Creative Financing and Public Moral Hazard: Evidence from Medicaid and the Nursing Home Industry

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CEPR Health Economics Toulouse
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Motivation

Federal matching grants are a core pillar of fiscal federalism.

- U.S. federal gvt transfers $1.3 trillion annually to lower jurisdictions
- Major programs: Medicaid, education, infrastructure, public safety

Theory: Local control ✓, externalities between states ✓

Practice: states use "creative financing" to extract more federal $$ (Committee for a Responsible Federal Budget, 2023)

Contribution

To identify a novel allocative bias due to creative financing (CF): *"public moral hazard"*, a volume expansion of publicly funded health care, triggered by federal cost-sharing.

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1. Audit reports on complex financial flows show states redirecting $$ from nursing homes ("creative financing")
2. DD models: expansion of Medicaid-funded nursing home care.
3. Mixed logit models: value-added/quality estimates (Einav, Finkelstein, Mahoney 2025, ECMA)

   $\rightarrow$ expansion concentrated among lower-quality nursing homes

Illustration of Creative Financing in Nursing Homes

- Medicaid pays a low per-diem rate; top-up (" UPL-supplemental payment ") is eligible for federal matching grants.

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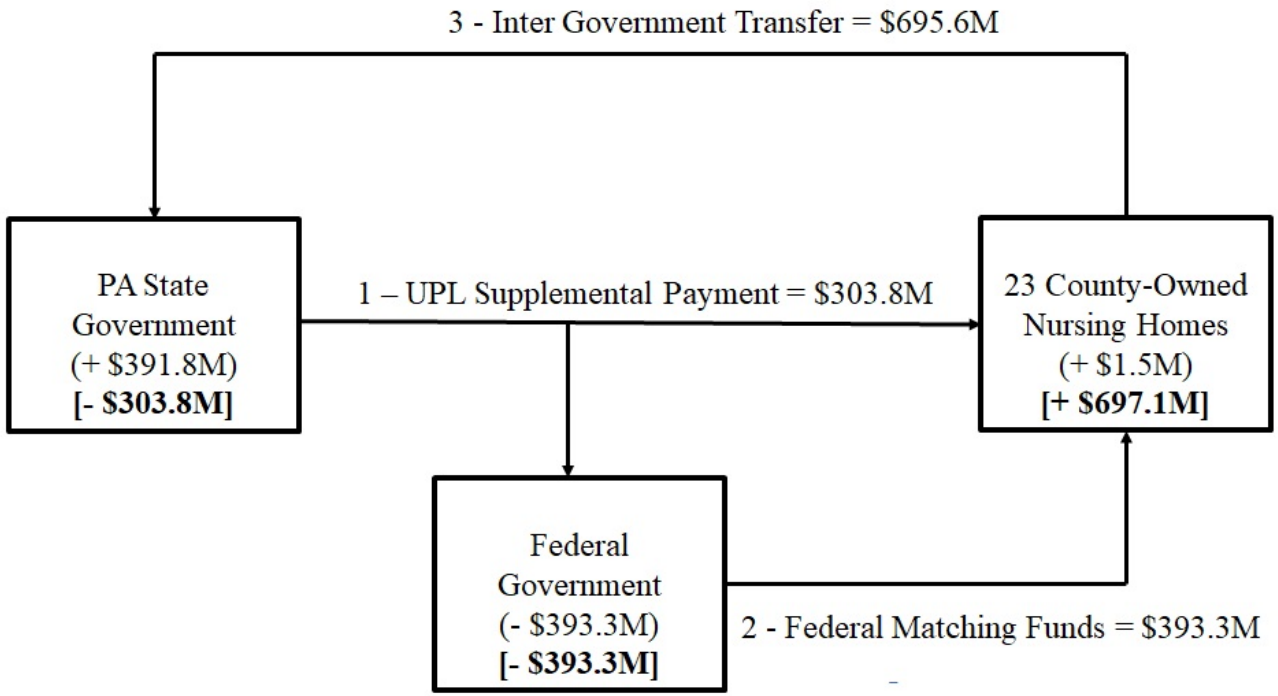
Example, Coughlin and Zuckerman (2003):



Outline

Price Effects

Hypothesis (H1)

"Public Markup":
CF can create a wedge between the nominal (P) and the effective reimbursement rate (R), which can be extracted via Intergovernmental Transfers: (P-R)·Q.

‘

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- Mechanism: *R* unobservable by fed gvt
- Evidence: even auditors have trouble tracking financial flows.

Testing Price Effects Using Digitized Audit Reports

- Calculate diverted $$ from audit reports
- 24% of nominal Medicaid SNF spending diverted!
- ”Effective FMAP” (federal cost share) 14 ppt higher

