Patient Privileges in Medicine: How Patients' Insider Knowledge, Social Ties, and Organizational Rank Shapes Clinical Decisions

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Motivation

- Physicians respond to financial incentives, but does this apply equally to all patients?
- How do patients' privileges shape physicians' response to incentives?
  - insider knowledge
  - social ties to the treating physician
  - administrative authority
- If not equally $\Rightarrow$ Efficiency costs of misaligned incentives may fall disproportionately on the least privileged patients $\Rightarrow$ Inequality $\uparrow$
- $*$ *Direct comparisons across patient groups may be confounded by unobserved differences*

This Paper

- Leverage a policy shock to physicians' financial incentives and examine how physicians' strategic responses differ by patients' insider knowledge, ties to physicians, and administrative rank
  - China's Zero Markup Drug Policy (ZMDP)
    – Remove 15% drug markup in public hospitals
- Unique measures allow **separate** identification
  - **Insider info:** working in the healthcare sector
  - **Social ties + insider info:** working in the same hospital as physician
  - **Organizational rank + ties + insider info:** same-hospital administrative leader

Preview of Findings

- Insiders' treatment barely responds to ZMDP
  – *Insider patients* defined as those working in healthcare institutions
- Non-insiders: drug costs $\downarrow$, non-drug costs $\uparrow\uparrow$, total costs $\uparrow$, health outcomes unchanged
- The cost-escalating effects of ZMDP grow monotonically as patients' privilege decreases
- In mitigating cost escalation: Insider knowledge $>$ social ties $\gg$ organizational rank

Contribution

- **Patient characteristics and physician behavior**
  Johnson & Rehavi (2016); Schwab & Singh (2024); Chen et al. (2025); Currie et al. (2026)
  $\Rightarrow$ Separately identify three channels: insider knowledge, social ties, and organizational rank

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- **Physicians' response to financial incentives**
  Clemens & Gottlieb (2014); Alexander (2020); Fang et al. (2021); Shi et al. (2023)
  $\Rightarrow$ Response is heterogeneous: cost-escalating effects fall disproportionately on the least privileged patients

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- **Social ties and resource allocation**
  Fisman (2001); Cohen et al. (2008); Li (2017)
  $\Rightarrow$ Disentangle insider knowledge, social ties, and rank in an important setting

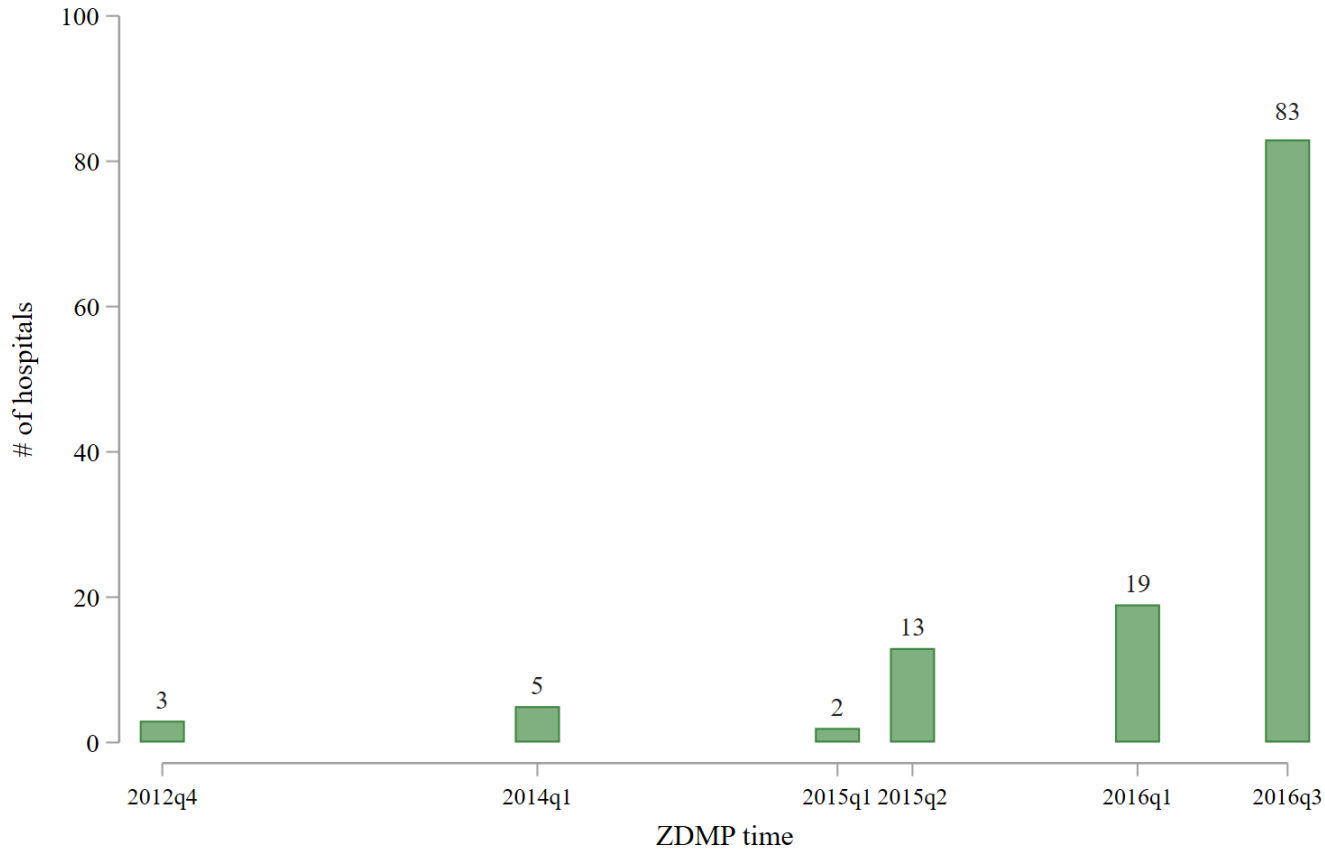
Institutional Background: China's Healthcare System

- Public hospitals dominate: 88% of outpatient, 85% of inpatient services
- Hospital financing:
  - Fee-for-service reimbursement
  - Revenue from: service charges + drug sales (>40%) + government subsidies (<10%)
  - Hospital pharmacies dispense ~80% of all prescription drugs
- Physician compensation:
  - Low base salary + bonus linked to revenue contribution
  - Bonus can be up to 75% of total income
  - $\Rightarrow$ Physicians and hospitals share aligned financial incentives

Institutional Background: ZMDP Reform

- Since 1950s: hospitals are allowed for 15% markup over drug procurement prices
  - Intended to offset declining government subsidies
  - Created incentives for over-prescription
- **Zero Markup Drug Policy (ZMDP):** eliminates the 15% markup
  - Piloted in 2009, nationwide by 2017
  - Compensation: increased service fees + government subsidies
- **Our setting: Changsha, Hunan Province**
  - The earliest adoption: October 2012, rural township hospitals
  - 102 of 125 urban hospitals adopted ZMDP in 2016
  - Private hospitals not subject to ZMDP

ZMDP: Timeline



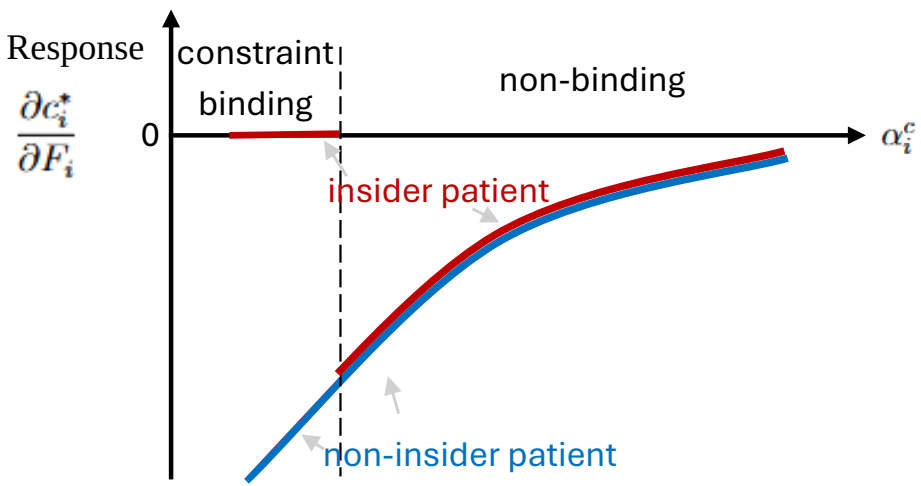
ZMDP Time in Changsha

Conceptual Framework

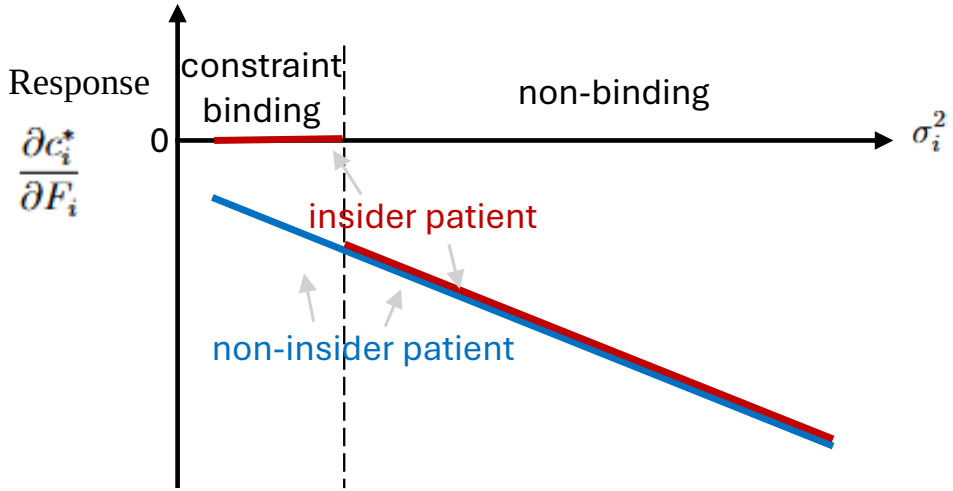
- Two treatment options: non-invasive (n) vs. invasive (v)
- Patient utility from invasive care: $U_i^v = \xi_i - \kappa_i$
  - ξ_i: severity (unobserved by patient; physician gets noisy signal)
  - κ_i: patient characteristics (common knowledge)
- Physician utility: $M_i^v = \alpha_i^c \cdot U_i^v + F_i$
  - α_i^c: altruism, $\uparrow$ with social ties
  - F_i: financial incentive to do surgery
- Physician observes noisy signal: $s_i = \xi_i + \epsilon_i, \quad \epsilon_i \sim N(0, \sigma_i^2)$
  - σ_i^2 lower for high-rank patients $\Rightarrow$ more precise signal
- Key behavioral distinction:
  - Non-insiders: passively follow physician recommendation
  - Insiders: Bayesian, may reject biased recommendations

Response to Financial Incentives Varies by Patient Type

- ZMDP increases F_i (surgery becomes relatively more profitable)
- Non-insiders: $\frac{\partial c_i^*}{\partial F_i} = -\frac{1}{\alpha_i^c}(1+\sigma_i^2)$ (always responds)
- Insiders: response is **zero** when obedience constraint binds
  - Stronger ties $\Rightarrow$ larger α_i^c $\Rightarrow$ smaller response
  - Higher rank $\Rightarrow$ smaller σ_i^2 $\Rightarrow$ smaller response



