

Online Appendix Tables and Figures

Appendix Table 1. Initial Steps in Selecting the Sample of Hospital Stays from HCCI Claims, 2013.

	Step Description	Number of Discharges	Number of Members	Percent of Discharges Removed From Previous Step	Number of Core Based Statistical Areas
1	Start with the 2013 HCCI inpatient claims	4,305,469	2,754,794	-	375
2	Restrict to inpatient hospital claims and exclude skilled nursing facility/hospice/other types of facility claims	3,489,508	2,644,537	19%	375
3	Restrict to stays that can be linked with the AHA annual survey and use the AHA data to limit our sample to acute care hospitals. Among the hospitals excluded are non-acute care, psychiatric, rehabilitation, long-term care, alcohol/chemical dependency, units of an institution, and Christian Science hospitals Also restrict to stays that can be linked with the CMS Impact File so we can compute the Medicare IPPS price for each stay. Hospitals paid by Medicare on a cost basis were excluded.	2,505,162	1,990,401	28%	315
4	Restrict to stays in metropolitan statistical areas	2,466,009	1,961,921	2%	314
5	Exclude stays from Maryland, West Virginia, or Puerto Rico	2,351,654	1,870,520	5%	305
6	Exclude hospitals with <50 discharges across all DRGs	2,348,319	1,867,930	0%	297
7	Restrict to acute care stays with one unique DRG and one unique NPI	2,328,735	1,856,744	1%	297

Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

AHA=American Hospital Association; CMS=Centers for Medicare & Medicaid Services;

DRG=diagnosis-related group; HCCI=Health Care Cost Institute; IPPS=inpatient prospective payment system; NPI=national provider identifier.

Appendix Table 2. Selecting the Medicare Advantage and Commercial Samples of Hospital Stays, 2013.

Step Description		Medicare Advantage Sample			Commercial Sample			Number of Core Based Statistical Areas
		Number of Discharges	Number of Patients	Percent of Discharges Removed From Previous Step	Number of Discharges	Number of Patients	Percent of Discharges Removed From Previous Step	
1	Identify stays for the commercial sample and Medicare Advantage sample	778,504	532,990	-	1,550,231	1,324,079	-	297
2	Exclude stays for people age 65 and older for commercial and under age 65 for Medicare Advantage	652,678	453,545	16%	1,239,427	1,064,209	20%	297
3	Restrict to non-pregnancy, non-childbirth and non-puerperium discharges	652,675	453,543	0%	922,887	763,845	26%	297
4	Exclude stay at transferring hospital when patient is transferred to another hospital	644,681	452,099	1%	898,381	752,863	3%	297
5	Restrict to adults age 18-64 for commercial sample	644,681	452,099	0%	703,918	569,463	22%	297
6	Restrict to large and small group market segments for commercial sample	644,681	452,099	0%	685,997	554,803	3%	297
7	Exclude product types unknown, all, other, indemnity, and short term plan for commercial sample and unknown, all, other, and special needs plans for Medicare Advantage	644,681	452,099	0%	680,947	550,692	1%	297
8	Exclude members who had commercial coverage for part of the year and Medicare Advantage coverage for the rest of the year, and exclude stays with overlapping admission dates	641,099	449,665	1%	679,632	549,956	0%	297
9	Exclude transplant DRGs	640,905	449,589	0%	677,393	548,924	0%	297
10	Restrict to stays with positive payment amounts \geq .01	619,657	438,274	3%	676,648	548,427	0%	297
11	Exclude stays with payment <50% basic Medicare FFS by DRG and MSA	602,551	429,039	3%	631,260	513,400	7%	297

12	Exclude stays with payment >99th percentile by DRG	596,703	426,293	1%	624,845	509,568	1%	297
13	Exclude stays with length of stay >99th percentile by DRG	593,044	424,722	1%	620,922	507,511	1%	297

Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

DRG=diagnosis-related group; FFS=fee for service; MSA=metropolitan statistical area.