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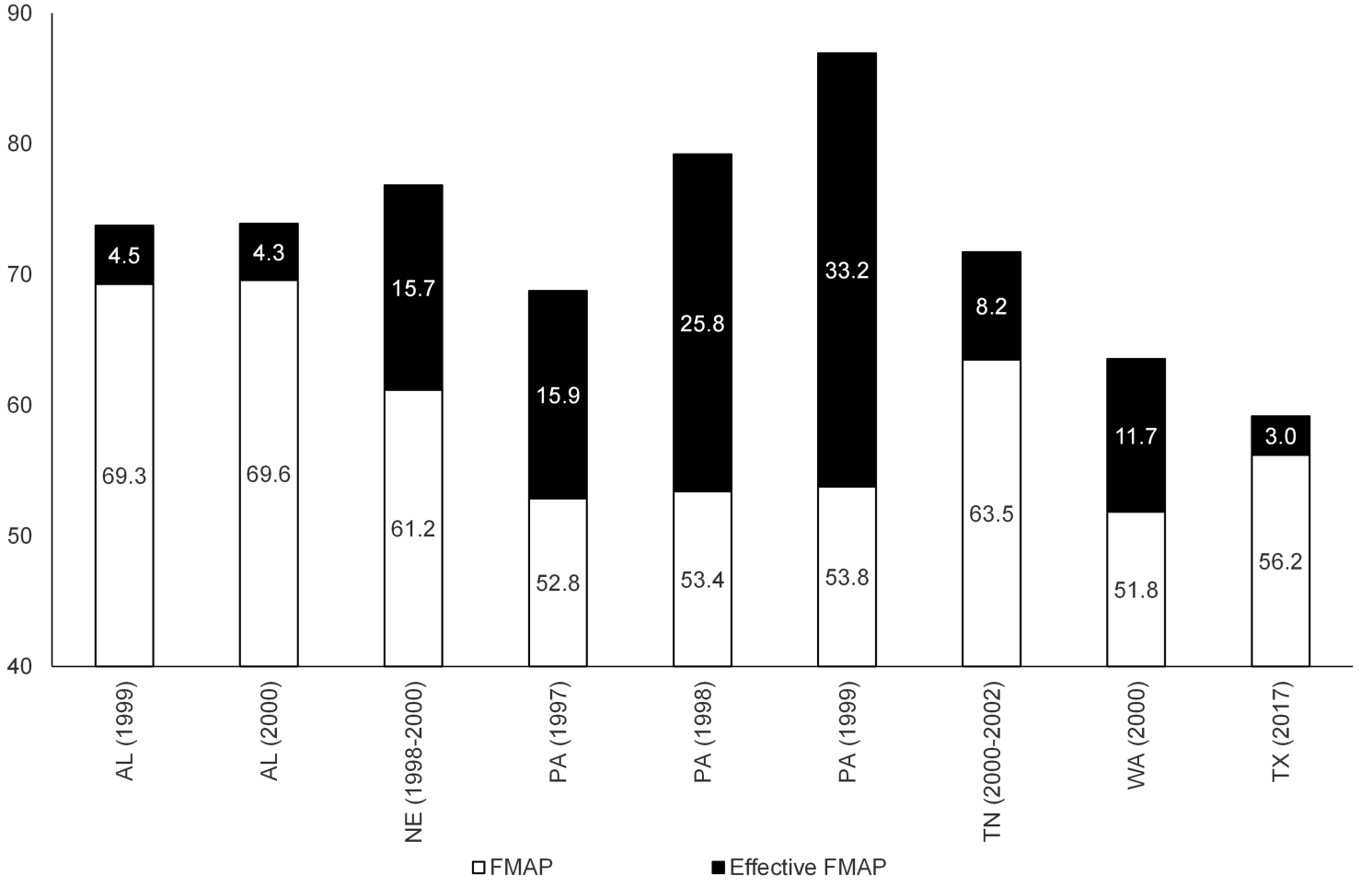

Outline

Volume Effects

Hypothesis (H2)

Public Moral Hazard:

Creative financing can increase the share of public health insurance funded by the federal gvt to FMAP $\cdot \frac{P}{R}$*. It thus incentivizes states to increase the volume of care eligible for matching funds.*

Creative Financing 2.0 in Indiana

2003 reform:

- Banned money transfers from *private* nursing homes

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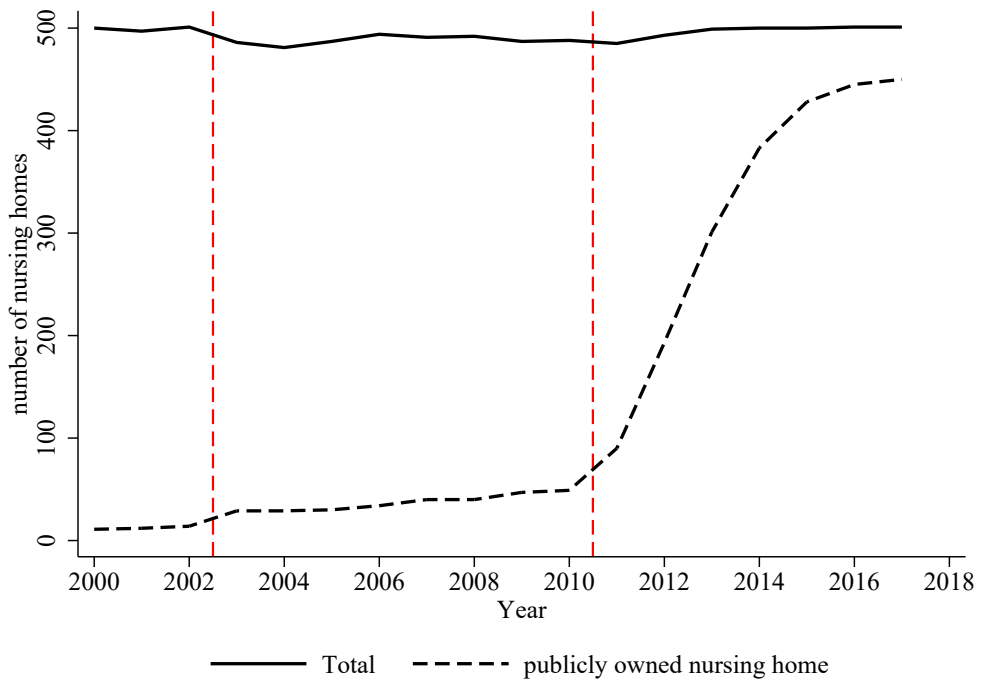

