identifier or the ability to merge in hospital characteristics. As a result, we could not identify a hospital price and therefore could not do any of our analyses of variation in hospital prices.

In addition to the core HCCI data, we merge on a number of other datasets listed below.

American Hospital Association Annual Survey: We obtain data on hospital characteristics from the American Hospital Association (AHA) annual survey. More information on the AHA survey data can be obtained from: <http://www.ahadataviewer.com/book-cd-products/AHA->

¹ Twenty-five percent of workers with employer sponsored health insurance were employed in firms of size 49 or less, thirty-four percent in firms smaller than one hundred, and forty-nine percent in firms of size four hundred ninety-nine or less (NIHCM Foundation 2013).

[Survey/](#). The survey polls hospitals on characteristics, staffing, technology, finances, and other information and has been running since 1946. We use the AHA data to create our technology measures and measures of hospital market concentration.

Medicare Quality Scores: We use data on hospital quality obtained from data.medicare.gov. The data includes quality scores drawn from both Medicare and private claims data. The data can be downloaded from: <https://data.medicare.gov/data/hospital-compare>. The quality scores used were developed by the Agency for Health Care Research and Quality (AHRQ).

American Hospital Directory Data: We use data on hospitals' Medicare activity that we obtained from the American Hospital Directory (AHD). The AHD is a for-profit data vendor that sells cleaned Medicare data derived from the Medicare Provider Analysis and Review limited access database. This includes claims records for 100% of Medicare fee-for-service inpatient claims. Details on the AHD data can be found at www.ahd.com.

U.S. News & World Report Rankings: We obtained rankings of hospitals printed in the US News and World Report from 2007 – 2011. Some data were obtained from online rankings. For some years, we obtained the physical copy of the printed magazine issues.

Dartmouth Data: We use data on Medicare spending per HRR that we downloaded from the Dartmouth Atlas. Full details on the Dartmouth Atlas Medicare data can be obtained from: <http://www.dartmouthatlas.org>

The Center for Consumer Information and Insurance Oversight Data: We use data from The Center for Consumer Information and Insurance Oversight (CCIIO) to create alternative measures of insurance market concentration. CCIIO is a federal organization within CMS that was created under the ACA. It oversees the measurement of Medical Loss Ratios (MLRs). More information on the CCIIO data can be obtained from: <https://www.cms.gov/CCIIO/Resources/Data-Resources/index.html>.

Census Data: Data on the number of uninsured lives by county, lives privately insured per county, and median household income come from the US census. See: <http://www.census.gov/did/www/sahie/> and <http://www.census.gov/did/www/saibe/index.html>.

Appendix A2: Identifying Hospitals Using National Plan and Provider Enumeration System Identifiers

Single hospitals can be assigned multiple National Plan and Provider Enumeration System Identifiers (NPI) because different wings of the hospitals and different units each have their own NPI. To address this issue, we made a crosswalk that consolidates providers' multiple NPIs into a single, master NPI. We use the master NPI to merge on data from the AHA and Medicare. To consolidate NPIs, we undertake the following steps:

1. Compile all variations of AHA ID/hospital name/address/city/state/ZIP Code in the 2000-2011 AHA survey data, retaining the row for the latest year.
2. Add NPI from the AHA survey files, beginning with the most recent year.

3. Make sure there is only one NPI per AHA ID. If more than one AHA ID have the same NPI, look up in the CMS NPI Registry to resolve the discrepancy.
4. Check all NPIs in the CMS NPI Registry to make sure they are valid and accurate. Remove invalid NPIs.
5. Look up hospitals in the NPI Registry that do not have a NPI in AHA by name and address. Attach NPI to the AHA file when a match is found.
6. Extract all organizational rows from the CMS NPI Registry where primary taxonomy code is for a hospital (287300000X, 281P00000X, 281PC2000X, 282N00000X, 282NC2000X, 282NC0060X, 282NR1301X, 282NW0100X, 282E00000X, 286500000X, 2865C1500X, 2865M2000X, 2865X1600X, 283Q00000X, 283X00000X, 283X00000X, 283XC2000X, 282J00000X, 284300000X) or hospital unit (273100000X, 275N00000X, 273R00000X, 273Y00000X, 276400000X).
7. Match AHA compiled address file to the hospital NPI file on NPI. Add AHA number to the hospital NPI file and mark the NPI as 'PRIMARY' NPI for that hospital.
8. Match remaining rows in the hospital NPI file according to the following hierarchy:
 1. Organization name, address1, city, state, ZIP Code
 2. Address1, city, state, ZIP Code, similar organization name
 3. Other organization name, address1, city, state, ZIP Code
 4. Address1, city, state, ZIP Code, similar other organization name
 5. Address, city, state, ZIP Code, different name (validated name changes via web search)²
 6. Organization name, similar address1, city, state, ZIP Code³
 7. Other organization name, similar address1, city, state, ZIP Code
 8. Similar organization name, similar address1, city, state, ZIP Code
 9. Similar other organization name, similar address1, state, ZIP Code
 10. Medicare number, city, state, ZIP Code
9. When a match is found, append AHA ID and 'PRIMARY' NPI.
10. Some hospitals in the NPI Registry were not in the AHA survey data files. For these hospitals, we pick one NPI as 'PRIMARY' and, using the match steps outlined above, add an 'X' to the AHA ID column and append the 'PRIMARY' NPI to all matched rows.
11. We also consolidated NPIs to ZIP codes. To do so, we:
 1. Sort file by ZIP Code, primary taxonomy code, address1
 2. Where more than one 'PRIMARY' NPI exists within a ZIP Code for the same organization name and primary taxonomy, change all rows to the 'PRIMARY' NPI associated with the AHA ID.
 3. Where more than one 'PRIMARY' NPI exists within a ZIP Code for the same organization name and primary taxonomy but none of the rows is associated with an AHA ID, double check against the AHA file. If no match is found, consolidate the rows to one single 'PRIMARY' NPI.

² Because there can be hospitals within hospitals (e.g., specialty or children's hospital on one floor of a general hospital), all of these occurrences were manually validated to ensure that the correct hospital was identified.

³ Suburb names are occasionally used in addresses (e.g., Brentwood vs. Los Angeles). If the address1, state, and ZIP Code matched but the city name differed, this was still considered a valid match at each level.

Appendix A3: Defining the samples

The inpatient sample in our data includes all inpatient claims aggregated to the DRG-level. The clinical procedures we use are defined using combinations of ICD9 codes and DRGs. In the case of MRIs, we identify episodes using the CPT-4 code. These are detailed in Table A1.

Appendix B: Details of Formal Price/Quantity Decomposition.

We performed formal decompositions of the variance of log spending separately for Medicare and privately insured beneficiaries. To do so, we decompose the variance of the natural log of spending per DRG d into 3 components,

$$\text{var}(\ln(p_d q_d)) = \text{var}(\ln(p_d)) + \text{var}(\ln(q_d)) + 2\text{cov}(\ln(p_d), \ln(q_d)),$$

Here, p_d is a vector of the HRR-level average prices of DRG d and q_d is the DRG-specific vector of inpatient visits divided by beneficiaries in each HRR.

The component $\frac{\text{var}(\ln(p_d))}{\text{var}(\ln(p_d q_d))}$ represents the share of the variance in spending attributable to differences in price across HRRs. The term $\frac{\text{var}(\ln(q_d))}{\text{var}(\ln(p_d q_d))}$, represents the share of the variance attributable to differences in quantity across HRRs. The covariance term: $\frac{2\text{cov}(\ln(p_d), \ln(q_d))}{\text{var}(\ln(p_d q_d))}$ represents the share of the variance attributable to the covariance of price and quantity across HRRs.

Table A5 presents the results of this decomposition for each of the 25 highest spending DRGs across Medicare and private payers. On average, variation in the quantity of DRGs provided in each HRR accounts for 76.65% of the variance in Medicare spending; 9.37% of the variance is attributable to variation in price of care. In contrast, for the privately insured, price variation is responsible for 45.89% of the variance in spending across HRRs, while quantity only accounts for 36.19% of the variation.

Table A1: Comparison of AHA Hospitals, the Inpatient Sub-sample and the Procedure Sub-samples

	AHA Hospitals	Inpatient	Hip Replacement	Knee Replacement	Cesarean Section	Vaginal Delivery	PTCA	Colonoscopy	MRI
Market Characteristics									
Monopoly	0.241	0.140	0.025	0.062	0.072	0.095	0.037	0.148	0.180
Duopoly	0.140	0.143	0.063	0.120	0.111	0.127	0.087	0.145	0.159
Triopoly	0.091	0.100	0.075	0.088	0.098	0.100	0.080	0.087	0.097
Hospital HHI	0.509	0.433	0.306	0.365	0.366	0.395	0.322	0.429	0.473
Insurer HHI	0.217	0.212	0.210	0.209	0.210	0.207	0.202	0.215	0.219
HCCI Market Share, County	0.149	0.180	0.243	0.227	0.203	0.195	0.226	0.199	0.187
Hospital Characteristics									
Technologies Ranked in US News & World Reports	48	59	69	65	68	66	71	64	61
Number of Beds	0.028	0.047	0.107	0.063	0.053	0.055	0.090	0.061	0.049
Teaching Hospital	204	266	376	315	334	320	402	279	256
Government Owned	0.314	0.377	0.545	0.454	0.459	0.443	0.527	0.400	0.368
Non-Profit	0.196	0.105	0.059	0.070	0.085	0.096	0.079	0.105	0.116
	0.566	0.668	0.763	0.717	0.742	0.734	0.732	0.725	0.692
Local Area Characteristics									
Percent of County Uninsured	0.177	0.174	0.169	0.172	0.171	0.172	0.176	0.167	0.170
Median Income	\$48,772	\$51,404	\$54,428	\$53,019	\$53,907	\$53,493	\$52,436	\$52,710	\$50,924
Rural	0.277	0.152	0.021	0.063	0.066	0.086	0.038	0.137	0.194
Other Payers									
Medicare Payment Rate	\$6,327	\$6,464	\$6,298	\$6,207	\$6,484	\$6,522	\$6,394	\$6,411	\$6,223
Share of Medicare	0.447	0.451	0.441	0.447	0.426	0.430	0.449	0.452	0.458
Share of Medicaid	0.173	0.186	0.146	0.161	0.188	0.192	0.169	0.178	0.177
Quality Scores									
30-day AMI death rate	0.158	0.157	0.153	0.156	0.156	0.156	0.154	0.158	0.158
% of AMI patients given aspirin at arrival	0.872	0.938	0.908	0.915	0.970	0.969	0.983	0.957	0.932
% of patients given antibiotics 1 hour before surgery	0.888	0.958	0.955	0.961	0.961	0.962	0.955	0.954	0.952
% of surgery patients given treatment to prevent blood clots within 24 hours	0.843	0.913	0.910	0.918	0.914	0.914	0.904	0.905	0.906
Number of Hospitals	3,830	2,252	477	937	1,113	1,214	598	1,193	1,583

Notes: The inpatient data is derived from the inpatient sample. The procedure files are drawn from the procedure samples.

Table A2: Definitions for the Seven Procedure Samples

<u>Procedure</u>	<u>ICD9</u>	<u>and</u>	<u>MS- DRG</u>	<u>or</u>	<u>CPT-4</u>
Hip Replacement	8151		470		
Knee Replacement	8154		470		
Cesarean Section	741		766		
Vaginal Delivery	7359		775		
PTCA	0066		247		
Colonoscopy	V7651 (CM)				
MRI					73721

Notes: For hip and knee replacements, we limit our analysis to individuals between forty-five and sixty-four years of age. For vaginal deliveries and cesarean sections, we limit our analysis to delivering mothers who are between the ages of twenty-five and thirty-four. In order to be included, an MRI episode must be a single-line facility claim and we must observe a separate physician payment for the reading of the MRI. We do this to ensure that we are isolating the professional component (reading of the MRI) from the technical component (administering the scan). We also limit MRIs to those carried out on individuals who had no other hospital claims on the day that the MRI was provided and for whom the hospitalization was exclusively for the MRI. Similarly, for colonoscopies, we limit our analysis to individuals age forty-five through sixty-four and only include hospital-based episodes where nothing else was done to the patient that day and for which the colonoscopy was the reason for the trip to the hospital. We exclude colonoscopies where a biopsy was taken.