(a) $\frac{\partial c_i^*}{\partial F_i}$ w.r.t. ties



(b) $\frac{\partial c_i^*}{\partial F_i}$ w.r.t. rank

Data

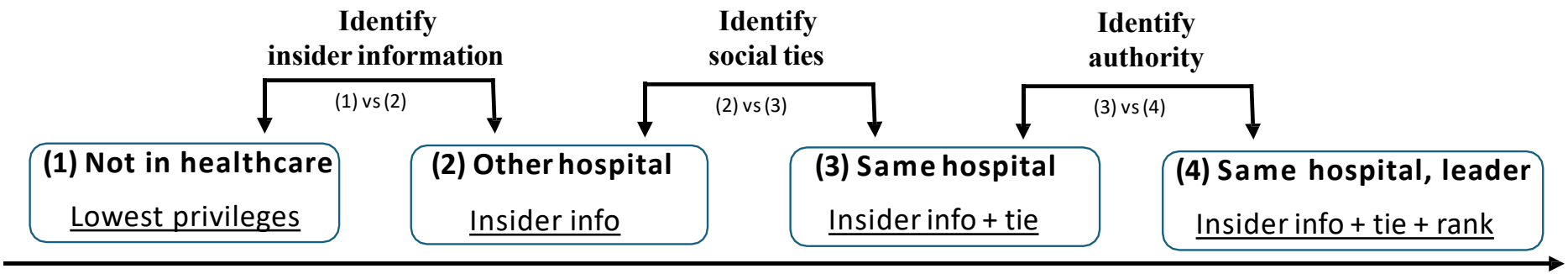
- Medical insurance claim data in Changsha
  - 2010–2018
  - Inpatient claim data + expense details
- Social security beneficiary data in Changsha
  - 2010–2018
  - Workplace, rank, proxy for income*: UEBMI
  - Mortality
- Characteristics of Changsha
  - Population: $>$ 10 million
  - Area: 11,819 km^2
  - 6 urban districts, 3 suburban counties
  - Annual wage in 2020: 101,114 RMB

Sample and Key Variables

- Orthopedic patients
  - Discretionary decision making between conservative treatment (medication) and intensive treatment (surgery)
  - 1/6 of all hospital claims
- Insider/Non-insider patients:
  - Insider patients: Patients who work in a health care institution
  - Non-insider patients: Patients who do not work in a health care institution
- High rank: Administrative classification is cadre
- Key outcome variables:
  - Total drug costs, Surgical costs, diagnostic tests, imaging tests, medical services, total medical costs,
  - Length of stay, readmission rates, mortality rates

▸ Summary Statistics

Use Data to Separately Identify the Role of Each Trait



Quasi-experimental Setting

- Key assumption: ZMDP changes physicians' incentives but not patient-physician matching
  - Test 1: No differential change in patient volume
    - Between public and private hospitals
    - Within public hospitals by pre-ZMDP drug revenue share
  - Test 2: No differential sorting across four subgroups
    - Hospital tier choice unchanged
    - Patient demographics (age, gender) unchanged
  - ▸ Results
- **Potential confound:** ZMDP also changes patient-facing prices
  - Lower drug prices $\Rightarrow$ patients demand *more* drugs
  - Higher service prices $\Rightarrow$ patients demand *fewer* services
  - Both work *against* the patterns we find $\Rightarrow$ our estimates understate the physician response

Efficiency Benchmark

- **Key assumption:** Most privileged patients' care is least distorted by the drug markup incentive
- **Supporting evidence:** Pre-ZMDP, same-hospital high-rank patients:
  - Received $\sim$3 fewer unique drugs
  - Incurred $\sim$1,800 CNY less in total costs per claim
  - Exhibited better health outcomes

  $\Rightarrow$ More efficient care, not under-treatment
- **Caveat:** We do not claim insiders receive first-best efficient care
  - Only that their treatment is least elastic to the markup incentive
  - The gradient across groups provides a lower bound on distortion for less privileged patients

▸ Pre-ZMDP Comparison

Empirical Strategy: Insiders vs. Non-insiders

- Separate DiD for insiders and non-insiders:

$$y_{iht}^{V} = \alpha_0 + \beta^{V}\text{ZMDP}_{ht} + X_{it} + \gamma_h + \mu_t + \varepsilon_{iht}^{V}$$

  - Compare public vs. private hospitals, before vs. after ZMDP
  - Estimated separately for $V \in \{\text{insider, non-insider}\}$

- Triple-difference: differential impact on non-insiders vs. insiders

$$y_{iht} = \alpha_0 + \beta\text{Noninsider}_i \cdot \text{ZMDP}_{ht} + \delta\text{ZMDP}_{ht}$$
$$+\theta public_h \cdot Noninsider_i + X_{it} + \gamma_h + \mu_t + \varepsilon_{iht}$$

- Controls: age cohort, gender, ICD-10 diagnosis (first 3 digits), patient's affiliated hospital tier, treating hospital FE, quarter FE

Mechanisms: Pairwise Comparisons

- Four patient groups: (1) non-insiders, (2) different-hospital insiders, (3) same-hospital low-rank, (4) same-hospital high-rank
- Sequential pairwise comparisons isolate each channel:

Comparison	**Identifies**
(1) vs. (2)	Insider knowledge
(2) vs. (3)+(4)	Social ties
(3) vs. (4)	Organizational rank

- Gradient specification: all four groups, benchmarked against same-hospital high-rank (most privileged)

$$Y_{iht} = \alpha_0 + \sum_{g=1}^{g=3} \beta^g Subgroup_i * ZMDP_{ht} + \sum_{g=1}^{g=3} \eta^g Subgroup_i + \delta ZMDP_{ht} + \gamma_h + \mu_t + \varepsilon_{iht},$$

Results: Insider vs. Non-insider Patients during ZMDP

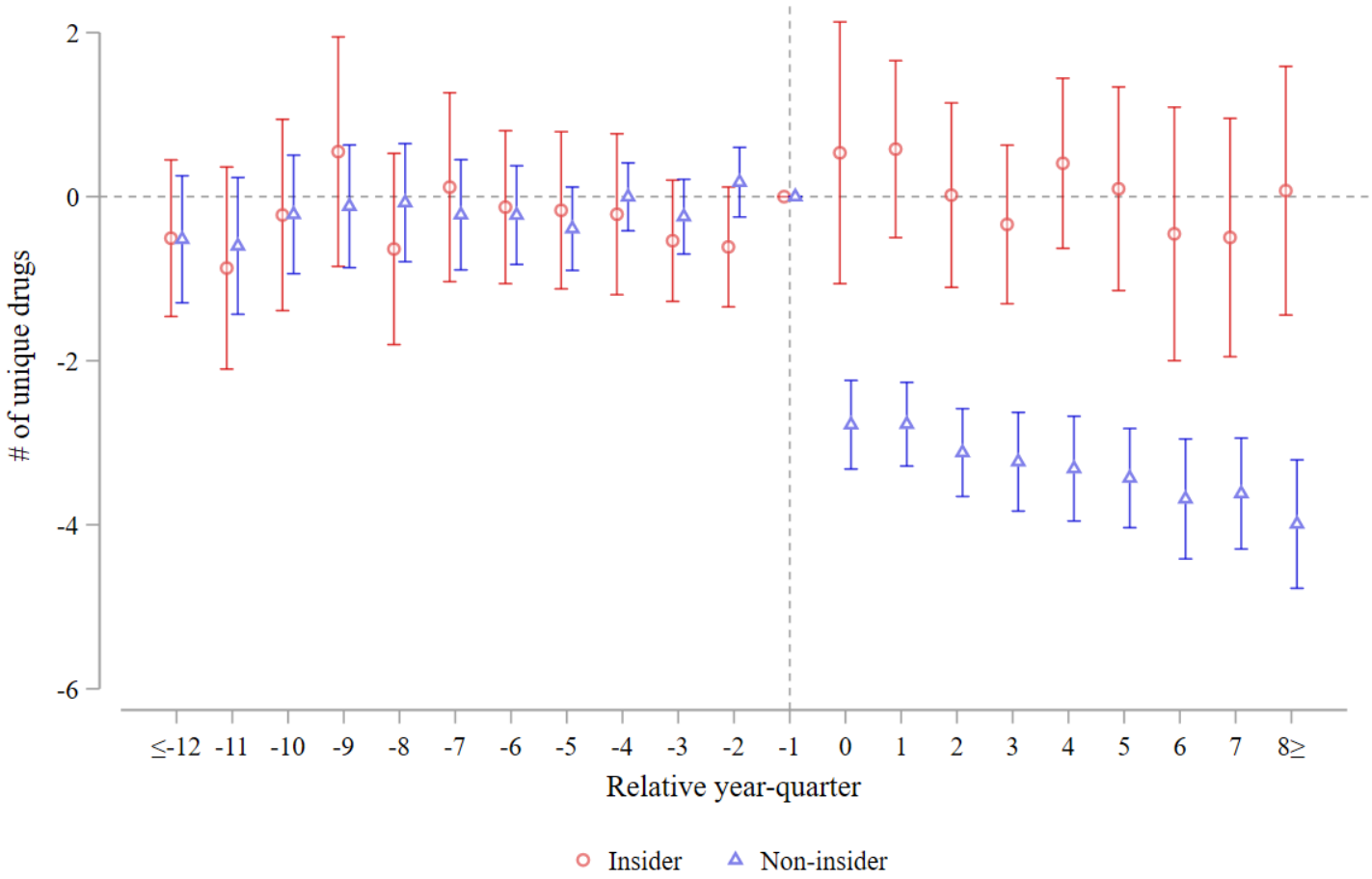
Panel A. Non-insider patients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
ZMDP	-3.06***	0.14***	6.35***	2.79***	1,668.20***	0.62*	-0.06
	(0.35)	(0.05)	(1.32)	(0.93)	(349.43)	(0.33)	(0.15)
Observations	418,614	418,614	418,614	418,614	418,614	418,614	418,614
Mean of Y (Pre-ZMDP)	9.417	0.189	22.19	10.15	5472	3.215	0.560

Panel B. Insider patients

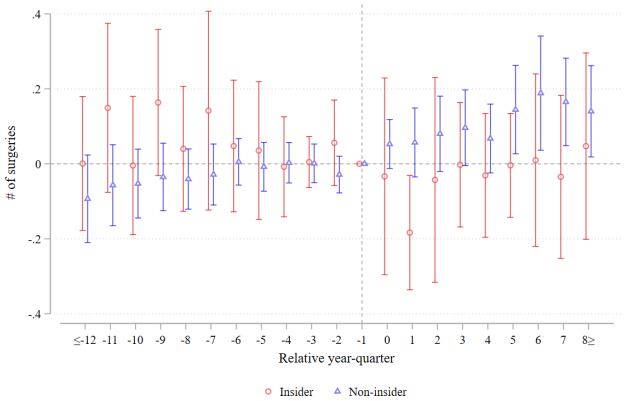
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
ZMDP	0.36	-0.04	-1.62	0.09	-377.75	0.56	-0.15
	(0.36)	(0.04)	(1.27)	(1.12)	(245.52)	(0.53)	(0.36)
Observations	8,897	8,897	8,897	8,897	8,897	8,897	8,897
Mean of Y (Pre-ZMDP)	8.188	0.205	20.35	10.59	5069	1.781	0.281

Insider vs. Non-insider Patients: Drug Utilization

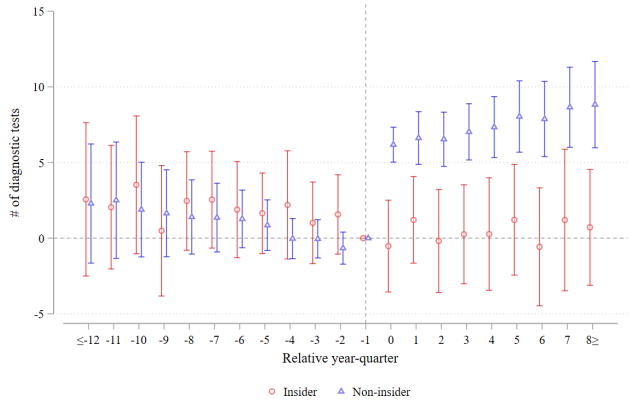


Drug

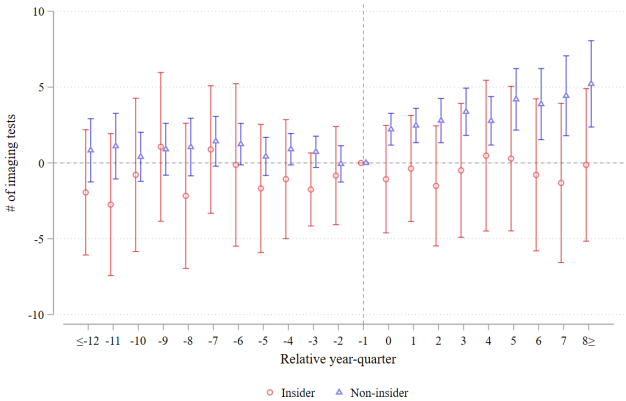
Insider vs. Non-insider Patients: Healthcare Utilization



