Current Era of Consolidation in Health Care

MDs employed by hospitals or corporations

Avalere Health (2022)

Number of Hospital Mergers

Source: Kaufman, Hall & Associates, LLC

Hospitals in Health System

Hospitals Not in Health System

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017

(Y-axis: 0, 500, 1,000, 1,500, 2,000, 2,500, 3,000, 3,500, 4,000)
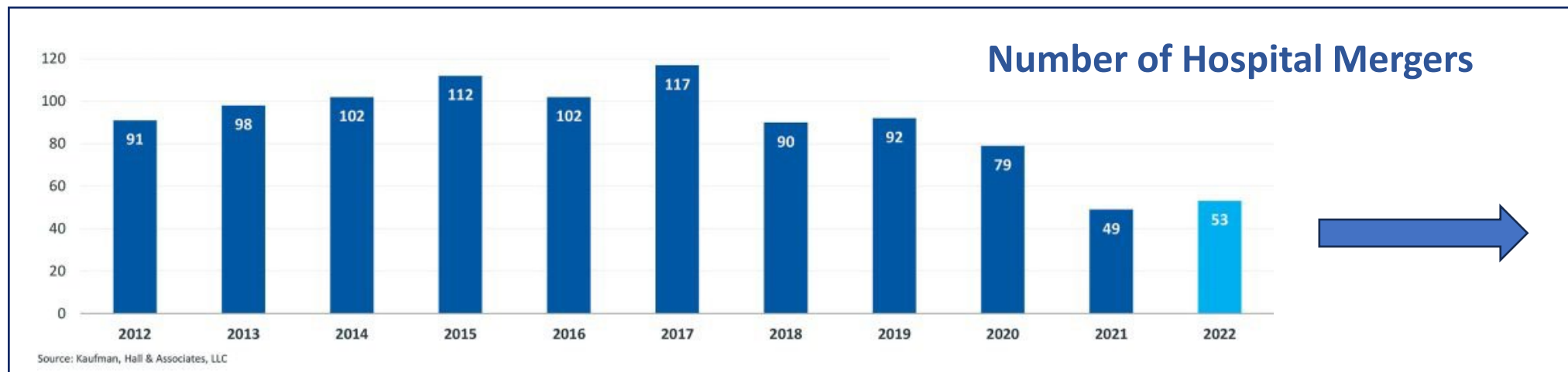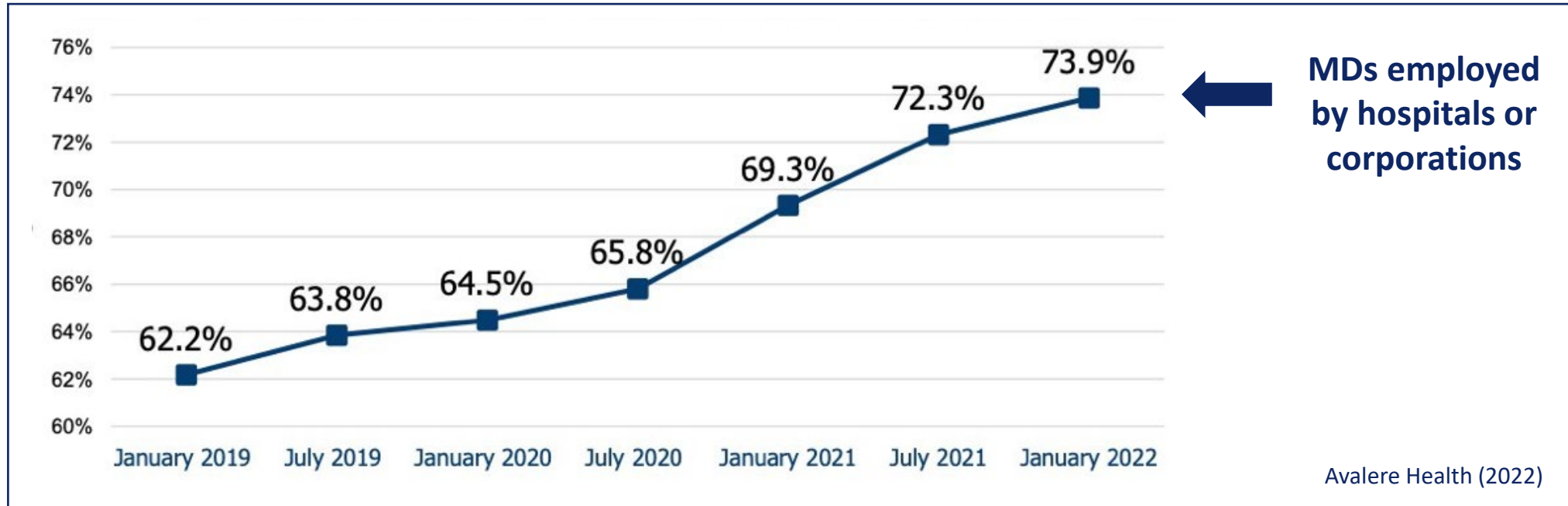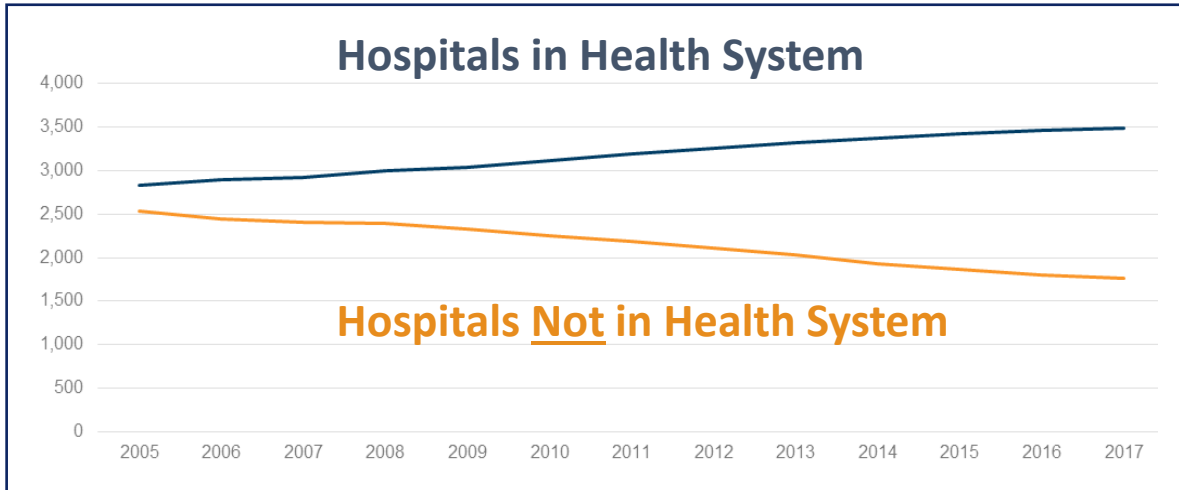
Examples of Cross-Market Mergers Announced Since June 2021 With Combined Operating Revenues of at Least $5 Billion

Year Announced	Larger system	Operating Revenues ($B)	Smaller system	Operating Revenues ($B)	Combined revenues ($B)
2023	BJC Healthcare (MO)	$6.3	St. Luke's Health System (MO)	$2.4	$8.7
2023	Kaiser Permanente (CA)*	$95.4	Geisinger (PA)*	$6.9	$102.3
2023	Presbyterian Healthcare Services (NM)	$5.5	UnityPoint Health (IA)	$4.3	$9.8
2022	University Of Michigan Health (MI)**	$5.6	Sparrow Health System (MI)	$1.5	$7.1
2022	Marshfield Clinic Health System (MI)	$2.8	Essentia Health (MN)	$2.6	$5.4
2022	Sanford Health (SD)***	$7.1	Fairview Health Services (MN)***	$6.4	$13.5
2022	Advocate Aurora Health (IL)	$14.1	Atrium Health (NC)	$9.0	$23.1
2021	Intermountain (UT)	$7.7	SCL Health (CO)	$2.9	$10.6
2021	Spectrum Health (MI)	$8.3	Beaumont Health (MI)	$4.6	$12.9

NOTE: Operating revenues come from audited financial statements covering the fiscal year prior to the merger announcement. State abbreviations reflect the corporate headquarters of a given health system. *Kaiser Permanente and Geisinger are both integrated health systems that include both insurance plans and health care providers. Revenues reflect all sources of operating income. **Reflects patient care revenues only. The University of Michigan does not separate out additional operating revenues related to its health system. ***Fairview Health Services and Sanford Health abandoned their plans to merge in July 2023.
SOURCE: KFF analysis of news releases and audited financial statements.

KFF

Kaiser Family Foundation (2023)

amazon → one medical: $3.9 Billion

CVS → Oak St. Health: $10.6 Billion

Walmart ↔ UnitedHealth Group: 10-year deal

UnitedHealth Group®

10-year deal (2022)

Many physician acquisitions

Optum

Walmart

5,000 pharmacies

70,000 Physicians & 2,200 clinics
Example:

Atrius Health

Prices of Medical Care vs. All Else – Last 23 Years

Medical care, 114.3%

All goods and services, 80.8%
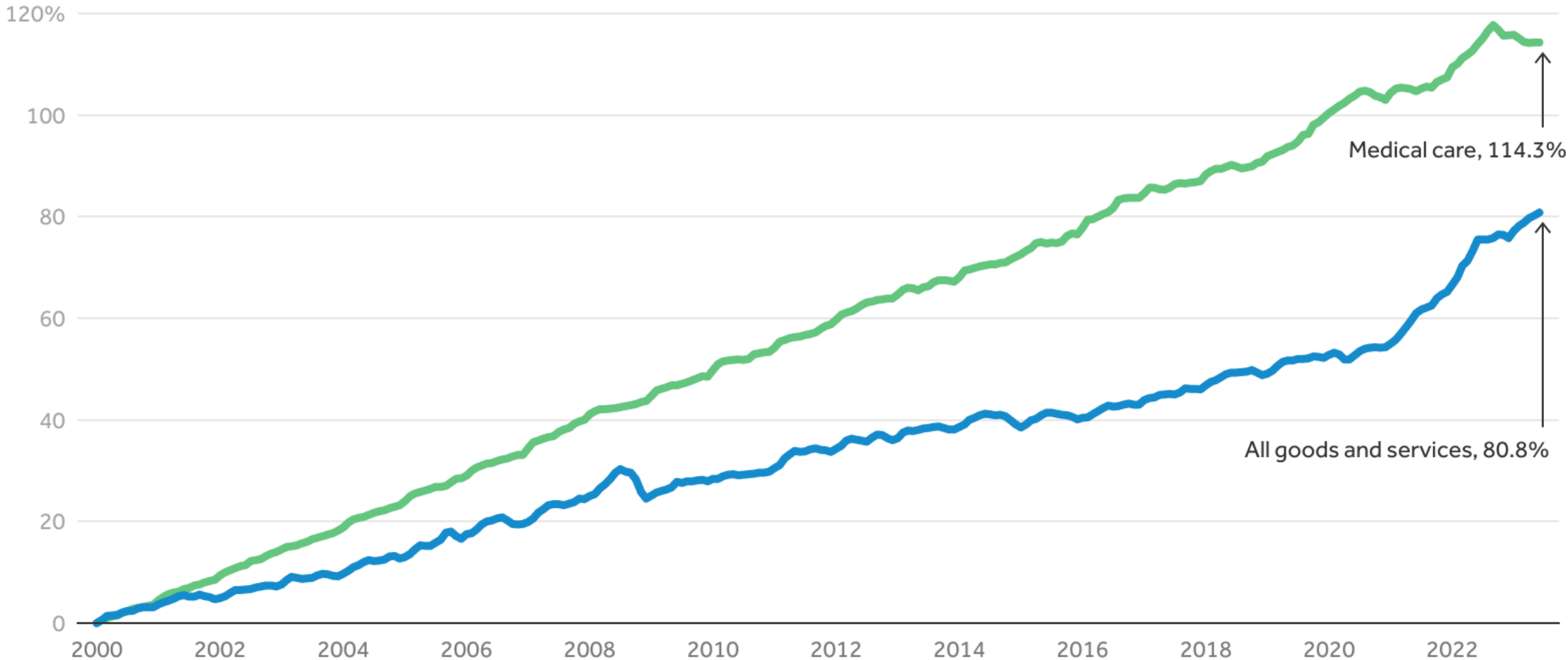
Note: Medical care includes medical services as well as commodities such as equipment and drugs.

Source: KFF analysis of Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) data

Peterson-KFF
Health System Tracker

Consequences of Consolidation: Commercial Price Growth

All Hospital Services

259%

199%

141%

Inpatient Hospital Services

222%

189%

151%

Outpatient Hospital Services

358%

264%

161%

Physician Services

179%

143%

118%

Medicare Payment Rates (100%)

● *Average Private Insurance Rates as a Percentage of Medicare Rates, Across Studies Using 2010-2017 Data*
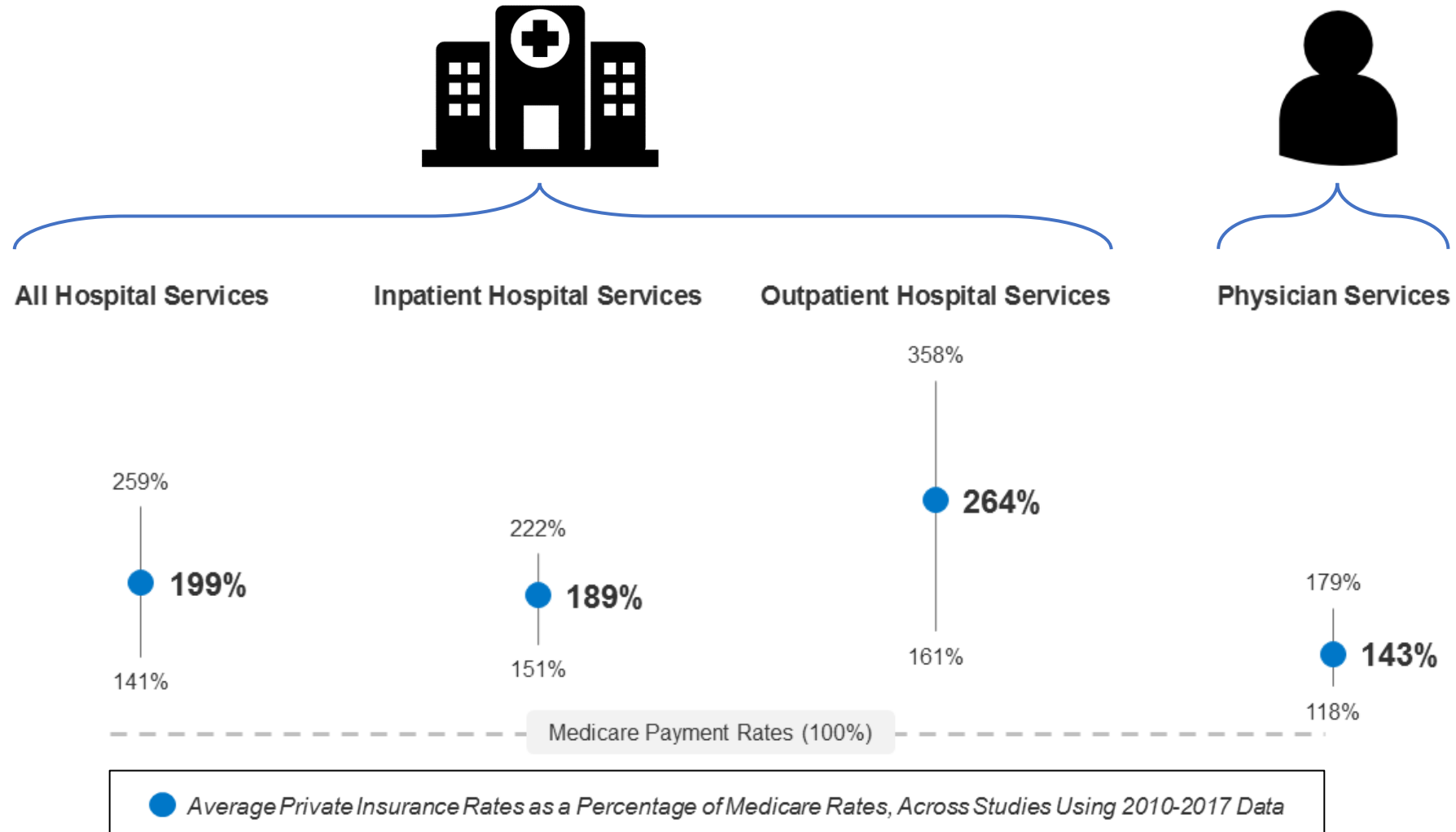
SOURCE: KFF analysis of 19 published studies comparing private insurance and Medicare payments to providers. Because some studies analyze payments to providers in multiple service categories, the number of studies across all categories is greater than 19.