Table A3: Pricing Regressions: Coefficients from Equation (1) for Inpatient Prices and equation (3) for Procedures Prices

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Facilities Price							
	Inpatient	Hip Replacement	Knee Replacement	Cesarean Section	Vaginal Delivery	PTCA	Colonoscopy	MRI
Age 25-34	-67.4*** (25.4)					-1,285.1 (3,649.8)		-2.4 (3.0)
Age 36-44	-33.6 (26.6)					-1,446.2 (3,609.7)		-3.5 (2.8)
Age 45-54	104.3*** (28.4)					-1,892.3 (3,607.2)		-4.5* (2.7)
Age 55-64	-139.1*** (28.8)	-473.3*** (83.1)	-211.8*** (56.3)			-2,197.6 (3,606.7)	1.5 (2.3)	-3.3 (2.7)
Charlson Score 1	-103.8*** (21.9)	-81.0 (125.9)	-22.3 (72.9)	52.1** (26.1)	48.8*** (17.5)	-585.0*** (147.8)	30.0*** (4.6)	1.1 (2.5)
Charlson Score 2	181.0*** (25.1)	256.6 (158.1)	-179.5* (99.3)	51.3 (59.7)	133.3*** (41.3)	-837.0*** (168.5)	26.6*** (4.8)	-0.2 (3.7)
Charlson Score 3	238.6*** (42.7)	-1,051.3*** (339.4)	-376.3* (199.8)	277.6 (227.0)	119.5 (176.2)	-413.6 (289.8)	39.6*** (13.2)	3.2 (8.8)
Charlson Score 4	280.0*** (52.7)	-673.6 (510.0)	-262.2 (327.8)	-158.5 (164.6)	-223.4 (154.6)	-1,934.0*** (431.5)	29.1* (15.4)	-1.3 (12.0)
Charlson Score 5	702.8*** (90.2)	-2,223.4** (1,058.0)	-397.6 (675.5)	-131.7 (747.9)	1,110.3* (634.5)	-1,134.0 (848.1)	37.6 (37.9)	-24.6 (26.9)
Charlson Score 6	1,135.0*** (46.0)	-287.9 (517.1)	-132.4 (491.2)	-452.9 (347.0)	226.4 (240.8)	-959.8 (746.4)	82.8*** (18.3)	-5.5 (14.9)
Female	-162.6*** (15.9)	154.0* (79.8)	-13.7 (51.4)			-348.7*** (110.6)	4.2* (2.3)	-2.0 (1.4)
DRG Fixed Effects	Yes	No	No	No	No	No	No	No
Observations	3,544,320	28,628	75,734	159,034	202,488	36,765	132,104	206,429
R-Square	0.541	0.565	0.537	0.617	0.570	0.453	0.678	0.703

Notes: The omitted category for the Charlson Index is 0. The omitted age category is 18-24. All regressions include hospital x year fixed effects and column (1) also includes DRG fixed effects. Estimates of DRG and hospital x year fixed effects are not reported to save space.

Table A4: Ranking of Spending Per Medicare and Privately Insured Beneficiaries

Panel A: Expensive Private, Cheap Medicare					
HRR	State	Private		Medicare	
		Spending Per Beneficiary	Rank	Spending Per Beneficiary	Rank
La Crosse	WI	\$4,272	285	\$6,844	1
Rochester	MN	\$4,564	296	\$7,433	14
Minot	ND	\$4,215	280	\$7,078	4
Albany	GA	\$4,798	302	\$7,887	37
Marshfield	WI	\$4,678	300	\$7,852	35
Idaho Falls	ID	\$4,499	293	\$7,769	32
Sioux Falls	SD	\$4,497	292	\$7,743	31
Wausau	WI	\$4,518	295	\$7,789	34
Grand Junction	CO	\$4,082	264	\$7,075	3
Madison	WI	\$4,186	273	\$7,684	27
<i>National Average</i>		\$3,505		\$9,317	

(Rank of 1 is lowest spending)

Panel B: Cheap Private, Expensive Medicare					
HRR	State	Private		Medicare	
		Spending Per Beneficiary	Rank	Spending Per Beneficiary	Rank
San Bernardino	CA	\$2,548	6	\$11,189	276
Detroit	MI	\$3,029	53	\$11,656	293
Pontiac	MI	\$3,053	55	\$11,618	292
Baltimore	MD	\$2,996	48	\$11,365	284
Corpus Christi	TX	\$2,994	46	\$11,290	281
Royal Oak	MI	\$3,103	66	\$11,392	286
New Orleans	LA	\$2,966	41	\$10,371	248
Hattiesburg	MS	\$2,755	20	\$9,962	215
Johnstown	PA	\$3,065	60	\$10,567	255
Takoma Park	MD	\$2,966	40	\$10,130	235
<i>National Average</i>		\$3,505		\$9,317	

(Rank of 1 is lowest spending)

Panel C: Expensive Private, Expensive Medicare					
HRR	State	Private		Medicare	
		Spending Per Beneficiary	Rank	Spending Per Beneficiary	Rank
Manhattan	NY	\$4,152	272	\$13,576	304
Paterson	NJ	\$4,152	271	\$11,685	295
Hackensack	NJ	\$4,151	270	\$11,748	296
Contra Costa County	CA	\$4,514	294	\$10,644	259
White Plains	NY	\$4,210	279	\$11,085	273
Alameda County	CA	\$4,126	269	\$11,194	277
Bronx	NY	\$3,878	239	\$13,678	305
Ridgewood	NJ	\$4,105	265	\$11,217	278
Napa	CA	\$5,516	306	\$10,117	233
East Long Island	NY	\$3,876	238	\$12,291	301
<i>National Average</i>		<i>\$3,505</i>		<i>\$9,317</i>	
(Rank of 1 is lowest spending)					

Panel D: Cheap Private, Cheap Medicare					
HRR	State	Private		Medicare	
		Spending Per Beneficiary	Rank	Spending Per Beneficiary	Rank
Honolulu	HI	\$1,707	1	\$7,245	6
Rochester	NY	\$2,196	3	\$7,285	8
Dubuque	IA	\$2,573	9	\$7,243	5
Bismark	ND	\$2,144	2	\$7,443	15
Lynchburg	VA	\$2,618	10	\$7,713	28
Great Falls	MT	\$2,738	19	\$7,714	29
Medford	OR	\$2,955	39	\$7,326	11
Binghamton	NY	\$2,918	34	\$7,539	19
Des Moines	IA	\$2,903	31	\$7,654	26
Springdale	AR	\$2,627	11	\$7,986	46
<i>National Average</i>		<i>\$3,505</i>		<i>\$9,317</i>	
(Rank of 1 is lowest spending)					

Notes: These are the four quadrants with the top and bottom 10 HRRs in terms of spending on Medicare and private payers per beneficiary.

Table A5: Results of Formal Price/Quantity Decomposition for Top-25 Highest Spending DRGs and the Average Across all DRGs

	Share Price	Private Share Quantity	Share Covariance	Share Price	Medicare Share Quantity	Share Covariance
Cardiac valve & oth maj cardiothoracic proc w/o card cath w CC	0.512	0.178	0.310	0.117	0.481	0.403
Cardiac valve & oth maj cardiothoracic proc w/o card cath w MCC	0.504	0.134	0.362	0.113	0.468	0.418
Cellulitis w/o MCC	0.392	0.974	-0.366	0.073	0.968	-0.041
Circulatory disorders except AMI, w card cath w/o MCC	0.436	0.602	-0.038	0.066	1.011	-0.077
Coronary bypass w cardiac cath w/o MCC	0.561	0.142	0.298	0.061	0.722	0.217
Craniotomy & endovascular intracranial procedures w MCC	0.408	0.190	0.402	0.078	0.545	0.378
Esophagitis, gastroent & misc digest disorders w/o MCC	0.577	0.803	-0.380	0.107	1.043	-0.150
Infectious & parasitic diseases w O.R. procedure w MCC	0.672	0.050	0.278	0.090	0.624	0.286
Kidney & urinary tract infections w/o MCC	0.538	0.872	-0.410	0.099	1.072	-0.170
Major cardiovasc procedures w MCC or thoracic aortic aneuerysm repair	0.597	0.096	0.307	0.117	0.521	0.363
Major cardiovascular procedures w/o MCC	0.521	0.265	0.213	0.109	0.696	0.195
Major joint replacement or reattachment of lower extremity w/o MCC	0.554	0.736	-0.289	0.123	1.017	-0.140
Major small & large bowel procedures w CC	0.417	0.562	0.020	0.116	0.890	-0.006
Major small & large bowel procedures w MCC	0.717	0.188	0.094	0.143	0.705	0.152
Nutritional & misc metabolic disorders w/o MCC	0.520	0.739	-0.259	0.110	1.073	-0.183
Perc cardiovasc proc w drug-eluting stent w MCC or 4+ vessels/stents	0.557	0.228	0.215	0.082	0.674	0.244
Perc cardiovasc proc w drug-eluting stent w/o MCC	0.658	0.760	-0.417	0.101	1.108	-0.210
Pulmonary edema & respiratory failure	0.542	0.340	0.118	0.142	0.736	0.122
Rehabilitation w CC/MCC	0.318	0.714	-0.032	0.045	0.838	0.117
Respiratory system diagnosis w ventilator support 96+ hours	0.518	0.147	0.335	0.114	0.531	0.355
Septicemia w MV 96+ hours	0.635	0.067	0.298	0.099	0.533	0.368
Septicemia w/o MV 96+ hours w MCC	0.795	0.565	-0.360	0.076	0.865	0.060
Simple pneumonia & pleurisy w CC	0.845	0.857	-0.702	0.126	1.044	-0.170
Simple pneumonia & pleurisy w MCC	0.805	0.583	-0.388	0.089	1.087	-0.176
Spinal fusion except cervical w/o MCC	0.344	0.388	0.269	0.079	0.738	0.183
<i>Average Shares (weighted by spending)</i>	<i>0.459</i>	<i>0.362</i>	<i>0.179</i>	<i>0.094</i>	<i>0.766</i>	<i>0.140</i>

Notes: The decomposition of Ln(spending per beneficiary) is carried out on 2011 Medicare and HCCI data. Details are in the text of Appendix B. CC is short for with complication or comorbidity. MCC is short for with major complication or comorbidity. We include the top 25 highest spending DRGs in the table and the average shares weighted by DRG spending. Full results are available at www.healthcarepricingproject.org.

Table A6: List of Technologies Included in the Hospital Technology Index

	Available	Mean
Adult cardiology services	2009-2011	0.8131
Adult diagnostic catheterization	2008-2011	0.7986
Acute long term care	2008-2011	0.0362
Adult cardiac surgery	2008-2011	0.5407
Adult cardiac electrophysiology-hospital	2008-2011	0.5503
Adult day care program	2008-2011	0.0555
HIV-AIDS services	2008-2011	0.4122
Airborne infection isolation room	2008-2011	0.8960
Alcohol/drug abuse or dependency inpatient care	2008-2011	0.1352
Alcohol/drug abuse or dependency outpatient services	2008-2011	0.2345
Alzheimer Center	2008-2011	0.0688
Ambulance services	2008-2011	0.1582
Ambulatory surgery center	2008-2011	0.3797
Arthritis treatment center	2008-2011	0.1084
Assisted living services	2008-2011	0.0276
Auxiliary	2008-2011	0.7461
Shaped beam Radiation System	2008-2011	0.3791
Blood Donor Center Hospital	2008-2011	0.1348
Burn care	2008-2011	0.0715
Birthing room/LDR room/LDRP room	2008-2011	0.8461
Bariatric/weight control services	2008-2011	0.4651
Computer assisted orthopedic surgery	2008-2011	0.2861
Cardiac Rehabilitation	2008-2011	0.7284
Chaplaincy/pastoral care services	2008-2011	0.8925
Chiropractic services	2008-2011	0.0298
Chemotherapy	2008-2011	0.8067
Cardiac intensive care	2008-2011	0.5477
Case Management	2008-2011	0.9821
Complementary and alternative medicine services	2008-2011	0.3165
Community outreach	2008-2011	0.8573
Crisis prevention	2008-2011	0.3486
Computed-tomography (CT) scanner	2008-2011	0.9787
Children's wellness program	2008-2011	0.2938
Dental services	2008-2011	0.3226
Diagnostic radioisotope facility	2008-2011	0.8736
Electron Beam Computed Tomography (EBCT)	2008-2011	0.1305
Emergency Department	2008-2011	0.9830
Enabling Services	2008-2011	0.3939