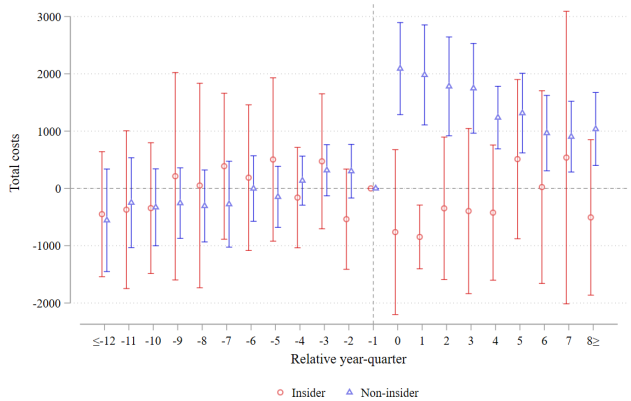
Surgery



Diagnostic tests

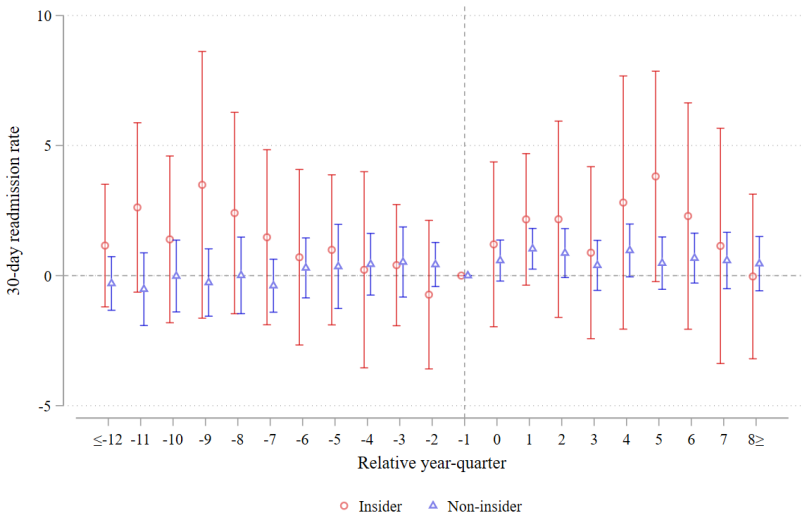


Imaging tests

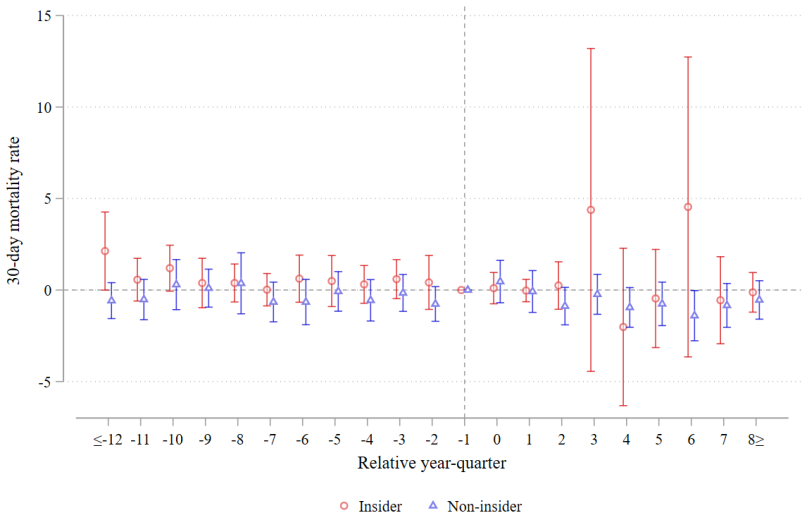


Total costs

Insider vs. Non-insider Patients: Health Outcomes



30-day Readmission



30-day Mortality

Triple-difference

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-3.69***	0.22***	5.43***	5.86***	1,577.79***	0.41	-0.51
	(0.38)	(0.05)	(0.98)	(1.17)	(313.71)	(0.33)	(0.90)
ZMDP	0.62	-0.08*	0.87	-3.00**	86.26	0.21	0.45
	(0.41)	(0.04)	(1.26)	(1.20)	(265.39)	(0.47)	(0.85)
Public*Non-insider	0.67**	0.02	-1.66***	2.77***	393.91**	0.30	0.03
	(0.26)	(0.06)	(0.59)	(0.78)	(192.29)	(0.40)	(0.42)
Observations	427,511	427,511	427,511	427,511	427,511	427,511	427,511
Mean of Y (Pre-ZMDP)	9.392	0.190	22.15	10.16	5464	3.186	0.554

Mechanisms: Pairwise Comparisons

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
	Panel A. Non-insider vs. Different hospital insider						
Non-insider*ZMDP	-3.08***	0.15**	4.07***	4.59***	1,122.51***	0.41	-1.07
	(0.34)	(0.07)	(0.96)	(1.63)	(387.09)	(0.62)	(1.70)
Observations	222,736	222,736	222,736	222,736	222,736	222,736	222,736
Mean of Y (Pre-ZMDP)	10.85	0.371	22.66	15.68	7528	3.381	0.980
	Panel B. Different hospital insider vs. Same hospital insider						
Diff hospital*ZMDP	-1.25*	0.12*	3.06**	3.57*	889.99**	0.03	0.13
	(0.68)	(0.07)	(1.28)	(1.99)	(409.42)	(1.15)	(0.97)
Observations	5,450	5,450	5,450	5,450	5,450	5,450	5,450
Mean of Y (Pre-ZMDP)	8.942	0.320	20.52	14.34	6204	1.924	0.542
	Panel C. Same hospital lower-ranked insider vs. Same hospital higher-ranked insider						
Same hospital-low rank*ZMDP	-0.91	0.09***	1.11	-0.32	-346.56	0.25	
	(0.64)	(0.03)	(1.84)	(1.56)	(466.17)	(0.47)	
Observations	2,649	2,649	2,649	2,649	2,649	2,649	
Mean of Y (Pre-ZMDP)	7.668	0.192	19.25	11.16	4960	1.450	

▸ Matching

Efficiency Benchmark: Compared to Same-hospital Higher-Ranked Patients (VVIP)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Subgroup*ZMDP							
Same hospital-low rank*ZMDP	-0.77	0.10	2.58	1.97	442.85	0.36	0.36
	(0.65)	(0.08)	(1.66)	(1.20)	(415.85)	(0.57)	(0.40)
Diff hospital*ZMDP	-1.55**	0.19*	4.18**	3.88*	1,126.38**	0.18	1.47
	(0.71)	(0.11)	(1.89)	(2.14)	(510.40)	(1.02)	(1.72)
Non-insider*ZMDP	-4.62***	0.34***	8.26***	8.50***	2,260.49***	0.60	0.41
	(0.69)	(0.08)	(1.89)	(1.51)	(437.89)	(0.61)	(0.28)
Subgroup							
Same hospital-low rank	1.87***	0.04	0.22	0.74	1,067.77***	0.35	0.69
	(0.27)	(0.04)	(0.86)	(0.67)	(292.22)	(0.36)	(0.44)
Diff hospital	2.11***	0.18*	0.03	3.38**	1,247.27***	0.28	1.17*
	(0.38)	(0.10)	(1.00)	(1.35)	(397.77)	(0.46)	(0.70)
ZMDP	1.65**	-0.28***	-1.35	-5.42***	117.05	-0.68	0.25
	(0.73)	(0.08)	(2.05)	(1.45)	(502.66)	(0.70)	(0.40)
Observations	225,385	225,385	225,385	225,385	225,385	225,385	225,385
Mean of Y (Pre-ZMDP)	10.81	0.369	22.62	15.62	7497	3.357	0.968

Robustness Checks

- Staggered DID ▸ Staggered DID
- Static DID ▸ Static DID
- Physician FE ▸ Physician FE
- Repeated hospitalizations ▸ Repeated hospitalizations
- More health outcomes ▸ Health outcomes
- Alternative non-insiders: teachers ▸ Teachers as non-insiders
- Other diseases ▸ By disease

Conclusion

- Physicians' response to financial incentives is not uniform $\rightarrow$ It depends on patients' privileged traits.
  - Non-insider patients bear the largest efficiency costs.
  - Insider knowledge and social ties are the primary shields; organizational rank plays a relatively limited role.
- Policy implication: treatment guidelines informed by insiders' care patterns may help reduce distortions for less privileged patients.

Thank you!

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Summary Statistics (1)

	All		Non-insider		Insider	
	(1) Public	(2) Private	(3) Public	(4) Private	(5) Public	(6) Private
			Panel A. Outcome variables			
Health care utilization						
# of unique drugs	10.04	8.34	10.06	8.36	9.35	7.36
	(8.37)	(4.68)	(8.38)	(4.69)	(7.95)	(4.30)
# of surgeries	0.47	0.06	0.47	0.06	0.34	0.10
	(1.47)	(0.58)	(1.48)	(0.57)	(1.28)	(1.01)
# of diagnostic tests	24.74	21.80	24.84	21.83	20.97	20.16
	(18.74)	(14.51)	(18.80)	(14.53)	(16.09)	(13.29)
# of imaging tests	18.61	6.12	18.70	6.11	15.27	6.55
	(25.76)	(7.17)	(25.84)	(7.18)	(22.29)	(6.89)
Total costs	8,510.75	3,966.17	8,557.73	3,960.65	6,742.87	3,905.01
	(12,554.12)	(2,711.59)	(12,622.35)	(2,692.86)	(9,475.05)	(2,616.25)
Health outcomes						
30-day readmission rate (%)	3.39	3.05	3.43	3.08	2.05	1.66
	(18.11)	(17.21)	(18.20)	(17.28)	(14.17)	(12.80)
30-day mortality rate (‰)	1.03	0.25	1.04	0.25	0.68	0
	(32.14)	(17.21)	(32.28)	(15.87)	(26.14)	(0)

Summary Statistics (1)

	All		Non-insider		Insider	
	(1) Public	(2) Private	(3) Public	(4) Private	(5) Public	(6) Private
	Panel B. Individual and hospital characteristics					
Demographic characteristics						
Age (in years)	57.25	58.49	57.39	58.71	51.31	45.92
	(12.37)	(10.45)	(12.24)	(10.21)	(15.57)	(15.16)
Gender (1 = female)	0.65	0.70	0.65	0.70	0.77	0.75
	(0.48)	(0.46)	(0.48)	(0.46)	(0.42)	(0.43)
Insider (1 = health related employment)	0.02	0.02	-	-	-	-
	(0.15)	(0.13)	-	-	-	-
Rank (1 = Cadre)	0.15	0.07	0.15	0.07	0.46	0.21
	(0.36)	(0.26)	(0.35)	(0.25)	(0.50)	(0.41)
Treating Hospital tier						
Share of Tier 1	0.15	0.67	0.15	0.67	0.17	0.58
	(0.35)	(0.47)	(0.35)	(0.47)	(0.37)	(0.49)
Share of Tier 2	0.27	0.32	0.27	0.32	0.25	0.40
	(0.44)	(0.47)	(0.44)	(0.46)	(0.43)	(0.49)
Share of Tier 3	0.59	0.02	0.59	0.02	0.58	0.02
	(0.49)	(0.13)	(0.49)	(0.13)	(0.49)	(0.15)
Observation	225,385	202,126	219,935	198,679	5,450	3,447

