Price or Quantity: What Explains the Variation in Spending on the Privately Insured?

Zack Cooper (Yale University)
Stuart Craig (Yale University)
Martin Gaynor (Carnegie Mellon University)
John Van Reenen (London School of Economics)

This paper analyzes the variation in health care spending of Americans covered by employer-sponsored insurance using a new, unique national dataset that covers one third of Americans with employer-sponsored health insurance. For decades, the prices health care providers negotiate with private insurers have been treated as commercially sensitive and have been largely unavailable to researchers. As a result, while we know a great deal about health care spending for the 15% of the American population covered by Medicare, much less is known about spending for the 48% of the US population covered by employer sponsored insurance. In this paper, we begin by comparing the spending per beneficiary across public and private payers. We then document the contribution of price variation to spending variation of the privately insured and assess the extent to which negotiated provider prices vary across the US. Finally, we identify the key factors that drive the observed variation in prices.

We find very weak correlation in spending per beneficiary across public and private payers. Spending per employer-sponsored beneficiary is correlated by less than 7% with spending per Medicare beneficiary. It is also correlated by less than 5% with spending per Medicaid beneficiary. The correlation of spending on inpatient care across public and private payers is even lower than overall spending. This low correlation in spending is not surprising given that while public payers regulate prices, prices for Americans with employer-sponsored insurance are a function of negotiations between insurers and health care providers. Moreover, it suggests that the factors which drive variation in spending for Americans with Medicare may differ from the factors driving spending variation for the privately insured. Indeed, while previous work has suggested that variations in the quantity of care provided drives variation in Medicare spending, as we will describe, our work suggests that variation in the prices negotiated between health care providers and insurers is driving variation in spending on the privately insured.

To assess the contribution of price to variation in spending, we identify how much spending would vary per beneficiary if prices did not vary at all or if prices varied by the amount Medicare prices vary. Here, we find that price variation can explain up to 70% of the variation in per beneficiary spending for those with employer sponsored insurance across markets.

Across the US, as Figure 1 illustrates, hospital prices vary by a factor of 7. Indeed, for hip replacements, the coefficient of variation is 0.35. This can be benchmarked against the reimbursement for knee replacements by Medicare, which has a coefficient of variation of 0.21. Moreover, what is evident when we compare mean prices within hospital referral regions (HRR) is that HRRs with lower private prices tend to price their services slightly above average Medicare rates. In contrast, the most expensive regions, like Alameda County in California, have mean prices that are five times higher than Medicare rates. Moreover, we observe interesting trends in pricing across the US. Major cities tend to have the highest prices, however, these areas are closely followed by some largely rural states such as Montana, North Dakota, and Wyoming, which also have prices in our highest quintile. Moreover, there is major variation within states. Texas, for example, has HRRs in each of the five quintiles of price.

We also observe substantial variation in prices within HRRs. As Figure 2 illustrates, while the Medicare reimbursement rate for knee replacements in Dallas is consistent across providers, the reimbursement rate for knee replacements varies by a factor of four for beneficiaries with employer-sponsored insurance. Indeed, we see similar variation across conditions across HRRs. This variation within markets is also present for non-differentiated services like colonoscopies, MRI scans, laparoscopic cholecystectomies, and appendectomies, where we would not expect substantial variation in either clinical practice or health outcomes.

Finally, we conclude by examining the factors associated with price variation. Here, we look at the role of demand shifters (i.e. local area characteristics), cost shifters (i.e. the cost of medical salaries in regions), and hospital and insurance market concentration. As our regressions presented in Figure 3 illustrate, we find that market concentration, hospital size, and the presence of high tech services are the major drivers of variation in health care prices. Importantly, proxies for quality of care like overall mortality and mortality from acute myocardial infarction do not explain much of the variation in prices.

Ultimately, this paper is the first to examine national variation in health care spending by the privately insured. We find substantial variation in spending per beneficiary across regions illustrate that this variation is largely driven by variation in health care providers' prices. This price variation does not appear to be due to costs or quality, nor does it parallel Medicare. Rather, the major drivers of price variation appear to be market power, firm size, and high-tech services.