Ablation of Barrett's esophagus	2008-2011	0.3593
Optical Colonoscopy-hospital	2008-2011	0.6880
Esophageal impedance study	2008-2011	0.3370
Endoscopic retrograde cholangiopancreatography (ERCP)	2008-2011	0.7600
Endoscopic ultrasound	2008-2011	0.5137
Enrollment Assistance Program	2008-2011	0.6766
Extracorporeal shock waved lithotripter (ESWL)	2008-2011	0.4741
Full-field digital mammography	2008-2011	0.6481
Fitness center	2008-2011	0.3765
Fertility Clinic	2008-2011	0.1152
Freestanding/Satellite Emergency Department	2008-2011	0.0964
General medical and surgical care (adult)	2008-2011	0.9965
Geriatric services	2008-2011	0.5103
Genetic testing/counseling	2008-2011	0.2553
Heart transplant	2008-2011	0.0566
Hemodialysis	2008-2011	0.5481
Community Health Education	2008-2011	0.8699
Health Fair	2008-2011	0.8779
Health screenings	2008-2011	0.9012
Health research	2008-2011	0.4102
Home health services	2008-2011	0.3046
Hospice Program	2008-2011	0.2854
Indigent care clinic	2008-2011	0.2586
Intermediate nursing care	2008-2011	0.0667
Adult interventional cardiac catheterization	2008-2011	0.6885
Image-guided radiation therapy	2008-2011	0.3674
Immunization program	2008-2011	0.4433
Intraoperative magnetic resonance imaging	2008-2011	0.0794
Intensity-Modulated Radiation Therapy (IMRT)	2008-2011	0.4636
Inpatient palliative care unit	2008-2011	0.1450
Kidney transplant	2008-2011	0.1005
Linguistic/translation services	2008-2011	0.7242
Liver transplant	2008-2011	0.0559
Lung transplant	2008-2011	0.0343
Breast cancer screening/mammograms	2008-2011	0.9114
Meals on wheels	2008-2011	0.1079
Mobile Health Services	2008-2011	0.1757
Magnetic resonance imaging (MRI)	2008-2011	0.9156
Multi-slice spiral computed tomography 64 + slice	2008-2011	0.6594
Multislice spiral computed tomography < 64 slice	2008-2011	0.8266
Medical/surgical intensive care	2008-2011	0.9461
Neurological services	2008-2011	0.8273
Neonatal intensive care	2008-2011	0.4338

Neonatal intermediate care	2008-2011	0.3187
Nutrition program	2008-2011	0.9054
Obstetrics care	2008-2011	0.8561
Occupational health services	2008-2011	0.7972
Oncology services	2008-2011	0.8498
Freestanding outpatient center	2008-2011	0.4832
Hospital-base outpatient care center/services	2008-2011	0.8710
Outpatient surgery	2008-2011	0.9964
Orthopedic services	2008-2011	0.9544
Bone Marrow transplant services	2008-2011	0.0810
Other care	2008-2011	0.1349
Other intensive care	2008-2011	0.1922
Other long-term care	2008-2011	0.0417
Other Transplant	2008-2011	0.0994
Pain Management Program	2008-2011	0.7305
Palliative Care Program	2008-2011	0.5142
Patient education center	2008-2011	0.7631
Patient representative services	2008-2011	0.8586
Patient Controlled Analgesia	2008-2011	0.8953
Pediatric cardiology services	2009-2011	0.1447
Primary care department	2008-2011	0.4578
Pediatric diagnostic catheterization	2008-2011	0.0832
Pediatric cardiac surgery	2008-2011	0.0724
Pediatric cardiac electrophysiology-hospital	2008-2011	0.0723
General medical and surgical care (pediatric)	2008-2011	0.6272
Pediatric intensive care	2008-2011	0.1702
Pediatric interventional cardiac catheterization	2008-2011	0.0765
Pediatric emergency department	2011	0.2017
Positron emission tomography/CT (PET/CT)	2008-2011	0.3571
Positron emission tomography (PET)	2008-2011	0.2952
Psychiatric residential treatment	2011	0.0586
Psychiatric child/adolescent services	2008-2011	0.2359
Psychiatric education services	2008-2011	0.3485
Psychiatric emergency services	2008-2011	0.5125
Psychiatric geriatric services	2008-2011	0.4129
Psychiatric care	2008-2011	0.4694
Psychiatric consultation/liaison services	2008-2011	0.4824
Psychiatric outpatient services	2008-2011	0.3587
Psychiatric partial hospitalization program	2008-2011	0.2555
Proton beam therapy	2008-2011	0.0401
Assistive technology center	2009-2011	0.1923
Robot-assisted walking therapy	2008-2011	0.0321
Electrodiagnostic services	2009-2011	0.3594

Physical Rehabilitation care	2008-2011	0.4245
Retirement housing	2008-2011	0.0229
Physical rehabilitation outpatient services	2008-2011	0.8624
Robotic surgery	2008-2011	0.3801
Prosthetic and orthotic services	2009-2011	0.2273
Simulated rehabilitation environment	2008-2011	0.3268
Rural health clinic	2010-2011	0.0749
Sleep Center	2008-2011	0.6584
Skilled nursing care	2008-2011	0.2099
Social work services	2008-2011	0.9457
Other special care	2008-2011	0.2647
Single photon emission computerized tomography (SPECT)	2008-2011	0.6592
Sports medicine	2008-2011	0.5397
Stereotactic radiosurgery	2008-2011	0.3495
Support groups	2008-2011	0.8339
Swing bed services	2008-2011	0.0717
Teen outreach services	2008-2011	0.2227
Tissue transplant	2008-2011	0.1254
Tobacco Treatment Services	2008-2011	0.6652
Transportation to health services	2008-2011	0.2940
Certified trauma center	2008-2011	0.4486
Ultrasound	2008-2011	0.9798
Urgent care center	2008-2011	0.3194
Volunteer services department	2008-2011	0.9476
Virtual colonoscopy	2008-2011	0.2663
Wound Management Services	2008-2011	0.7986
Women's health center/services	2008-2011	0.7744

Notes: This data is from the AHA Annual Survey. It covers 2,252 providers. The mean is the simple average of a binary indicator of whether or not the particular technology is used in the hospital.

Table A7: Estimates of Equation (8) with Price in Levels (Instead of Logarithms)

	(1)	(2)	(3)	(4)
Dependent Variable:	Facilities Price			Facilities Charge
Market Characteristics				
Monopoly	2629.1*** (344.4)	1908.6*** (403.2)	1524.5*** (350.2)	-627.0 (475.5)
Duopoly	1895.7*** (294.1)	1088.7*** (328.6)	771.3** (299.1)	-247.9 (403.4)
Triopoly	1385.8*** (332.2)	706.8** (343.8)	(468.1) (321.6)	-431.0 (475.2)
Ln Insurer HHI			-2135.4 (3610.2)	570.5 (6274.5)
Ln Share HCCI			-1942.6*** (430.1)	-48.4 (561.7)
Hospital Characteristics				
Ln Technologies	77.2 (61.1)	73.3 (55.6)	66.3 (55.1)	238.3** (116.8)
Ranked by US News and World Reports	1698.8*** (476.4)	1848.1*** (479.4)	1870.3*** (489.8)	1433.7* (772.8)
Ln Number of Beds	374.5** (149.1)	559.0*** (162.4)	566.8*** (162.2)	1069.1*** (250.1)
Teaching Hospital	10.4 (213.0)	158.5 (196.7)	158.2 (195.8)	-324.8 (322.7)
Government Owned	-1341.6*** (375.6)	-1546.5*** (389.0)	-1582.1*** (390.3)	-7204.3*** (598.2)
Non-Profit	-372.8 (289.8)	-679.6** (318.5)	-702.1** (314.5)	-5358.8*** (543.5)
County Characteristics				
Ln Percent Uninsured	1174.1** (482.0)	-1292.7* (772.2)	-940.8 (766.0)	517.8 (1869.9)
Ln Median Income	1635.3** (697.3)	-1743.7** (817.5)	156.8 (797.3)	971.3 (1438.7)
Other Payers				
Ln Medicare Base Payment Rate	4964.2*** (1069.8)	1693.6 (1136.4)	1959.4* (1149.9)	4481.3** (2128.2)
Ln Share Medicare	-1377.2*** (475.6)	-1530.4*** (525.9)	-1501.9*** (527.9)	-1915.3** (809.2)
Ln Share Medicaid	-849.6*** (274.5)	-725.1** (299.4)	-777.6** (303.6)	-44.6 (297.5)
HRR FE	No	Yes	Yes	Yes
Observations	8,176	8,176	8,176	8,176
R-square	0.121	0.377	0.386	0.606

Notes: * p<0.10, ** p<0.05, *** p<0.01. OLS estimates of equation (8) with standard errors clustered at the HRR-level in parentheses. Facilities prices are regression corrected transaction prices and are unlogged. Facilities charges are regression corrected list prices. All regressions include yearly fixed effects. The omitted ownership category is private hospitals.

Table A8: Main Inpatient Regression Estimates of (8) Using Different Measures of Hospital Market Concentration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ln(Facilities Price)						
Hospital Market Structure							
Ln HHI	0.169*** (0.065)	0.338*** (0.057)	0.409*** (0.096)	0.248*** (0.061)			
Hospital Count					-0.065*** (0.018)		
Q4 HHI						0.151*** (0.035)	0.094*** (0.019)
Q3 HHI						0.085*** (0.031)	
Q2 HHI						0.027 (0.026)	
Radius	5 mile	15 mile	30 mile	Variable	15 mile	15 mile	15 mile
Insurer Market Structure							
Ln Insurer HHI	-0.256 (0.332)	-0.210 (0.307)	-0.219 (0.316)	-0.204 (0.327)	-0.203 (0.333)	-0.232 (0.312)	-0.250 (0.318)
Ln Share HCCI	-0.163*** (0.037)	-0.130*** (0.033)	-0.132*** (0.033)	-0.149*** (0.035)	-0.134*** (0.033)	-0.139*** (0.034)	-0.150*** (0.036)
Hospital Characteristics							
Ln Technologies	0.009** (0.004)	0.009** (0.004)	0.010** (0.004)	0.009** (0.004)	0.009* (0.004)	0.009** (0.004)	0.009** (0.004)
Ranked by US News & World Reports	0.134*** (0.037)	0.127*** (0.036)	0.128*** (0.037)	0.130*** (0.037)	0.131*** (0.037)	0.128*** (0.036)	0.128*** (0.036)
HRR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,176	8,176	8,176	8,176	8,176	8,176	8,176
R-square	0.383	0.391	0.386	0.387	0.387	0.389	0.386

Notes: * p<0.10, ** p<0.05, *** p<0.01. OLS estimates of equation (8) with standard errors clustered at the HRR-level in parentheses. We use multiple measures of hospital market concentration. Column (1) includes hospital HHIs where the market is defined using a five-mile fixed radius drawn around each hospital. Column (2) includes hospital HHIs where the market is defined using a fifteen-mile fixed radius drawn around each hospital. Column (3) includes hospital HHIs where the market is defined using a thirty-mile fixed radius drawn around each hospital. In Column (4), we measure hospital HHIs in variable radii

markets. Hospitals located in ‘large urban’ areas are assigned a market defined by a 10-mile radius; hospitals located in ‘urban’ have a market defined around them using a 15-mile radius; and hospitals located in ‘rural’ areas have a market defined around them using a 20-mile radius. In Column (5), we measure market concentration using counts of hospitals within a fifteen-mile radius drawn around each hospital. In Column (6), we use dummy variables to capture the quartiles of our hospital HHIs measured within hospital markets defined using fixed radii extending fifteen-miles around each hospital. The omitted category, quartile 1, is the least concentrated quartile. In Column (7), we measure the effect of being in the most concentrated quartile of hospital HHI within a market defined by a fifteen-mile fixed radius market drawn around each hospital. The reference categories are the other three quartiles of hospital HHI. Facilities prices are regression-adjusted transaction prices. All regressions include yearly fixed effects and controls for number of beds, teaching status, government ownership, non-profit status, county insurance rate and median income, Medicare payment rate, and share of hospital activity covered by Medicare and Medicaid. The omitted ownership category is private hospitals.