KFF
HENRY J KAISER
FAMILY FOUNDATION

Levers to Slow Health Care Spending

Coverage

Eligibility   **Capacity**

Prevention   **Quantity**   **Managed Care**

Competition

Price   **Health Care Spending**

Regulation

Bundled (or Episode) Payment + Financial Risk & Quality Bonus

Global Budget or "ACO" Contract + Financial Risk & Quality Bonus
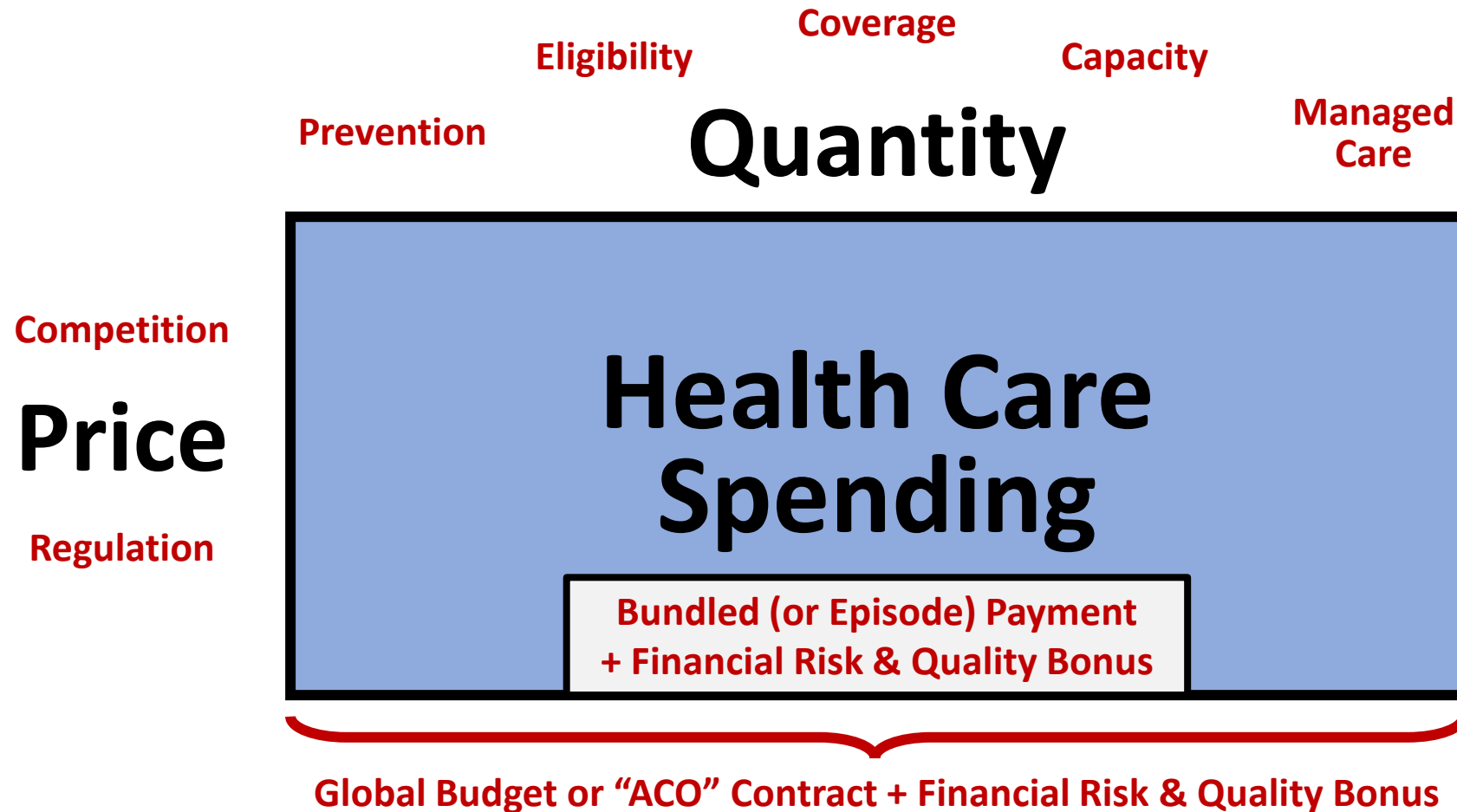
Two Types of Commercial Prices – Out-of-Network is Higher

	Medicare Price	Commercial Insurer Price			
		In-Network		Out-of-Network	
		Price	Ratio	Price	Ratio
Office Visit	$73	$80	1.1	$100	1.4
Hernia Repair	$540	$771	1.4	$1523	2.8
ECG	$9	$17	1.9	$28	3.3

No differences
in vs. out of network

Song Z. JAMA (2019)

Geography Matters – Rural Commercial Prices Are Higher

Service Code	Metropolitan Statistical Areas in the United States by Quartile of Population Size (Average Population in 2015)				Medicare Fee-for-Service Price
	Smallest Quartile (112,452) **Rural**	Second Quartile (188,239)	Third Quartile (408,414) *percent*	Largest Quartile (2,022,512) **Urban**	$
Hospitalizations (DRG code)					
Major hip replacement (470)	228	180	159	132	21,977
Sepsis (871)	218	210	213	157	19,515
Digestive disorder (392)	242	183	154	140	8,297

Selected Commercial Prices as a Percentage of Traditional Medicare Fee-for-Service Prices, 2015.*

Song Z. N Engl J Med (2017)

Private Equity – One Particular Type of Corporate Ownership

Photo credits: Philadelphia Inquirer (2020), AP (2020)

U.S. Private Equity Deal Value and Volume in Health Care

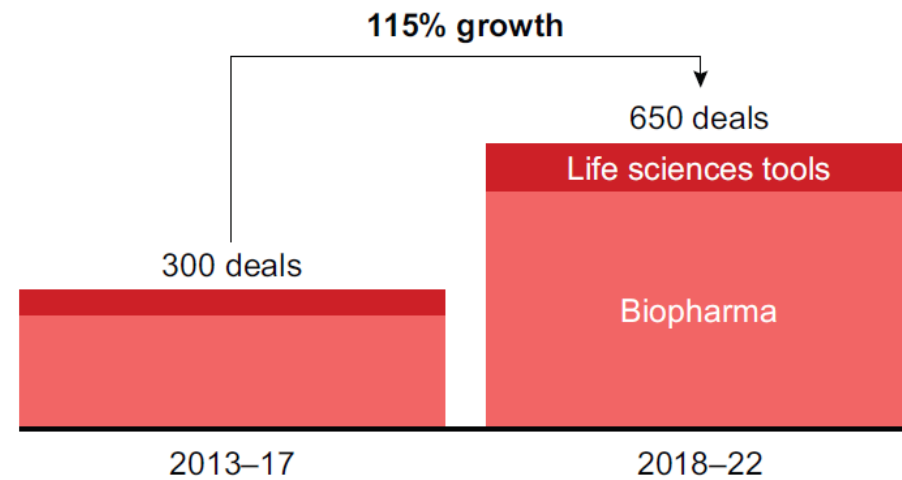Pricewaterhouse Cooper audit, 2023
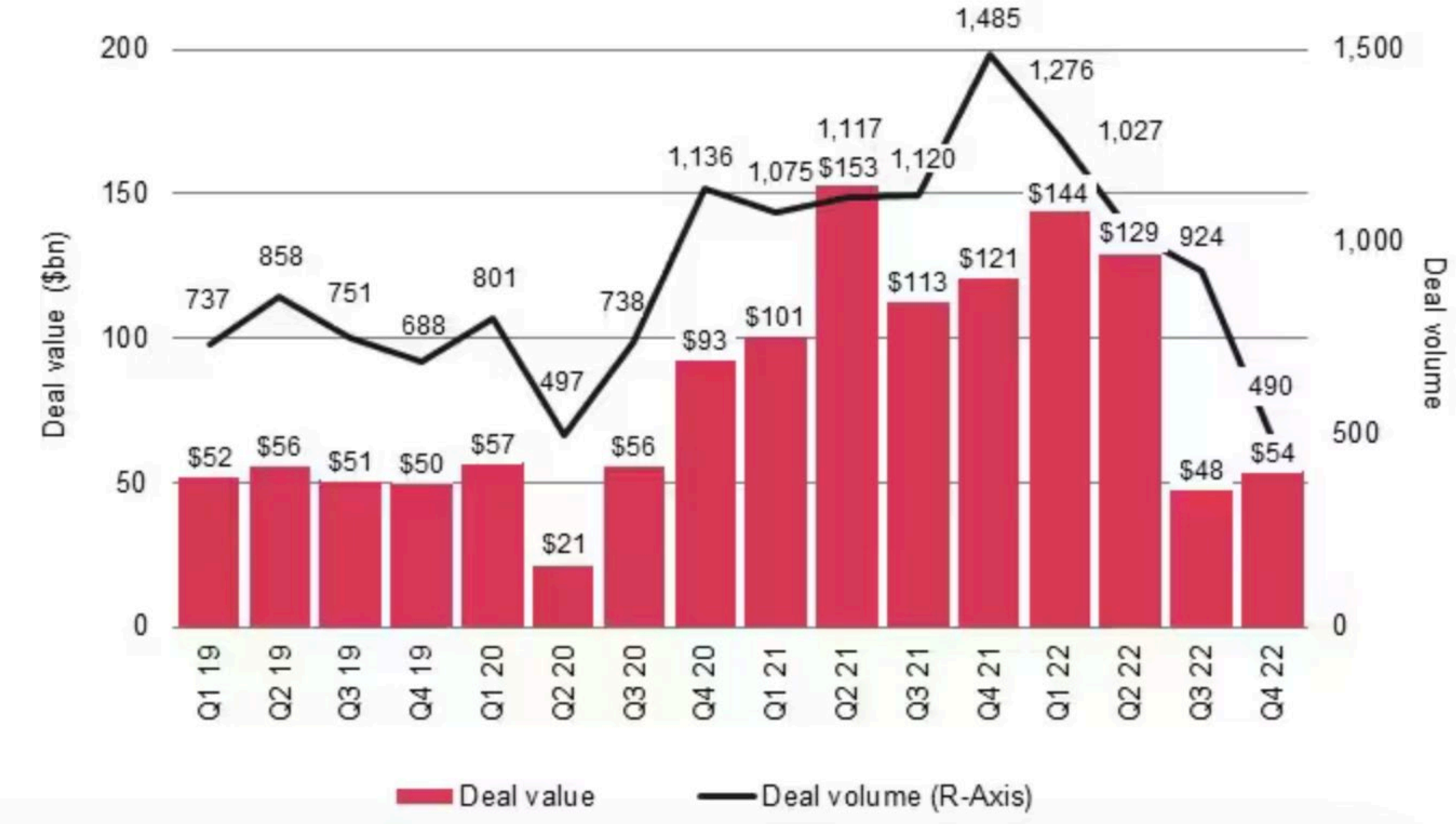
Global Private Equity Deals in Health Care

Global healthcare deal volume for provider, payer, and medtech sectors

55% growth
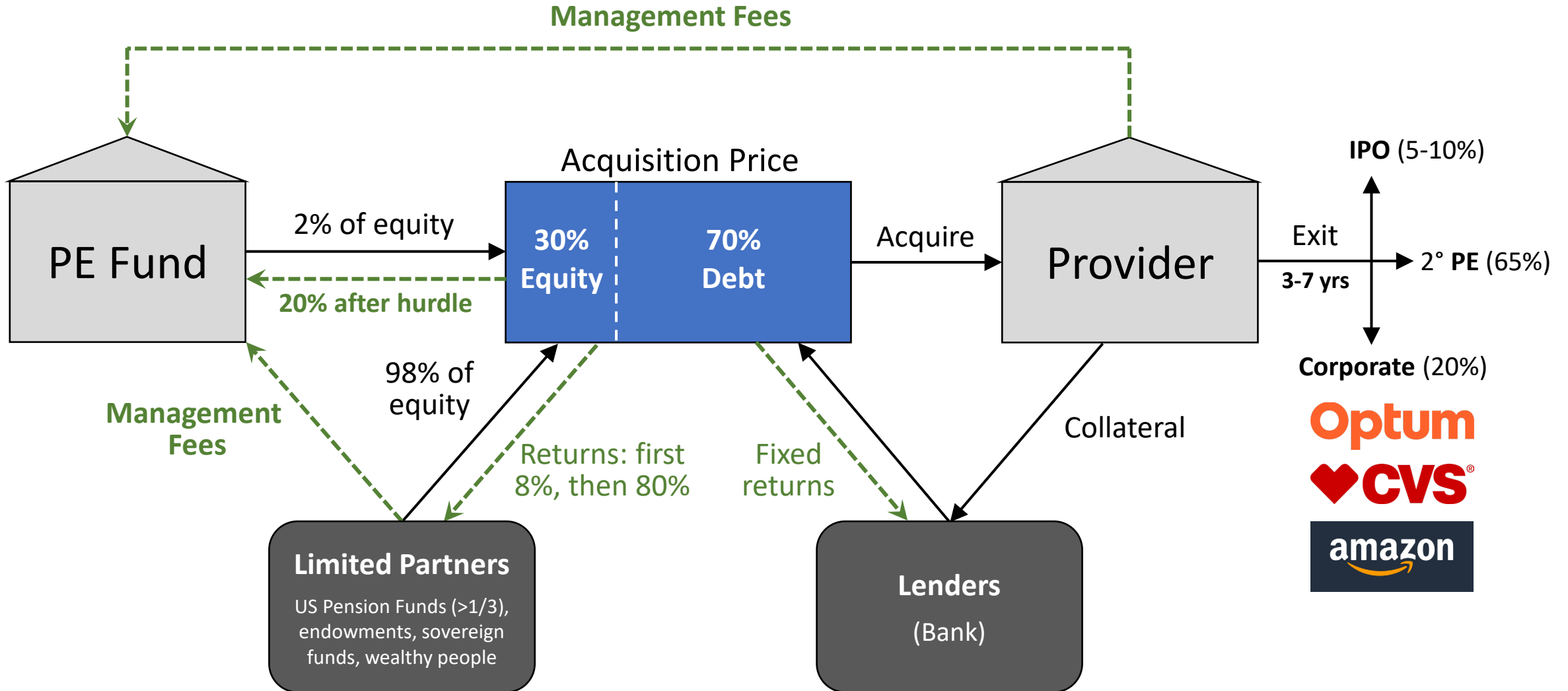
1,200 deals

- Payer
- Medtech
- Provider

770 deals

2013–17   2018–22
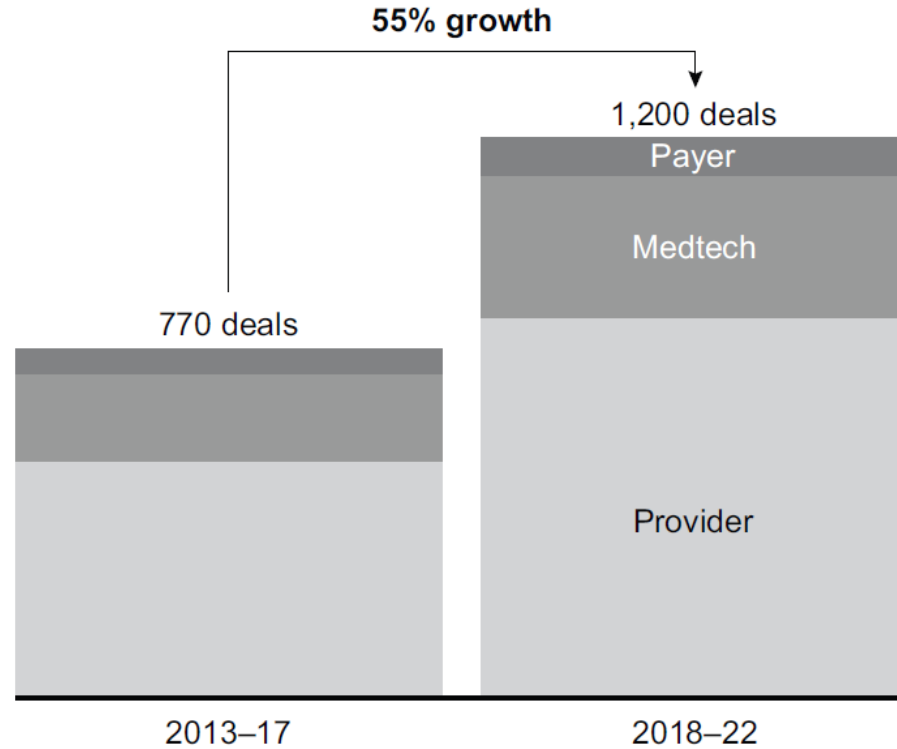
Global healthcare deal volume for biopharma and life sciences tools sectors

115% growth

650 deals

- Life sciences tools
- Biopharma

300 deals

2013–17   2018–22

Notes: Excludes spin-offs, add-ons, loan-to-own transactions, special purpose acquisitions, and acquisitions of bankrupt assets; based on announcement date includes announced deals that are completed or pending, with data subject to change; deal value does not account for deals with undisclosed values; values updated based on Dealogic 2020 sponsor classifications; values include net debt where relevant; deal totals are rounded
Sources: Dealogic; AVCJ; Bain analysis

Bain and Company, 2023

Classic Model of a Private Equity (PE) Acquisition

Management Fees

PE Fund

2% of equity

20% after hurdle

Management Fees

98% of equity

Acquisition Price

| 30% Equity | 70% Debt |

Acquire

Provider

Collateral

Returns: first 8%, then 80%

Fixed returns

Limited Partners

US Pension Funds (>1/3), endowments, sovereign funds, wealthy people

Lenders

(Bank)

Exit
3-7 yrs

IPO (5-10%)

2° **PE** (65%)

Corporate (20%)

Optum
CVS
amazon

Management fees = 2/3 of revenue for GP

In progress

Private Equity and Primary Care: Lessons from the Field

Umar Ikram, MD, PhD, Khin-Kyemon Aung, MD, MBA, Zirui Song, MD, PhD

**Table 1. Comparison of Venture Capital, Growth Equity, and Traditional Private Equity**

	Venture Capital	Growth Equity	Traditional Private Equity (Leveraged Buyout)
Stage of investment	Early stage	Later stage	Mature
Types of companies targeted	Start-ups or early-stage ventures with less of a proven business model, but with high growth potential	Organizations with stronger revenues and operating with proven business models, but in need of financing to pursue further growth	Established businesses that are undervalued or underperforming with inefficiencies that could be addressed through changes in operations, financial engineering, or governance
Amount of investment	Minority stake, <50% ownership	Usually minority stake, <50% ownership	Majority stake, >50% ownership
Exit time frame (on average)	5–10 years	3–7 years	3–7 years
U.S. deal value total in 2019*	$136.5 billion	$92.8 billion†	$627.3 billion
Number of U.S. deals in 2019*	10,777	1,678†	5,133
Estimated average investment size	$12.7 million	$55.3 million	$122.2 million
Expectations for returns	At least 10×; ideally, 50–100× returns for the most successful companies	At least 3–6× returns per deal	At least 2–4× returns per deal
Examples of firms	Venrock, Accel, Benchmark, Sequoia Capital, Madrona Venture Group	TPG Growth, Blackstone Growth, Summit Partners, General Atlantic, Insight Partners	The Carlyle Group, The Blackstone Group, KKR, TPG Capital, Warburg Pincus

*Data from Pitchbook. †Numbers reflect North America and Europe, not U.S. alone. Source: The authors

Geographic Distribution and Penetration
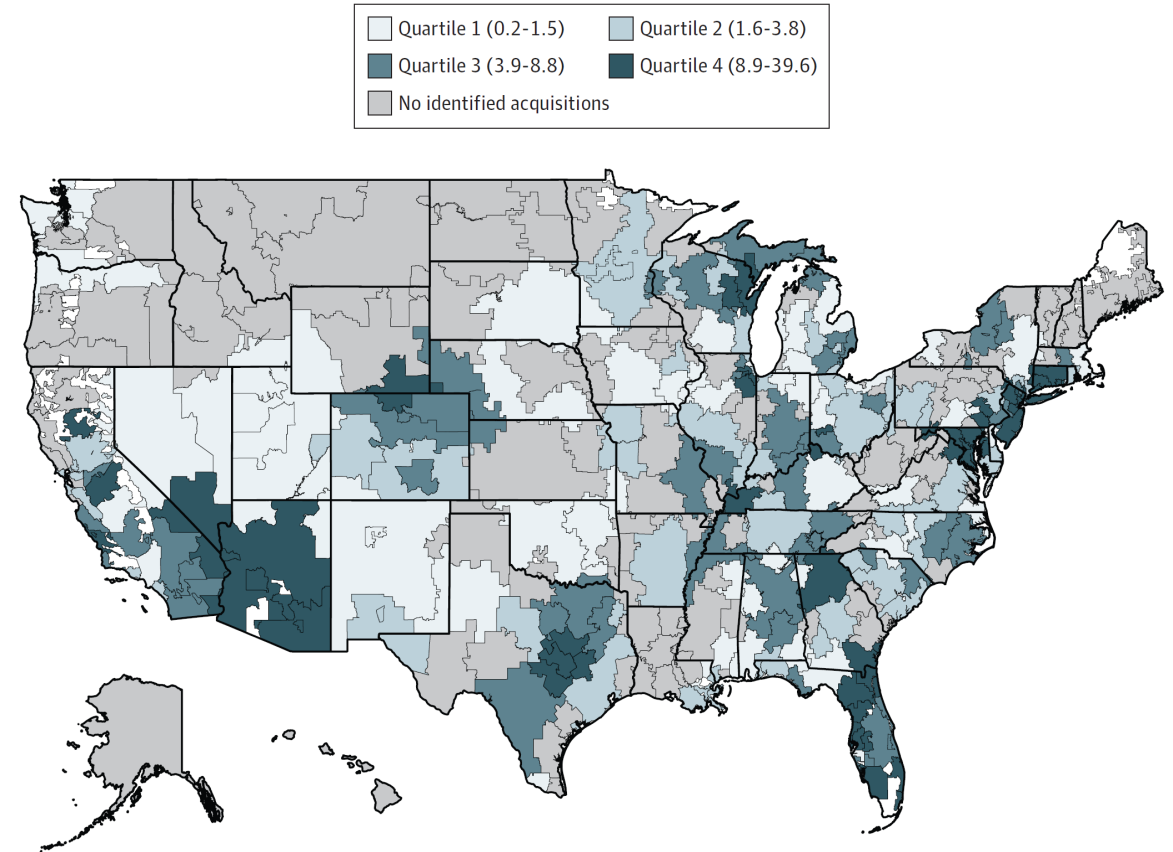
Hospital Acquisitions