Summary Statistics (2)

	(1) Same-hospital high-rank insider	(2) Same-hospital low-rank insider	(3) Different-hospital insider
		Panel A. Outcome variables	
Health care utilization			
# of unique drugs	8.22	7.79	10.46
	(6.62)	(6.11)	(8.90)
# of surgeries	0.21	0.11	0.50
	(0.94)	(0.69)	(1.55)
# of diagnostic tests	18.79	18.53	22.88
	(14.44)	(12.20)	(17.85)
# of imaging tests	13.00	8.47	19.11
	(18.14)	(12.96)	(25.86)
Total costs	5,163.64	4,496.56	8,335.44
	(4,581.23)	(4,275.88)	(11,916.95)
Health outcomes			
30-day readmission rate (%)	1.04	1.36	2.75
	(10.14)	(11.60)	(16.34)
30-day mortality rate (‰)	0	0	1.25
	(0)	(0)	(35.31)

Summary Statistics (2)

	(1) Same-hospital high-rank insider	(2) Same-hospital low-rank insider	(3) Different-hospital insider
	Panel B. Individual and hospital characteristics		
Demographic characteristics			
Age (in years)	49.98	46.51	54.30
	(13.31)	(14.92)	(16.13)
Gender (1 = female)	0.81	0.77	0.74
	(0.39)	(0.42)	(0.44)
Rank (1 = Cadre)	-	-	0.44
	-	-	(0.50)
Hospital tier			
Share of Tier 1	0.08	0.27	0.16
	(0.27)	(0.44)	(0.37)
Share of Tier 2	0.12	0.37	0.25
	(0.33)	(0.48)	(0.43)
Share of Tier 3	0.80	0.36	0.59
	(0.40)	(0.48)	(0.49)
Working/Affiliated Hospital tier			
Share of Tier 1	0.19	0.58	0.52
	(0.39)	(0.49)	(0.45)
Share of Tier 2	0.06	0.10	0.11
	(0.24)	(0.30)	(0.30)
Share of Tier 3	0.75	0.33	0.37
	(0.43)	(0.47)	(0.47)
Observation	1,252	1,397	2,801

◂ Sample

Test for Patient Sorting: Hospital-quarter Level

	(1) # of hosp.	(2) # of hosp.	(3) Insider share	(4) Insider share
Public*post	-6.70		0.01	
	(9.45)		(0.01)	
High pre-ZMDP shareD*post		-1.04		0.02
		(13.54)		(0.01)
Treating hospital FE	Yes	Yes	Yes	Yes
Year-quarter FE	Yes	Yes	Yes	Yes
Observations	5,078	2,588	5,078	2,588
Mean of Y (Pre-ZMDP)	83.72	92.57	0.03	0.04

Test for Patient Sorting: Individual Claim Level

	(1) Tier 3	(2) Tier 2	(3) Tier 1	(4) Age	(5) Female
Subgroup*ZMDP					
Same hospital-low rank*ZMDP	-0.07	-0.06	0.12	-0.37	-0.02
	(0.07)	(0.11)	(0.08)	(1.24)	(0.05)
Diff hospital*ZMDP	-0.06	0.02	0.06	-0.27	-0.00
	(0.08)	(0.07)	(0.05)	(1.30)	(0.03)
Non-insider*ZMDP	-0.05	-0.02	0.09	0.03	-0.03
	(0.09)	(0.07)	(0.06)	(0.71)	(0.03)
Subgroup					
Same hospital-low rank	-0.15***	0.15*	0.14	-2.30	-0.06**
	(0.04)	(0.08)	(0.11)	(1.93)	(0.02)
Diff hospital	-0.09	0.08	0.06	2.91**	0.01
	(0.06)	(0.07)	(0.06)	(1.34)	(0.03)
Non-insider	-0.20**	0.20**	0.04	5.83***	0.10**
	(0.09)	(0.08)	(0.05)	(2.12)	(0.05)
ZMDP	0.47***	-0.37***	0.15	0.44	0.03
	(0.14)	(0.12)	(0.13)	(0.71)	(0.03)
Treating hospital FE	No	No	No	Yes	Yes
Year-quarter FE	Yes	Yes	Yes	Yes	Yes
3-digit ICD FE	Yes	Yes	Yes	Yes	Yes
Affiliated hospital's tier FE	Yes	Yes	Yes	Yes	Yes
Observations	225,385	225,385	225,385	225,385	225,385
Mean of Y (Pre-ZMDP)	0.31	0.55	0.13	57.06	0.66

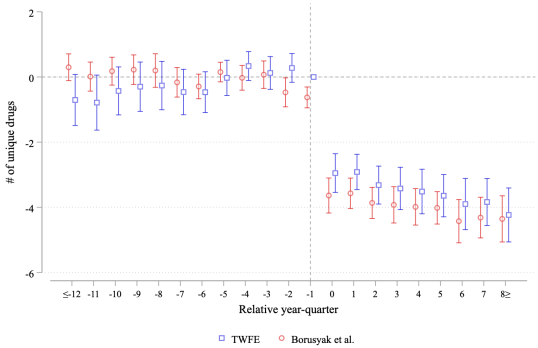
◂ Assumption

Pre-ZMDP Comparisons of Different Patient Groups

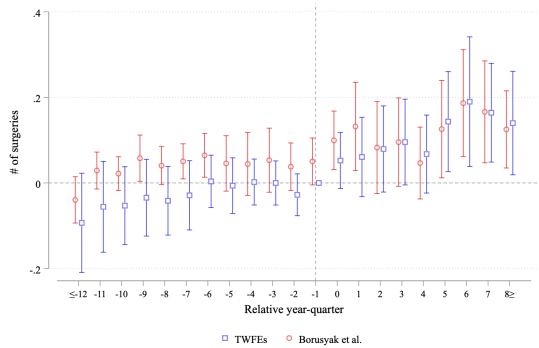
	(1) Unique drugs	(2) Total costs	(3) 30-day readm.	(4) 30-day mortality	(5) Unique drugs	(6) Total costs	(7) 30-day readm.	(8) 30-day mortality
				Panel A. Public and private hospitals				
Insider	-0.809***	-244.0*	-0.854***	0.0634				
	(0.202)	(138.4)	(0.184)	(0.257)				
Diff hospital					-0.349***	139.9	-0.780***	0.255
					(0.116)	(89.48)	(0.291)	(0.359)
Same hospital-low rank					-0.490*	-164.2	-0.789**	-0.0186
					(0.282)	(151.6)	(0.347)	(0.146)
Same hospital-high rank					-3.074***	-1,895***	-1.233***	-0.601**
					(0.419)	(302.2)	(0.319)	(0.276)
Observations	265,125	265,125	265,125	265,125	265,125	265,125	265,125	265,125
				Panel B. Public hospitals only				
Insider	-0.925***	-398.2**	-1.037***	0.0683				
	(0.289)	(184.7)	(0.194)	(0.394)				
Diff hospital					-0.262*	139.7	-1.058***	0.442
					(0.157)	(141.8)	(0.356)	(0.661)
Same hospital-low rank					-0.339	-216.1	-0.755**	-0.108
					(0.360)	(186.8)	(0.314)	(0.200)
Same hospital-high rank					-2.907***	-1,722***	-1.267***	-0.557**
					(0.416)	(302.5)	(0.324)	(0.270)
Observations	149,831	149,831	149,831	149,831	149,831	149,831	149,831	149,831
Treating Hospital FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3-digit ICD FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

◂ Efficiency benchmark

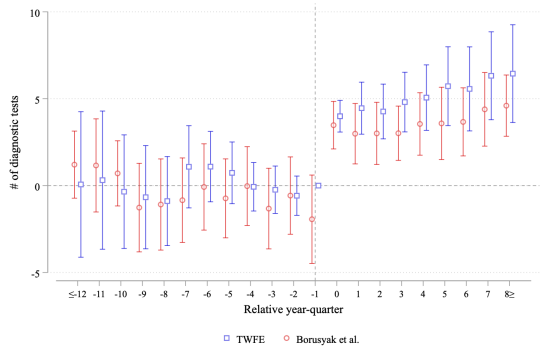
Event Studies: Public vs. Private Hospitals – Non-insiders