Table A9: Main Estimates of (8) Across Hospitals with High and Low HCCI Coverage, States with High and Low Blue Cross Blue Shield Insurance Coverage, and Hospitals in Urban and Rural Areas

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)
	Ln(Facilities Price)					
Sample	High HCCI	Low HCCI	High BCBS	Low BCBS	Urban	Rural
Market Characteristics						
Monopoly	0.150*** (0.041)	0.209*** (0.047)	0.089*** (0.032)	0.183*** (0.046)	0.131*** (0.038)	0.060 (0.074)
Duopoly	0.064** (0.031)	0.150*** (0.052)	0.028 (0.031)	0.090** (0.038)	0.045 (0.031)	0.090 (0.073)
Triopoly	0.074** (0.036)	0.024 (0.047)	-0.015 (0.034)	0.082* (0.044)	0.029 (0.031)	0.233*** (0.077)
Ln Insurer HHI	0.204 (0.352)	-0.746 (0.548)	-0.050 (0.538)	0.139 (0.605)	-0.411 (0.325)	0.942* (0.556)
Ln Share HCCI			-0.097*** (0.037)	-0.171*** (0.053)	-0.132*** (0.047)	-0.140*** (0.043)
Hospital Characteristics						
Ln Technologies	0.010* (0.006)	0.008 (0.006)	0.013** (0.005)	0.004 (0.007)	0.008 (0.005)	0.030*** (0.011)
Ranked by US News and World Reports	0.078** (0.039)	0.190*** (0.056)	0.107* (0.059)	0.123*** (0.047)	0.126*** (0.038)	0.260** (0.125)
Ln Number of Beds	0.056*** (0.014)	0.109*** (0.029)	0.082*** (0.023)	0.068*** (0.016)	0.077*** (0.014)	0.050 (0.045)
Teaching Hospital	0.0001 (0.019)	0.024 (0.027)	0.006 (0.026)	0.010 (0.019)	0.006 (0.016)	0.032 (0.071)
Government Owned	-0.135*** (0.049)	-0.093** (0.042)	-0.102*** (0.036)	-0.133** (0.056)	-0.100*** (0.036)	-0.268*** (0.099)
Non-Profit	-0.014 (0.035)	-0.062 (0.043)	-0.050 (0.037)	-0.013 (0.038)	-0.014 (0.029)	-0.188*** (0.057)
County Characteristics						
Ln Percent Uninsured	-0.110 (0.078)	-0.159* (0.090)	-0.078 (0.074)	-0.097 (0.085)	-0.186*** (0.067)	0.169 (0.156)
Ln Median Income	-0.185*** (0.068)	0.023 (0.082)	0.019 (0.076)	0.005 (0.086)	-0.060 (0.065)	0.265** (0.125)
Other Payers						
Ln Medicare Base Payment Rate	0.008 (0.103)	-0.010 (0.146)	0.106 (0.153)	-0.023 (0.110)	-0.019 (0.097)	0.180 (0.339)
Ln Share Medicare	-0.126*** (0.036)	-0.044** (0.020)	-0.02 (0.032)	-0.131*** (0.033)	-0.081*** (0.025)	-0.128* (0.066)
Ln Share Medicaid	-0.007 (0.028)	0.000 (0.025)	0.029 (0.031)	-0.035 (0.029)	0.009 (0.022)	-0.106*** (0.030)
HRR FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,565	2,611	3,789	4,387	7,136	1,040
R-square	0.297	0.523	0.504	0.312	0.409	0.607

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. OLS estimates of equation (8) with standard errors clustered at the HRR-level in parentheses. Facilities prices are regression corrected transaction prices. Facilities charges are regression corrected list prices. All regressions include yearly fixed effects. The omitted ownership category is private hospitals. In column (1), the High HCCI sample includes data from states where the HCCI data contributors cover over 20% of individuals in the state with employer sponsored coverage. In column (2), the Low HCCI sample includes data from states where the HCCI data contributors cover less than 20% of individuals in the state with employer sponsored coverage. In column (3), the High BCBS sample includes data from states where over 20% of the population has employer-sponsored coverage from Blue Cross Blue Shield insurers. In column (4), the Low BCBS sample includes data from states where less than 20% of the population has employer-sponsored coverage from Blue Cross Blue Shield insurers. In column (5), we limit our analysis to data from hospitals in non-rural areas. In column (6), we limit our analysis to data from hospitals in rural areas. These were defined using US census definitions, see: <https://www.census.gov/geo/reference/ua/uafaq.html>.

Table A10: Estimates of Procedure-Level Regressions (2008 – 2011) without HRR Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Ln(Facilities Price)							
Procedure	Inpatient	Hip Replacement	Knee Replacement	Cesarean Section	Vaginal Delivery	PTCA	Colonoscopy	Lower Limb MRI
Market Characteristics								
Monopoly	0.202*** (0.026)	0.098 (0.082)	0.195*** (0.048)	0.172*** (0.050)	0.134*** (0.036)	0.103 (0.090)	0.041 (0.045)	0.177*** (0.038)
Duopoly	0.134*** (0.024)	0.037 (0.051)	0.065 (0.042)	0.078* (0.041)	0.069** (0.029)	0.155** (0.072)	0.072* (0.039)	0.127*** (0.034)
Triopoly	0.092*** (0.028)	0.115** (0.052)	0.071 (0.050)	0.072* (0.040)	0.011 (0.032)	0.054 (0.060)	0.002 (0.049)	0.109*** (0.038)
Ln Insurer HHI	-0.087 (0.182)	-0.034 (0.241)	-0.047 (0.218)	0.067 (0.181)	-0.080 (0.158)	0.087 (0.329)	-0.155 (0.257)	-0.073 (0.299)
Ln Share HCCI	-0.121*** (0.026)	-0.002 (0.045)	-0.018 (0.041)	-0.085** (0.035)	-0.065** (0.030)	-0.043 (0.050)	-0.051 (0.052)	-0.089** (0.034)
Hospital Characteristics								
Ln Technologies	0.008 (0.005)	-0.001 (0.011)	-0.005 (0.009)	0.002 (0.007)	-0.004 (0.006)	0.025** (0.012)	0.010 (0.008)	0.019** (0.009)
Ranked by US News and World Reports	0.134*** (0.035)	0.022 (0.046)	0.047 (0.035)	0.070* (0.036)	0.048 (0.034)	-0.001 (0.048)	-0.016 (0.039)	0.031 (0.044)
Ln Number of Beds	0.046*** (0.013)	0.023 (0.030)	0.021 (0.021)	0.030* (0.015)	0.036** (0.014)	0.090*** (0.033)	0.002 (0.018)	-0.015 (0.016)
Teaching Hospital	0.004 (0.018)	-0.043 (0.038)	-0.044 (0.028)	-0.007 (0.022)	-0.009 (0.021)	-0.097*** (0.033)	-0.024 (0.029)	0.019 (0.022)
Government Owned	-0.111*** (0.035)	-0.007 (0.101)	-0.072 (0.070)	-0.086* (0.047)	-0.083* (0.043)	-0.224*** (0.070)	-0.081 (0.059)	0.121** (0.058)
Non-Profit	-0.013 (0.026)	0.082 (0.059)	0.043 (0.039)	0.038 (0.032)	0.059** (0.029)	-0.123*** (0.042)	-0.018 (0.040)	0.093* (0.048)
County Characteristics								
Ln Percent Uninsured	0.156*** (0.053)	0.179** (0.081)	0.181** (0.080)	-0.029 (0.063)	-0.005 (0.049)	0.061 (0.090)	0.032 (0.098)	0.013 (0.059)
Ln Median Income	0.304*** (0.060)	0.166* (0.091)	0.167* (0.092)	0.225*** (0.075)	0.281*** (0.061)	0.122 (0.124)	0.134 (0.107)	0.116 (0.085)
Other Payers								
Ln Medicare Base Payment Rate	0.208** (0.080)	0.551*** (0.153)	0.408*** (0.127)	0.440*** (0.111)	0.558*** (0.095)	0.215* (0.127)	0.313** (0.136)	0.025 (0.126)
Ln Share Medicare	-0.106***	-0.071	-0.083*	-0.048**	-0.020	0.002	0.077*	-0.007

	(0.028)	(0.088)	(0.044)	(0.021)	(0.018)	(0.050)	(0.041)	(0.029)
Ln Share Medicaid	-0.026	-0.075**	-0.038**	-0.038**	-0.053***	-0.016	-0.018	-0.023
	(0.022)	(0.031)	(0.019)	(0.018)	(0.016)	(0.029)	(0.027)	(0.025)
HRR FE	No	No	No	No	No	No	No	No
Observations	8,176	1,250	2,677	3,578	3,837	1,607	3,350	4,854
R-square	0.141	0.136	0.100	0.191	0.257	0.084	0.075	0.077

Notes: * p<0.10, ** p<0.05, *** p<0.01. OLS estimates of equation (8) with standard errors clustered at the HRR-level in parentheses. This specification does not include HRR fixed effects. Procedure prices are regression-adjusted transaction prices. All regressions include yearly fixed effects. The omitted ownership category is private hospitals.

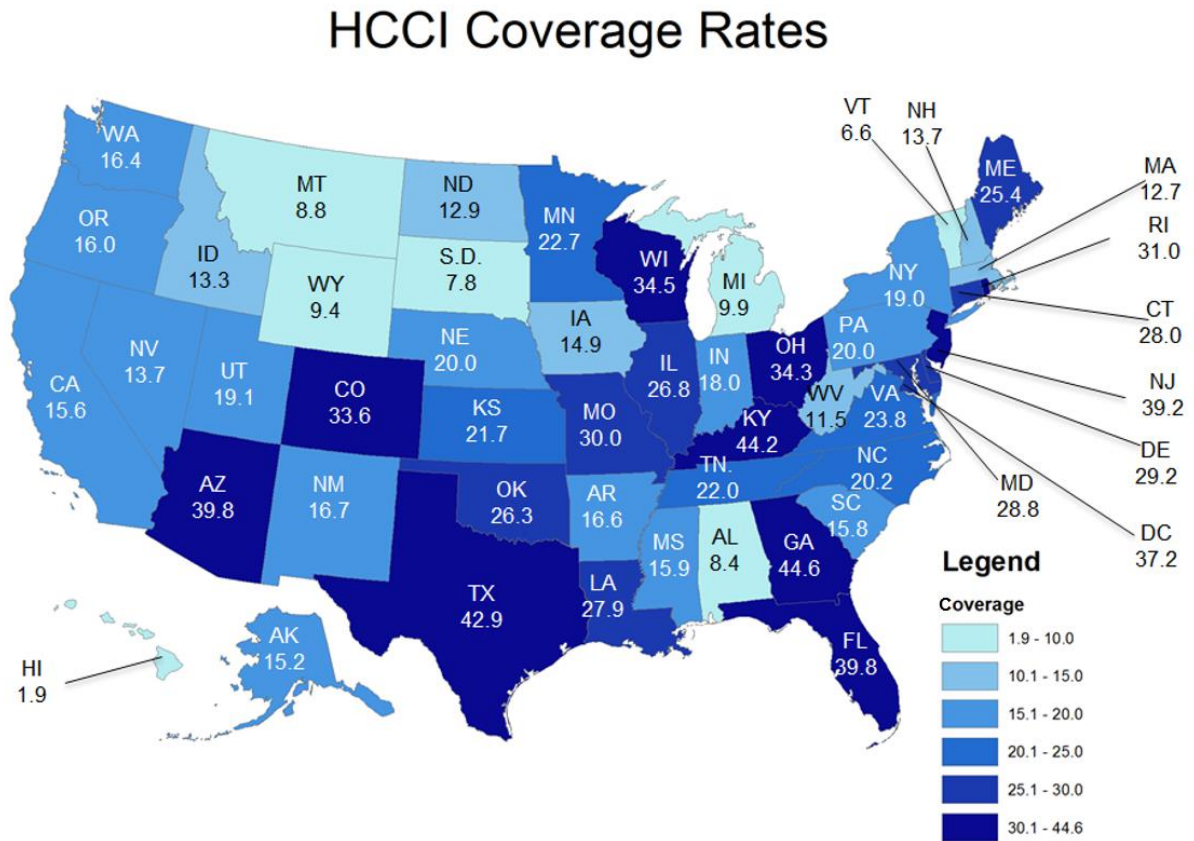
Table A11: Estimates of Procedure-Level Regressions (2008 – 2011) including Physician Payments