Subsetting the Medicare Advantage and Commercial Samples

In addition to the sample restrictions discussed in the main text, we excluded hospital stays in which the patient was transferred from the “transferring” hospital but retained the stay at the “receiving” hospital for both the Medicare Advantage and commercial samples. That criterion removed 1 percent of stays from the Medicare Advantage sample and 3 percent of stays from the commercial sample. We also restricted the commercial sample to members in the large and small group markets. For the commercial sample, we excluded stays in which the product type was listed as unknown, other, indemnity, or short-term plan leaving us with stays for which the product type was a preferred provider organization, point-of-service plan, or health maintenance organization. That restriction removed 0.7 percent of the stays from the commercial sample. We also eliminated members who were enrolled in a Medicare Advantage plan for part of the year and a commercial plan for part of the year, and we eliminated stays with overlapping admission dates. Applying those restrictions removed less than 1 percent of stays. Finally, we excluded stays in which the patient received an organ transplant, because that service is typically “carved out” of coverage benefits. Although a payment amount is still included on the claim, commercial insurers typically pay hospitals and physicians for transplant services through a bundled payment. Removing stays with transplant diagnostic-related groups eliminated less than 0.1 percent of the stays from the Medicare Advantage sample and 0.3 percent of the stays from the commercial sample.

Appendix Table 3. Two Approaches to Comparing the Mean Medicare Advantage and Medicare FFS Prices for All Stays, Medical Stays, and Surgical Stays, 2013.

	All MS-DRGs	Medical MS-DRGs	Surgical MS-DRGs
Prices			
Medicare Advantage	\$10,667	\$7,281	\$17,661
Medicare FFS Base Price Plus DSH and Outliers ^{a, b}	\$10,716	\$7,236	\$17,932
Medicare FFS Base Price Plus IME, DSH, and Outliers ^b	\$11,231	\$7,555	\$18,851
Ratios			
Medicare Advantage/Medicare FFS Base Price Plus DSH and Outliers ^{a, b}	1.00	1.01	.98
Medicare Advantage/Medicare FFS Base Price Plus IME, DSH, and Outliers ^b	.95	.96	.94
Number of Stays in Analysis	593,044	399,597	193,447
Number of MSAs in Analysis	297	296	296

Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The Medicare Advantage sample was limited to adults 65 years or older. This table is analogous to Table 3 in the main text, except we show that if payments for IME, DSH, and outliers are all included in the calculation of Medicare FFS prices, Medicare Advantage rates are 5 percent lower than Medicare FFS prices for all MS-DRGs, on average.

^aFor our preferred estimate comparing Medicare Advantage prices with Medicare FFS prices (highlighted in grey), we excluded IME payments from the FFS prices because Medicare makes IME payments directly to hospitals for Medicare Advantage enrollees. Also, IME payments are excluded in the calculation of Medicare Advantage benchmarks.

^bThe Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample, including the base price and payments for DSH and, in certain cases, IME (but not outlier payments). We estimated the average outlier payment for admissions in each major category of DRG from a separate analysis of Medicare claims.

DSH=disproportionate share hospital payments; FFS=fee for service; IME=indirect medical

education payments; MSA=metropolitan statistical area; MS-DRG=Medicare severity-diagnosis-related group.

Appendix Table 4. Ratio of Medicare Advantage Prices to Medicare FFS Prices and Ratio of Commercial Prices to Medicare FFS Prices by Plan Type, 2013

Product Type	Ratio of Medicare Advantage Prices to Medicare FFS Prices across all DRGs	Ratio of Commercial Prices to Medicare FFS Prices across all DRGs
PFFS	0.99	N/A
EPO	N/A	1.79
HMO	0.99	1.83
POS	0.99	1.90
PPO	1.00	1.93

Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The Medicare Advantage sample was limited to adults 65 years or older. The commercial sample excludes maternal stays associated with childbirth and was limited to adults 18-64 years. The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample and the commercial sample. For the comparison with commercial prices, the estimates of Medicare FFS prices include the base payment amount plus any additional payments for IME and DSH. For the comparison with Medicare Advantage prices, Medicare FFS prices were estimated in the same manner except that payments for IME were excluded. We estimated the average outlier payment for admissions in each major category of DRG from a separate analysis of Medicare claims.