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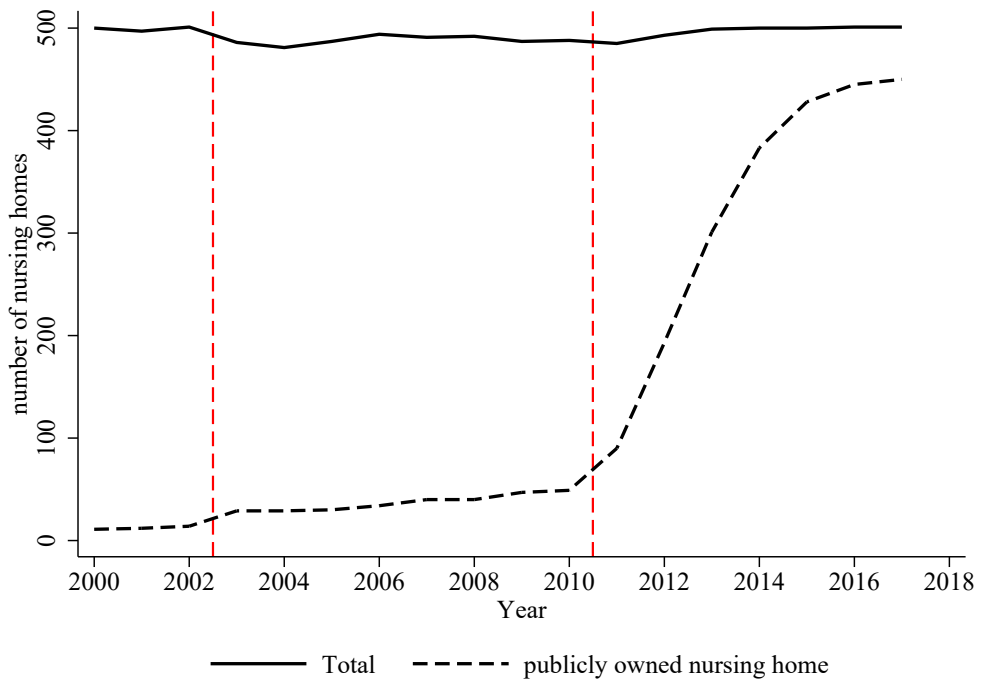


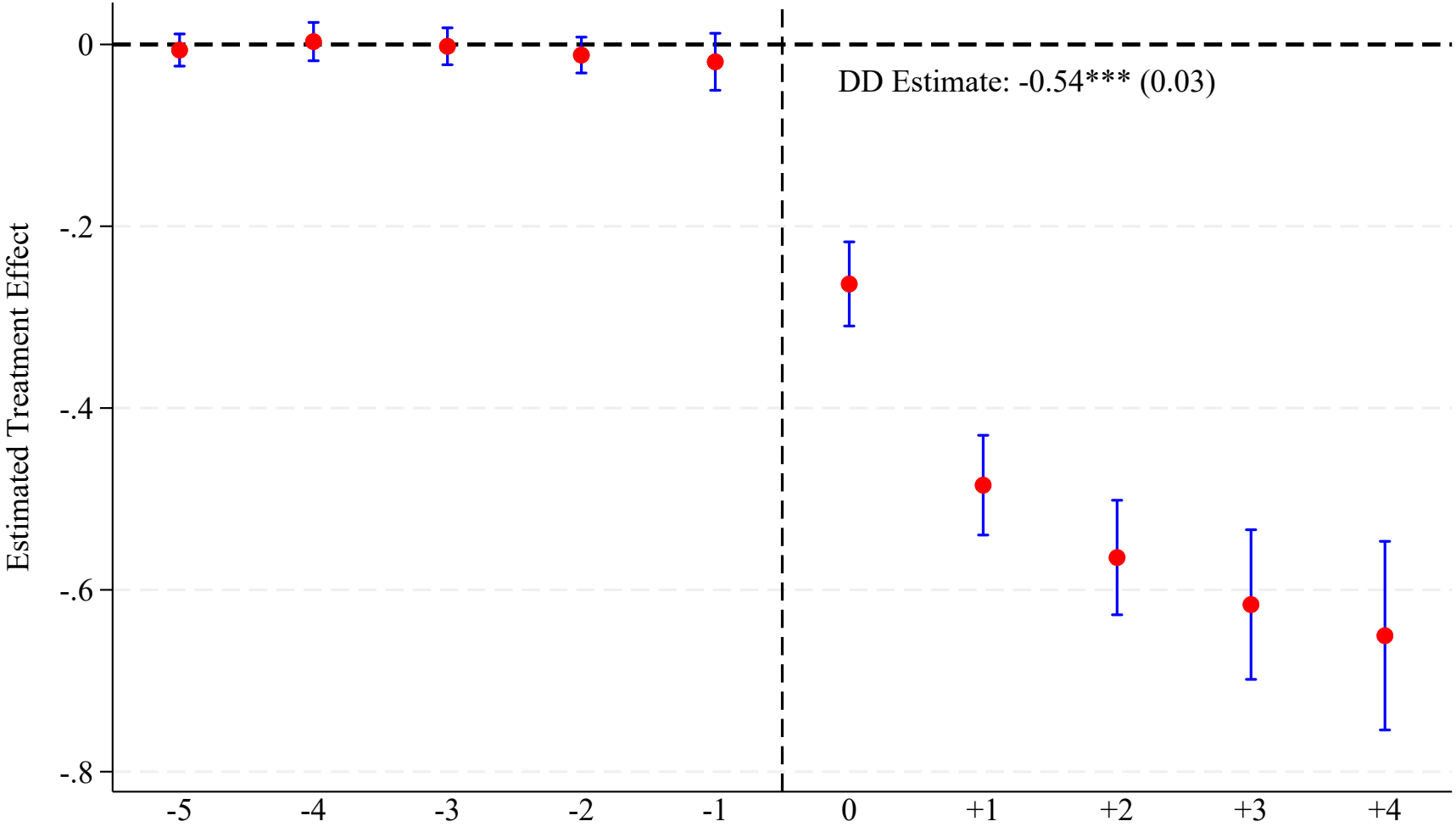
- Use license acquisition in Callaway/Sant'Anna (CS) event studies