Dependent Variable: Procedure	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ln(Facilities + Physician Price)						
	Hip Replacement	Knee Replacement	Cesarean Section	Vaginal Delivery	PTCA	Colonoscopy	Lower Limb MRI
Market Characteristics							
Monopoly	0.075 (0.094)	0.107* (0.056)	0.097*** (0.036)	0.051** (0.026)	0.100 (0.107)	0.073* (0.039)	0.157*** (0.033)
Duopoly	-0.131* (0.070)	-0.079* (0.042)	0.006 (0.033)	0.01 (0.023)	0.131 (0.089)	0.089** (0.041)	0.111*** (0.029)
Triopoly	0.017 (0.063)	-0.010 (0.051)	-0.001 (0.030)	0.001 (0.022)	0.090 (0.057)	0.069 (0.043)	0.093*** (0.034)
Ln Insurer HHI	-0.674 (0.601)	-0.718* (0.411)	-0.463* (0.262)	-0.487* (0.263)	-1.490** (0.665)	-0.518 (0.555)	-0.163 (0.414)
Ln Share HCCI	-0.189** (0.092)	-0.130* (0.066)	0.001 (0.043)	-0.056 (0.035)	-0.115 (0.090)	-0.067 (0.041)	-0.097** (0.042)
Hospital Characteristics							
Ln Technologies	-0.001 (0.007)	0.002 (0.007)	0.007* (0.004)	0.002 (0.003)	0.014* (0.008)	0.013** (0.005)	0.008 (0.007)
Ranked by US News and World Reports	0.017 (0.036)	0.053 (0.033)	0.074*** (0.025)	0.067*** (0.023)	0.032 (0.044)	0.074** (0.035)	0.062* (0.037)
Ln Number of Beds	0.030 (0.029)	0.012 (0.016)	0.025** (0.011)	0.030*** (0.008)	0.088*** (0.025)	-0.011 (0.015)	0.007 (0.012)
Teaching Hospital	0.007 (0.034)	0.0001 (0.020)	0.006 (0.013)	0.008 (0.014)	-0.041 (0.031)	0.023 (0.027)	-0.004 (0.019)
Government Owned	-0.168** (0.083)	-0.091 (0.058)	-0.070** (0.031)	-0.082*** (0.027)	-0.162** (0.067)	-0.128*** (0.044)	0.065 (0.054)
Non-Profit	0.006 (0.040)	0.040 (0.037)	-0.007 (0.017)	0.007 (0.016)	-0.078* (0.046)	-0.094*** (0.025)	0.055 (0.047)
County Characteristics							
Ln Percent Uninsured	-0.168* (0.096)	-0.087 (0.112)	-0.159*** (0.053)	-0.056 (0.053)	-0.120 (0.107)	0.026 (0.085)	-0.047 (0.098)
Ln Median Income	-0.08 (0.096)	-0.079 (0.118)	-0.171*** (0.061)	0.005 (0.060)	-0.123 (0.132)	0.108 (0.091)	-0.038 (0.099)
Other Payers							
Ln Medicare Base Payment Rate	0.023 (0.142)	-0.025 (0.104)	-0.143** (0.072)	-0.097 (0.068)	-0.147 (0.145)	-0.081 (0.103)	0.034 (0.109)
Ln Share Medicare	-0.014	-0.025	-0.057***	-0.044***	-0.001	0.016	-0.001

	(0.048)	(0.023)	(0.015)	(0.012)	(0.046)	(0.025)	(0.023)
Ln Share Medicaid	0.003	-0.003	-0.002	-0.009	0.046**	-0.003	-0.022
	(0.024)	(0.014)	(0.012)	(0.010)	(0.021)	(0.019)	(0.023)
HRR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,250	2,677	3,578	3,837	1,607	3,350	4,854
R-square	0.644	0.544	0.624	0.630	0.604	0.513	0.397

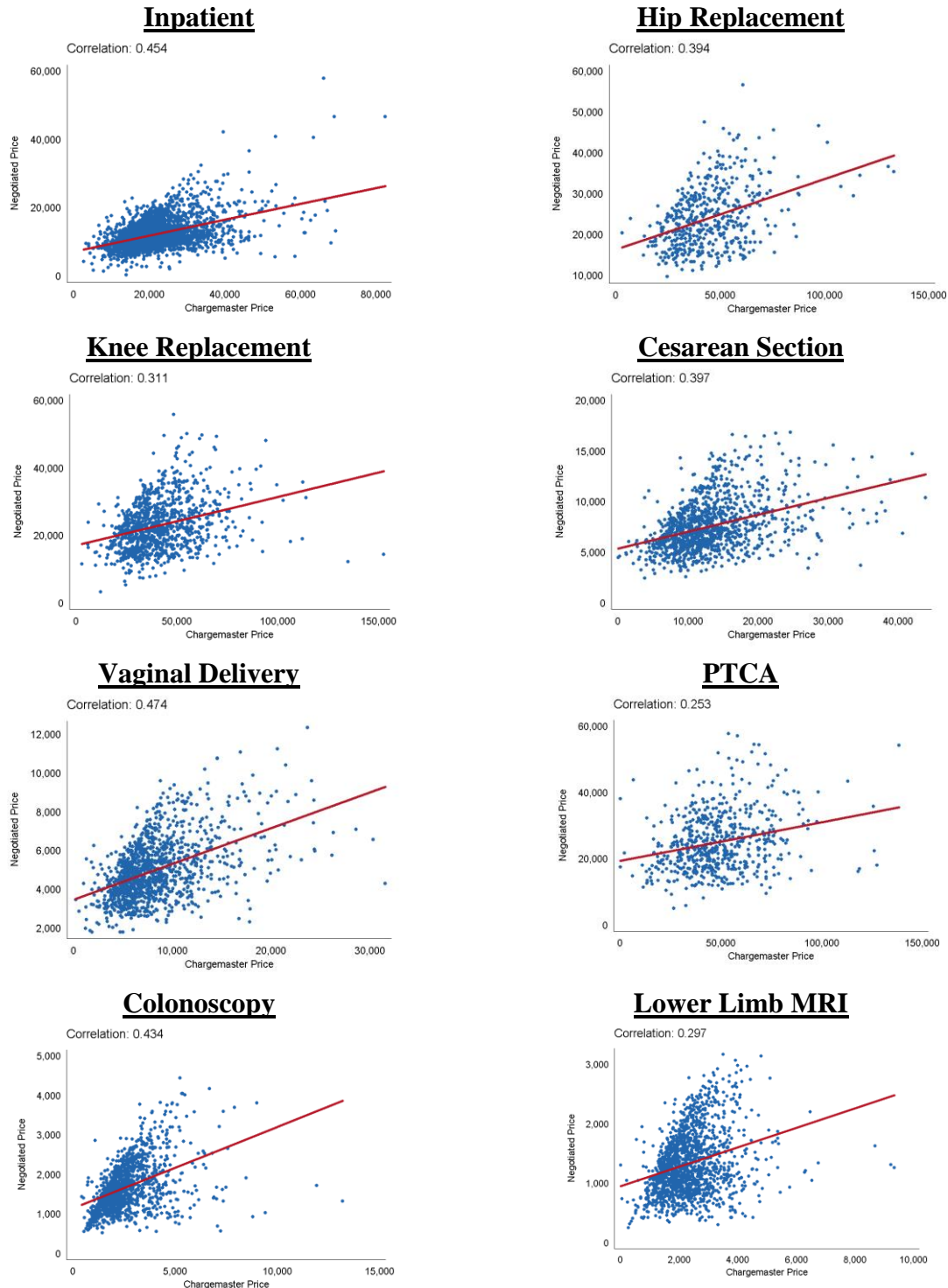
Notes: * p<0.10, ** p<0.05, *** p<0.01. OLS estimates of equation (8) with standard errors clustered by at the HRR-level in parentheses. Facilities and Physician prices are regression corrected transaction prices. All regressions include yearly fixed. The omitted ownership category is private hospitals.

Figure A1: HCCI data Coverage Rates by State



Notes: Coverage rates were calculated using 2011 HCCI enrollment data. Statewide insurance coverage totals were derived from the American Community Survey for 2011.

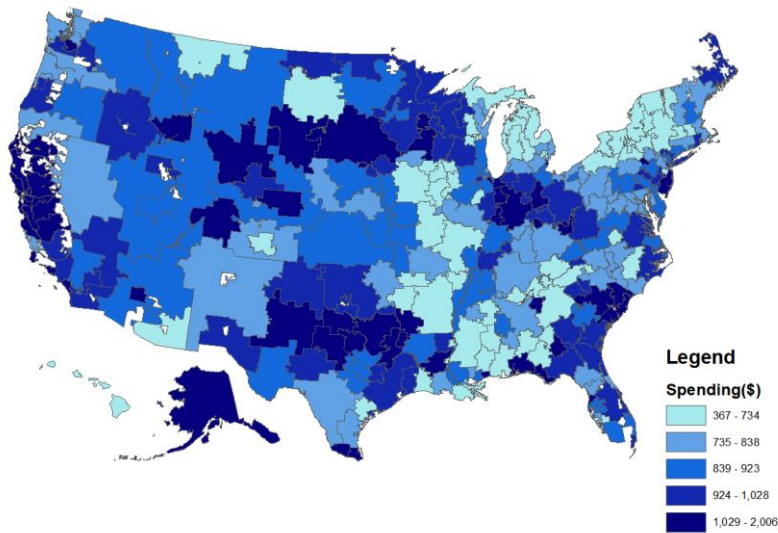
Figure A2: Correlations Between Negotiated Prices and Charges for All Procedures



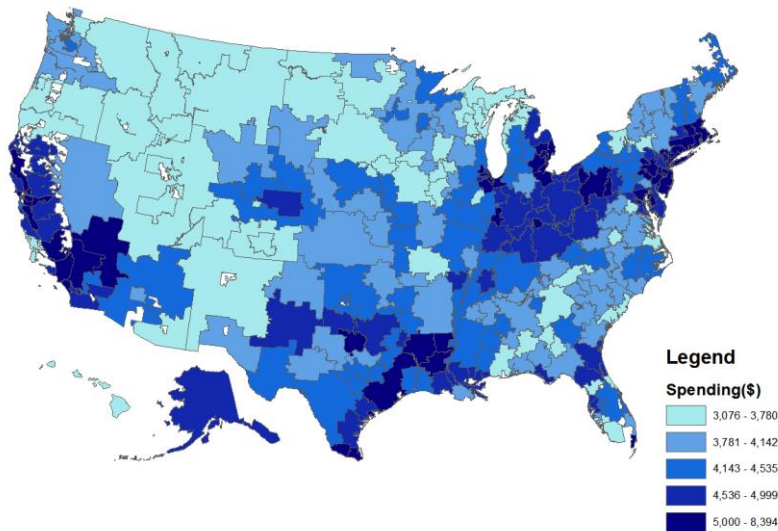
Notes: These are scatter plots of hospital list prices for our main procedures (“Chargemaster prices”) and regression-adjusted transaction prices (“negotiated prices”). We include providers who deliver ten or more of the specific procedure per year. We include prices from 2008 through 2011 that are inflation adjusted into 2011 dollars and averaged across the three years. The figures contain the correlation between charges and transaction prices.

Figure A3: Map of inpatient spending per beneficiary for Medicare beneficiaries and the privately insured