Figure. Locations of private equity–owned hospitals in 2018.
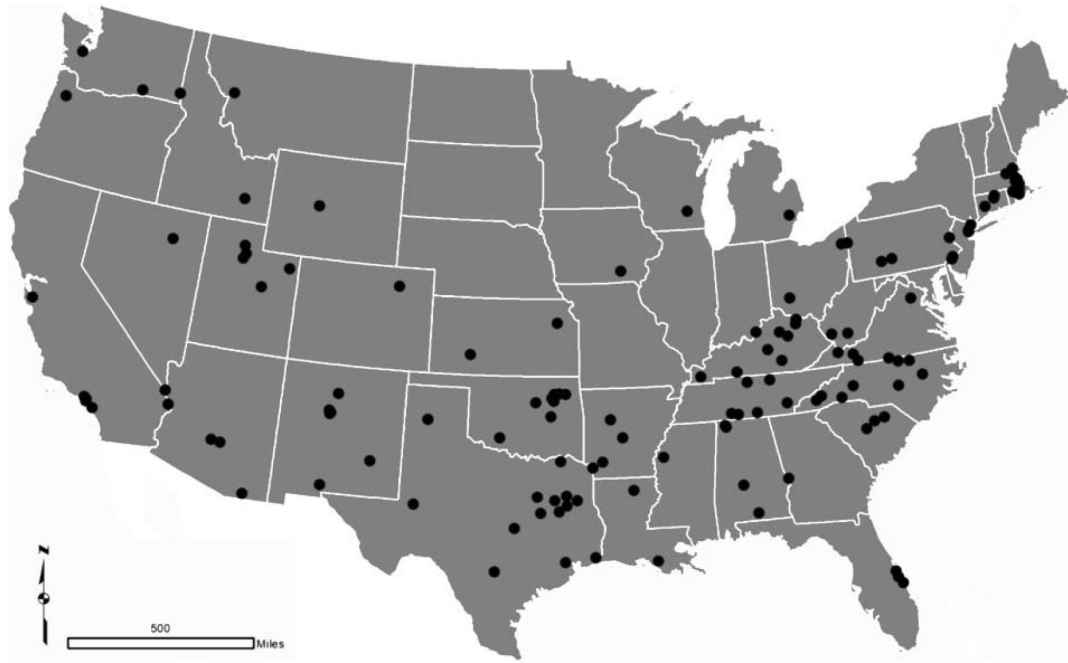
Using Medicare cost reports, the addresses for the 130 private equity–owned hospitals in 2018 were identified. There were no such hospitals located in Hawaii or Alaska.

Bruch J, Zeltzer D, Song Z. Ann Intern Med. 2020

Physician Practice Acquisitions

Figure 1. Private Equity (PE) Penetration Across 6 Office-Based Specialties by Hospital Referral Region (HRR)

Legend:
- Quartile 1 (0.2-1.5)
- Quartile 2 (1.6-3.8)
- Quartile 3 (3.9-8.8)
- Quartile 4 (8.9-39.6)
- No identified acquisitions
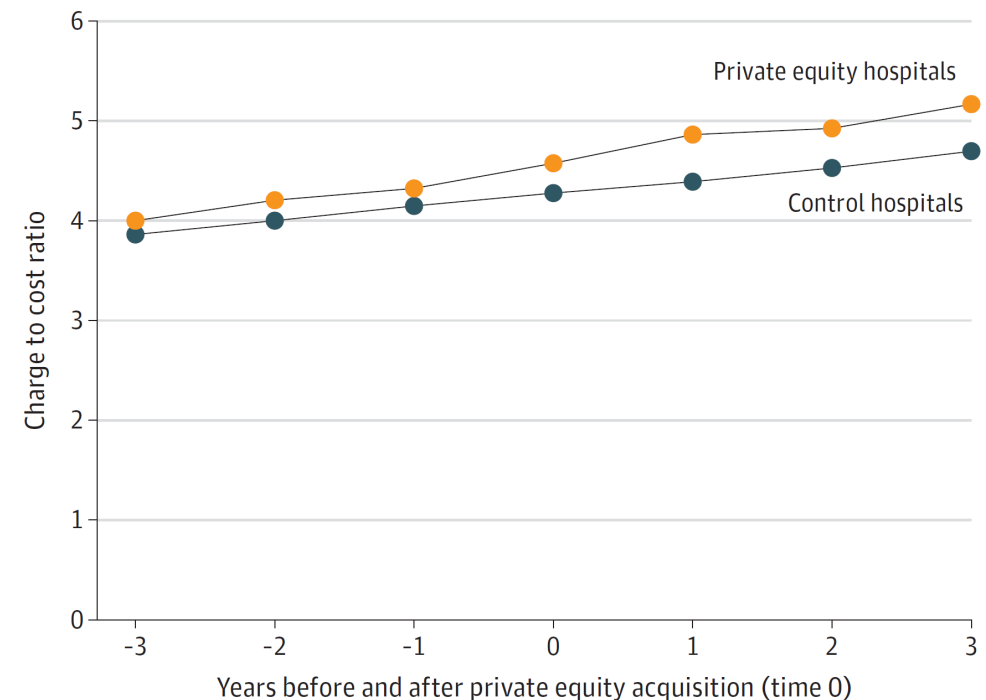
Singh Y, Zhu JM, Polsky D, Song Z. JAMA Health Forum 2022.

JAMA Internal Medicine | Original Investigation

Changes in Hospital Income, Use, and Quality Associated With Private Equity Acquisition

Table 1. Characteristics of 204 Private Equity–Acquired Hospitals and 532 Control Hospitals[a]

Characteristic	Hospitals, No. (%)	
	Private equity acquisition	Control
Hospital ownership		
Nonprofit	29 (14.2)	76 (14.3)
Government	3 (1.5)	8 (1.5)
For profit	172 (84.3)	448 (84.2)
Geographic region		
South	125 (61.3)	325 (61.1)
West	37 (18.1)	97 (18.2)
Northeast	21 (10.3)	55 (10.3)
Midwest	21 (10.3)	55 (10.3)
Teaching hospital	55 (27.0)	139 (26.1)
Hospital size by total No. of beds, mean No.	212	200
Small (<150 beds), %	30.9	40.8
Medium (150-350 beds), %	56.4	45.1
Large (>350 beds), %	12.8	14.2

Figure. Total Charge to Cost Ratios Before and After Private Equity Acquisition

Bruch JD, Gondi S, Song Z. JAMA Intern Med. 2020

Acquisitions of Hospitals → ↑ Income, Charges, Case Mix, Commercial %

Changes in Hospital Income, Use, and Quality Associated With Private Equity Acquisition

Relative to control, PE acquisitions increased:

Net income	27%
Charges per day	7%
Charge/cost ratio	7%
Charge/cost ratio (ED)	16%
Case mix	1.4%
Medicare %	-2.4%

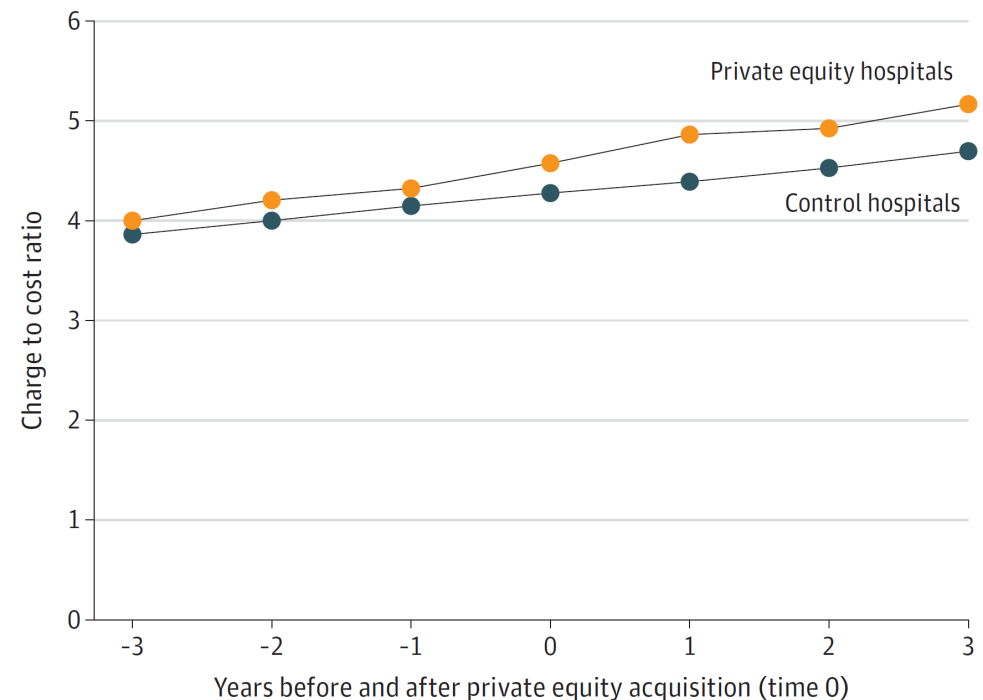Figure. Total Charge to Cost Ratios Before and After Private Equity Acquisition

Bruch JD, Gondi S, Song Z. JAMA Intern Med. 2020

Table 2. Changes in Hospital Income and Use Measures After Private Equity Acquisition

Measure	Hospitals						Differential change			
	Acquired hospitals (n = 204)			Control hospitals (n = 532)						
	Before private equity	After private equity	Change	Before private equity	After private equity	Change	Unadjusted, No.[a]	Adjusted, No. (%) [95% CI][b]	P value	Corrected P value[c]
Net income per y, $	8 527 119	12 861 680	4 334 561	7 655 125	10 092 820	2 437 695	1 896 866	2 302 391 (27.0) [956 660 to 3 648 123]	.001	.009
Total charge per inpatient day, $	5789	7766	1978	5583	6928	1345	633	407 (7.0) [296 to 518]	<.001	<.001
Emergency charge to cost ratio	3.81	5.52	1.71	4.00	5.03	1.02	0.69	0.61 (16.0) [0.48 to 0.73]	<.001	<.001
Total charge to cost ratio	4.17	5.02	0.85	3.90	4.38	0.48	0.37	0.31 (7.4) [0.26 to 0.37]	<.001	<.001
Case mix index	1.42	1.47	0.05	1.36	1.41	0.05	0.00	0.02 (1.4) [0.01 to 0.02]	.001	.007
Medicare's share of discharges, %	40.3	36.8	−3.5	39.1	37.1	−2.0	−1.56	−0.96 (−2.4) [−1.45 to −0.46]	<.001	.002
Medicaid's share of discharges, %	13.2	12.2	−1.0	15.2	14.3	−0.9	−0.07	−0.16 (−1.2) [−0.86 to 0.53]	.64	>.99
Total discharges per y, No.	8948	9181	233	8504	8353	−151	384	98 (1.1) [−54 to 250]	.21	>.99

Table 3. Changes in Hospital Performance on Quality Measures After Private Equity Acquisition[a]

| Measure | Hospitals | | | | | | Differential change | | | |
| | Acquired hospitals (n = 179) | | | Control hospitals (n = 404) | | | | | | |
	Before private equity	After private equity	Change	Before private equity	After private equity	Change	Unadjusted[b]	Adjusted, No. (%) [95% CI][c]	P value	Corrected P value[d]
Heart failure[e]	75.2	93.6	18.4	76.7	89.4	12.7	5.7	1.3 (1.7) [−0.2 to 2.7]	.08	.92
Acute myocardial infarction[f]	89.3	97.5	8.2	89.8	93.6	3.8	4.4	3.3 (3.7) [1.6 to 5.0]	<.001	.002
Pneumonia[g]	73.7	95.4	21.7	77.2	91.4	14.2	7.5	2.9 (3.9) [1.8 to 3.9]	<.001	<.001

[a] The aggregate quality measures are the weighted averages of individual measures within each condition category. Values correspond to the proportion (%) of eligible patients for a measure who met quality performance for the measure.

[b] Private equity–acquired hospitals were matched to controls at time 0 (time of acquisition). R Package MatchIt was used to generate at most 8 controls per acquired hospital. We used nearest neighbor matching on total beds and exact matching on year, ownership, region (Northeast, Midwest, South, and West), and teaching hospital status. The unadjusted model refers to the mixed-effects model, which included a random intercept for the matched group and for the provider group, with no covariates. Values indicate means before and after private equity for acquired and control hospitals and were calculated using the unadjusted model.

[c] The adjusted model included a random intercept term for the matched group and for the provider group and adjusted for calendar year, case mix index, and total hospital beds. Percentage differential change was calculated by dividing the adjusted differential change by the preacquisition mean among acquired hospitals.

[d] Bonferroni correction for multiple comparisons testing.

[e] Heart failure included Hf1 (2004-2014), Hf2 (2004-2015), and Hf3 (2004-2014); Hf1 represents patients with heart failure given discharge instructions; Hf2, patients with heart failure given an assessment of left ventricular function; and Hf3, patients with heart failure given an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker for left ventricular systolic dysfunction.

[f] Acute myocardial infarction included Ami2 (2004-2014); Ami2 represents patients with an acute myocardial infarction given aspirin at discharge.

[g] Pneumonia included Pn2 (2004-2011), Pn3 (2004-2012), Pn5 (2004-2011), and Pn6 (2004-2015); Pn2 represents patients with pneumonia assessed and given pneumococcal vaccination; Pn3, patients with pneumonia who received a blood culture performed prior to first antibiotic received in hospital; Pn5, patients with pneumonia given initial antibiotic(s) within 4 hours after arrival; and Pn6, patients with pneumonia given the most appropriate initial antibiotic(s).

Hospital-Acquired Conditions (Adverse Events)

Hospital Acquired Condition	Eligible Hospitalizations
Foreign body retained after surgery	All
Air Embolism	All
Blood Incompatibility	All
Pressure ulcers	All
Falls	All
Catheter-associated urinary tract infection (CAUTI)	All
Central line-assoc. bloodstream infection (CLABSI)	All
Surgical site infection (SSI) for CABG, Orthopedic Surgeries, and Bariatric Surgeries	Hospitalizations with performed CABG, Orthopedic Surgeries, or Bariatric Surgeries
Poor glycemic control	All
Deep vein thrombosis/ pulmonary embolism (DVT/PE)	Hospitalizations with performed Hip/Knee Replacements

RTI International. Evidence-based Guidelines for Selected and Candidate Hospital-Acquired Conditions. 2010. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Downloads/evidenced_based_guidelines_report.pdf
RTI International. Hospital-Acquired Conditions–Present on Admission: Examination of Spillover Effects and Unintended Consequences Final Report. 2012. https://www.cms.gov/medicare/medicare-fee-for-service-payment/hospitalacqcond/downloads/hac-spillovereffects.pdf

Characteristics of Hospitalizations Pre-Acquisition

100% Medicare Part A and 100% Part B Institutional Claims, 2009-2019

Characteristics of Hospitalizations Pre-Acquisition	Private Equity Hospitals (N=287,185)	Matched Control Hospitals (N=1,776,090)
Age (S.D.)	73.3 (14.2)	74 (13.5)
Female (%)	55.4	55.2
Male (%)	44.6	44.8
vW-Elixhauser (S.D.)[b]	8.2 (8.1)	8.2 (8.2)
Dual Eligible (%)[c]	43.8	32.8
Race and Ethnicity (%)		
Black	15.8	9.4
Asian	1.8	1.5
Hispanic	4.4	2.3
North American Native	3.3	1.6
Other or Unknown	1.2	0.9
White	73.4	84.3

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Acquisitions of Hospitals → ↑ Hospital-Acquired Complications

Composite Hospital-Acquired Complications (HACs)