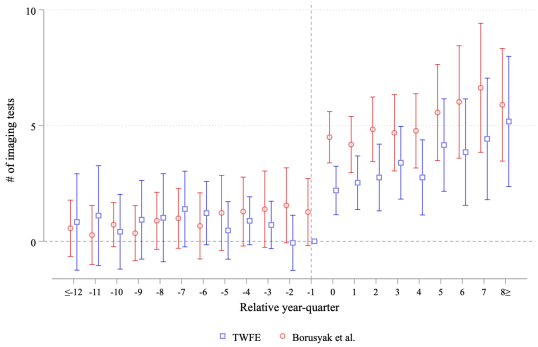
Drug



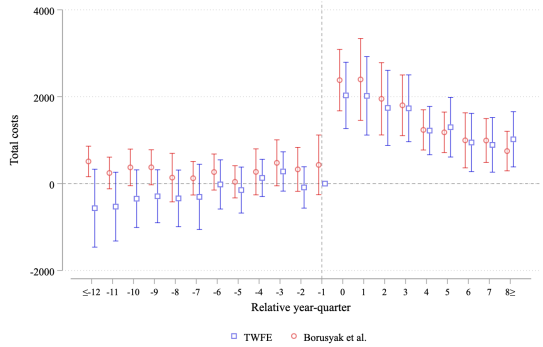
Surgery



Diagnostic tests

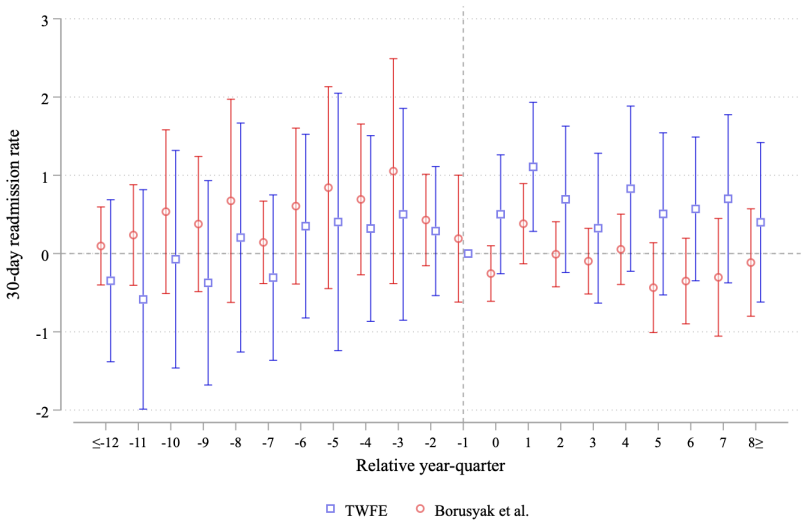


Imaging tests

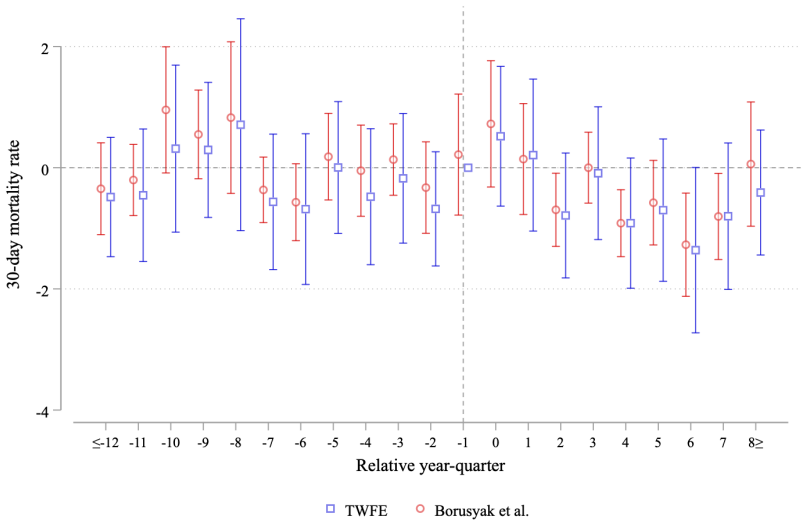


Total

Event Studies: Public vs. Private Hospitals – Non-insiders

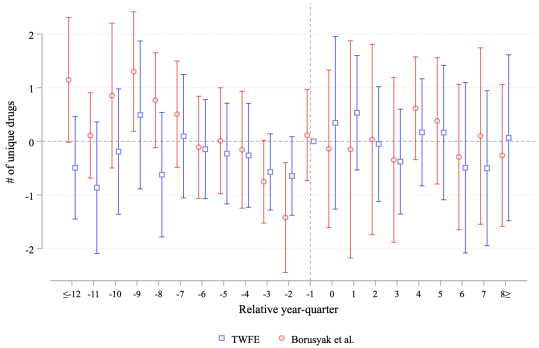


30-day Readmission

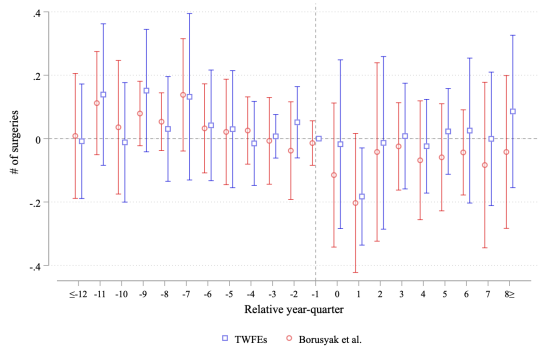


30-day Mortality

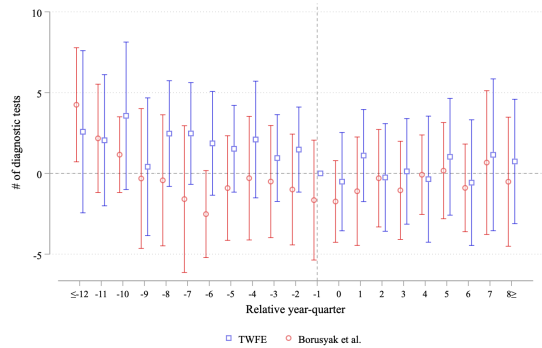
Event Studies: Public vs. Private Hospitals – Insiders



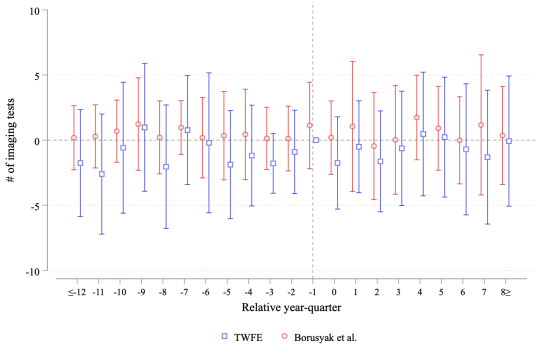
Drug



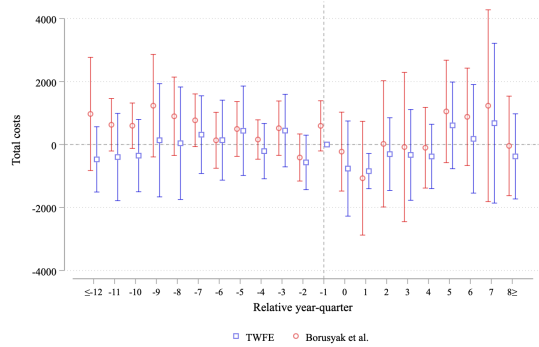
Surgery



Diagnostic tests

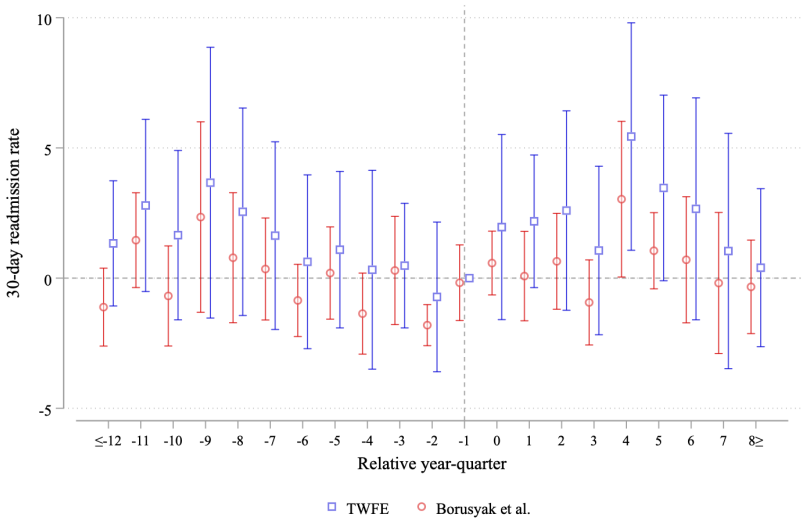


Imaging tests

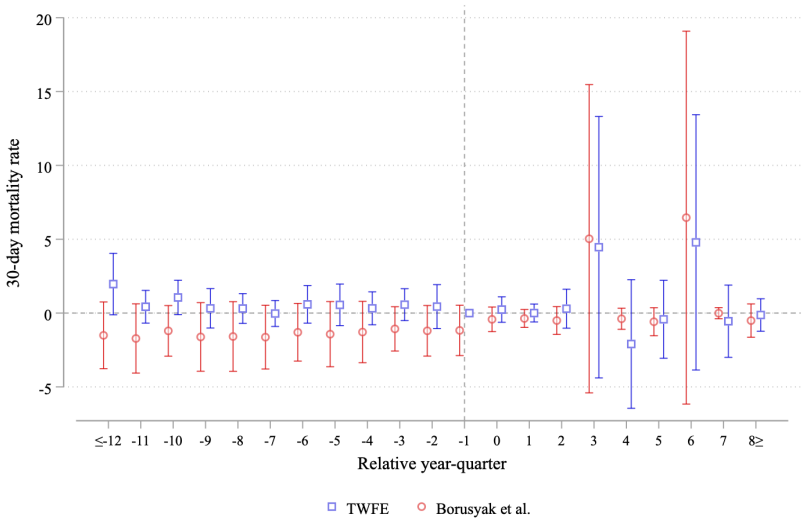


Total

Event Studies: Public vs. Private Hospitals – Insiders



30-day Readmission



30-day Mortality

◂ Robustness

Staggered DDD – Borusyak–Jaravel–Spiess (2024)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-3.42***	0.11*	8.47***	5.20***	3,010.19***	0.01	0.52
	(0.33)	(0.06)	(1.55)	(0.81)	(573.17)	(0.26)	(0.39)
Observations	362,488	362,488	362,488	362,488	362,488	362,488	362,488
Mean of Y (Pre-ZMDP)	9.392	0.190	22.15	10.16	5464	3.186	0.554

◂ Robustness

Static DID – 2016 Treatment Cohorts Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Public*Non-insider*Post	-3.06***	0.09*	7.97***	3.57**	1,395.61***	0.34	-0.41
	(0.49)	(0.05)	(1.17)	(1.42)	(338.09)	(0.66)	(0.90)
Public*Post	0.32	0.05	-2.55	0.93	169.64	0.48	0.25
	(0.45)	(0.06)	(1.56)	(1.52)	(287.41)	(0.70)	(0.84)
Non-insider*Post	-0.22	0.13***	-3.21***	4.15***	127.70	0.23	-0.09
	(0.25)	(0.04)	(0.68)	(0.67)	(121.15)	(0.55)	(0.16)
Public*Non-insider	0.60**	0.06	-2.79***	4.40***	436.43**	0.31	0.01
	(0.28)	(0.07)	(0.69)	(0.88)	(210.73)	(0.48)	(0.42)
Observations	417,095	417,095	417,095	417,095	417,095	417,095	417,095
Mean of Y (Pre-ZMDP)	9.964	0.230	22.62	10.87	5960	3.499	0.654

Static DID: Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
	Panel A. Non-insider vs. Different hospital insider						
Non-insider*Post	-2.81***	0.17**	3.33***	4.78**	1,098.79***	0.49	-0.98
	(0.34)	(0.07)	(0.95)	(1.89)	(382.47)	(0.67)	(1.67)
Observations	212,397	212,397	212,397	212,397	212,397	212,397	212,397
Mean of Y (Pre-ZMDP)	10.96	0.387	23.12	16.17	7779	3.384	0.991
	Panel B. Different hospital insider vs. Same hospital insider						
Diff hospital*Post	-1.21*	0.11*	3.24**	2.83	832.05**	0.26	0.12
	(0.69)	(0.06)	(1.30)	(2.19)	(417.47)	(1.15)	(0.93)
Observations	5,340	5,340	5,340	5,340	5,340	5,340	5,340
Mean of Y (Pre-ZMDP)	9.065	0.334	20.71	14.62	6327	1.981	0.566
	Panel C. Same hospital lower-ranked insider vs. Same hospital higher-ranked insider						
Same hospital-low rank*Post	-1.11	0.08***	1.43	0.09	-336.59	0.13	
	(0.67)	(0.03)	(1.81)	(1.55)	(461.15)	(0.46)	
Observations	2,572	2,572	2,572	2,572	2,572	2,572	
Mean of Y (Pre-ZMDP)	7.757	0.203	19.46	11.37	5054	1.531	

◂ Robustness

1:1 Propensity Score Matching: Mechanisms

Matching variable: gender, rank, age, 3-digit ICD code, income categories (by 10-percentile intervals of the distribution)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	No. of services				Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-3.06***	0.28**	1.45*	2.36	1,320.53**	0.56	1.85*
	(0.46)	(0.12)	(0.77)	(1.88)	(644.66)	(1.08)	(1.07)
Observations	5,132	5,132	5,132	5,132	5,132	5,132	5,132
Mean of Y (Pre-ZMDP)	10.36	0.508	21.83	16.64	7779	2.165	0.293

◂ Mechanism

Physician FE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-2.94***	0.07	5.25***	2.92***	1,094.05***	0.42	-0.15
	(0.24)	(0.05)	(0.57)	(0.79)	(323.13)	(0.57)	(1.38)
ZMDP	0.70**	-0.03	1.83**	-0.23	270.38	-0.01	0.24
	(0.28)	(0.05)	(0.77)	(0.98)	(355.09)	(0.57)	(1.37)
Public*Non-insider	0.21***	0.16***	-3.61***	6.80***	1,849.47***	-0.19	0.15
	(0.08)	(0.01)	(0.21)	(0.28)	(100.15)	(0.19)	(0.18)
Observations	197,407	197,407	197,407	197,407	197,407	197,407	197,407
Mean of Y (Pre-ZMDP)	8.663	0.125	21.86	8.766	4689	3.219	0.423

Physician FE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	No. of services				Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Panel A. Non-insider vs. Different hospital insider							
Non-insider*ZMDP	-2.40***	0.20***	2.53***	6.54***	2,539.35***	-0.46	-0.21
	(0.38)	(0.08)	(0.87)	(1.27)	(576.90)	(0.91)	(2.18)
Observations	86,270	86,270	86,270	86,270	86,270	86,270	86,270
Mean of Y (Pre-ZMDP)	9.803	0.313	20.47	13.81	6585	3.863	0.909
Panel B. Different hospital insider vs. Same hospital insider							
Diff hospital*ZMDP	-2.05***	0.14	3.43**	3.59*	523.96	0.70	-0.23
	(0.77)	(0.16)	(1.62)	(2.03)	(877.87)	(1.70)	(0.82)
Observations	1,954	1,954	1,954	1,954	1,954	1,954	1,954
Mean of Y (Pre-ZMDP)	8.654	0.361	19.40	13.63	6115	2.071	0
Panel C. Same hospital lower-ranked insider vs. Same hospital higher-ranked insider							
Same hospital-low rank*ZMDP	-0.32	0.20	-3.54	-0.12	105.74	-0.17	
	(1.08)	(0.17)	(2.60)	(2.10)	(769.93)	(1.65)	
Observations	711	711	711	711	711	711	
R-squared	0.771	0.663	0.742	0.734	0.736	0.493	
Mean of Y (Pre-ZMDP)	6.864	0.186	19.53	9.177	4281	1.662	