EPO=exclusive provider organization; HMO=health maintenance organization; PFFS=private fee-for-service; POS=point-of-service; PPO=preferred provider organization.

Appendix Table 5. Top 10 DRGs with the Highest and Lowest Ratio of Medicare Advantage

Prices to Medicare FFS Prices, 2013

	Medicare Advantage Price	Medicare FFS Base Price Plus DSH and Outliers	Ratio of Medicare Advantage Prices to Medicare FFS Prices
Highest Ratios of Medicare Advantage Prices to Medicare FFS Prices			
DRG 945 - Rehabilitation with CC/MCC	\$18,922	\$8,250	2.29
DRG 940 - O.R. Procedure with Diagnoses of Other Contact with Health Services with CC	\$16,632	\$11,484	1.45
DRG 881- Depressive Neuroses	\$5,430	\$4,090	1.33
DRG 885- Psychoses	\$7,697	\$6,076	1.27
DRG 813 - Coagulation Disorders	\$12,490	\$10,686	1.17
DRG 306 - Cardiac Congenital and Valvular Disorders with MCC	\$9,428	\$8,367	1.13
DRG 614 - Adrenal and Pituitary Procedures with CC/MCC	\$17,764	\$16,139	1.10
DRG 823 - Lymphoma and Nonacute Leukemia with Other O.R. Procedure with MCC	\$33,960	\$32,020	1.06
DRG 834 - Acute Leukemia without Major O.R. Procedure with MCC	\$40,941	\$38,957	1.05
DRG 545 - Connective Tissue Disorders with MCC	\$17,692	\$17,320	1.02
Lowest Ratios of Medicare Advantage Prices to Medicare FFS Prices			
DRG 542 - Pathological Fractures and Musculoskeletal and Connective Tissue Malignancy with MCC	\$12,214	\$13,418	0.91
DRG 464 - Wound Debridement and Skin Graft Except Hand; for Musculo-Connective Tissue Disorders with CC	\$17,349	\$19,030	0.91
DRG 469 - Major Joint Replacement or Reattachment of Lower Extremity with MCC	\$20,083	\$21,416	0.94
DRG 539 - Osteomyelitis with MCC	\$12,079	\$12,841	0.94
DRG 557 - Tendonitis; Myositis and Bursitis with MCC	\$9,154	\$9,639	0.95
DRG 562 - Fractures; Sprains; Strains and Dislocations Except Femur; Hip; Pelvis and Thigh with MCC	\$8,405	\$8,780	0.96

DRG 571 - Skin Debridement with CC	\$8,946	\$9,233	0.97
DRG 415 - Cholecystectomy Except by Laparoscope without C.D.E. with CC	\$12,400	\$12,753	0.97
DRG 478 - Biopsies of Musculoskeletal System and Connective Tissue with CC	\$13,639	\$14,004	0.97
DRG 178 - Respiratory Infection and Inflammations with CC	\$8,611	\$8,841	0.97

Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The Medicare Advantage sample was limited to adults 65 years or older.