Figure 1:

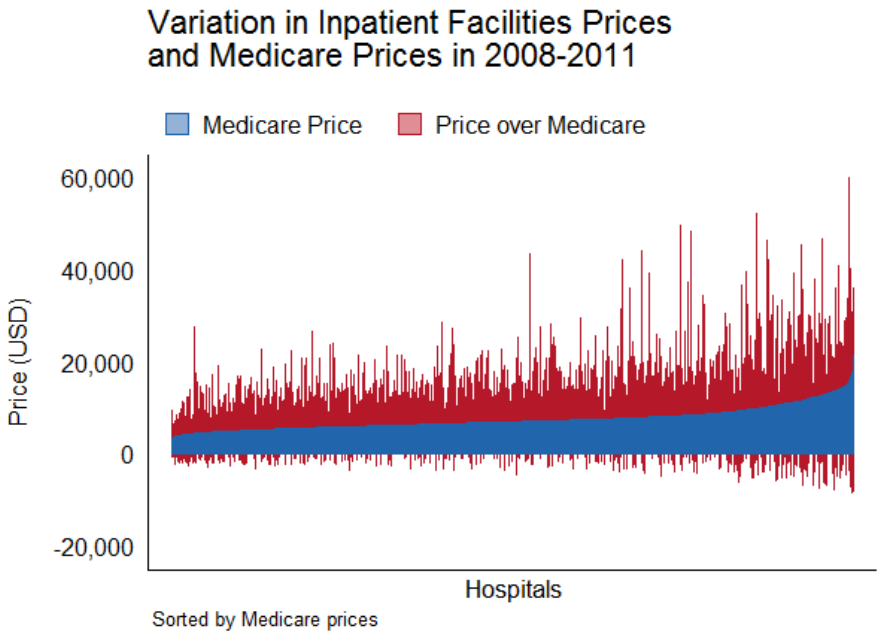


Figure 2:

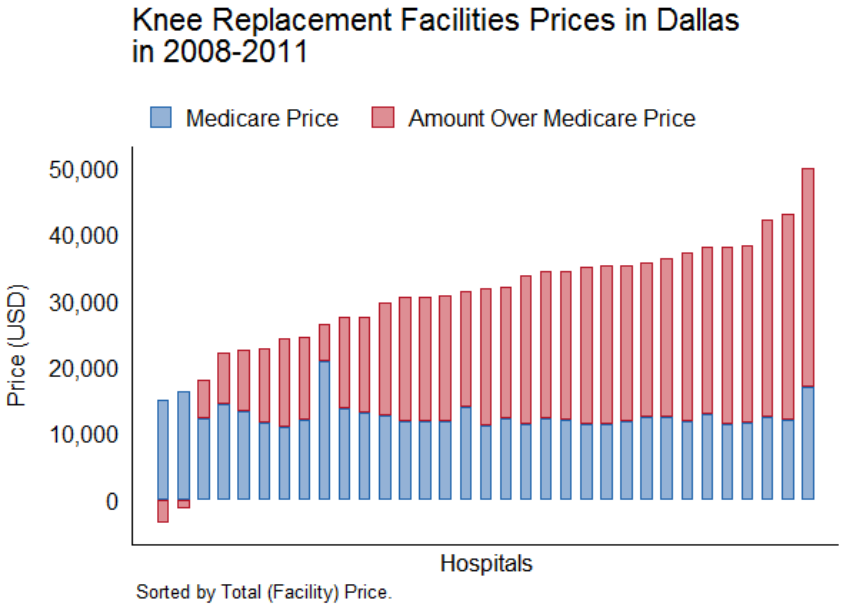


Figure 3: Regression of Inpatient Hospital Prices Against Cost Shifters, Demand Shifters, and Insurance and Provider Market Concentration