Kannan S, Bruch J, Song Z. Forthcoming
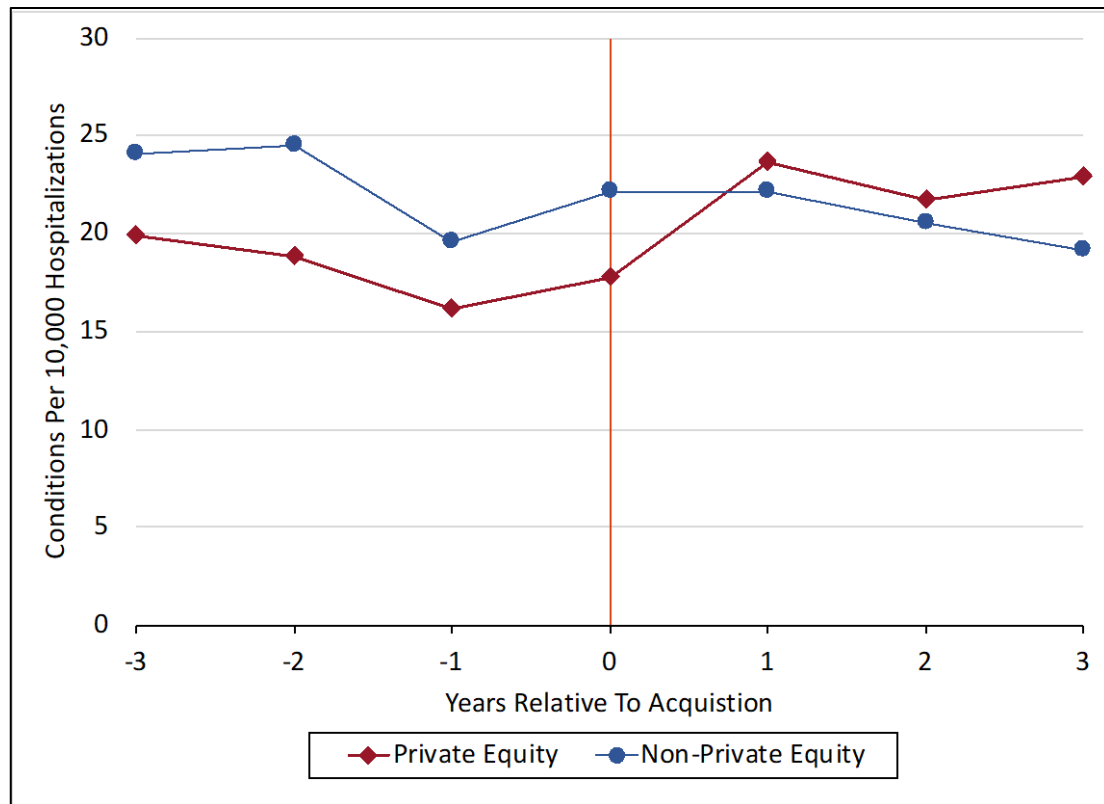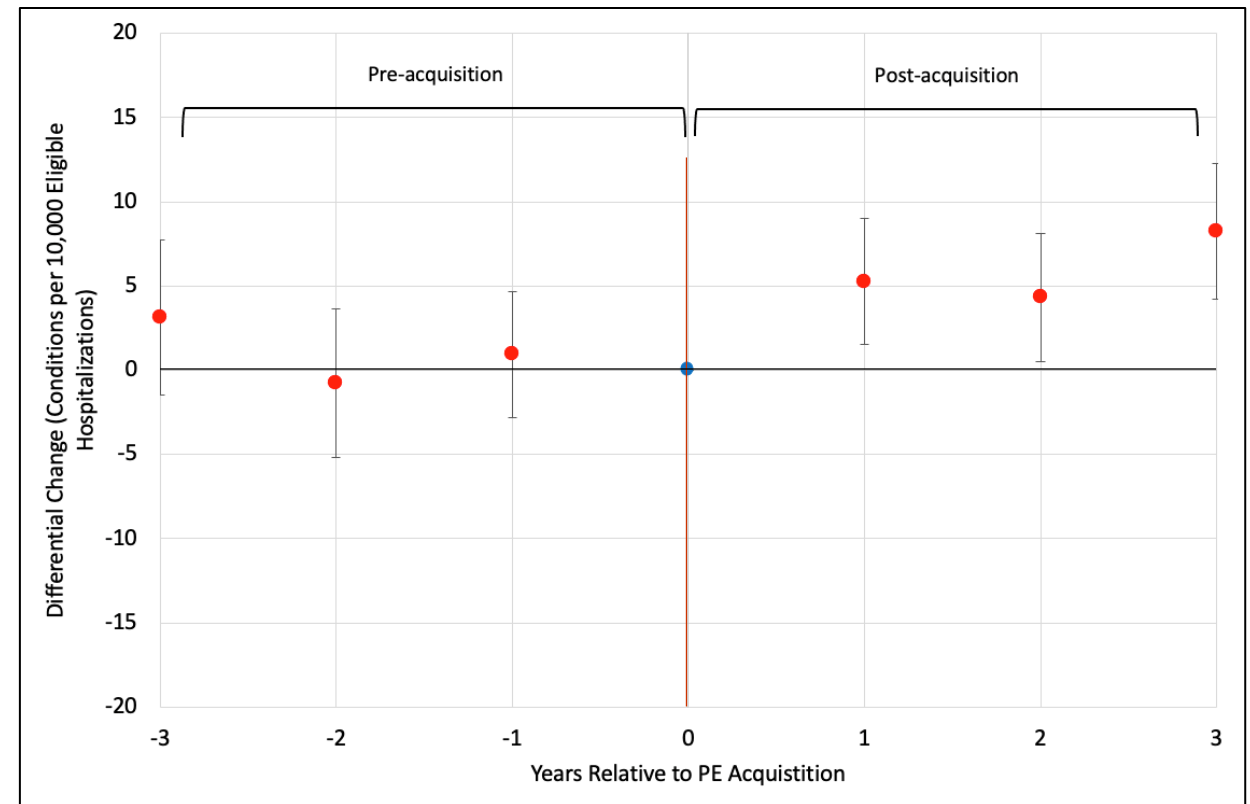
Empirical Strategy

Event study framework (difference-in-differences) – ordinary least squares (OLS) model

Hospitalization n, hospital i, matched group j, year k

$$\text{Outcome}_{nijk} = \alpha + \tau(\text{Exposure})_{nijk} + \sum_{y=1}^{3} \delta_y(\text{Year after acquisition})_{nijk}$$

$$+ \sum_{y=1}^{3} \beta_y(\text{Year after acquisition x Exposure})_{nijk} + \sum_{y=2010}^{2019} \gamma_y(\text{year})$$

$$+ \eta(\text{Age})_{nijk} + \theta(\text{Sex})_{nijk} + \kappa(\text{Race and Ethnicity})_{nijk}$$

$$+ \vartheta(\text{vW Elixhauser Score})_{nijk} + \sum_{y=0}^{25} \mu_y(\text{MDC})_{nijk} + \nu(\text{hospital})_i$$

$$+ \varepsilon_{nijk}$$

- MDC rather than DRG because complications arising from HACs can change the DRG

- Hospital fixed effects – adjusts for time-invariant attributes of the hospital (e.g. catchment area)

- Multiple inference adjustment: Bonferroni correction (adjusted p-values)

Acquisitions of Hospitals → ↑ Hospital-Acquired Complications

CMS Hospital-Acquired Conditions (HACs) – Composite
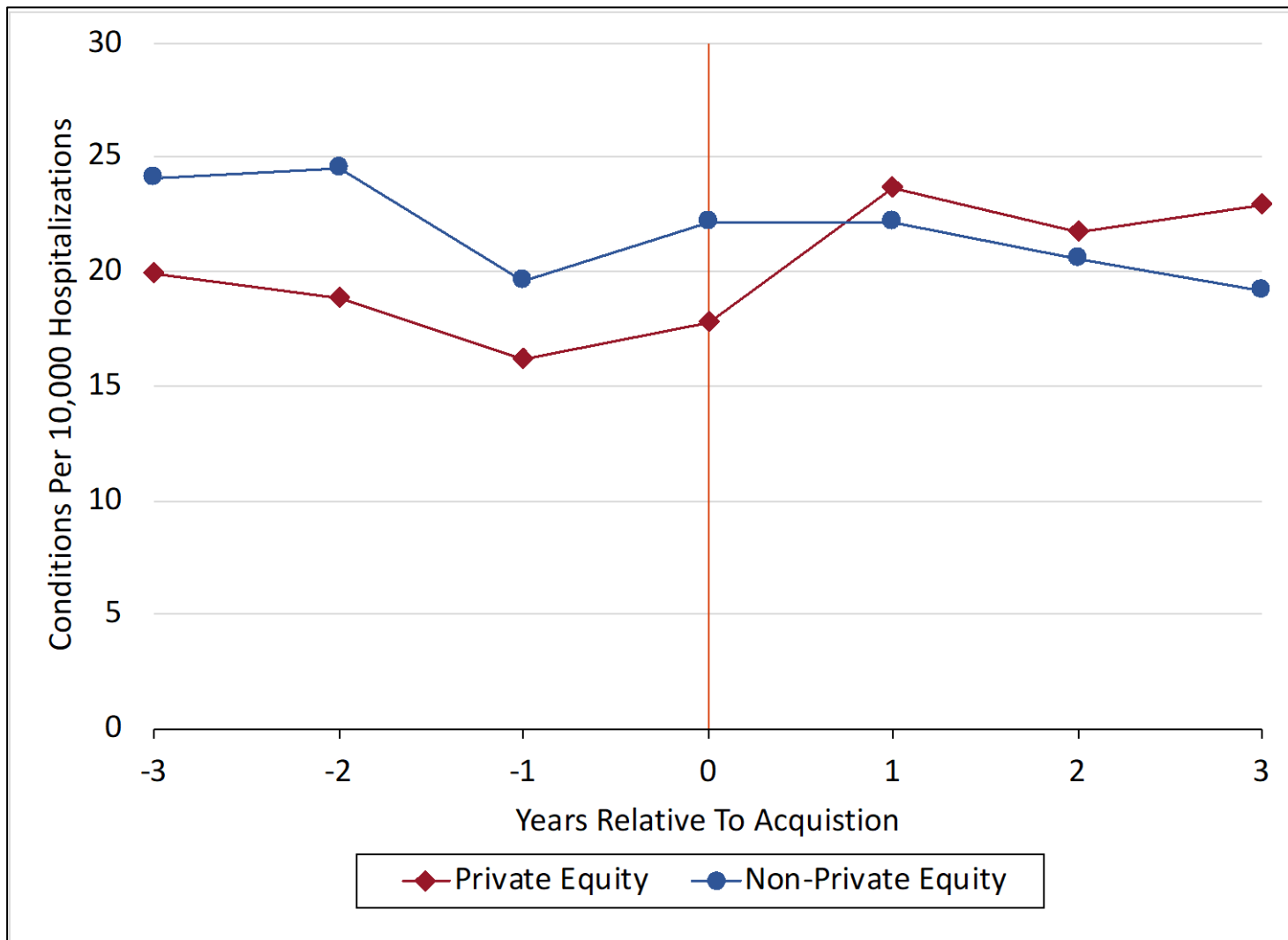
Relative to control, PE acquisitions increased:

Composite HACs — 25%
Falls — 27%
Central line infections — 38%
(Despite 16% fewer central lines)

Surgical site infections doubled at PE hospitals, while declining at controls.
(Despite 8% fewer surgeries performed)

Kannan S, Bruch J, Song Z. Forthcoming

Hospital-Acquired Conditions (Adverse Events)

	Hospitalizations at Private Equity Hospitals (N=662,095)		Hospitalizations at Matched Control Hospitals (N=4,160,720)		Unadjusted Difference-in-Differences (DID)	Adjusted DID (%) [95% CI]	Conventional P value	Bonferroni Adjusted P value[c]
	Pre PE	Post PE	Pre PE	Post PE				
Hospital Acquired Conditions (HACs) Composite Measure	18.1	22.1	22.0	20.7	4.6	4.6 (25.4) [2.0 to 7.2]	<0.001	0.004
Foreign body	0.3	0.4	0.4	0.3	0.2	0.2 (60.5) [-0.1 to 0.5]	0.23	>0.99
Pressure ulcers	1.5	2.0	1.6	1.9	0.2	0.3 (18) [-0.5 to 1.0]	0.48	>0.99
Falls	6.8	6.8	8.7	6.9	1.5	1.9 (27.3) [0.3 to 3.4]	0.002	0.02
Catheter-associated urinary tract infection (CAUTI)	1.8	3.2	3.6	4.7	0.2	0.3 (18.1) [-0.8 to 1.4]	0.57	>0.99
Central line-assoc. bloodstream infection (CLABSI)	4.0	6.1	3.9	3.8	2.0	1.5 (37.7) [0.4 to 2.6]	0.005	0.04
Poor glycemic control	0.8	1.1	0.8	0.8	0.3	0.1 (14.9) [-0.4 to 0.6]	0.64	>0.99
Surgical site infection (SSI)	(N=9,256) 10.8	21.6	(N=84,188) 17.5	12.6	15.1	16 (147.8) [-2.3 to 34.2]	0.09	0.69
Deep vein thrombosis/ pulmonary embolism (DVT/PE)[e]	(N=24,965) 65.6	58.4	(N=207,210) 50.9	41.7	2.2	2.2 (3.3) [-17.2 to 21.6]	0.83	>0.99

Kannan S, Bruch J, Song Z. Forthcoming

Volume of Procedures Eligible for Hospital-Acquired Condition Measures

Procedures (per 10,000 Hospitalizations)	Private Equity Group (N=662,095)		Control Group (N=4,160,720)		Unadjusted Difference-in-Differences (DID)	Adjusted DID (%) [95% CI]
	Pre-Acquisition (N=287,185)	Post-Acquisition (N=374,190)	Pre-Acquisition (N=1,776,090)	Post-Acquisition (N=2,384,630)		
Foley Catheters (CAUTI)	67.55	67.32	96.67	80.87	15.75	17.55 (26.0) [12.61 to 22.5]
Central Venous Catheters (CLABSI)	228.88	172.81	217.90	142.08	-27.45	-37.14 (-16.2) [-44.33 to -29.94]
Total Hip/Knee Arthroplasties (DVT/PE)	392.71	365.07	488.48	505.11	-38.76	0.98 (0.3) [-8.55 to 10.52]
Surgeries within SSI measure	161.05	123.58	202.46	202.29	-38.72	-13.06 (-8.1) [-20.49 to -5.64]
Coronary Artery Bypass Grafts (CABGs)	47.88	41.18	67.51	64.88	-4.25	6.99 (14.6) [2.66 to 11.32]
Bariatric Surgeries	17.65	14.64	13.01	12.93	-3.18	-3.08 (-17.5) [-5.09 to -1.08]
Orthopedic Surgeries	95.51	67.75	121.94	124.48	-31.29	-16.97 (-17.8) [-22.69 to -11.24]

Acquisitions of Hospitals → ↑ Emergency Department Mortality

Despite younger, healthier, and less disadvantaged:
- **12% ↑ in ED mortality** (52% ↑ for heart attack)
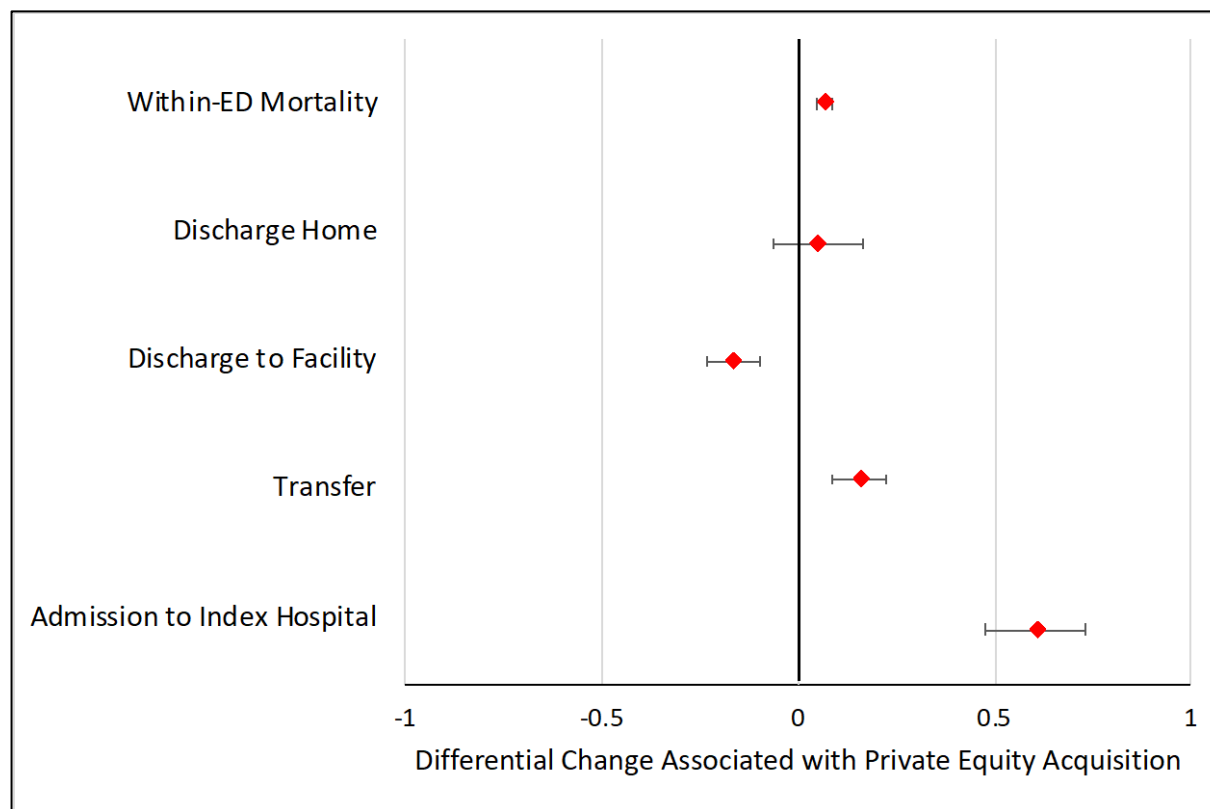
Relative to control, EDs of PE hospitals saw:
- **Younger** Medicare beneficiaries
- **Healthier** Medicare beneficiaries
- **Fewer dual eligible** (Medicare-Medicaid)

Kannan S, Bruch J, Song Z. Under review

Emergency Department Mortality

	Private Equity Group (N=1,043,656)		Matched Control Group (N=6,423,574)		Unadjusted Difference-in-Differences	Adjusted DID (%) [95% CI]	Conventional P value	Bonferroni Adjusted P value§
	Pre-Acquisition (N=447,112)	Post-Acquisition (N=596,544)	Pre-Acquisition (N=2,572,339)	Post-Acquisition (N=3,851,235)				
Deaths per 10,000 Beneficiaries	55.5	62.2	51.3	45.2	12.9	6.7 (12.0) [4.8 to 8.5]	<0.001	<0.001
Acute Myocardial Infarction	1.7	2.4	1.6	1.3	1.1	0.9 (51.8) [0.3 to 1.4]	0.001	0.006
Arrest	42.5	45.3	36.9	32.6	7.2	1.9 (4.6) [0.9 to 3.0]	<0.001	<0.001
Pulmonary	3.0	1.8	2.8	1.7	-0.1	0.2 (7.4) [-0.4 to 0.8]	0.47	>0.99
Other	8.4	12.7	10.0	9.6	4.7	3.7 (43.6) [2.3 to 5.1]	<0.001	<0.001