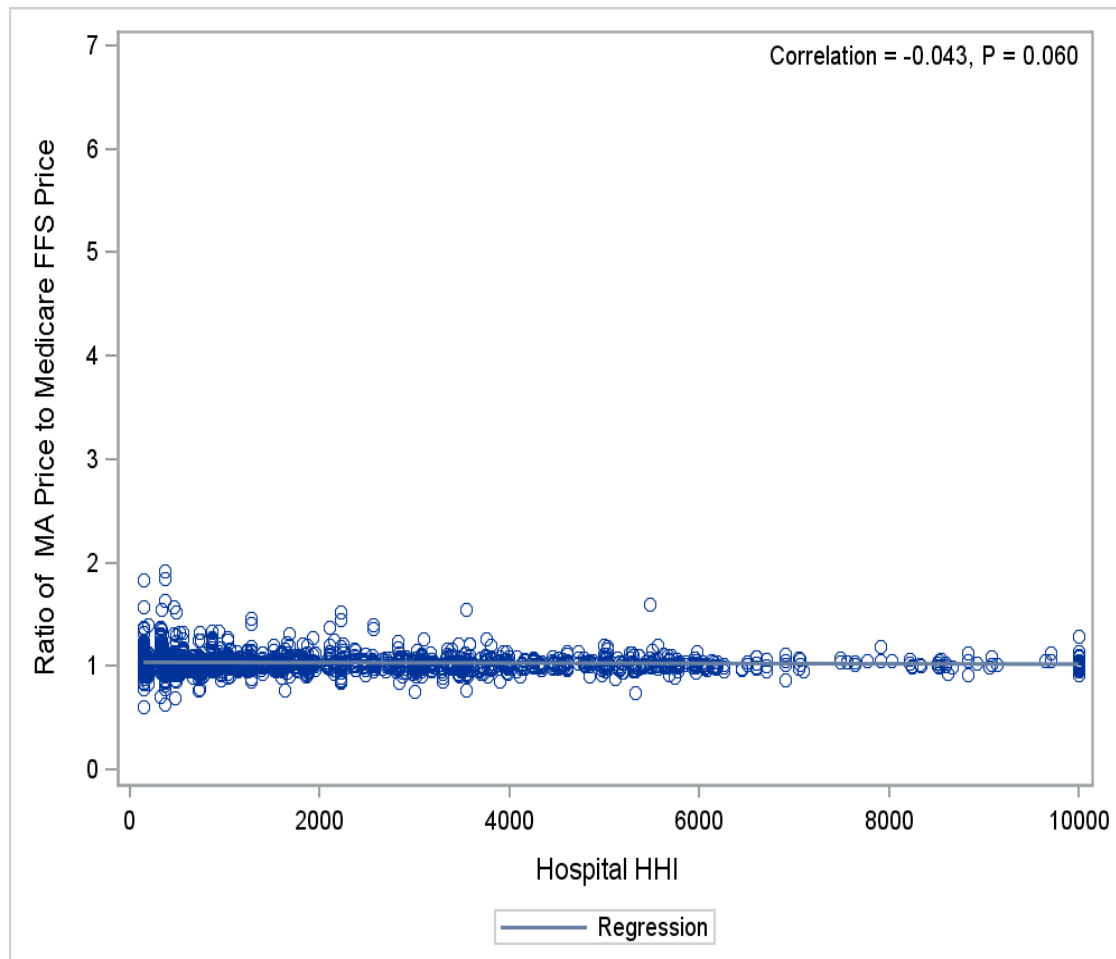
The ratio of Medicare Advantage prices to Medicare FFS prices were sorted and ranked. DRGs with at least 100 discharges were included and "Other" DRGs were excluded from this analysis.

The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample. The estimates of Medicare FFS prices include the base payment amount plus any additional payments for DSH. We estimated the average outlier payment for admissions in each major category of DRG from a separate analysis of Medicare claims.

CC=complication or comorbidity; CDE=common duct exploration; DRG=diagnosis-related group; DSH=disproportionate share hospital payments; FFS=fee for service; MCC=major complication or comorbidity; OR=operating room.

Appendix Figure 1. Scatter Plot of the Ratio of Medicare Advantage Prices to Medicare FFS Prices and Hospital Market Concentration, 2013.

Correlation = -0.043; $p = 0.060$



Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The scatter plot shows the bivariate association between the hospital-level ratio of Medicare Advantage prices to Medicare FFS prices and hospital market concentration across all DRGs. There are 1,914 hospitals in this analysis. The Medicare Advantage sample was limited to adults 65 years or older.