High-Quality Survey and Admin Data

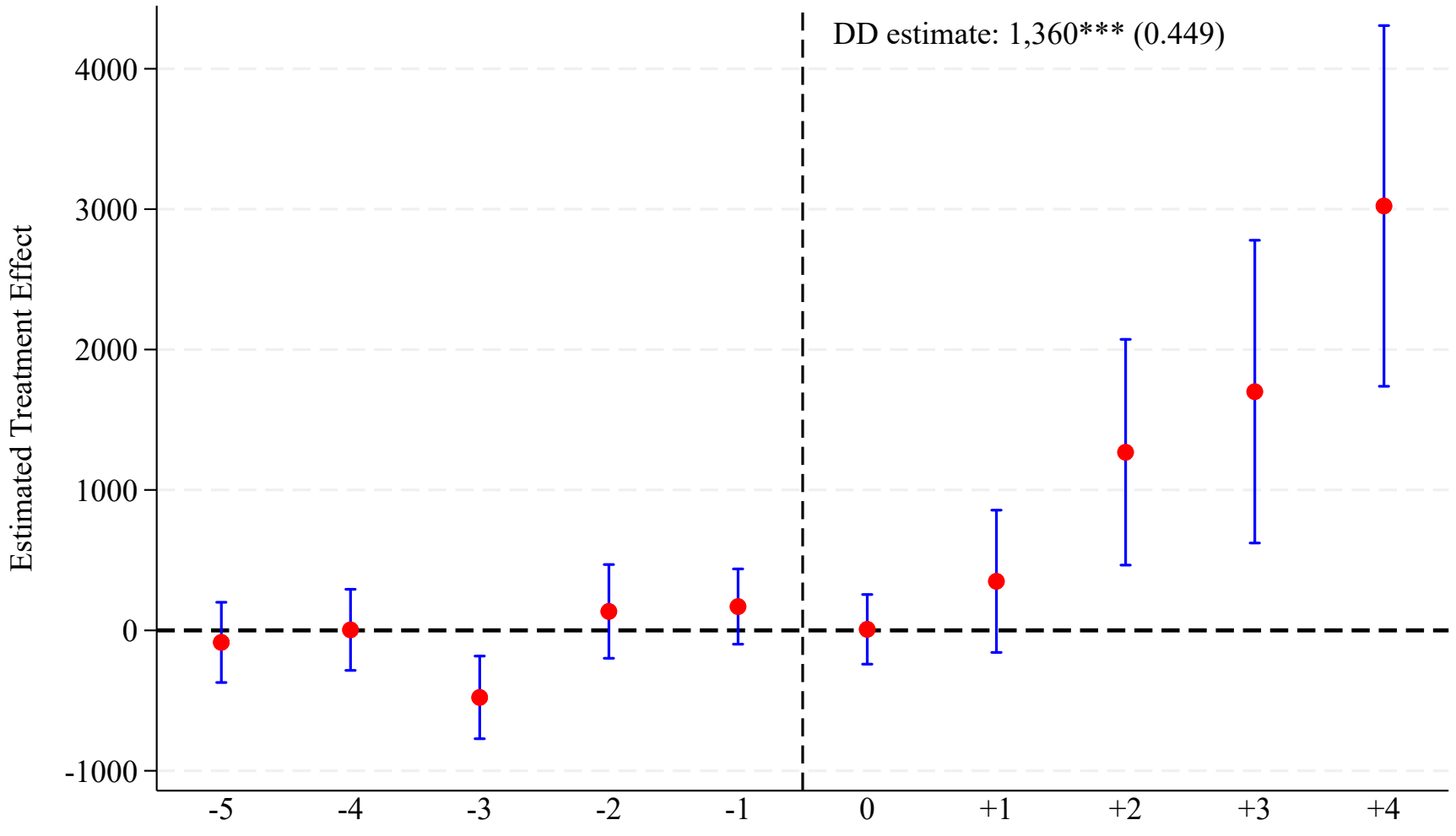
Combine hand-collected nursing home license acquisition dates with:

1. LTC Focus state-year data: 1999-2017
   - Staffing, special dementia care units
   - Patient volume by payer type
   - Medicaid per diem rates
2. Patient-level "Long-Term Care Minimum Data Set": 1999-2015
   - 98% of all SNFs. Today: data on Indiana
   - Health assessment, payer, length of stay,...
3. Patient-level Medicare Inpatient Data: 1999-2015
   - Hospital stays by ICD codes
   - Mortality, readmissions,...