Panel A: Private Inpatient Spending per Beneficiary, 2011

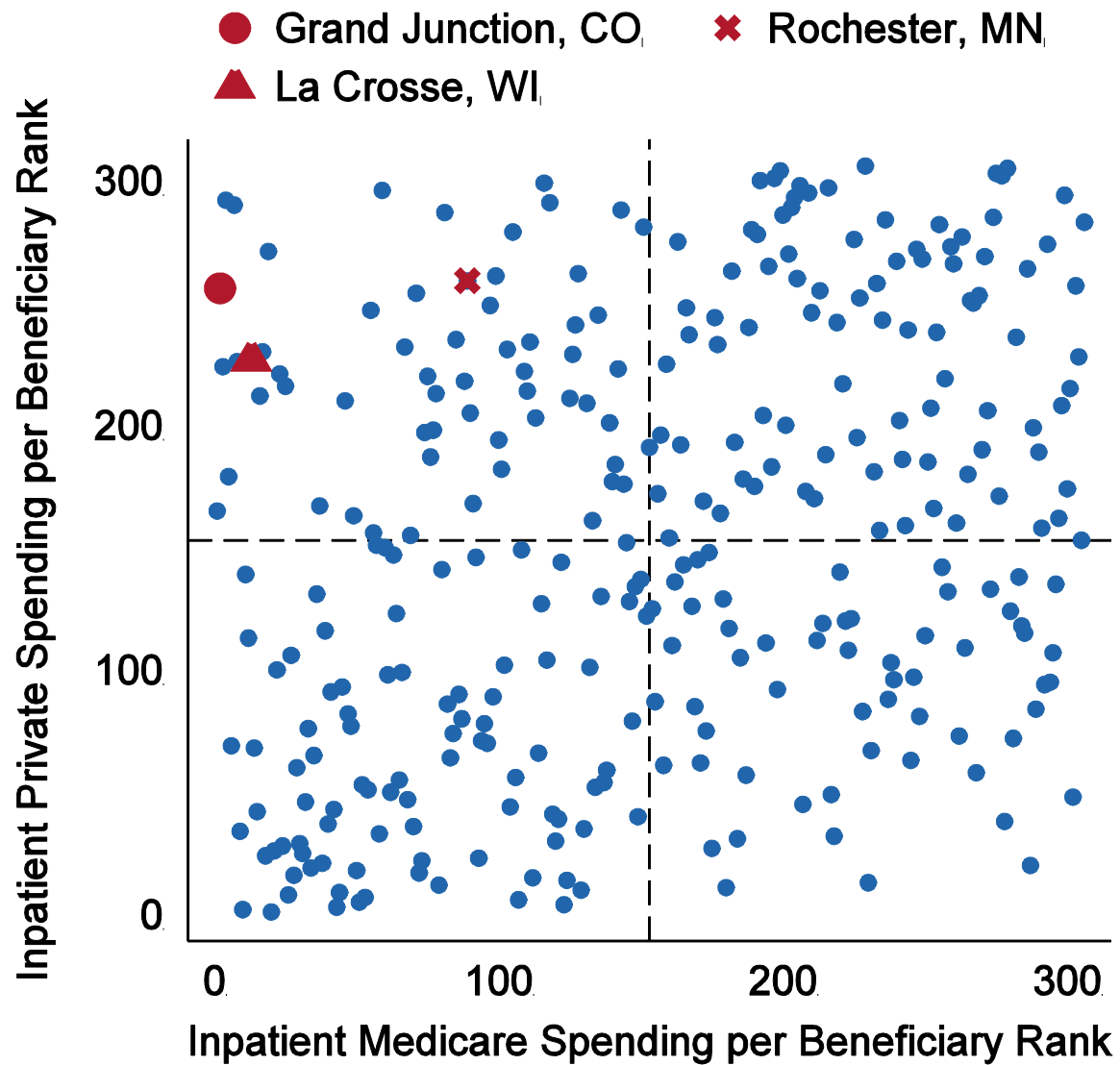


Panel B: Medicare Inpatient Spending Per Beneficiary, 2011



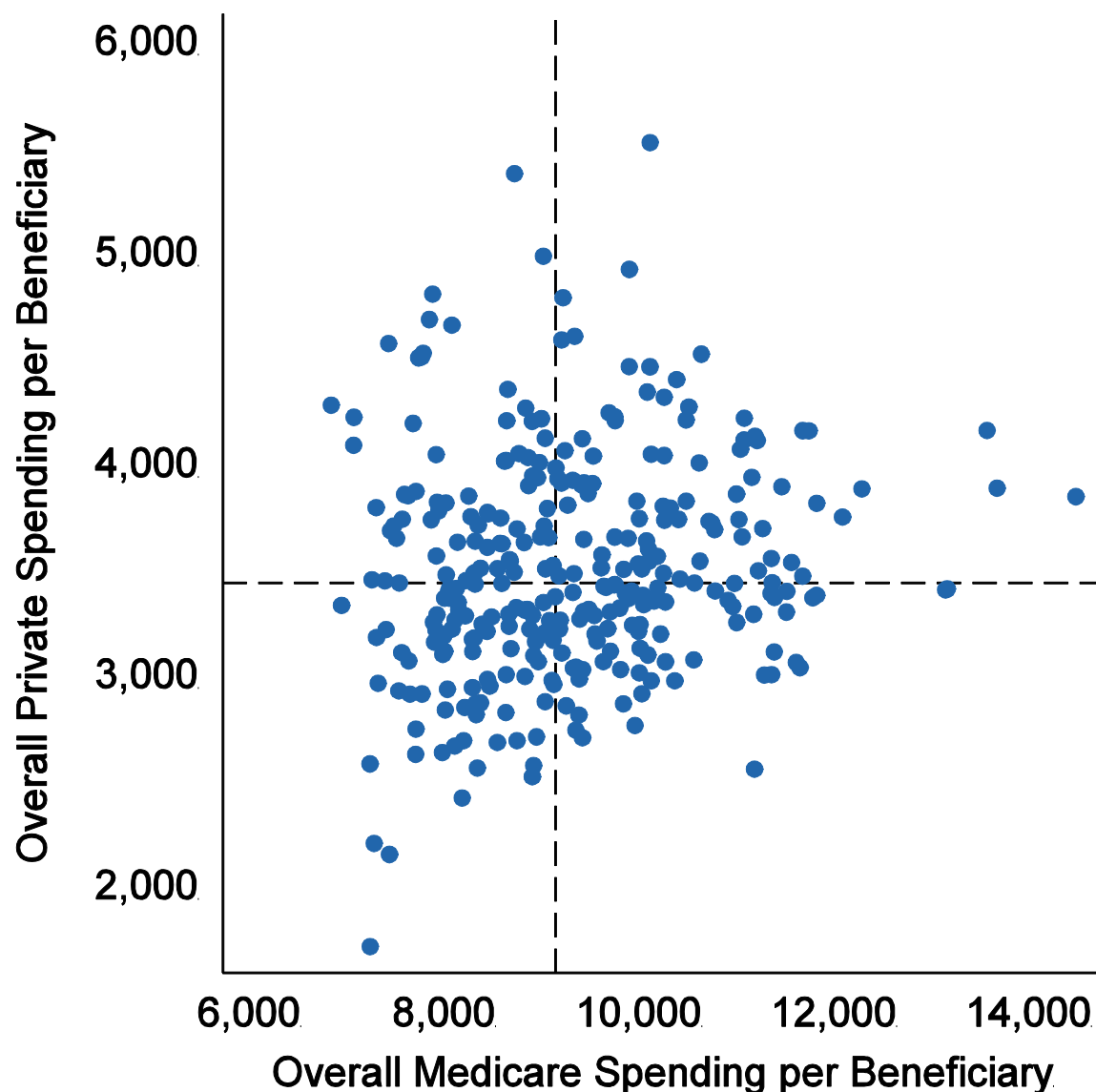
Notes: Medicare data is drawn from the Dartmouth Atlas (dartmouthatlas.org). Private data is risk-adjusted for age and sex using indirect standardization. Spending data does not include prescription drug spending.

Figure A4: Relationship between 2011 Medicare and Private Inpatient Spending per Beneficiary Ranks



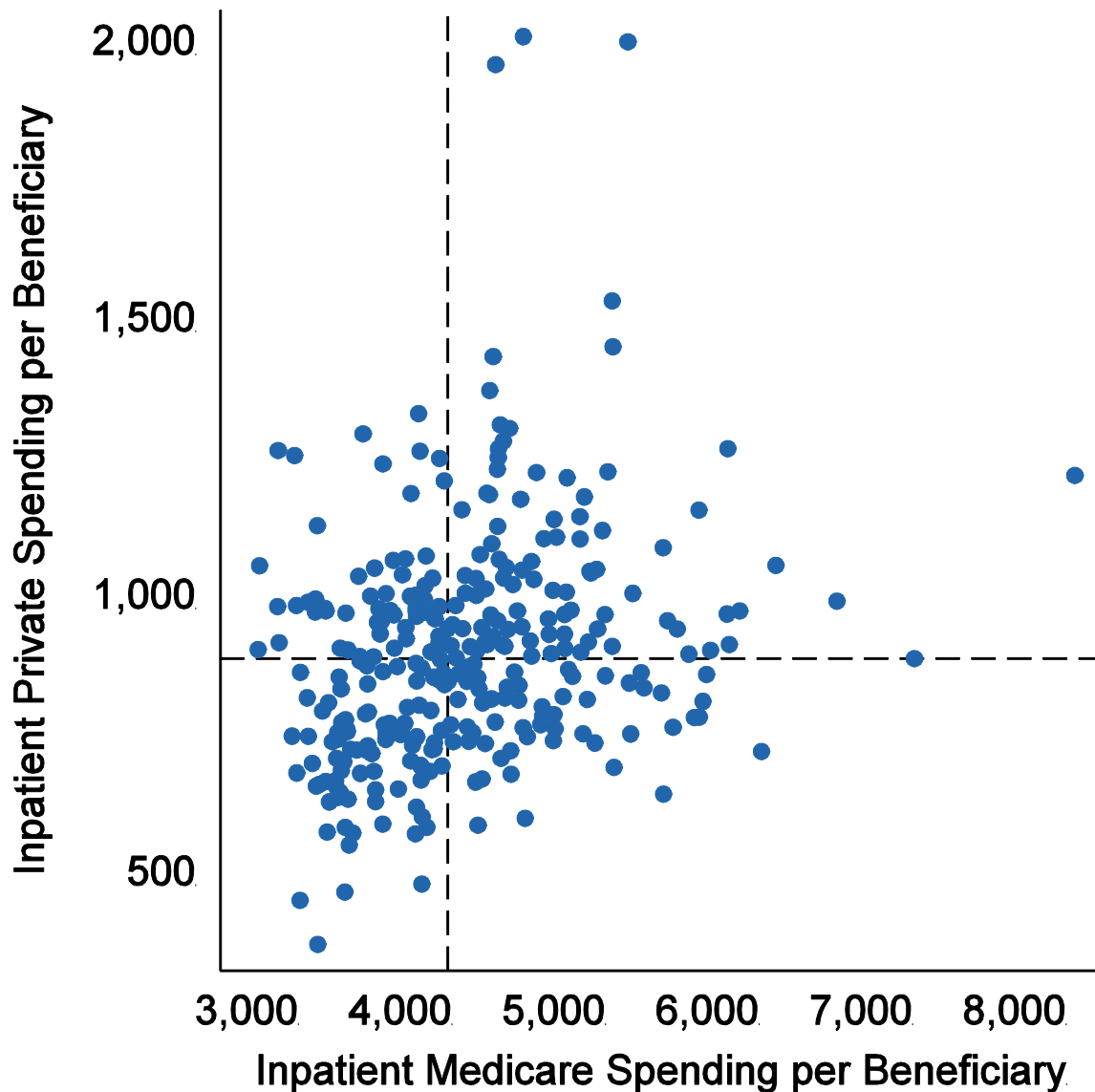
Notes: This is a scatter plot of HRRs rankings (1-306) on 2011 inpatient spending per Medicare beneficiary and spending per privately insured beneficiary. Data on Medicare spending was downloaded from the Dartmouth Atlas <http://www.dartmouthatlas.org/>. An HRR with a rank of 1 has the lowest spending per beneficiary of all HRRs. An HRR with a rank of 306 has the highest spending per beneficiary of all HRRs.

Figure A5: Relationship between 2011 Medicare and Private Overall Spending per Beneficiary



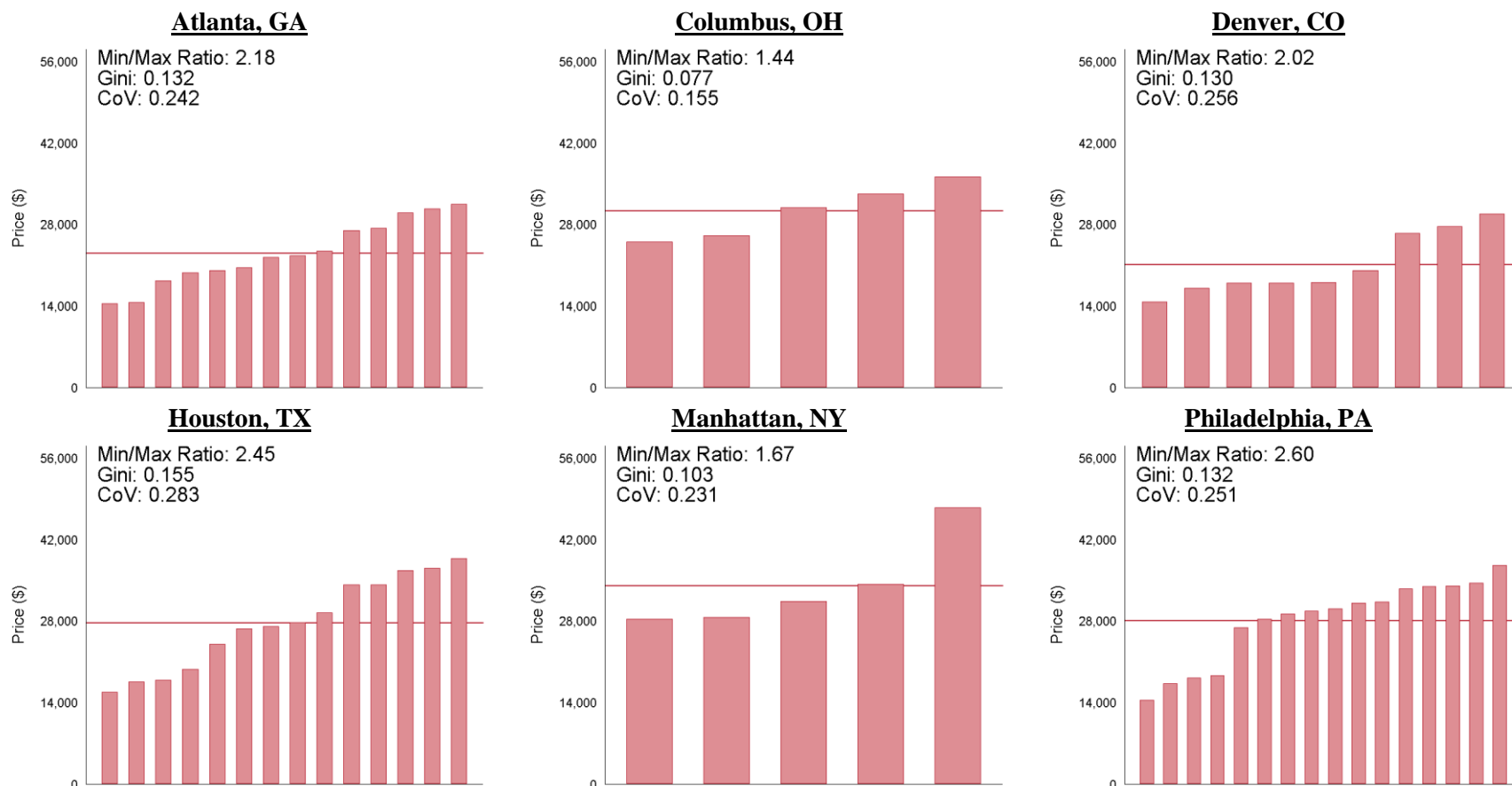
Notes: This is a scatter plot of HRR overall spending per Medicare beneficiary and overall spending per privately insured beneficiary. Data on Medicare spending was downloaded from the Dartmouth Atlas <http://www.dartmouthatlas.org/>. We measure spending in 2011 and spending is measured in dollars. The vertical and horizontal hashed lines represent average private spending per beneficiary and average Medicare spending per beneficiary.