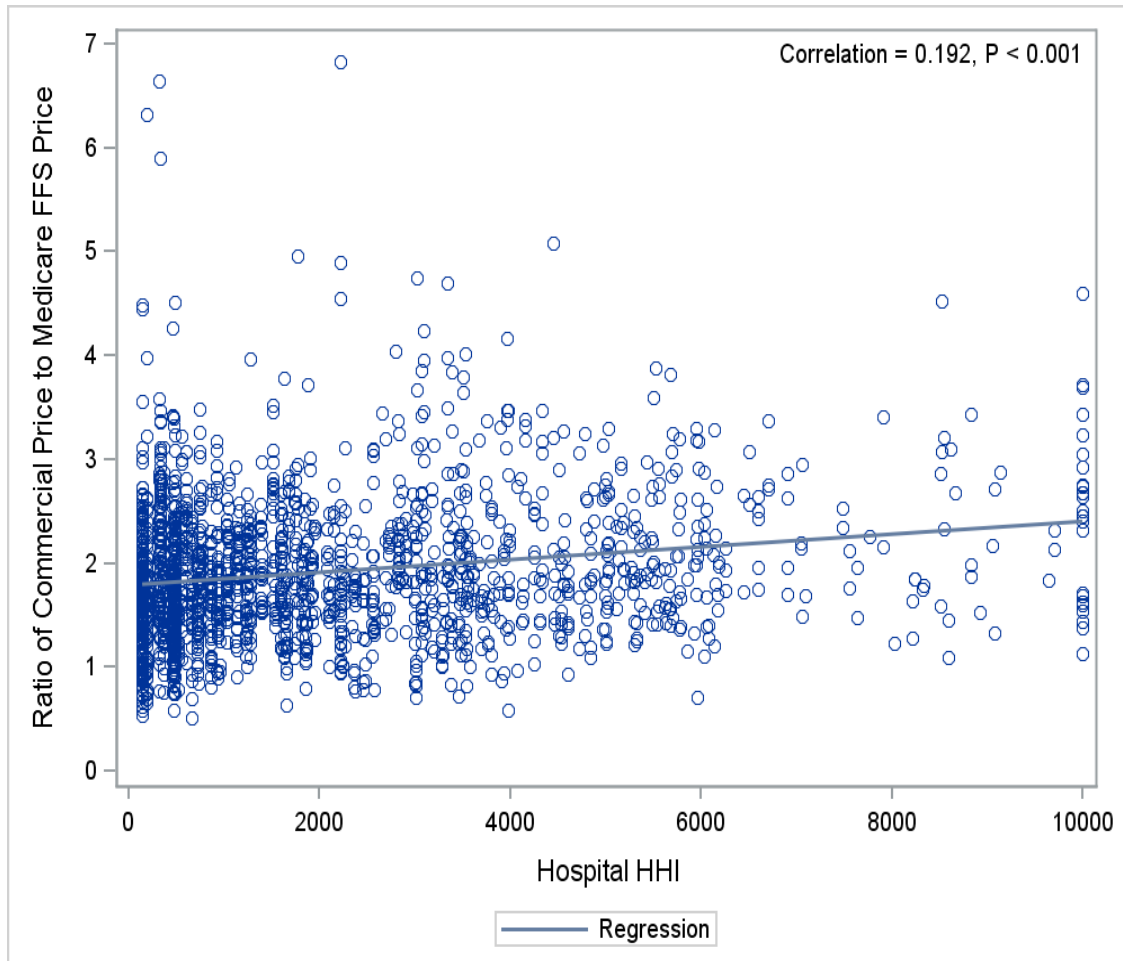
Hospital market concentration was calculated based on the number of inpatient discharges.

The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample. The estimates of Medicare FFS prices include the base payment amount plus any additional payments for DSH. Because of data restrictions, the FFS prices were not adjusted to account for outlier payments.

DSH=disproportionate share hospital payments; FFS=fee for service; HHI=Herfindahl-Hirschman Index.

Appendix Figure 2. Scatter Plot of the Ratio of Commercial Prices to Medicare FFS Prices and Hospital Market Concentration, 2013.

Correlation = 0.192; $p < .001$



Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The scatter plot shows the bivariate association between the hospital-level ratio of commercial prices to Medicare FFS prices and hospital market concentration across all DRGs.

There are 1,926 hospitals in this analysis. The commercial sample was limited to adults 18 to 64 years old.