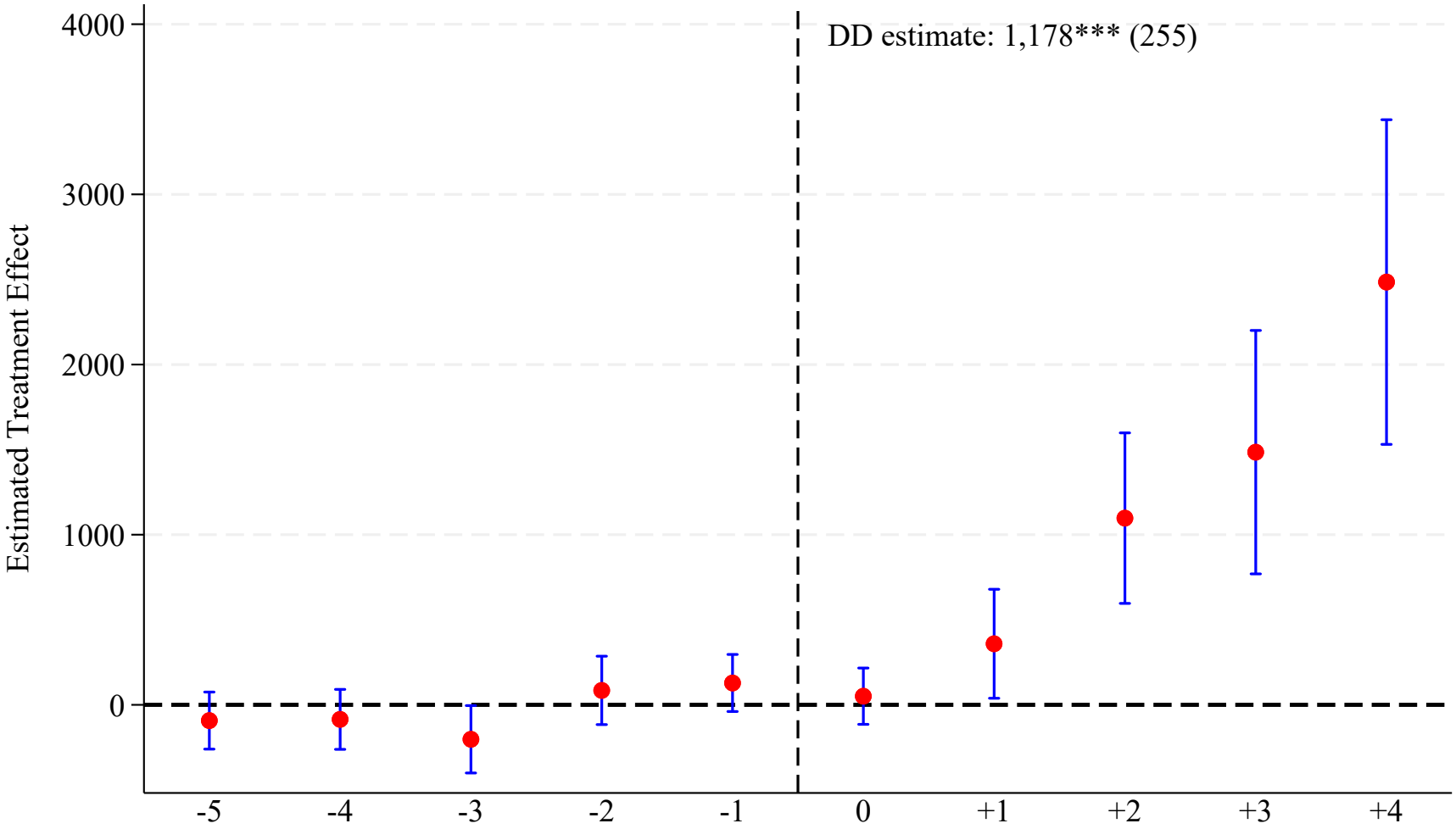
Falsification: For Profit Status



Volume Expansion ("public moral hazard"): Medicaid Days



Mechanism: Alzheimer Patients



To evidence on SNF inputs

Which Nursing Homes Expand Public Health Care?

Hypothesis (H3)

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The higher the public markup, the stronger the incentive to inflate the volume eligible for matching-funds.

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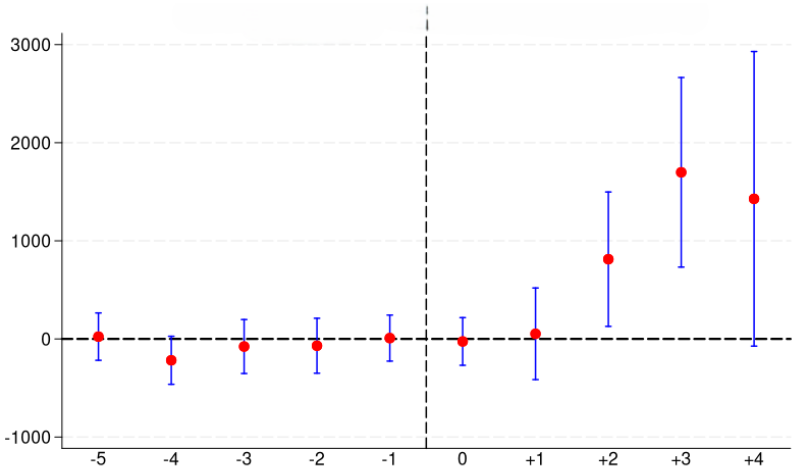
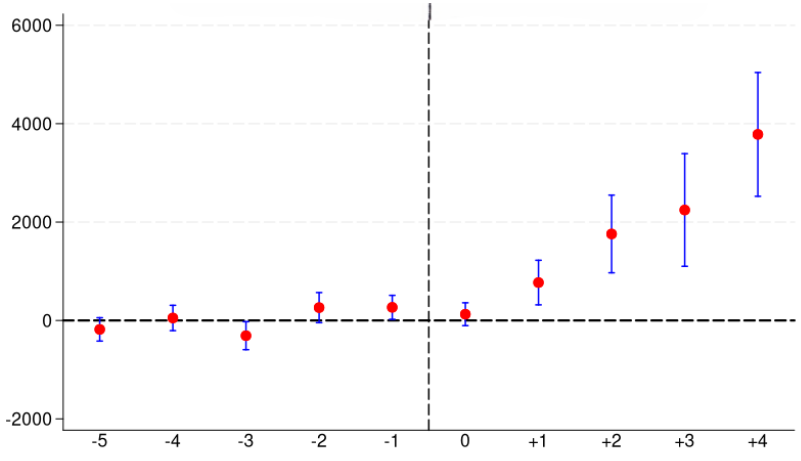
Empirically, as ”markup” (money diversion) unobserved:
Stronger volume expansion among nursing homes with

- ...higher share of Medicaid patients
- ...prior for-profit status (as proxy for high markup, low cost structure)
- ...excess capacity

Effect Heterogeneity, Stratifying By...