◂ Robustness

Repeated Hospitalizations: Including Individual FE

	(1)	(2)	(3)	(4)	(5)
		No. of services			Costs
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs
Non-insider*ZMDP	-3.31***	0.23***	6.32***	5.73***	1,724.72***
	(0.35)	(0.08)	(1.00)	(1.35)	(378.04)
ZMDP	0.67*	-0.13*	-0.03	-2.94**	-4.21
	(0.37)	(0.07)	(1.51)	(1.49)	(403.34)
Public*Non-insider	0.33	0.04	1.31	3.00***	596.66**
	(0.35)	(0.05)	(0.96)	(1.08)	(283.47)
Observations	190,593	190,593	190,593	190,593	190,593
Mean of Y (Pre-ZMDP)	8.596	0.0953	21.01	8.294	4752

Repeated Hospitalizations: Mechanisms

	(1)	(2)	(3)	(4)	(5)
		No. of services			Costs
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs
	Panel A. Non-insider vs. Different hospital insider				
Non-insider*ZMDP	-3.15***	0.09	3.33**	2.11	206.03
	(0.38)	(0.09)	(1.28)	(3.31)	(523.52)
Observations	62,119	62,119	62,119	62,119	62,119
Mean of Y (Pre-ZMDP)	10.01	0.219	21.01	13.02	6705
	Panel B. Different hospital insider vs. Same hospital insider				
Diff hospital*ZMDP	-1.42**	0.24	3.77**	5.23	1,287.54**
	(0.68)	(0.18)	(1.72)	(4.14)	(585.91)
Observations	1,691	1,691	1,691	1,691	1,691
Mean of Y (Pre-ZMDP)	7.886	0.264	19.43	11.66	5368
	Panel C. Same hospital lower-ranked insider vs. Same hospital higher-ranked insider				
Same hospital-low rank*ZMDP	-0.61	0.01	-0.70	-1.44	-601.60
	(1.05)	(0.09)	(1.45)	(1.15)	(722.48)
Observations	927	927	927	927	927
Mean of Y (Pre-ZMDP)	6.814	0.146	18.67	8.623	4442

◂ Robustness

More Health Outcomes: Triple-difference

	(1) 30-day readm.	(2) 30-day mortality	(3) 90-day readm.	(4) 90-day mortality	(5) 1-year mortality
Non-insider*ZMDP	0.41	-0.51	0.49	0.48	0.24
	(0.33)	(0.90)	(0.84)	(1.11)	(2.44)
ZMDP	0.21	0.45	2.70**	-0.88	-2.58
	(0.47)	(0.85)	(1.31)	(0.96)	(2.69)
Public*Non-insider	0.30	0.03	1.03	0.72	3.63*
	(0.40)	(0.42)	(1.39)	(0.98)	(1.97)
Observations	427,511	427,511	427,511	427,511	427,511
Mean of Y (Pre-ZMDP)	3.186	0.554	19.46	1.818	7.475

More Health Outcomes: Mechanisms

	(1) 30-day readm.	(2) 30-day mortality	(3) 90-day readm.	(4) 90-day mortality	(5) 1-year mortality
	Panel A. Non-insider vs. Different hospital insider				
Non-insider*ZMDP	0.41	-1.07	0.60	1.08	0.01
	(0.62)	(1.70)	(1.16)	(1.97)	(4.66)
Observations	222,736	222,736	222,736	222,736	222,736
Mean of Y (Pre-ZMDP)	3.381	0.980	15.64	2.898	11.40
	Panel B. Different hospital insider vs. Same hospital insider				
Diff hospital*ZMDP	0.03	0.13	-1.20	-1.74	-1.42
	(1.15)	(0.97)	(1.83)	(1.46)	(4.94)
Observations	5,450	5,450	5,450	5,450	5,450
Mean of Y (Pre-ZMDP)	1.913	0.539	12.10	1.616	5.927
	Panel C. Same hospital lower-ranked insider vs. Same hospital higher-ranked insider				
Same hospital-low rank*ZMDP	0.25		2.84		-2.37
	(0.47)		(2.60)		(4.08)
Observations	2,649		2,649		2,649
Mean of Y (Pre-ZMDP)	1.436		10.93		2.209

◂ Robustness

Alternative Non-insiders: Teachers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-3.68***	0.19***	4.05***	4.84***	1,228.22***	0.02	-0.37
	(0.40)	(0.05)	(0.92)	(1.34)	(285.67)	(0.48)	(0.85)
ZMDP	0.54	-0.04	0.12	-1.50	-11.50	-0.43	0.47
	(0.37)	(0.05)	(1.18)	(1.20)	(258.28)	(0.57)	(0.74)
Public*Non-insider	0.55**	-0.00	-1.84***	1.03	230.61	0.77	-1.34**
	(0.22)	(0.05)	(0.59)	(0.90)	(167.02)	(0.47)	(0.66)
Observations	26,056	26,056	26,056	26,056	26,056	26,056	26,056
Mean of Y (Pre-ZMDP)	9.276	0.230	20.88	11.45	6011	2.911	0.152

Alternative Non-insiders: Teachers, Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Non-insider*ZMDP	-3.11***	0.14*	2.39***	3.36*	682.83*	0.09	-0.75
	(0.38)	(0.07)	(0.81)	(1.73)	(344.9)	(0.75)	(1.52)
Observations	15,135	15,135	15,135	15,135	15,135	15,135	15,135
Mean of Y (Pre-ZMDP)	10.68	0.350	21.49	15.70	7834	3.634	0.206

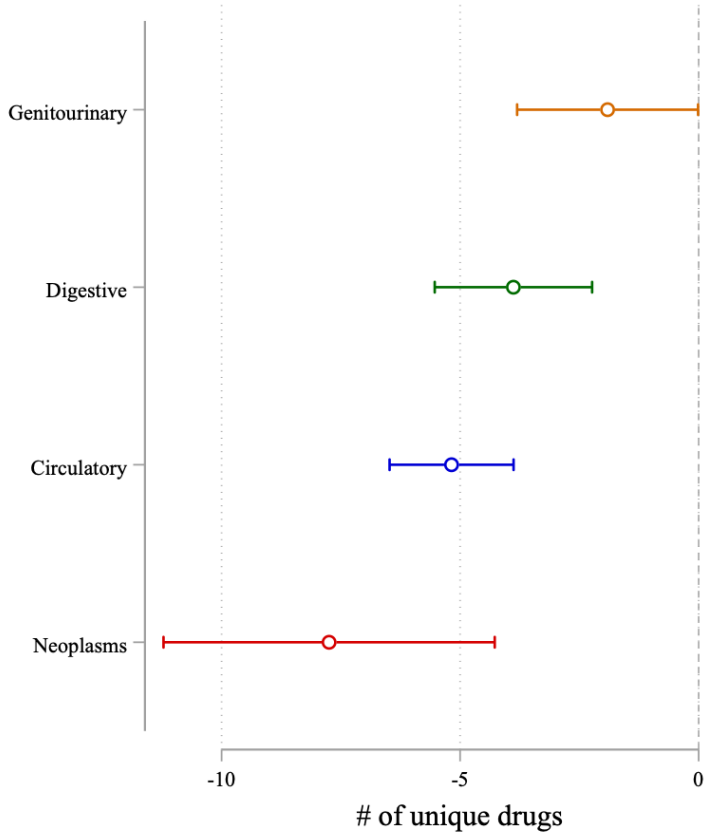
◂ Robustness

Comparison with Government Staff

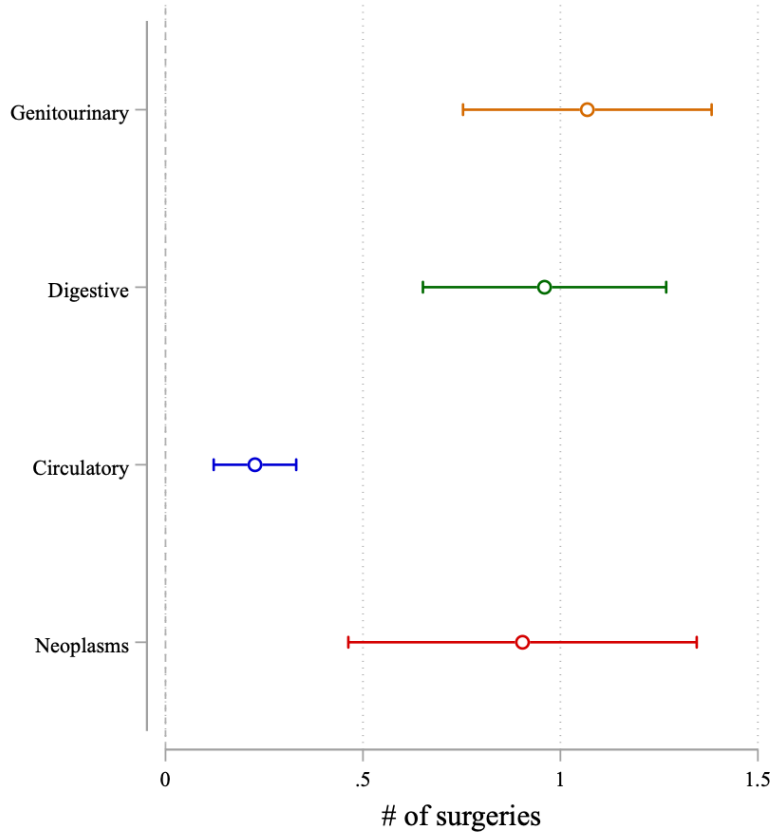
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		No. of services			Costs	Health outcomes	
	Unique drugs	Surgeries	Diagnostic tests	Imaging tests	Total costs	30-day readm.	30-day mortality
Panel A. Government non-insiders vs. Insiders							
Gov*ZMDP	-3.60***	0.16***	4.07***	4.83***	1,856.08***	0.67	-0.72
	(0.39)	(0.05)	(1.00)	(1.22)	(570.03)	(0.53)	(1.07)
ZMDP	0.53	-0.07	0.15	-1.82*	-189.62	-0.13	0.10
	(0.39)	(0.04)	(1.18)	(1.07)	(254.32)	(0.53)	(0.78)
Public*Gov	0.33	0.04	-2.21***	1.73**	-0.62	-0.10	-0.52
	(0.24)	(0.06)	(0.69)	(0.77)	(248.66)	(0.49)	(0.65)
Observations	27,974	27,974	27,974	27,974	27,974	27,974	27,974
Mean of Y (Pre-ZMDP)	9.160	0.231	20.75	10.82	5762	2.778	0.458
Panel B. Government non-insiders vs. Other non-insiders							
Gov*ZMDP	-0.00	-0.08***	-1.54***	-1.38**	150.10	0.19	-0.46
	(0.15)	(0.03)	(0.50)	(0.65)	(459.68)	(0.40)	(0.53)
Gov	-0.24***	-0.02**	-0.76**	-0.67***	14.84	-0.08	-0.11
	(0.09)	(0.01)	(0.30)	(0.15)	(44.66)	(0.28)	(0.20)
ZMDP	-3.06***	0.14***	6.45***	2.87***	1,658.63***	0.61*	-0.03
	(0.35)	(0.05)	(1.32)	(0.94)	(342.28)	(0.33)	(0.16)
Public*Gov	-0.44***	0.00	-0.22	-0.67**	-372.75**	-0.03	-0.12
	(0.14)	(0.02)	(0.39)	(0.30)	(168.49)	(0.43)	(0.39)
Observations	418,614	418,614	418,614	418,614	418,614	418,614	418,614
Mean of Y (Pre-ZMDP)	9.417	0.189	22.19	10.15	5472	3.215	0.560