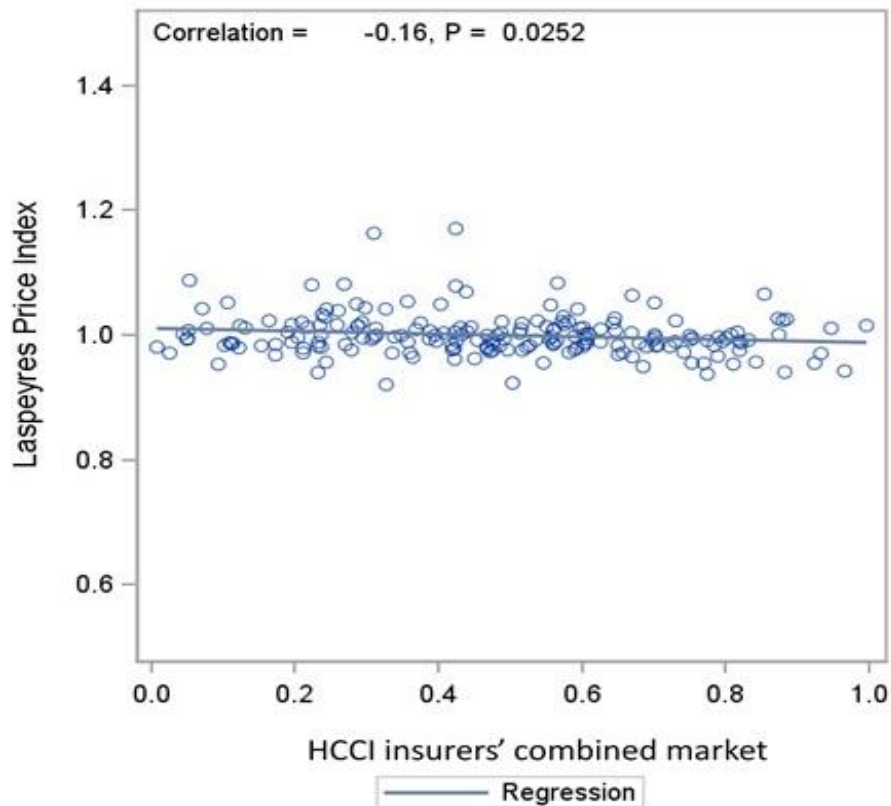
Hospital market concentration was calculated based on the number of inpatient discharges.

The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the commercial sample. The estimates of Medicare FFS prices include the base payment amount plus any additional payments for IME and DSH. Because of data restrictions, the FFS prices were not adjusted to account for outlier payments.

DSH=disproportionate share hospital payments; FFS=fee for service; HHI=Herfindahl-Hirschman Index; IME=indirect medical education payments.

Appendix Figure 3. Scatter Plot of an Index of the Ratio of Medicare Advantage Prices to Medicare FFS Prices and HCCI Insurers' Combined Market Share, 2013.

Correlation = -0.16; p 0.025



Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

Note. The scatter plot shows the bivariate association between the combined HCCI insurers' market share and the Laspeyres price index of the ratio of Medicare Advantage prices to

Medicare FFS prices based on the top 20 DRGs for Medicare Advantage at the MSA-level.

There are 196 MSAs in this analysis. The Medicare Advantage sample was limited to adults 65 years or older.