Figure A6: Relationship between 2011 Medicare and Private Inpatient Spending per Beneficiary



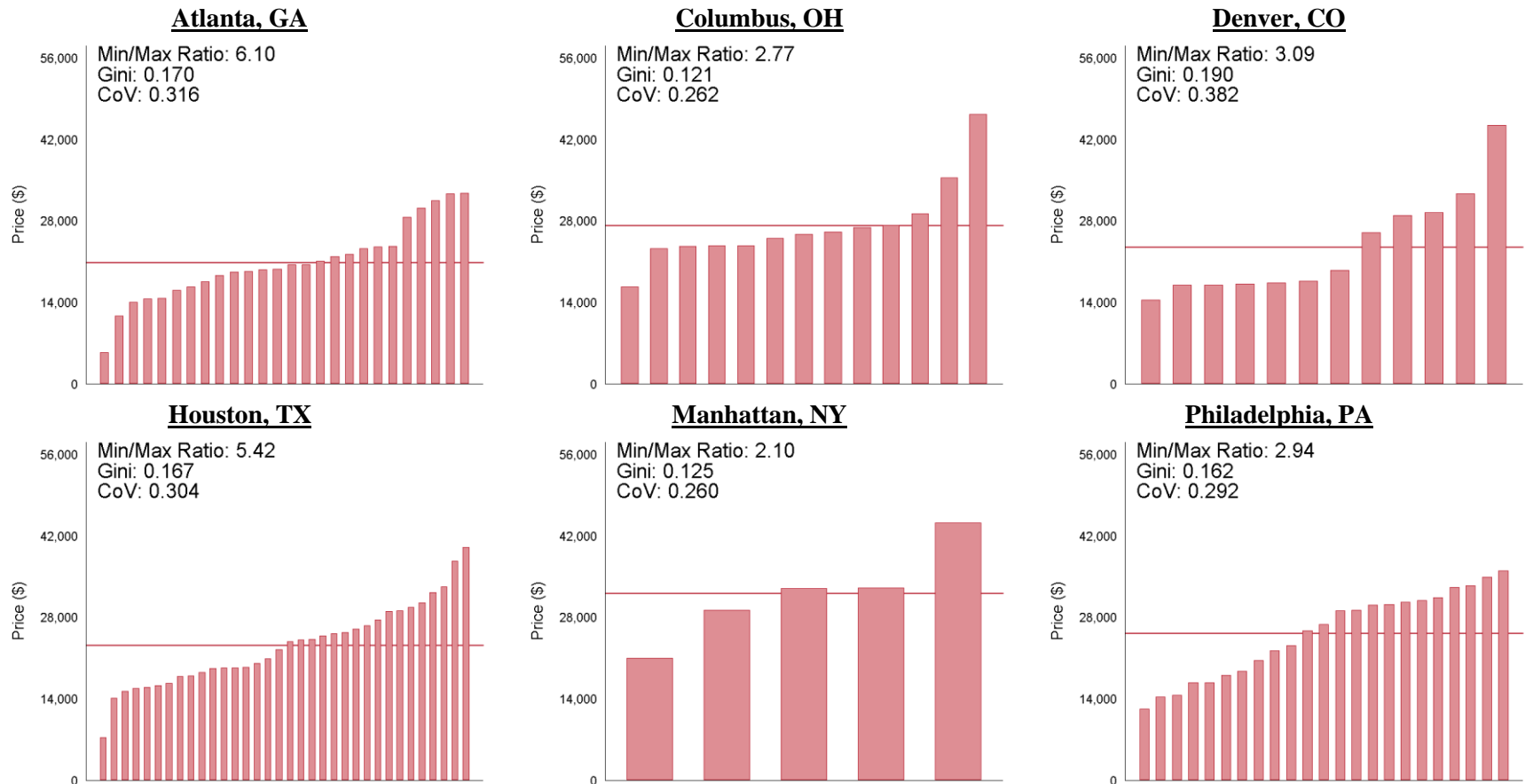
Notes: This is a scatter plot of HRR inpatient spending per Medicare beneficiary and inpatient spending per privately insured beneficiary. Data on Medicare spending was downloaded from the Dartmouth Atlas <http://www.dartmouthatlas.org/>. We measure spending in 2011 and spending is measured in dollars. The vertical and horizontal hashed lines represent average private spending per beneficiary and average Medicare spending per beneficiary.

Figure A7: Within Market Price Variation for Hip Replacement



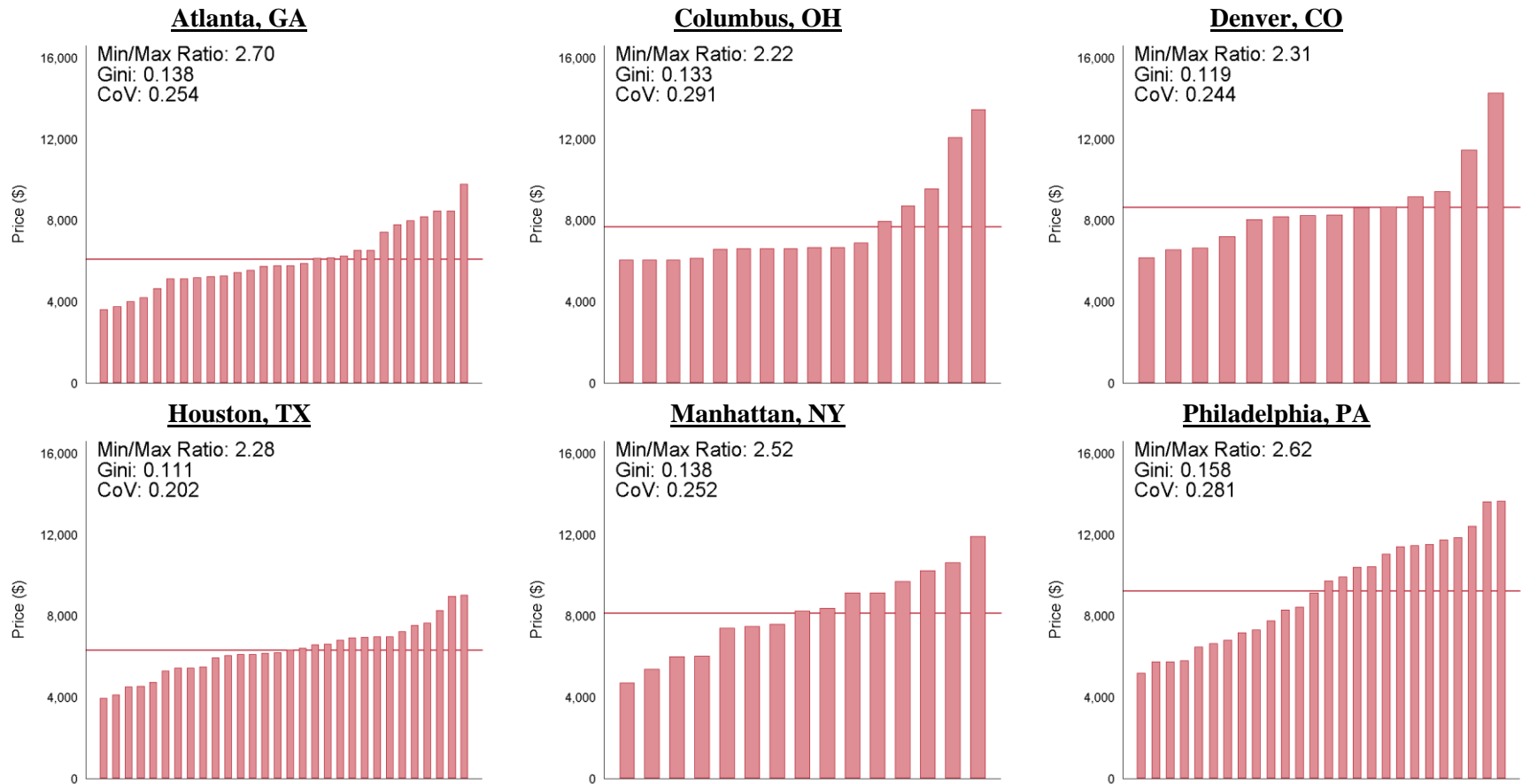
Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A8: Within Market Price Variation for Knee Replacement



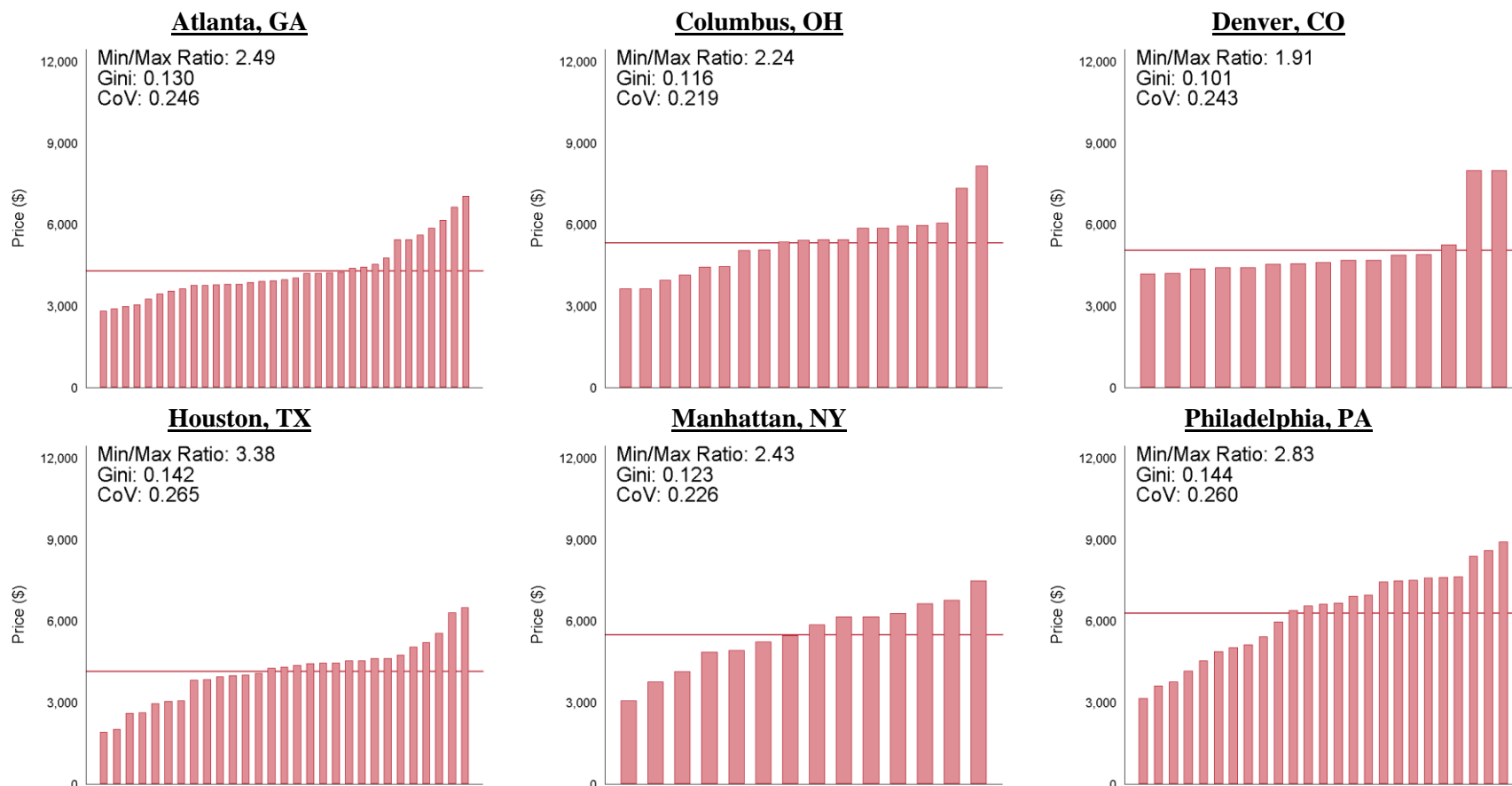
Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A9: Within Market Price Variation for Cesarean Section