Kannan S, Bruch J, Song Z. Under review

Emergency Department Services for Heart Attack Patients
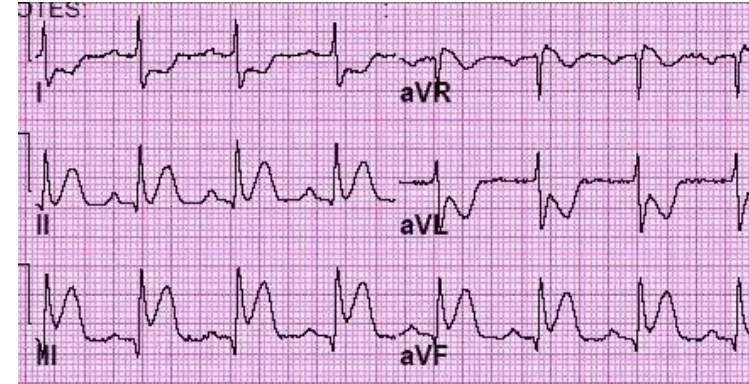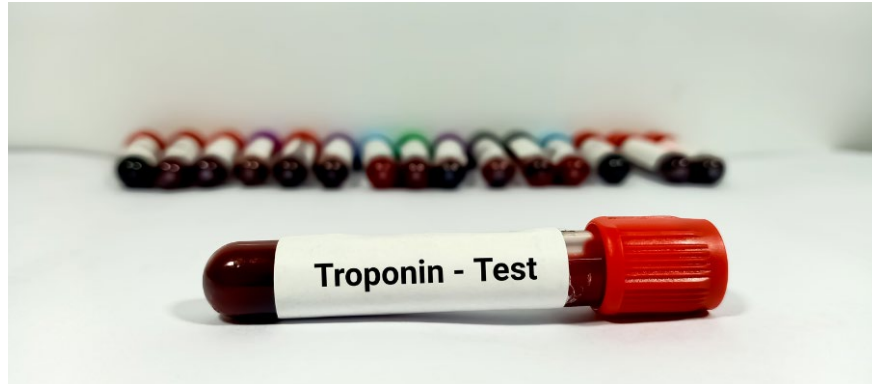
		Private Equity Hospitals		Matched Control Hospitals		Unadjusted Difference-in-Differences (DID)	Adjusted DID (%) (95% CI)
		Pre-Acquisition	Post-Acquisition	Pre-Acquisition	Post-Acquisition		
Acute Myocardial Infarction in the ED (N=14,103)	Troponin	90.1	89.0	93.2	93.1	-1.5	-1.3 (-1.5) [-2.6 to -0.1]
	ECG	89.4	83.8	92.9	92.0	-4.5	-2.8 (-3.1) [-5.5 to -0.1]
	Chest X-ray	78.7	75.0	83.6	83.1	-3.7	-3.3 (-4.2) [-7.1 to 0.5]
	Heparin	36.5	42.2	40.6	45.1	0.3	-1.3 (-3.5) [-5.8 to 3.2]

Colleagues at MGH

30-day Mortality for COVID and Non-COVID Hospitalizations
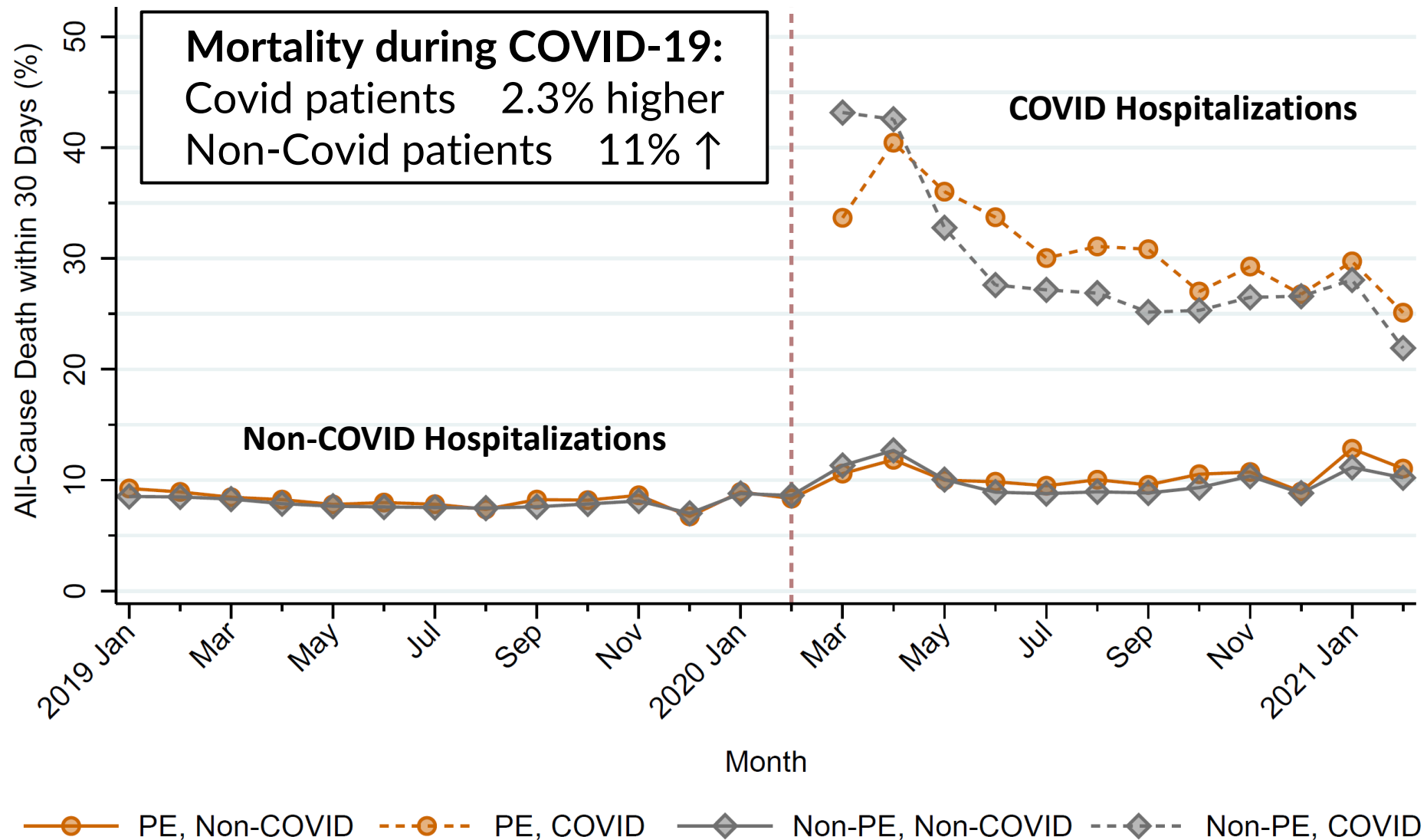
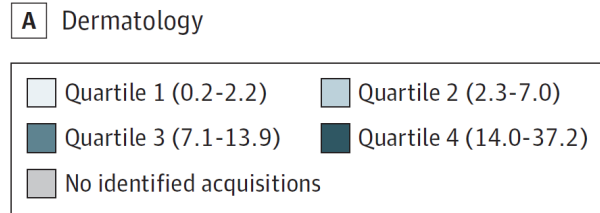Song Z, Patterson L, Bruch J, Zhang X, Haas D. In progress

Geographic Variation in Private Equity Penetration Across Select Office-Based Physician Specialties in the US

Yashaswini Singh, MPA; Jane M. Zhu, MD, MPP, MSHP; Daniel Polsky, PhD, MPP; Zirui Song, MD, PhD

JAMA Health Forum (2022)

Specialty	Count of physicians identified in PE-acquired practices	Count of physicians in office-based settings	Estimated PE penetration (%)
Gastroenterology	845	6,147	13.7
Urology	492	4,758	10.3
Dermatology	851	8,565	9.9
Women's Health	1,352	15,360	8.8
Ophthalmology	741	11,398	6.5
Orthopedics	460	15,588	3.0
Total	4,738	61,752	7.7

Figure 2. Geographic Variation in Private Equity (PE) Penetration by Physician Specialty and State

A | Dermatology

- Quartile 1 (0.2-2.2)
- Quartile 2 (2.3-7.0)
- Quartile 3 (7.1-13.9)
- Quartile 4 (14.0-37.2)
- No identified acquisitions

B | Gastroenterology

- Quartile 1 (0.4-2.0)
- Quartile 2 (2.1-9.7)
- Quartile 3 (9.8-16.7)
- Quartile 4 (16.8-43.3)
- No identified acquisitions

C | Ophthalmology

- Quartile 1 (0.3-2.0)
- Quartile 2 (2.1-5.5)
- Quartile 3 (5.6-7.3)
- Quartile 4 (7.4-21.3)
- No identified acquisitions

D | Orthopedics

- Quartile 1 (0.05-0.1)
- Quartile 2 (0.2-1.2)
- Quartile 3 (1.3-4.7)
- Quartile 4 (4.8-21.9)
- No identified acquisitions

E | Urology

- Quartile 1 (0.9-3.5)
- Quartile 2 (3.6-10.1)
- Quartile 3 (10.2-20.5)
- Quartile 4 (20.6-48.3)
- No identified acquisitions

F | Obstetrics/gynecology

- Quartile 1 (0.1-0.8)
- Quartile 2 (0.9-4.0)
- Quartile 3 (4.1-13.9)
- Quartile 4 (14.0-37.2)
- No identified acquisitions

Original Investigation

Association of Private Equity Acquisition of Physician Practices With Changes in Health Care Spending and Utilization

JAMA Health Forum (2022)

Yashaswini Singh, MPA; Zirui Song, MD, PhD; Daniel Polsky, PhD, MPP; Joseph D. Bruch, PhD; Jane M. Zhu, MD, MPP, MSHP

Table 1. Characteristics of PE- and Non–PE-Acquired Physician Practices at Baseline, 2015

Characteristic	Mean (SD)	
	PE-acquired	Non−PE-acquired[a]
Physician practices, No.	578	2874
Charge/claim, mean $	322 (258)	332 (326)
Allowed amount/claim, mean $	187 (136)	178 (136)
Total No.		
Unique patients	94 (182)	88 (172)
New patients	72 (136)	67 (132)
Encounters	124 (237)	118 (224)
E&M visits	75 (188)	72 (180)
Share of E&M visits >30 min		
New patients	0.26 (0.15)	0.26 (0.21)
Established patients	0.19 (0.17)	0.18 (0.22)
Patient HCC score, median	1.21 (1.05)	1.28 (1.10)

20% increase in charges
11% increase in prices

Chart: US dollars (y-axis) vs Quarters relative to PE acquisition (x-axis, −4 to 8)
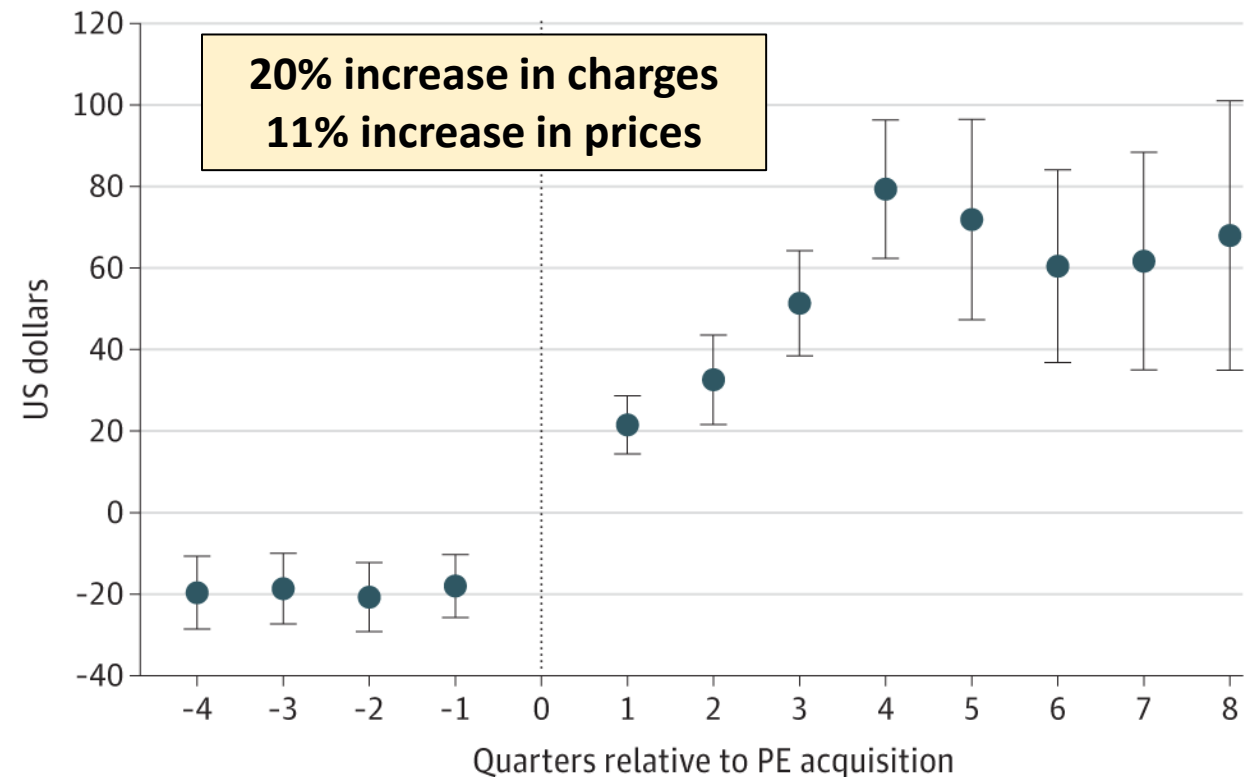
Relative to control, PE acquisitions led to:
16% increase in aggregate volume
26% increase in unique patients
38% increase in new patient visits
9% increase in long (>30 min) visits

JAMA
Health Forum

A Unique patients per practice

B New patients per practice

Singh Y, Song Z, Polsky D, Bruch JD, Zhu JM. JAMA Health Forum. 2022

By Joseph Dov Bruch, Canyon Foot, Yashaswini Singh, Zirui Song, Daniel Polsky, and Jane M. Zhu
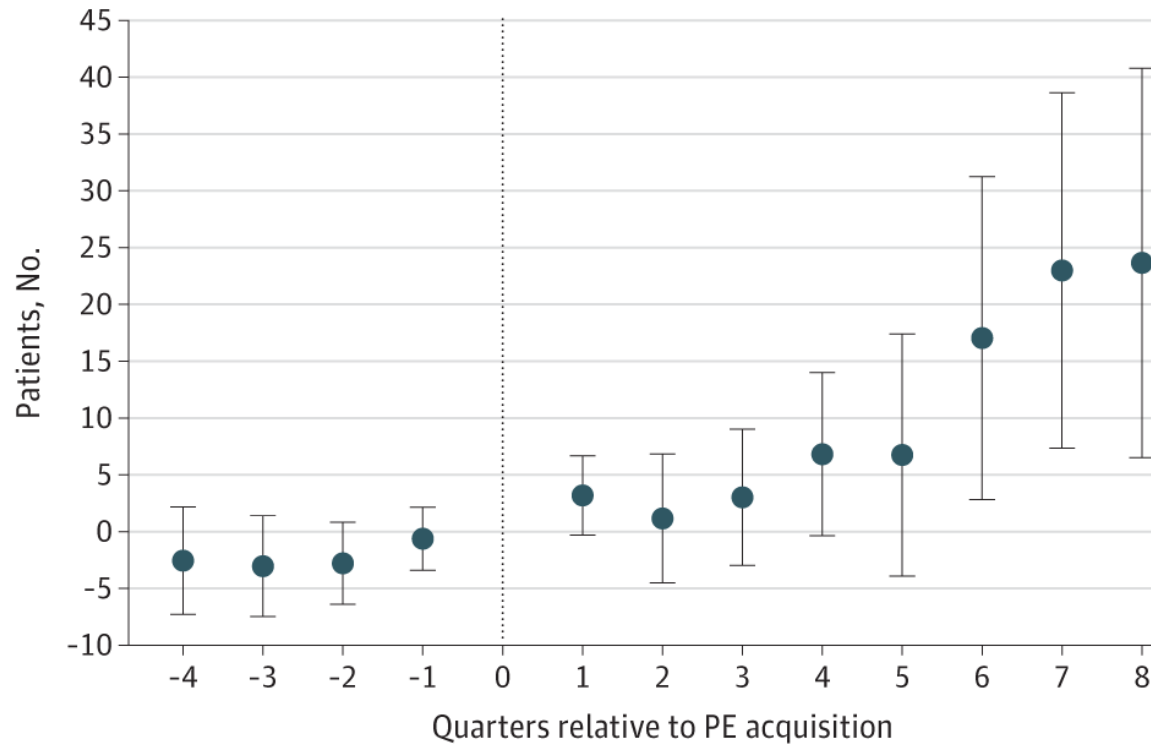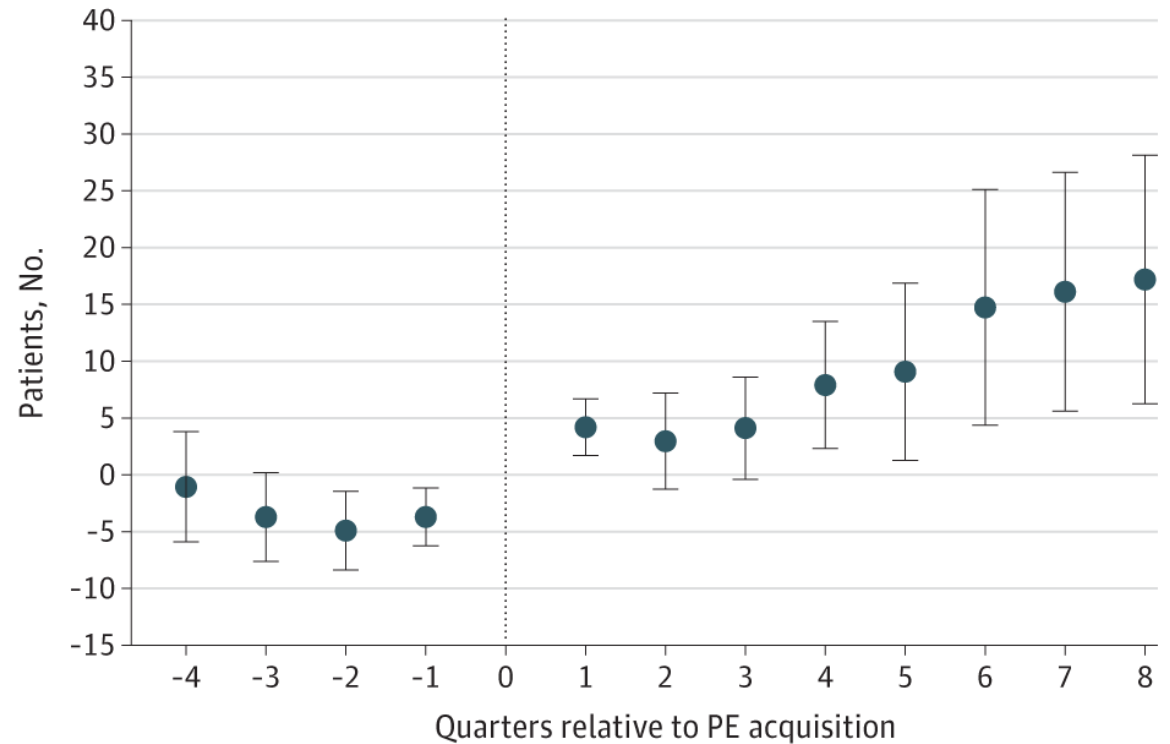
Workforce Composition In Private Equity–Acquired Versus Non–Private Equity–Acquired Physician Practices