...below median Medicaid share



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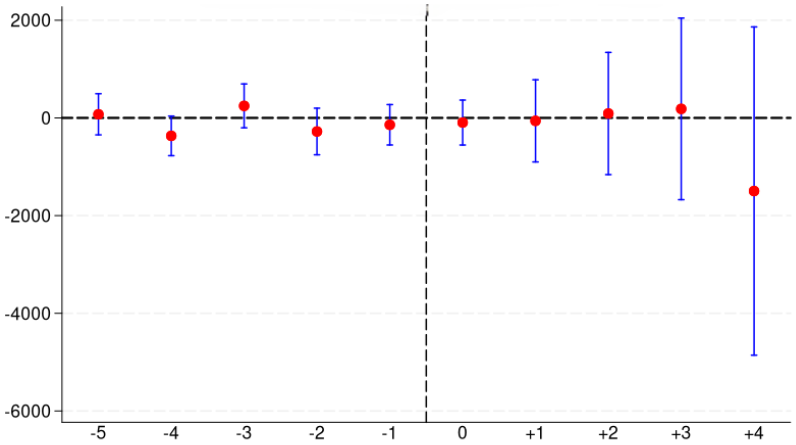
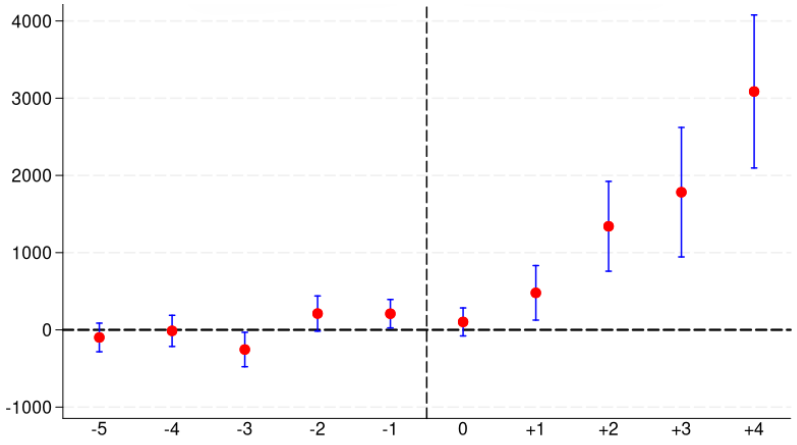


...not-for-profit



...for-profit

Outline

How Does Use of Health Care Quality Change?

Building on Einav, Mahoney, Finkelstein (2025, ECMA):

- Estimate mixed logit nursing home choice model.
- Enrich w/ outside good, “home health care”
- Quality measures:
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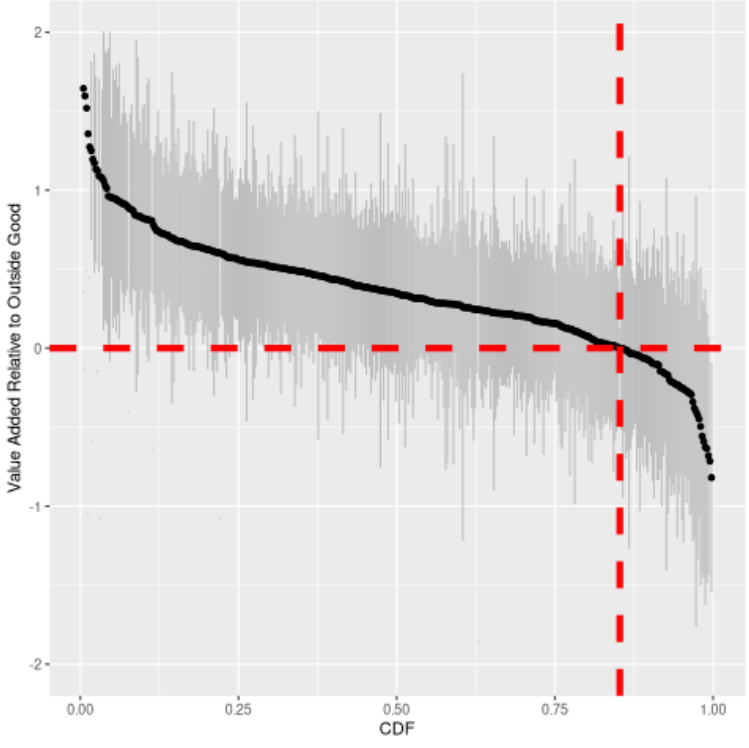
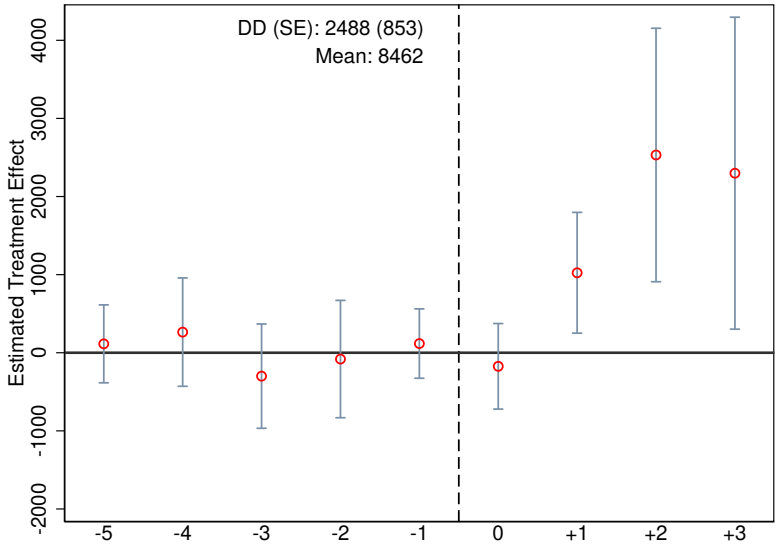
To mixed logit demand estimates