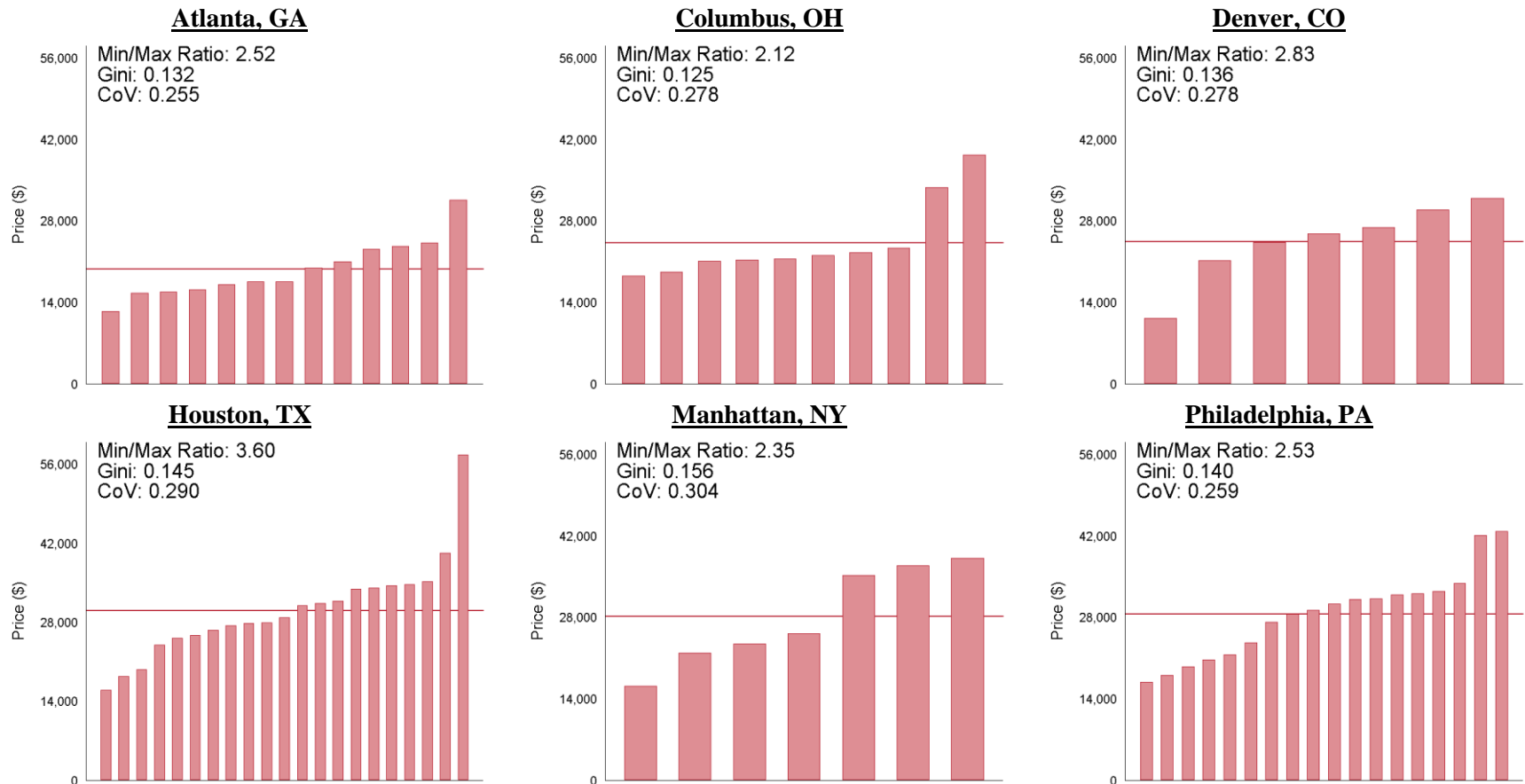
Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A10: Within Market Price Variation for Vaginal Delivery



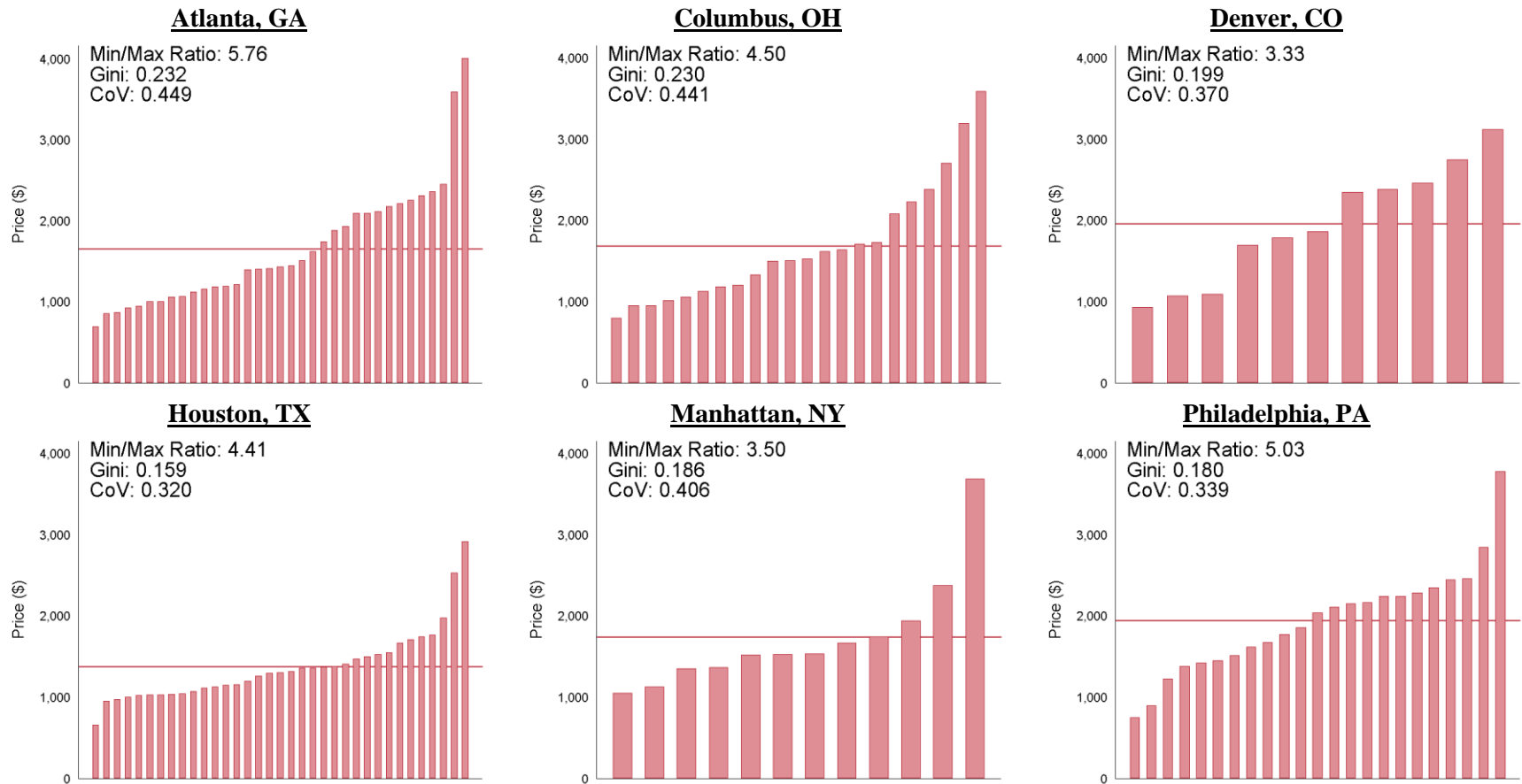
Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A11: Within Market Price Variation for PTCA



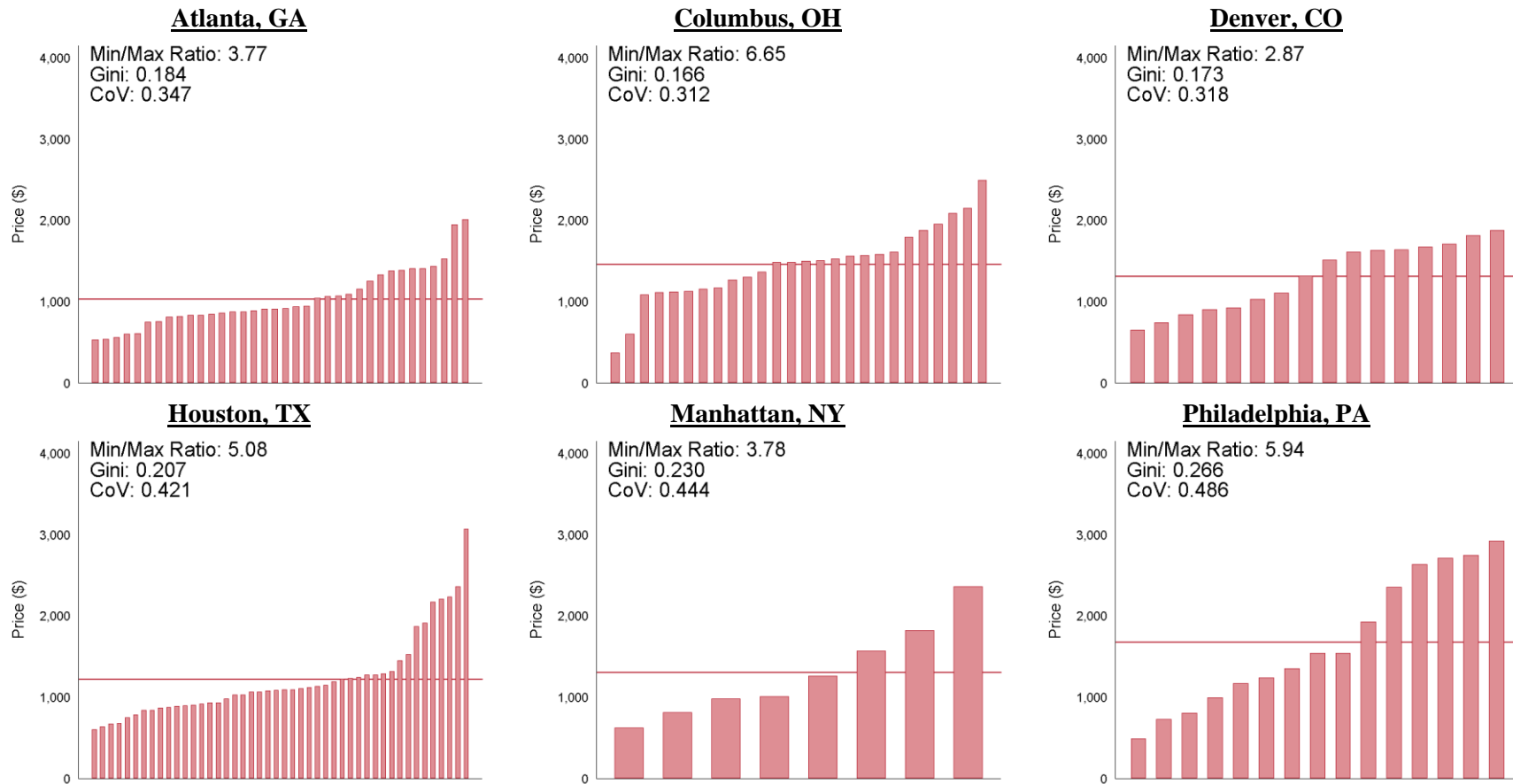
Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A12: Within Market Price Variation for Colonoscopy



Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.

Figure A13: Within Market Price Variation for Lower Limb MRI



Notes: These present average hospital regression corrected private-payer prices, averaged from 2008 – 2011 using inflation adjusted 2011 prices. These do not include physician fees. Each column captures a hospital within an HRR.