	Specification									
	1		2		3		4		5	
	No log	Log	No log	Log	No log	Log	No log	Log	No log	Log
Provider HHI	1619.5**	0.273**	2386.5**	0.345**	2326.4**	0.318**	1602.2**	0.276**	2320.8**	0.319**
	(429.7)	(0.0626)	(388.4)	(0.0526)	(485)	(0.0575)	(432.5)	(0.0621)	(487)	(0.0576)
Insurer HHI	-546.2	-0.214	-2183.3	-0.235	-432.9	-0.0785	-552	-0.214	-415.7	-0.0808
	(3126.3)	(0.302)	(1606.2)	(0.194)	(2773.5)	(0.316)	(3115.7)	(0.301)	(2766)	(0.316)
HMO contracts	0.424**	-0.0158*	0.421**	-0.0287**	0.489**	-0.0089	0.418**	-0.0160*	0.487**	-0.00897
	(0.129)	(0.00763)	(0.097)	(0.00791)	(0.15)	(0.00681)	(0.119)	(0.00763)	(0.147)	(0.0068)
Teaching	54.21	-0.00209	-432.7*	-0.0521*	-42.35	-0.00121	51.56	-0.00286	-40.74	-0.00131
	(193.4)	(0.0247)	(205.6)	(0.0259)	(181.1)	(0.0242)	(191.7)	(0.0246)	(181.5)	(0.0241)
For-profit	2288.7**	0.253**	2242.4**	0.255**	2122.7**	0.274**	2382.1**	0.255**	2144.3**	0.276**
	(382.6)	(0.0467)	(394.5)	(0.0484)	(391.2)	(0.0502)	(383.1)	(0.0471)	(393.2)	(0.0503)
Non-profit	742.8**	0.122**	1061.4**	0.165**	788.1**	0.125**	833.0**	0.124**	811.2**	0.127**
	(269.9)	(0.0311)	(282)	(0.0343)	(289.8)	(0.0359)	(261.8)	(0.0312)	(282.7)	(0.036)
Saidin index	57.24*	0.0463**	116.6**	0.0745**	88.69**	0.0506**	57.46*	0.0465**	88.31**	0.0508**
	(28.39)	(0.0134)	(27.97)	(0.0138)	(30.3)	(0.0166)	(28.37)	(0.0134)	(30.44)	(0.0167)
FTE	0.501**	0.0844**	0.229*	0.0616**	0.488**	0.0951**	0.504**	0.0839**	0.489**	0.0946**
	(0.111)	(0.0124)	(0.0975)	(0.0137)	(0.117)	(0.0122)	(0.111)	(0.0124)	(0.117)	(0.0124)
Death Rate	148.5**	0.00886	49.6	-0.00922	125.0*	-0.00235	144.7*	0.00907	123.5*	-0.00246
	(56.91)	(0.0109)	(66.83)	(0.0127)	(62.59)	(0.0127)	(56.4)	(0.0109)	(62.58)	(0.0126)
Percent uninsured	16.1	0.00679	25.29	0.0587	31.51	0.0199	18.62	0.00915	32.02	0.022
	(40.92)	(0.0469)	(26.03)	(0.0475)	(38.49)	(0.0446)	(40.84)	(0.0469)	(38.54)	(0.0449)
Prop. Medicare	-15.42	-0.0585**	-15.32	-0.0523*	-0.799	-0.0225	46.33	-0.128*	14.74	-0.0675
	(10.02)	(0.0223)	(9.612)	(0.023)	(9.411)	(0.0197)	(36.82)	(0.0647)	(37.68)	(0.0554)
PPS Pmt	-0.0717	0.0362	0.696**	0.455**	-0.0073	0.048	0.254	-0.0279	0.0754	0.00573
	(0.161)	(0.0783)	(0.169)	(0.0831)	(0.165)	(0.0752)	(0.268)	(0.0962)	(0.262)	(0.0875)
AMI death rate					3.208	-0.00568			3.081	-0.00564
					(8.893)	(0.00424)			(8.869)	(0.00423)
Prop. Medicare*PPS Pmt							-0.997+	0.0497	-0.246	0.0326
							(0.567)	(0.0435)	(0.567)	(0.0271)
HRR FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11100	11100	11100	11100	7816	7816	11100	11100	7816	7816
R-sq	0.341	0.339	0.093	0.114	0.425	0.435	0.342	0.34	0.425	0.435

Standard errors in second row
+ p<0.10, * p<0.05, ** p<0.01