Use 1-Year Survival Rates to Estimate "Quality"

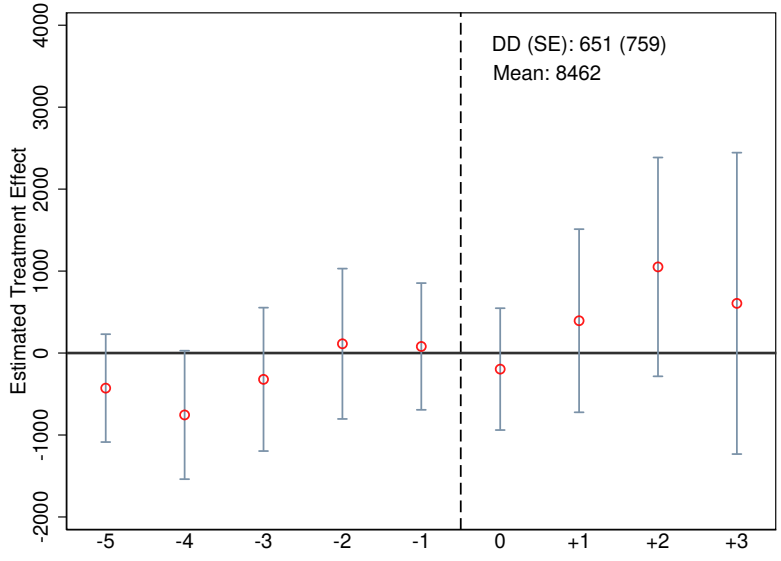


- 1-year survival relative to outside good (home health care)
- In descending order, outside good (dashed horizontal) subtracted
- 20% of SNFs $\leq$ home care
- Heterogeneity: 10^{th} vs. 90^{th} pc $\approx$ 1-yr survival for 65 vs. 100 old

Low Quality Nursing Homes Expand!



Low quality (bottom 20%)



High quality (top 20%)

- Dementia patients spend 176K additional days p.a. in low-quality nursing homes
- ...plus an increase of 50 deaths within one year (cf paper).

Conclusion

- Creative Financing (CF) as a result of fiscal federalism
- This paper provides
  - a framework to study (i) price, (ii) volume, (iii) quality
  - empirically investigates in context of Medicaid & nursing homes.

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Evidence that creative financing leads to

- Lower effective than nominal reimbursement
- Higher Medicaid inpatient volume; novel bias
- Low-quality providers most likely to expand

CF can distort the quantity-quality tradeoff in health care

Conclusions

Creative financing as a novel driving force of:

1. Low effective Medicaid rates, compromising SNF quality
2. Institutional bias in U.S. long-term care, Indystar (2020):
   "The state's [Indiana's] elder care system is now so skewed to nursing homes [...] that the expansion of alternative options such as in-home care has been stifled."

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Creative financing as a novel driving force of:

1. Low effective Medicaid rates, compromising SNF quality
2. Institutional bias in U.S. long-term care, Indystar (2020):
   "The state's [Indiana's] elder care system is now so skewed to nursing homes [...] that the expansion of alternative options such as in-home care has been stifled."

Thanks a lot for invite me and your comments!

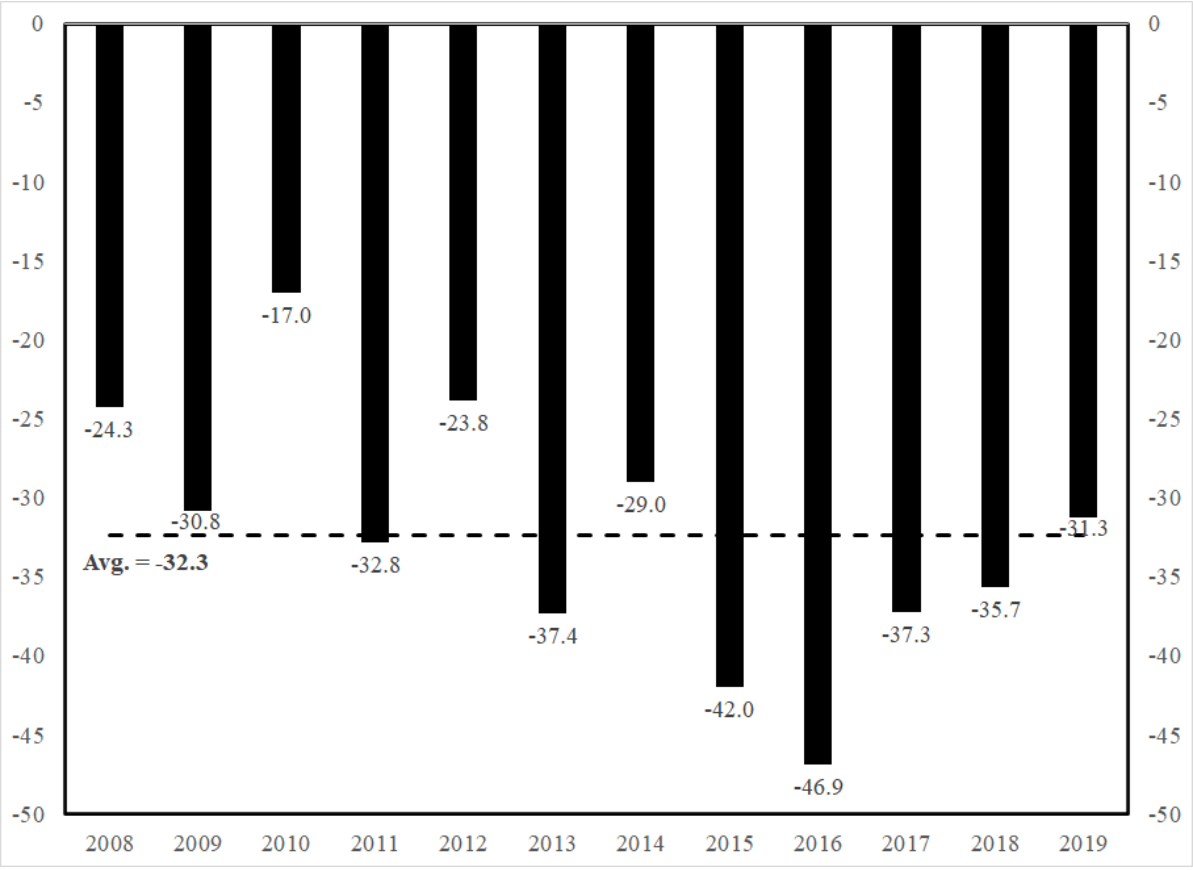
Table: Effects of 2003 Reform on SNF State-Level Outcomes