◂ Robustness

By Disease: Non-insiders and Insiders



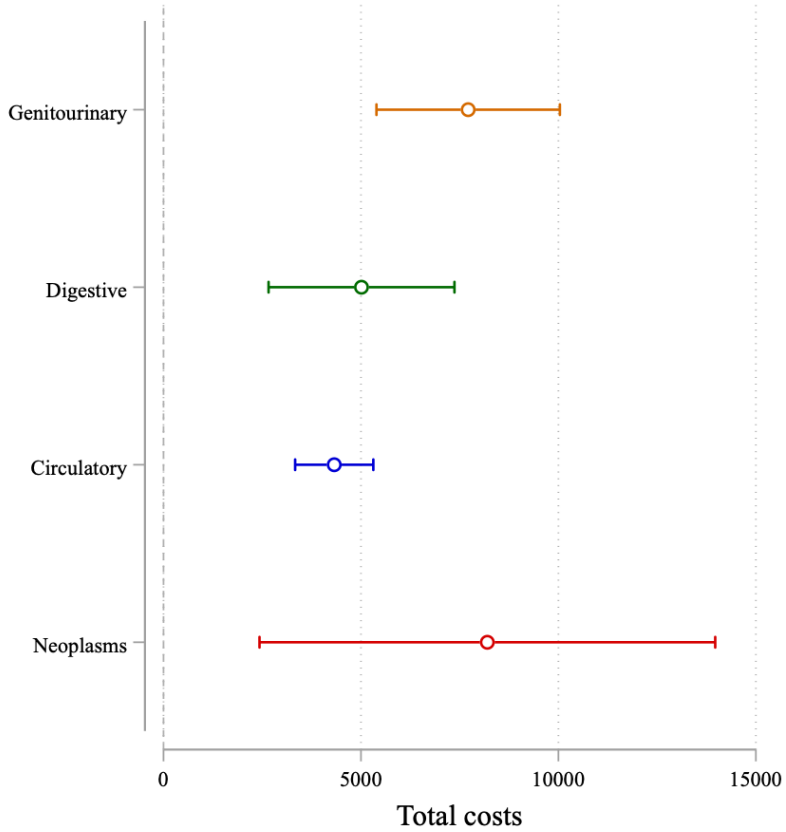
Drug quantity



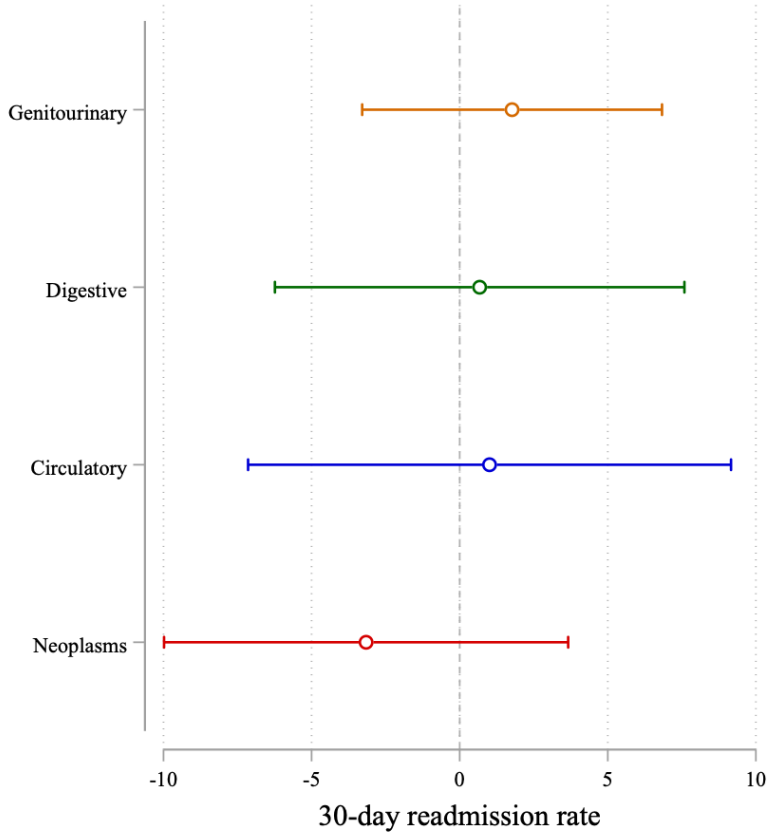
Surgery quantity

◂ Robustness

By Disease: Non-insiders and Insiders



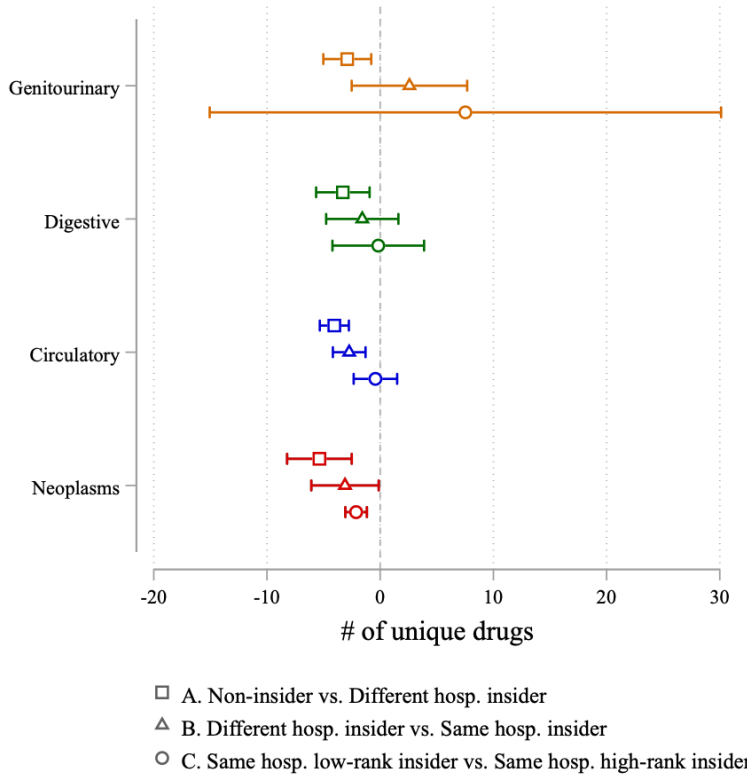
Total costs



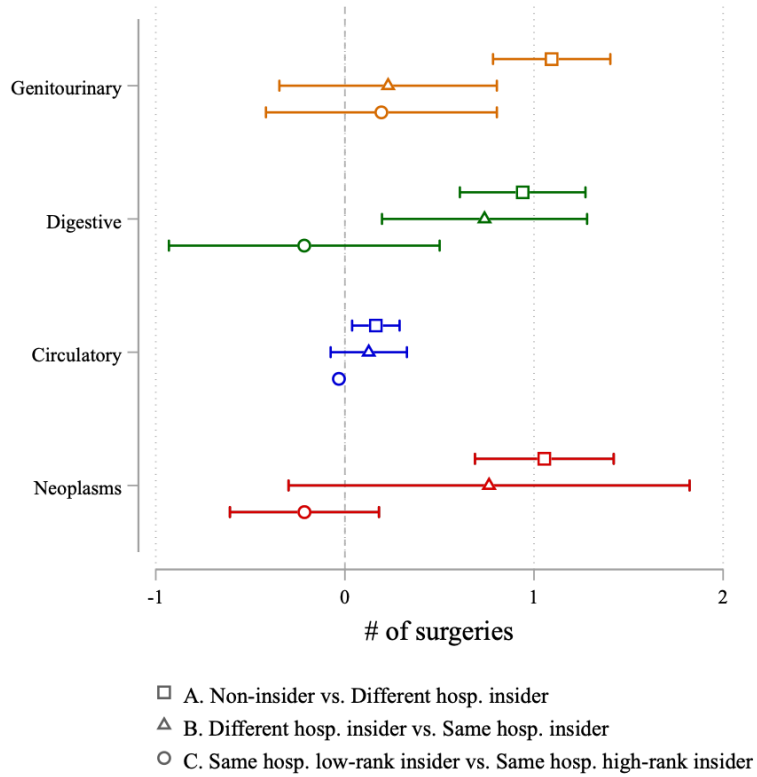
30-day readmission rate

◂ Robustness

By Disease: Mechanisms



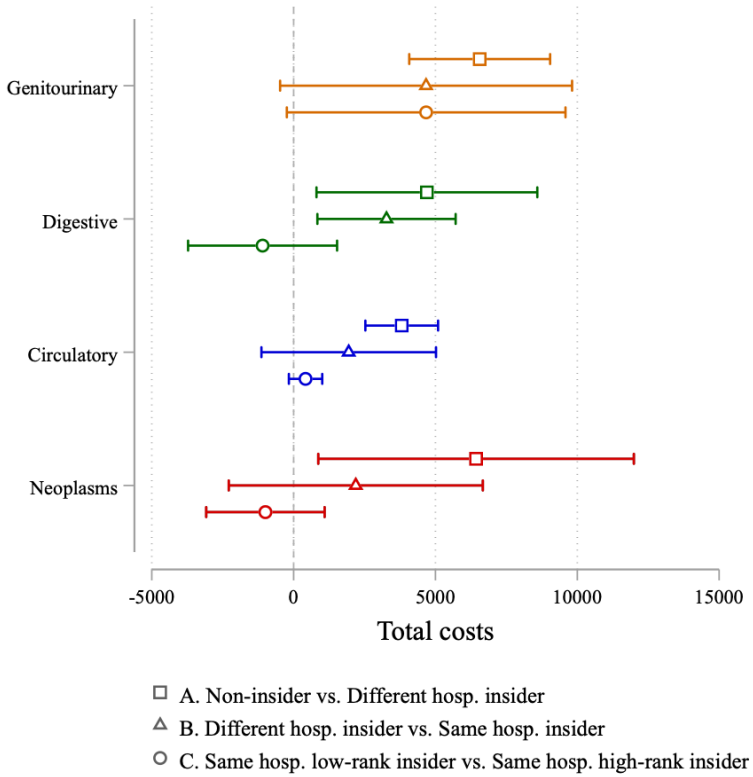
Drug quantity



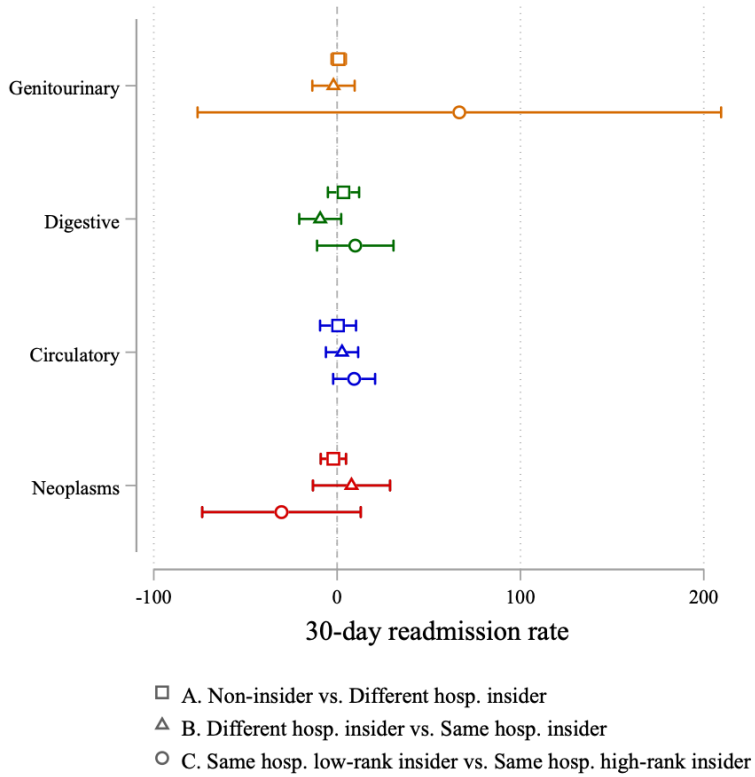
Surgery quantity

◂ Robustness

By Disease: Mechanisms



Total costs

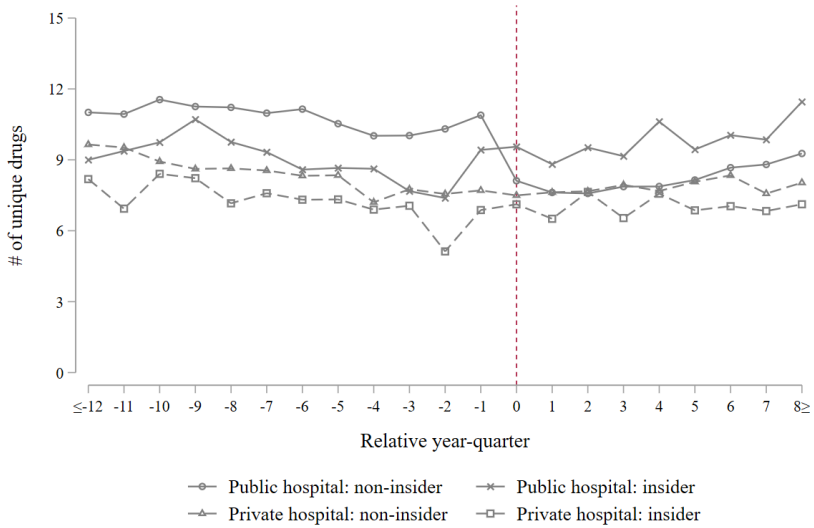


30-day readmission rate

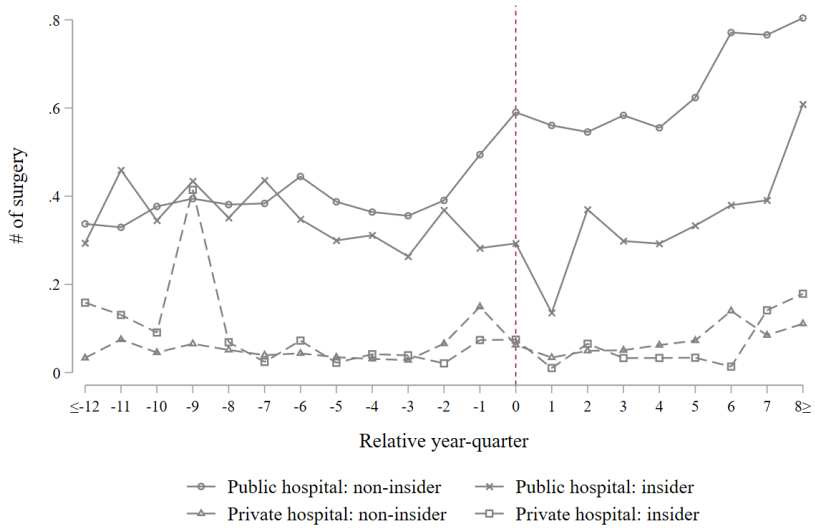
◂ Robustness