HealthAffairs

Clinician replacement ratios for advanced practice providers and physicians in private equity (PE)-acquired and non-PE-acquired practices in the US, by specialty, 2014–19
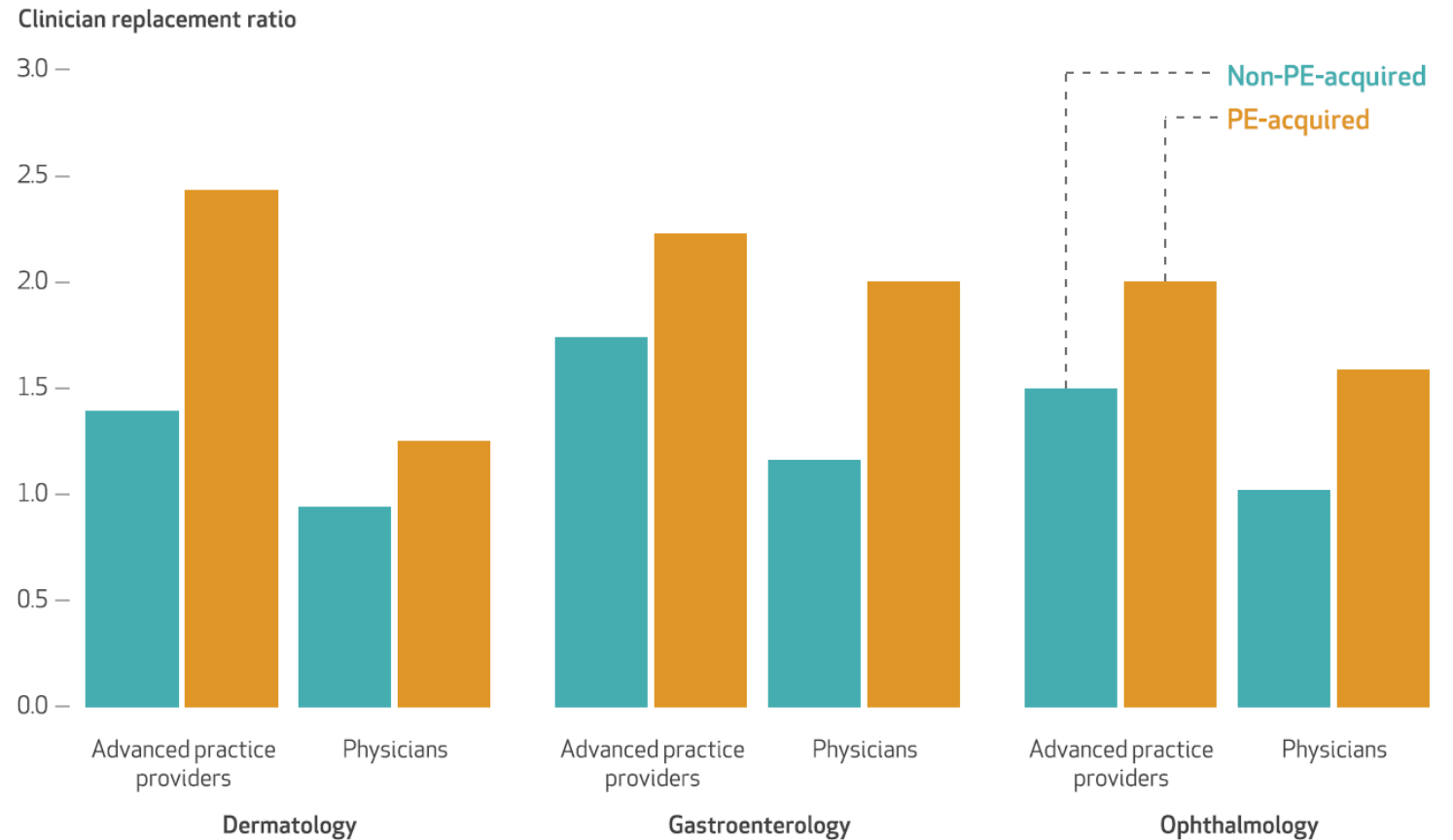
Relative to hospital-based GI practices, private equity GI practices increased spending by 28%, driven by a 78% increase in professional fees.

(a) Physician professional fees per claim
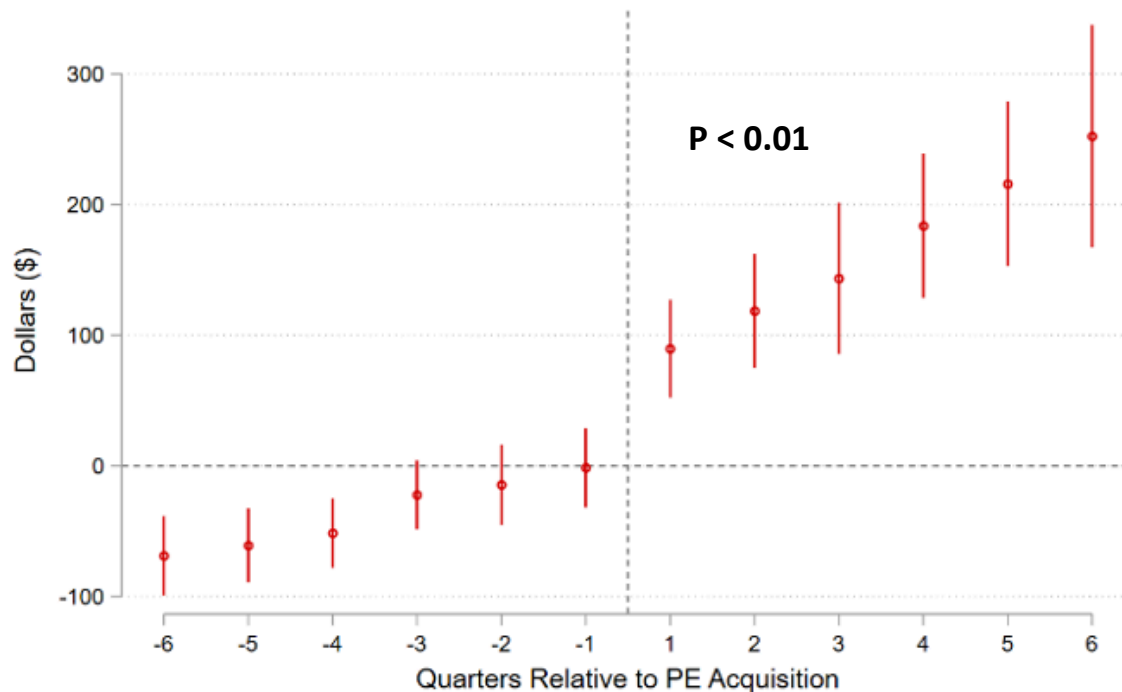
(b) Facility fees per claim

P < 0.01

P = 0.53

Singh Y, Song Z, Polsky D, Zhu JM. In progress
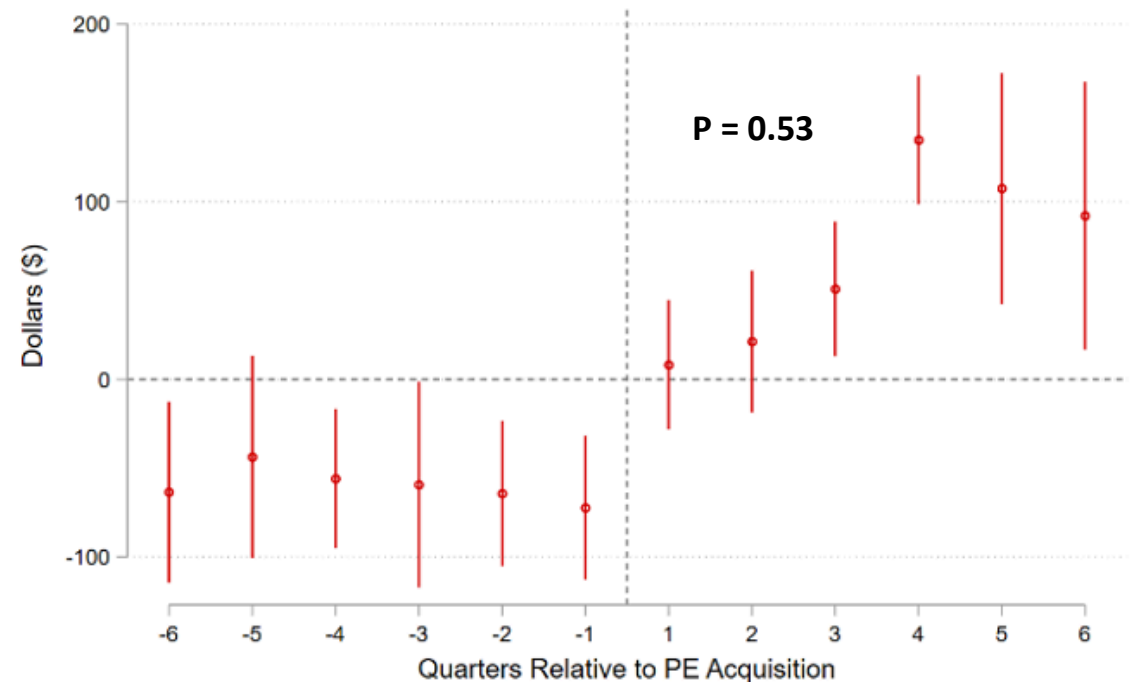
Additional Evidence on Acquisitions of Physician Practices

Percent of dermatologist claims made by private equity (PE) dermatologists, by hospital referral region, 2017

Claims by PE dermatologists
- 0%
- >0%–15%
- >15%–30%
- >30%–50%
- >50%–70%
- >70%–90%
- >90%–100%
- Data not available
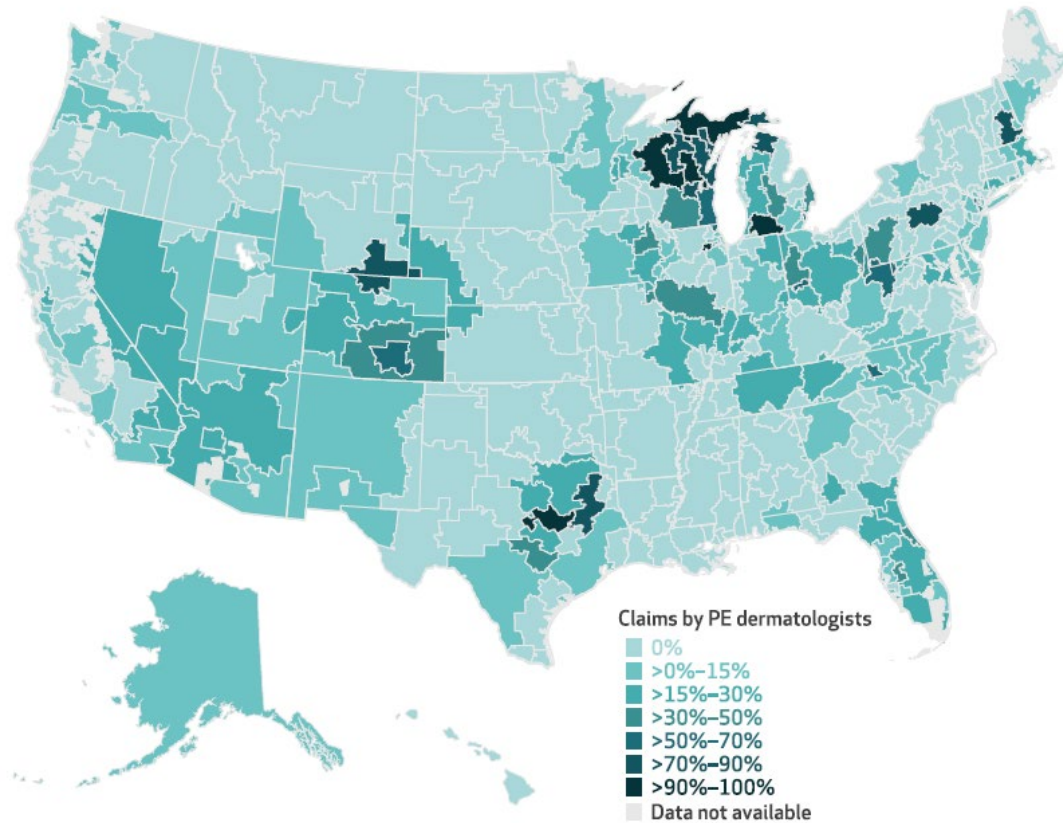
Effect of private equity acquisition on the price of a routine dermatology office visit, by quarter, 2012–17
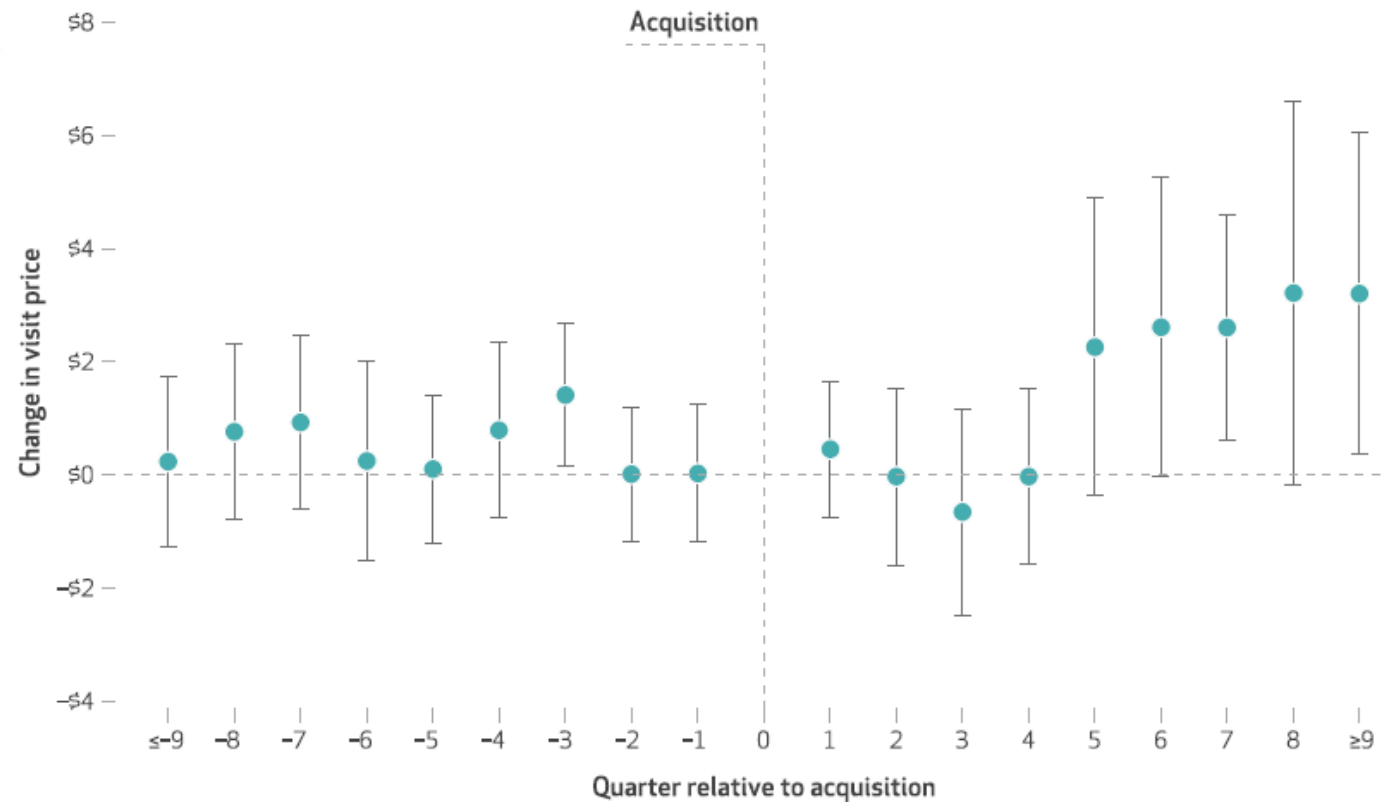
"At 1.5 years after acquisition, prices paid to private equity dermatologists for routine medical visits were 3-5 percent higher than those paid to non-private equity dermatologists. There was no significant consistent impact on dermatology spending or use of biopsies, lesion destruction, or Mohs surgery."

Braun RT, Bond AM, Qian Y, Zhang M, Casalino LP. Health Affairs. 2021.

Additional Evidence on Acquisitions of Physicians

Association of Physician Management Companies and Private Equity Investment With Commercial Health Care Prices Paid to Anesthesia Practitioners