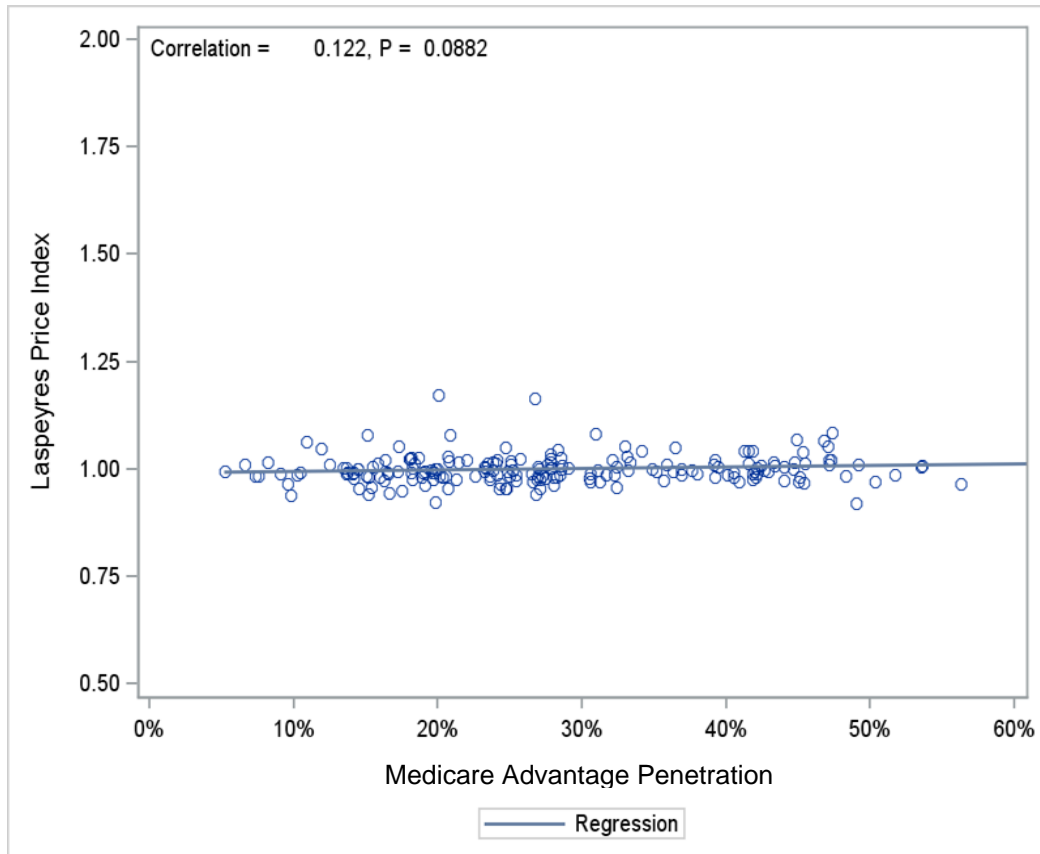
The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample. The estimates of Medicare

FFS prices include the base payment amount plus any additional payments for DSH. Because of data restrictions, the FFS prices were not adjusted to account for outlier payments.

DSH=disproportionate share hospital payments; FFS=fee for service; HCCI=Health Care Cost Institute; MSA= metropolitan statistical area.

Appendix Figure 4. Scatter Plot of the Medicare Advantage Penetration Rate and an Index of the Ratio of Medicare Advantage Prices to Medicare FFS Prices, 2013.

Correlation = 0.122; $p = 0.088$



Source. Authors' analysis of 2013 Health Care Cost Institute claims data.