Raw Trends: Public vs. Private Hospitals – Non-insiders vs. Insiders

Health care utilization



(a) Drug

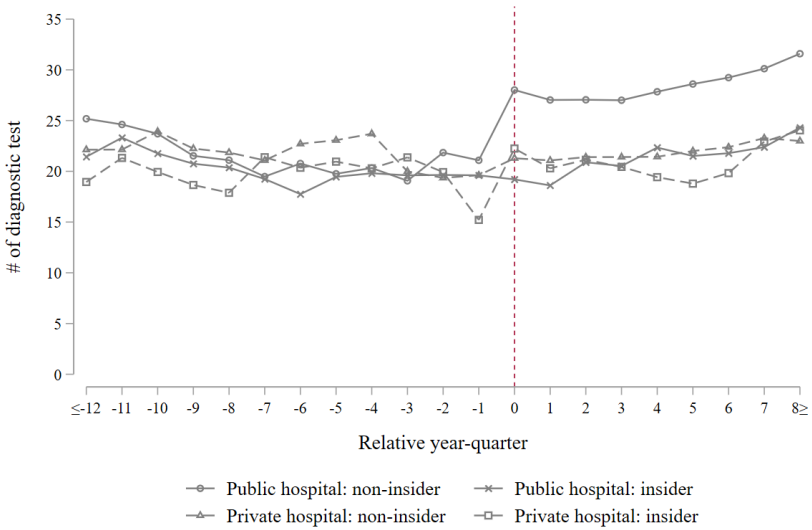


(b) Surgery

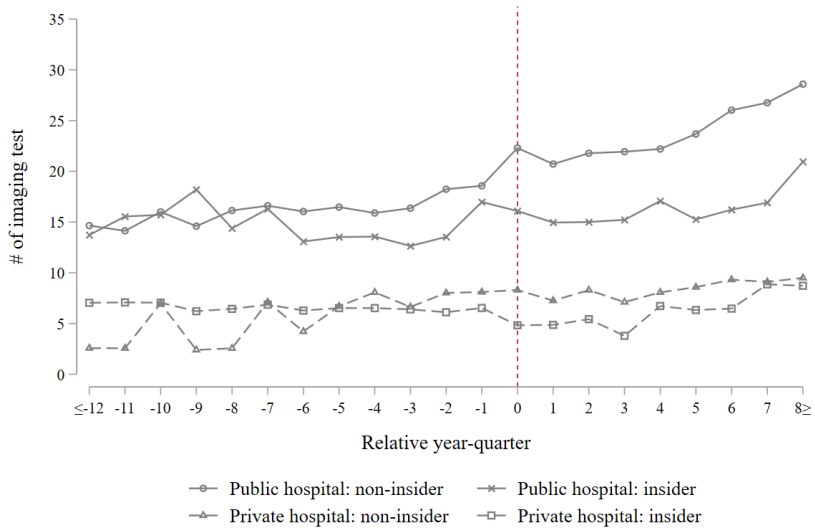
◂ Mechanisms

Raw Trends: Public vs. Private Hospitals

Health care utilization



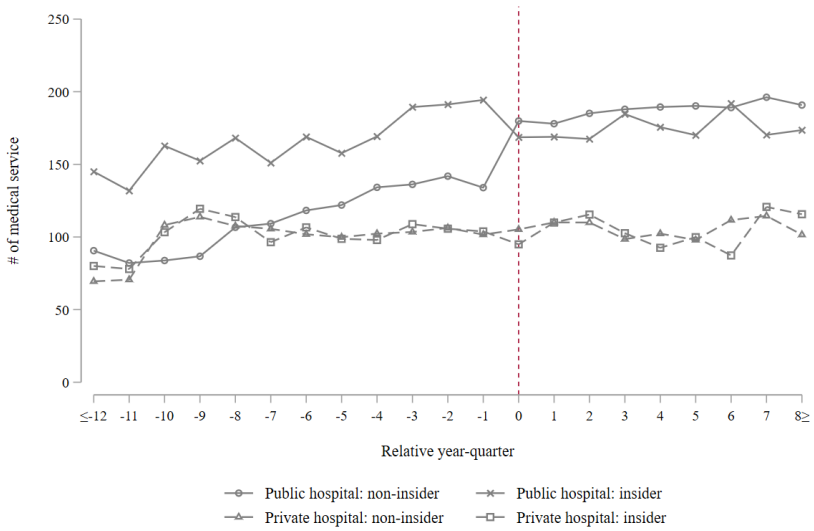
(c) Diagnostic tests



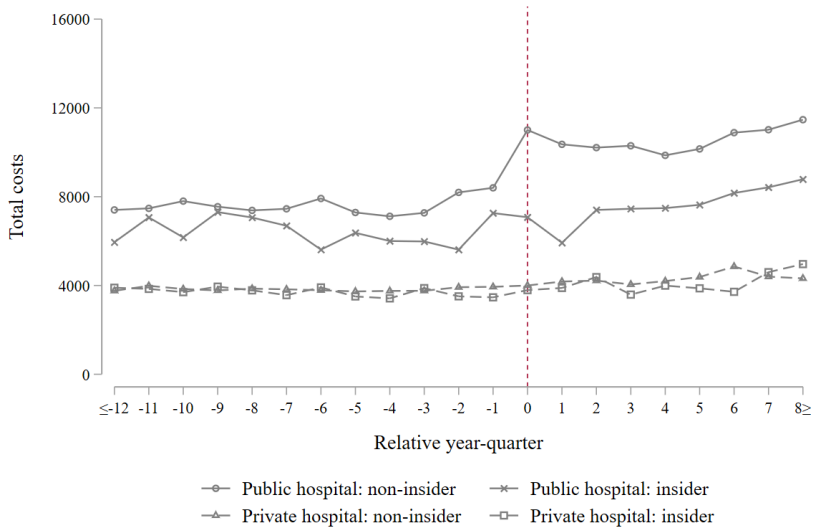
(d) Imaging tests

Raw Trends: Public vs. Private Hospitals

Health care utilization



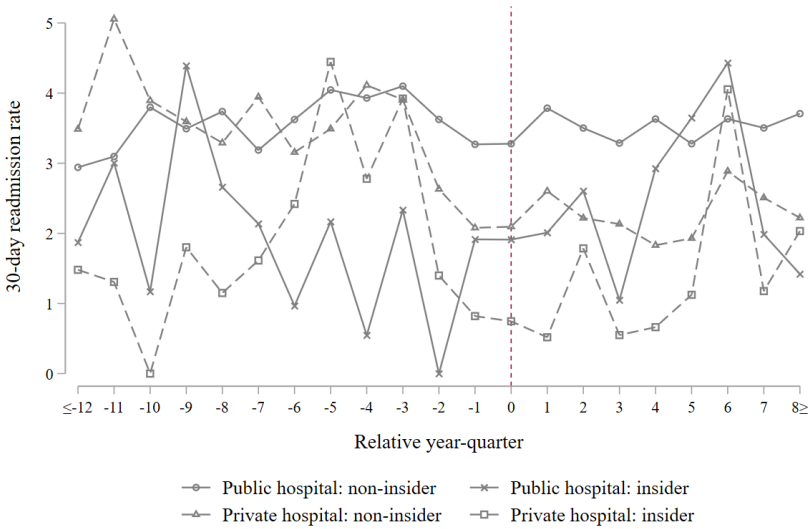
(e) Medical services



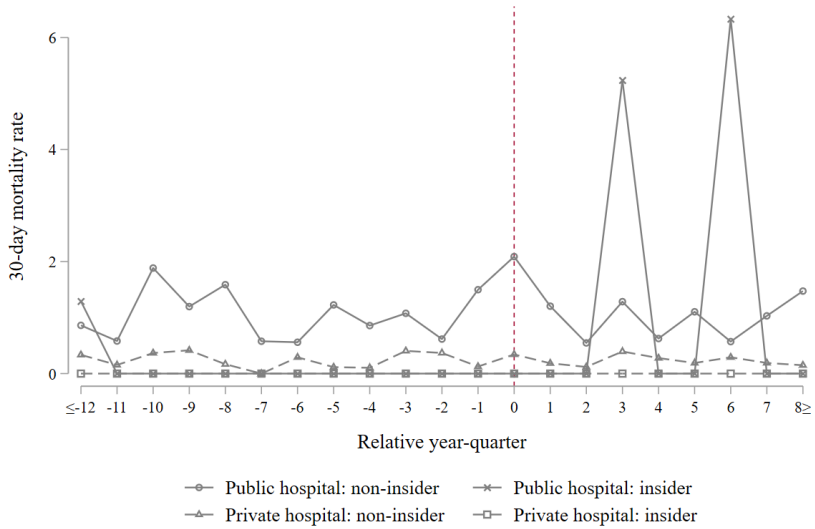
(b) Total costs

Raw Trends: Public vs. Private Hospitals

Health outcomes



(a) Readmission 30 days



(b) Mortality 30 days

◂ Mechanisms