Ambar La Forgia, PhD; Amelia M. Bond, PhD; Robert Tyler Braun, PhD; Leah Z. Yao, BS; Klaus Kjaer, MD, MBA; Manyao Zhang, MA; Lawrence P. Casalino, MD, PhD
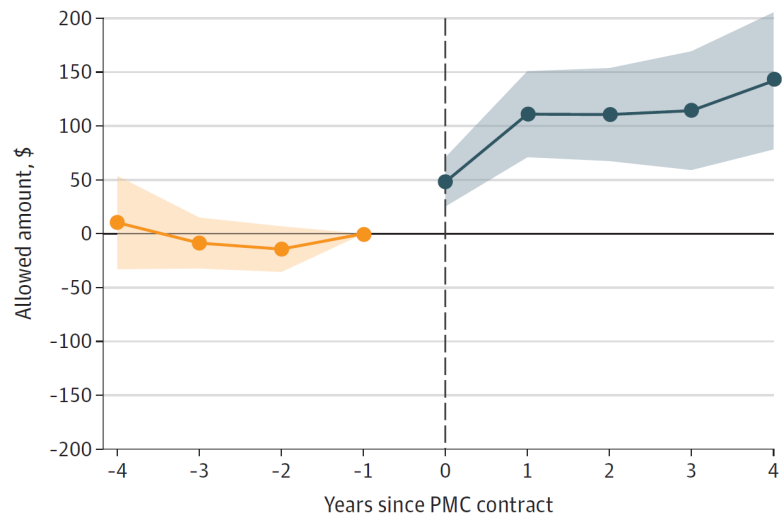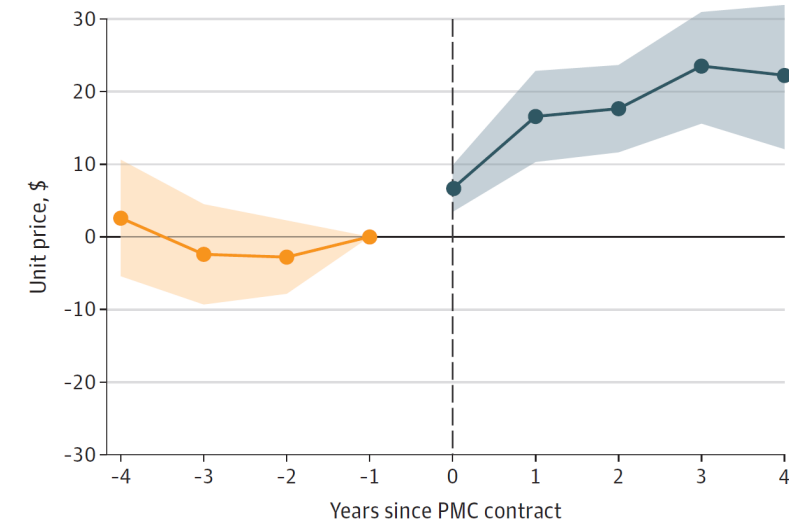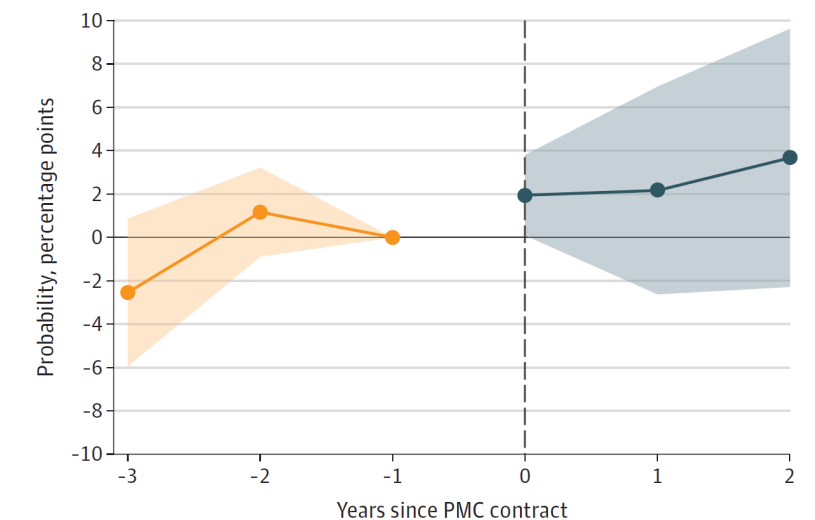
Figure 2. Adjusted Differential Changes in Outcomes Associated With Physician Management Company (PMC) Contract With and Without Private Equity (PE) Investment
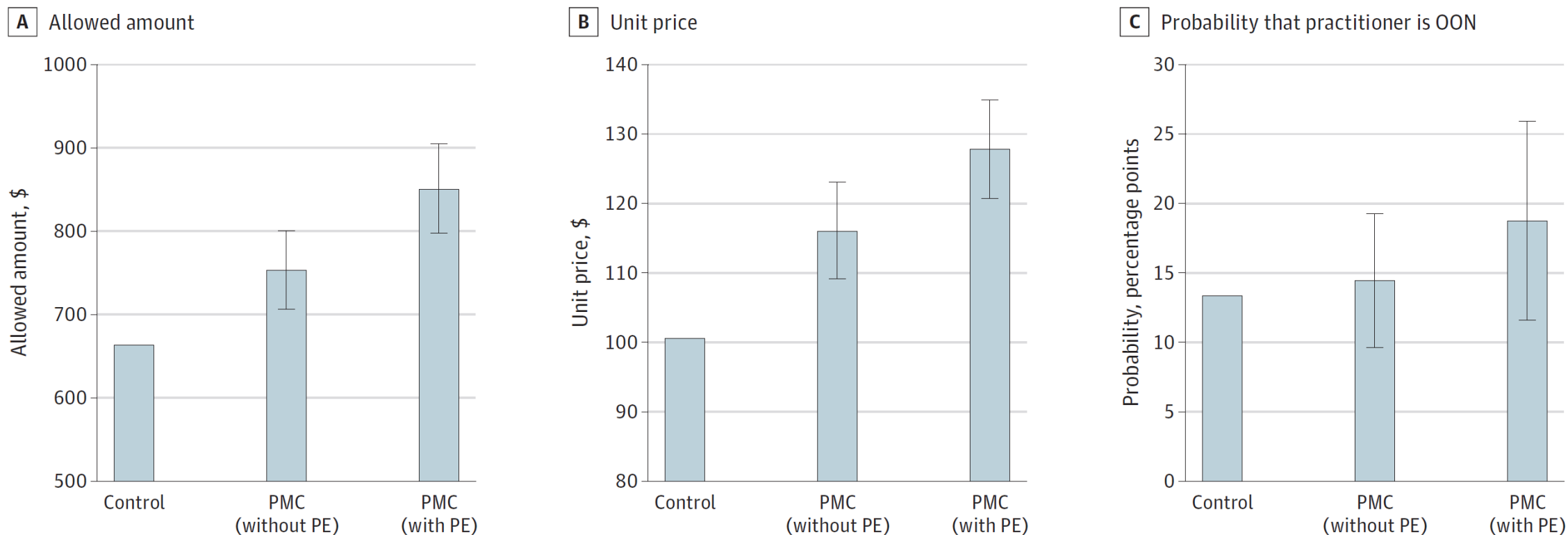

Adjusted difference-in-differences estimates from the specification interacting the post-PMC contract indicator with an indicator for whether the PMC received PE investment, relative to the regression-adjusted mean value of the control facilities, are shown. Therefore, the difference between the height of the PMC bars and the control bar represents the differential change in each outcome relative to control facilities, with the corresponding 95% CIs (error bars). The regression-adjusted difference (95% CI) between PMCs with PE relative to without PE is as follows: +$97.18 ($35.38 to $158.97) for allowed amounts, +$11.71 ($4.46 to $18.95) for unit prices, and +4.34 percentage points (−2.11 to 10.79) for the probability that a practitioner is out-of-network (OON). See eTable 9 in the Supplement for the regression output.

Horizontal Physician Practice Consolidation → Higher Prices

MD prices 14-30% higher in most vs. least concentrated markets
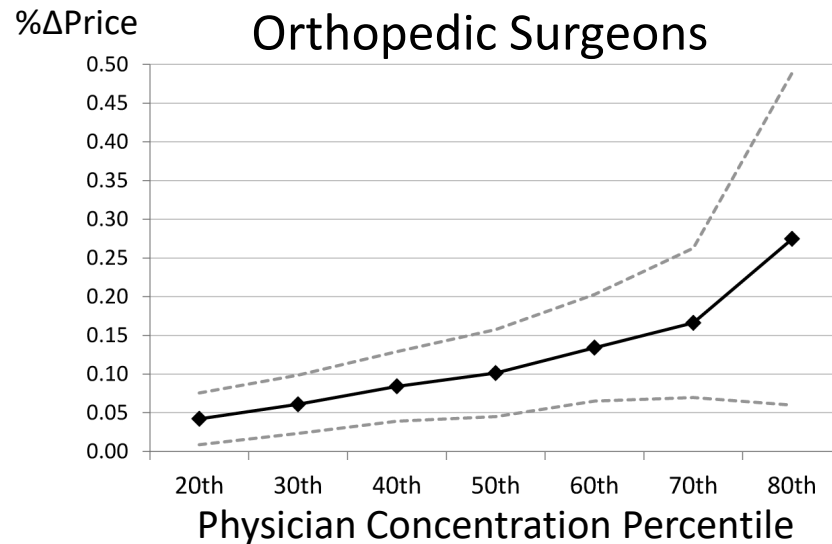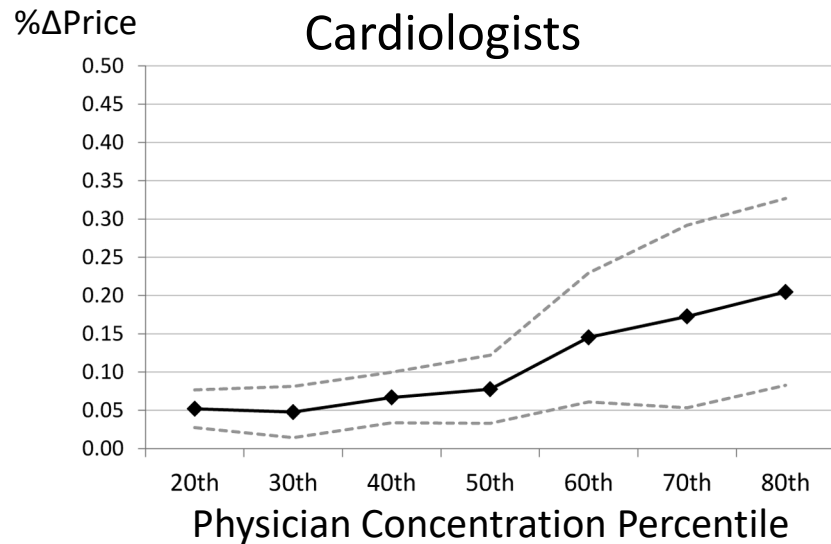
MD consolidation raises prices more in more concentrated markets

: Prices ↑ 10-14%

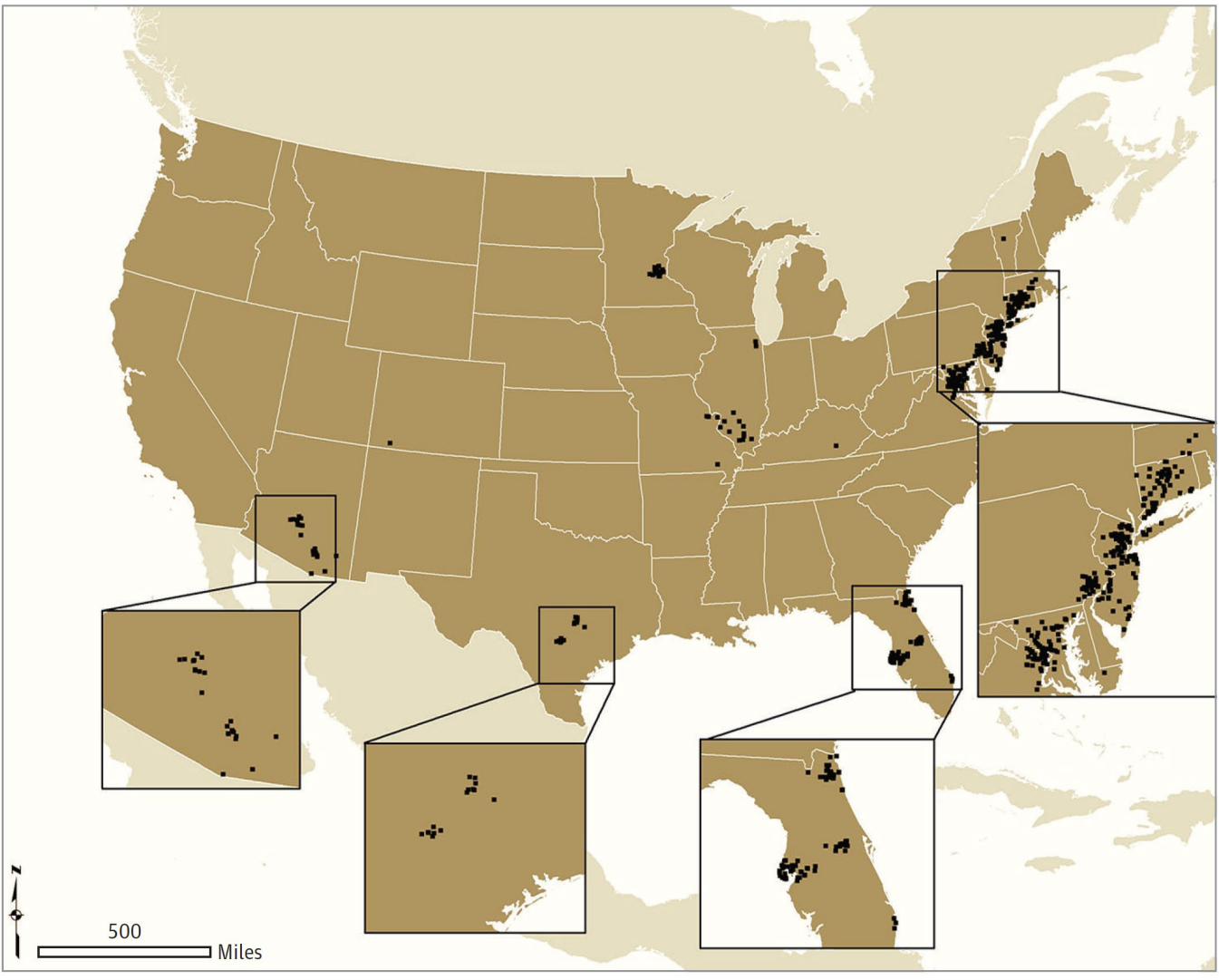Dunn and Shapiro. Journal of Law and Economics. 2014

Physician Perceptions of Private Equity

Q. Compared to the following forms of ownership in the health care sector, is private equity ownership...

|	Much better	Somewhat better	About the same	Somewhat worse	Much worse
Independent physician ownership	6%	14%	13%	24%	28%
Not-for-profit hospital or health system ownership	6%	11%	20%	28%	22%
For profit hospital or health system ownership	3%	10%	40%	23%	8%
Other corporate ownership (e.g. Optum, CVS)	2%	12%	38%	22%	9%

base: n=525

Zhu JM, Zeveney A, Read S, Crowley R. Under review

Figure. Private Equity–Affiliated Obstetrics/Gynecology (OB/GYN) Offices in 2020
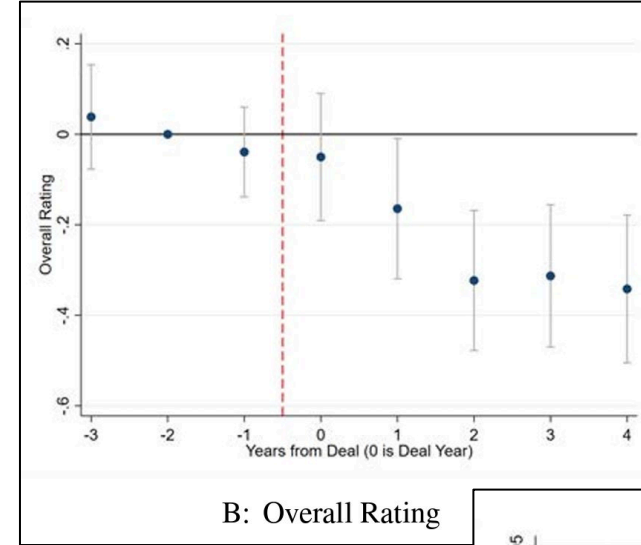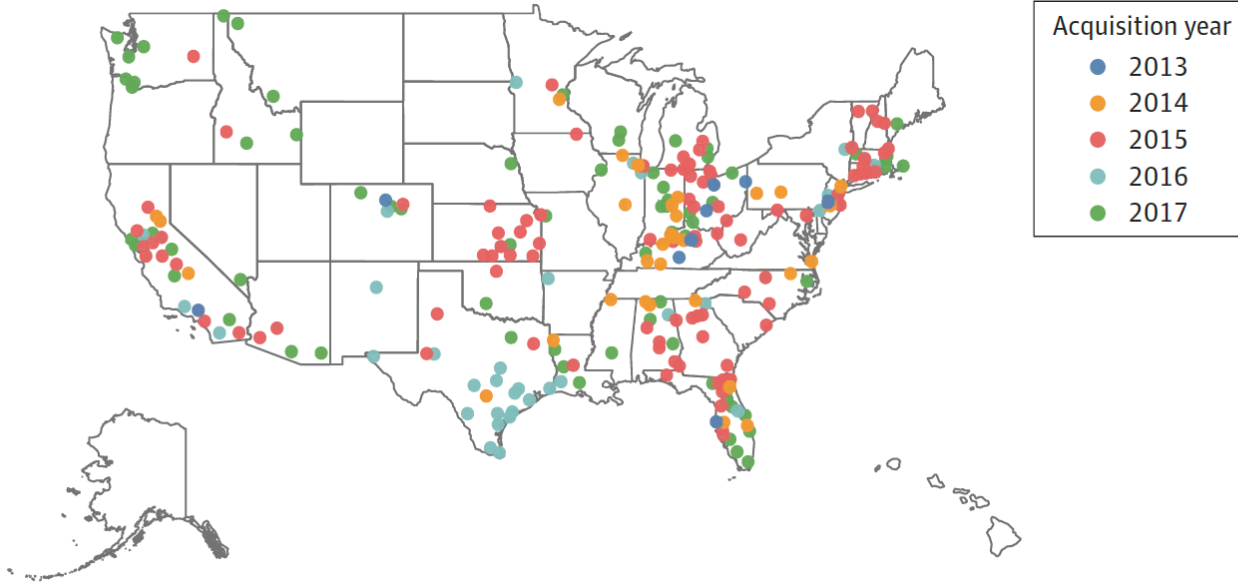

500 Miles

We mapped 533 OB/GYN offices in 2020, excluding the 180 hospitals contracted with Ob Hospitalist Group and 439 offices without identifiable locations. No mapped offices were located in Alaska or Hawaii.