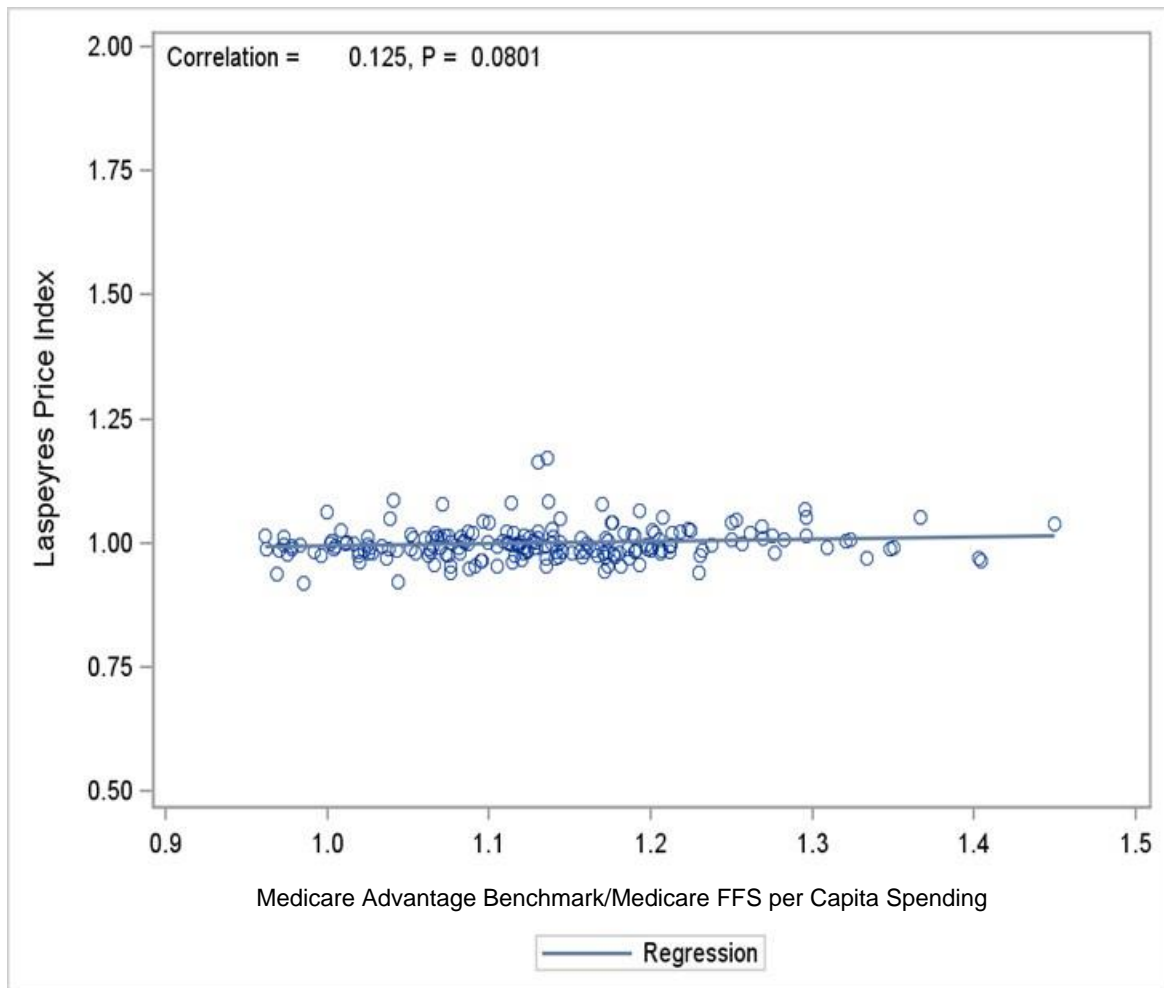
Note. The scatter plot shows the bivariate association between the MSA-level Medicare Advantage penetration rate and the Laspeyres price index of the ratio of Medicare Advantage prices to Medicare FFS prices based on the top 20 DRGs for Medicare Advantage. There are 196 MSAs in this analysis. The Medicare Advantage sample was limited to adults 65 years or older. The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample. The estimates of Medicare

FFS prices include the base payment amount plus any additional payments for DSH. Because of data restrictions, the FFS prices were not adjusted to account for outlier payments.

DRG=diagnosis-related group; DSH=disproportionate share hospital payments; FFS=fee for service; MSA=metropolitan statistical area.

Appendix Figure 5. Scatter Plot of the Ratio of the Medicare Advantage Benchmark to Medicare FFS per Capita Spending and an Index of the Ratio of Medicare Advantage Prices to Medicare FFS Prices, 2013

Correlation = 0.125; p = 0.08



The scatter plot shows the bivariate association between the MSA-level ratio of the Medicare Advantage benchmark to Medicare FFS per capita spending and the Laspeyres price index ratio of the Medicare Advantage prices to Medicare FFS prices based on the top 20 DRGs for Medicare Advantage. There are 196 MSAs in this analysis. The Medicare Advantage sample was limited to adults 65 years or older.

The Medicare payment rules were used to compute the amount that the Medicare FFS program would have paid for each stay in the Medicare Advantage sample. The estimates of Medicare FFS prices include the base payment amount plus any additional payments for DSH. Because of data limitations, the FFS prices were not adjusted to account for outlier payments.

DRG=diagnosis-related group; DSH=disproportionate share hospital payments; FFS=fee for service; MSA=metropolitan statistical area.