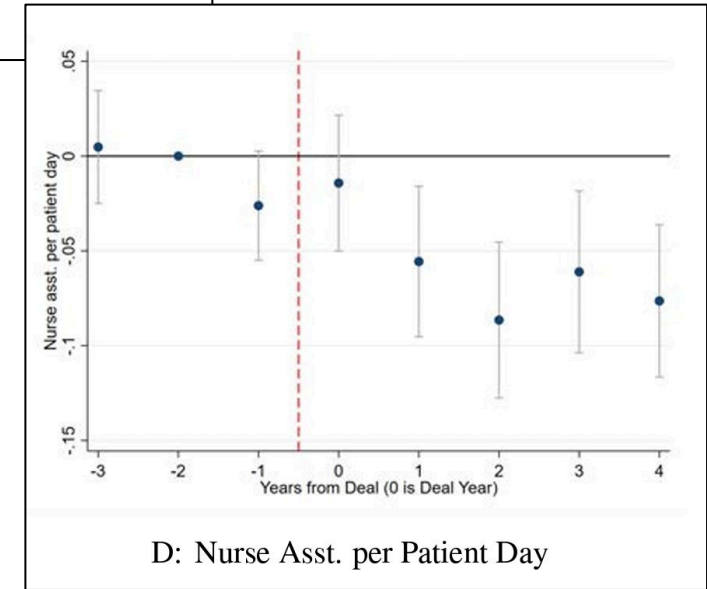Bruch JD, Borsa A, Song Z, Richardson SS. JAMA Intern Med. 2020
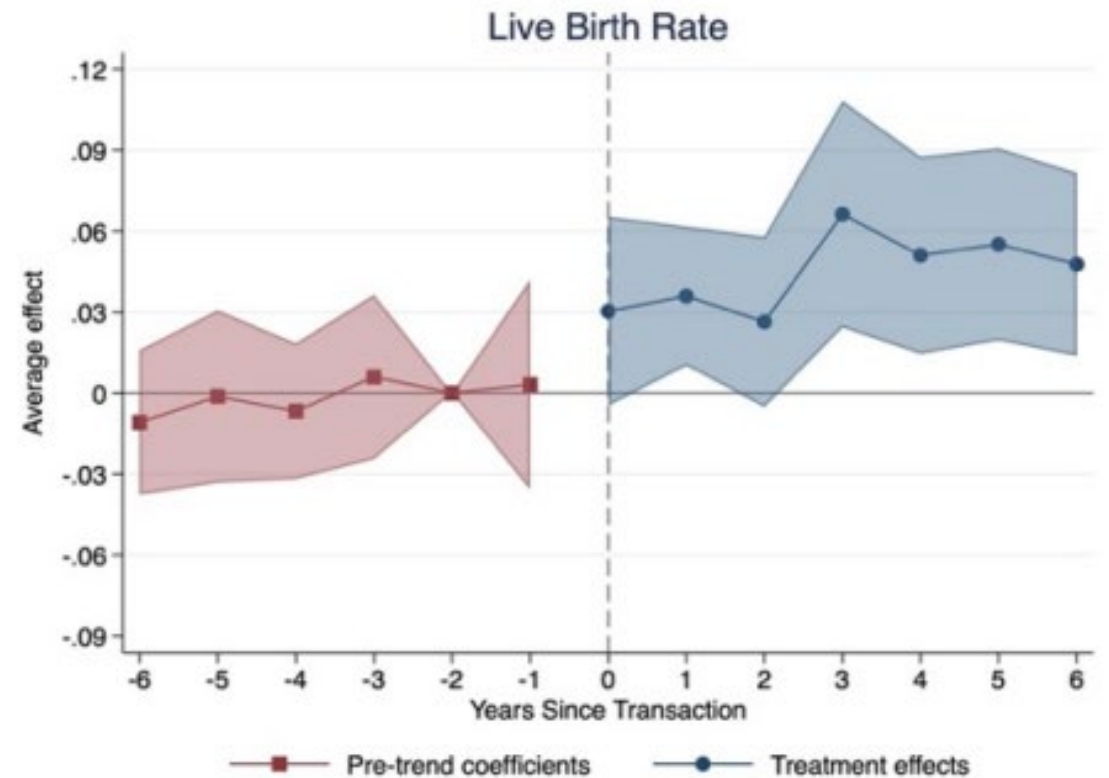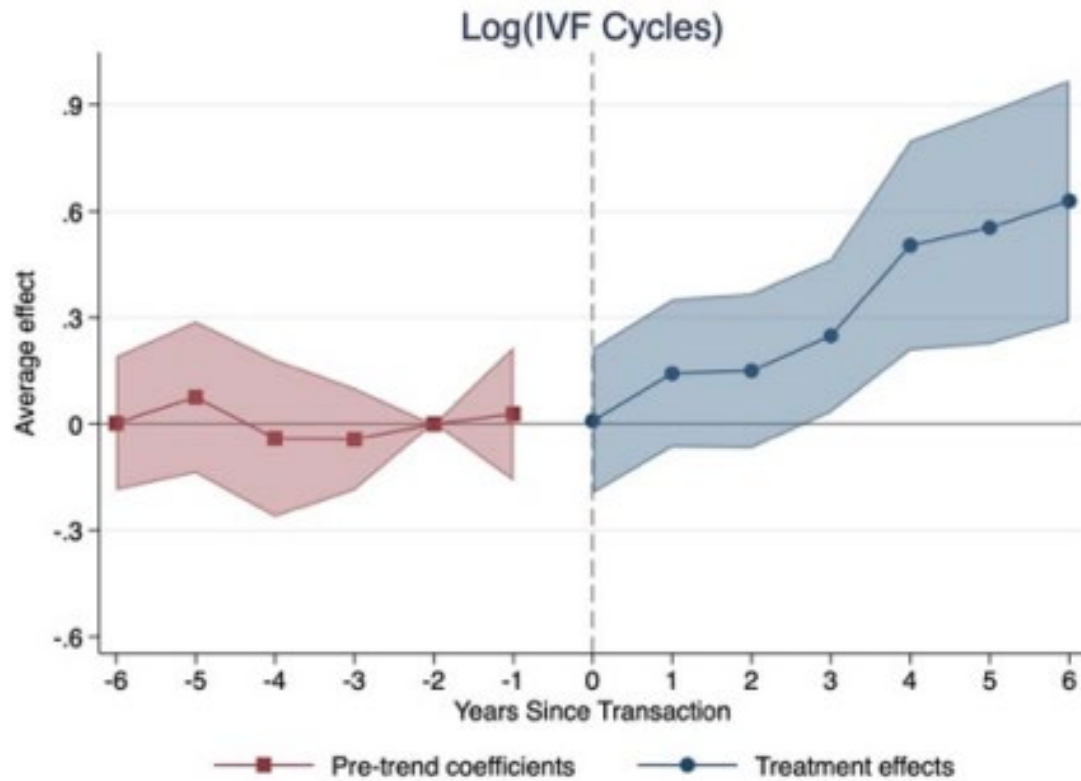
Private equity invests in 8 of 11 fertility chains. Total IVF price = $40-60K.
Acquisition → 28% ↑ in volume, 14% ↑ in IVF success rate.
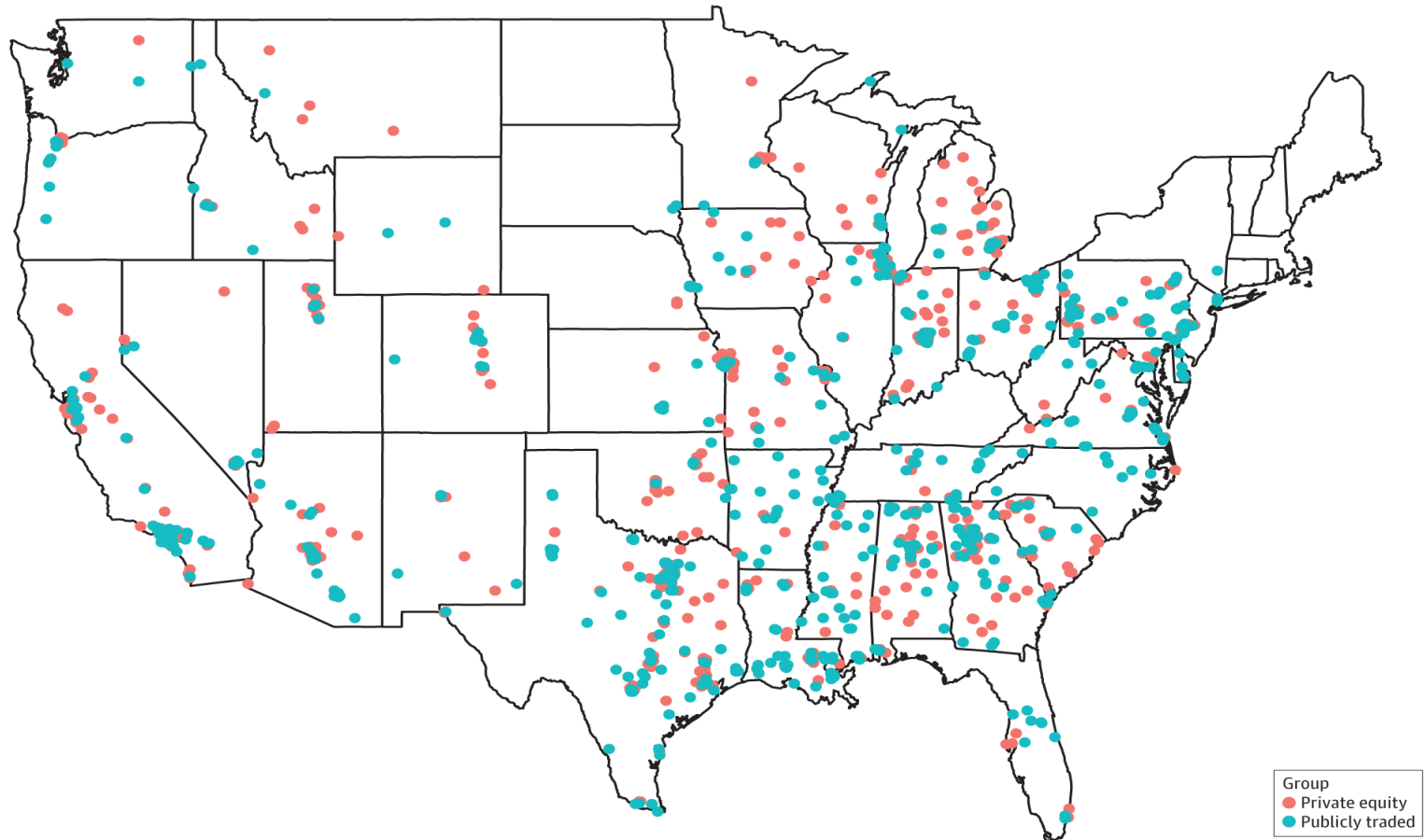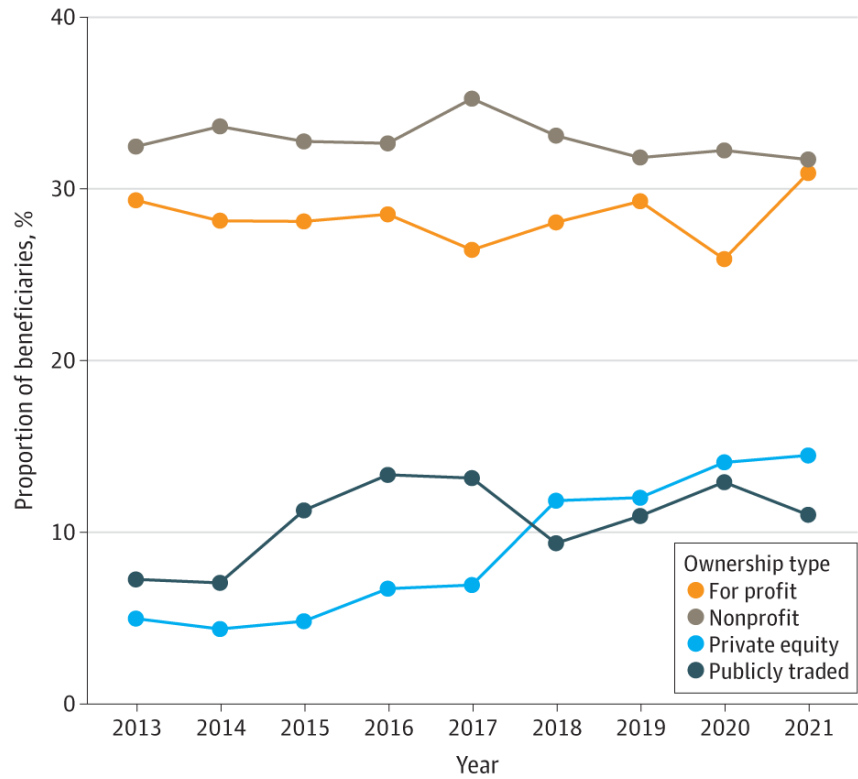No evidence of patient selection.

La Forgia and Bodner (2023) Working paper

To Older Age – Nursing Homes

Acquisition year
- 2013
- 2014
- 2015
- 2016
- 2017

B: Overall Rating

D: Nurse Asst. per Patient Day

PE acquisitions increased:

ED visits	11%
Hospitalizations	9%
Medicare spending	4%
Mortality	10%

Braun R, Jung HY, Casalino L, Myslinksi L, Unruh M. JAMA Health Forum. 2021   Gupta A, Howell S, Yannelis C, Gupta A. 2021. NBER Working Paper 28474

To the End of Life – Hospice

Braun RT, Unruh MA, Stevenson DG, Prigerson HG, Fernandez R, Yao LZ, Casalino LP. JAMA Network Open. 2023
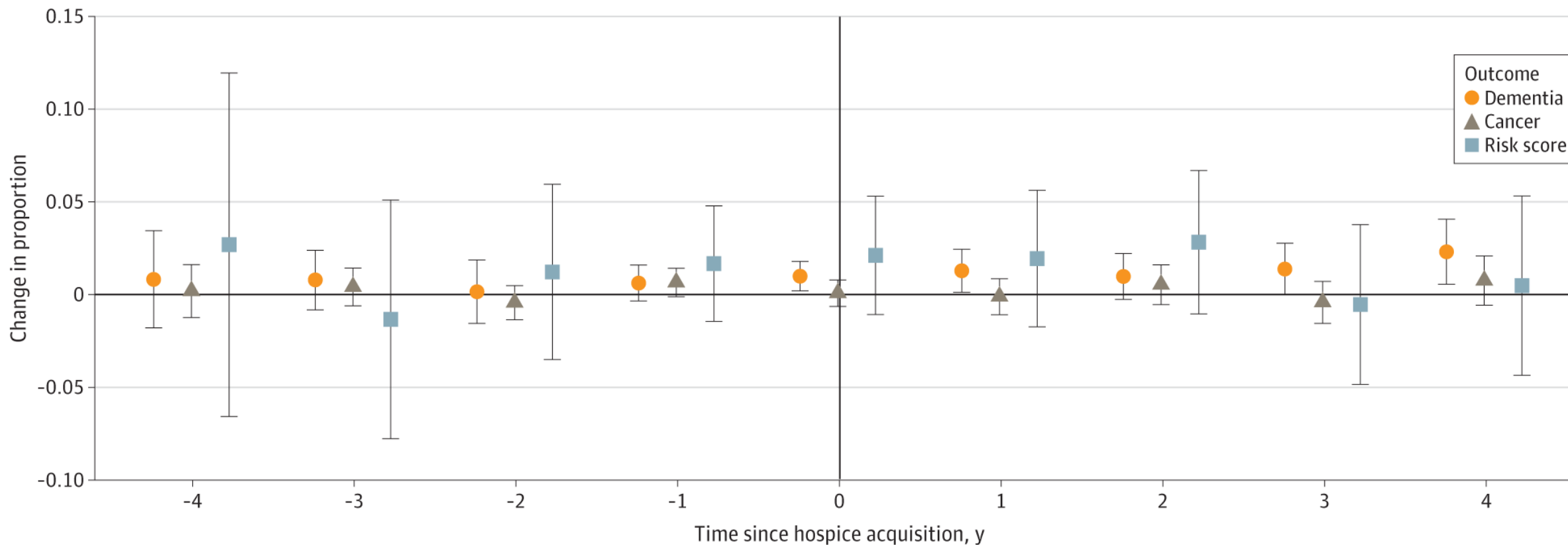
From the End of Life – Hospice

A. Private equity

6% ↑ in patients with dementia in PE hospices relative to control

Braun RT, Unruh MA, Stevenson DG, Prigerson HG, Fernandez R, Yao LZ, Casalino LP. JAMA Network Open. 2023

Policy Framework for Private Equity

F	Fraud & abuse	Enforce federal statutes including Anti-Kickback, Stark Laws
A	Antitrust	A) Federal: improve staffing and bandwidth for oversight at FTC B) State: state AGs, "corporate practice of medicine" laws
M	Moral hazard	A) Affiliation rule that ties acquired entities to the parent PE firm B) Limit the % debt used to make an acquisition C) Closure of the 20% carried interest "loophole"
P	Patients & prices	A) No Surprises Act prohibiting surprise billing in certain situations B) Price regulation to mitigate arbitrage incentive of consolidation
T	Transparency	Lower the threshold ($111.4 million) for mandatory reporting of PE acquisitions and the % debt used in the acquisition.

Corporate Practice of Medicine Laws at the State Level
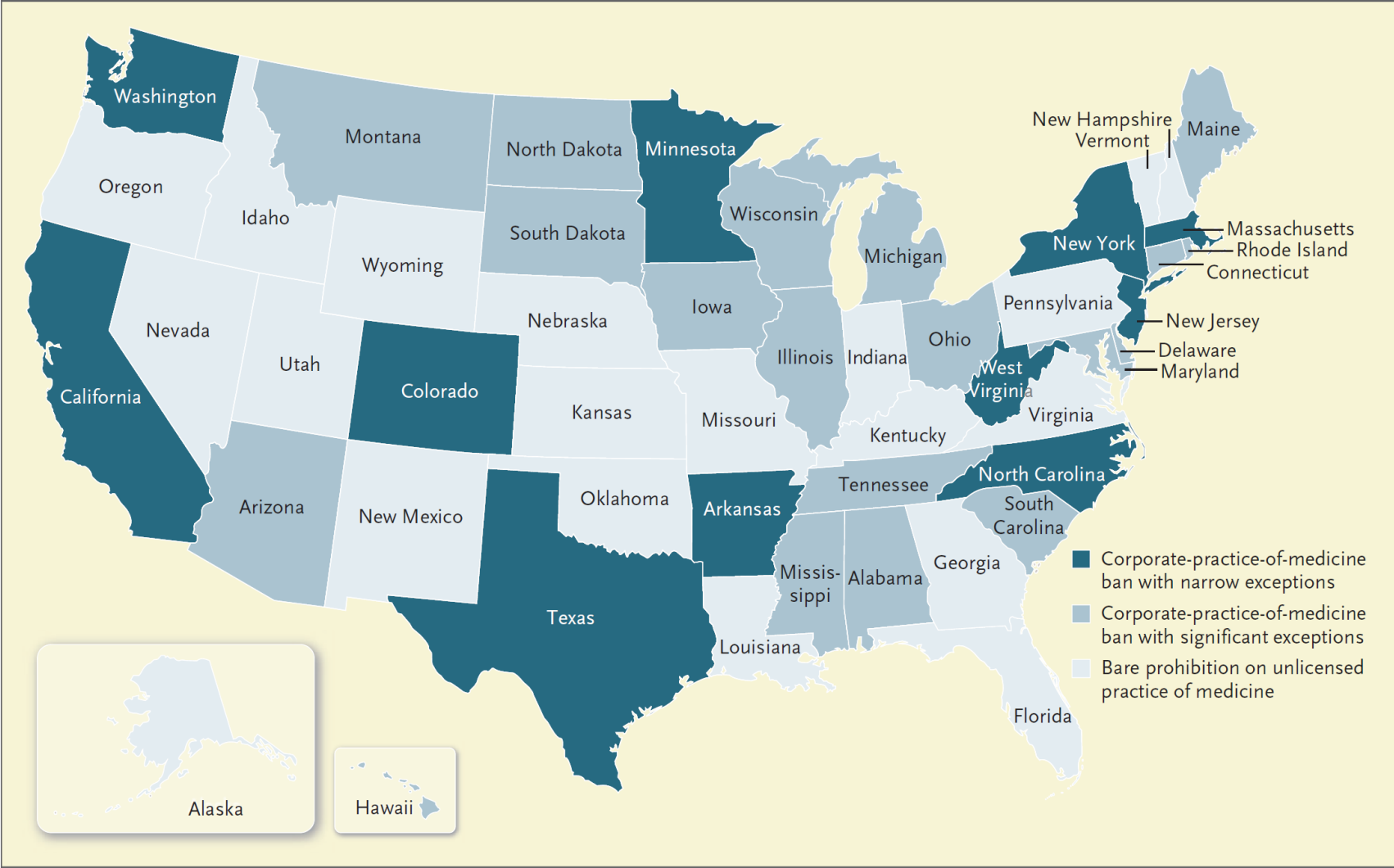
Scope of State Corporate-Practice-of-Medicine Laws in the United States.

Information is based on the authors' analysis of primary documents and summaries of legal texts as of April 2023.

Zhu JM, Rooke-Ley H, Fuse-Brown E. NEJM. 2023

To

Subject

Dear Dr. ████████████

Our sincere condolences for the loss of your patient.

The Clinical Documentation Integrity (CDI) team reviews the charts of all deceased patients to make sure that the documentation captures the full complexity of the case. Having performed this review, we would appreciate your thoughtful attention to the Clinical Documentation query below.

There are 3 CDI queries for you in Epic. Access the drop down options by using F2 when completing the query. If needed, further instructions are at the bottom of this email.