	Markdown	**Effective FMAP**	**Federal Expenditure**	**State Expenditure**
UPL × *Post*	0.1904***	-15.7243***	-149.80***	-111.50***
	(0.0453)	(3.6935)	(46.76)	(34.25)
	Direct Care Staff Ratio	**RN Ratio**	**LPN Ratio**	**CNA Ratio**
UPL × *Post*	-0.0041	-0.0106	-0.0021	-0.0084
	(0.0576)	(0.0289)	(0.0260)	(0.0423)

Source: LTC Focus (2020), CMS 2020, authors' calculation. Each column in each panel stands for one standard DD model with *UPL* flagging states with a pre-reform UPL scheme in place, and *Post* taking the value 1 for years after 2002. Federal and state expenditures are measured in million $. ***, **, and * = statistically different from zero at the 1%, 5%, and 10% level. All models have year and SNF fixed effects. Standard errors are clustered at the state level and reported in parentheses. All models have 248 state-year observations from 31 states. See main text for more details.

Back

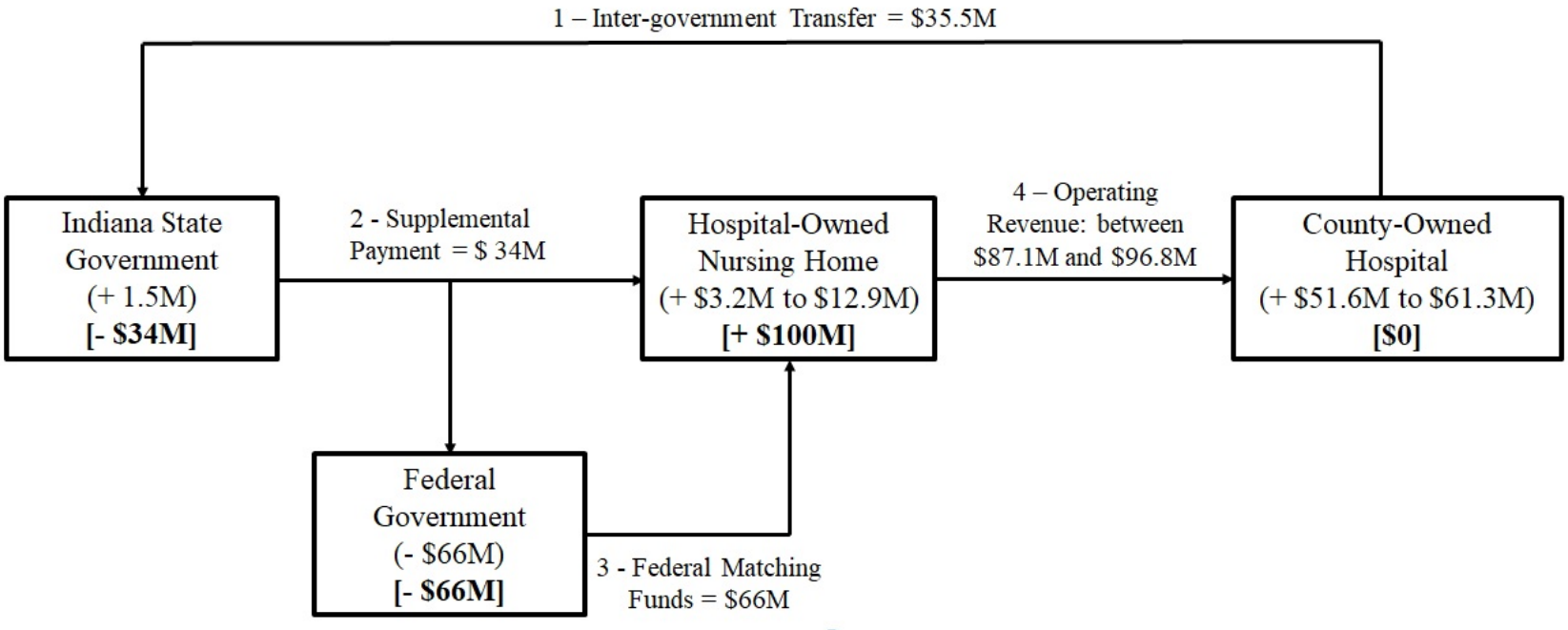
HHC SNFs' Negative Markdown: $-\mu$



- Data from HHC financial statements
- 32% of nominal Medicaid SNF spending diverted!
- Effective FMAP 100%

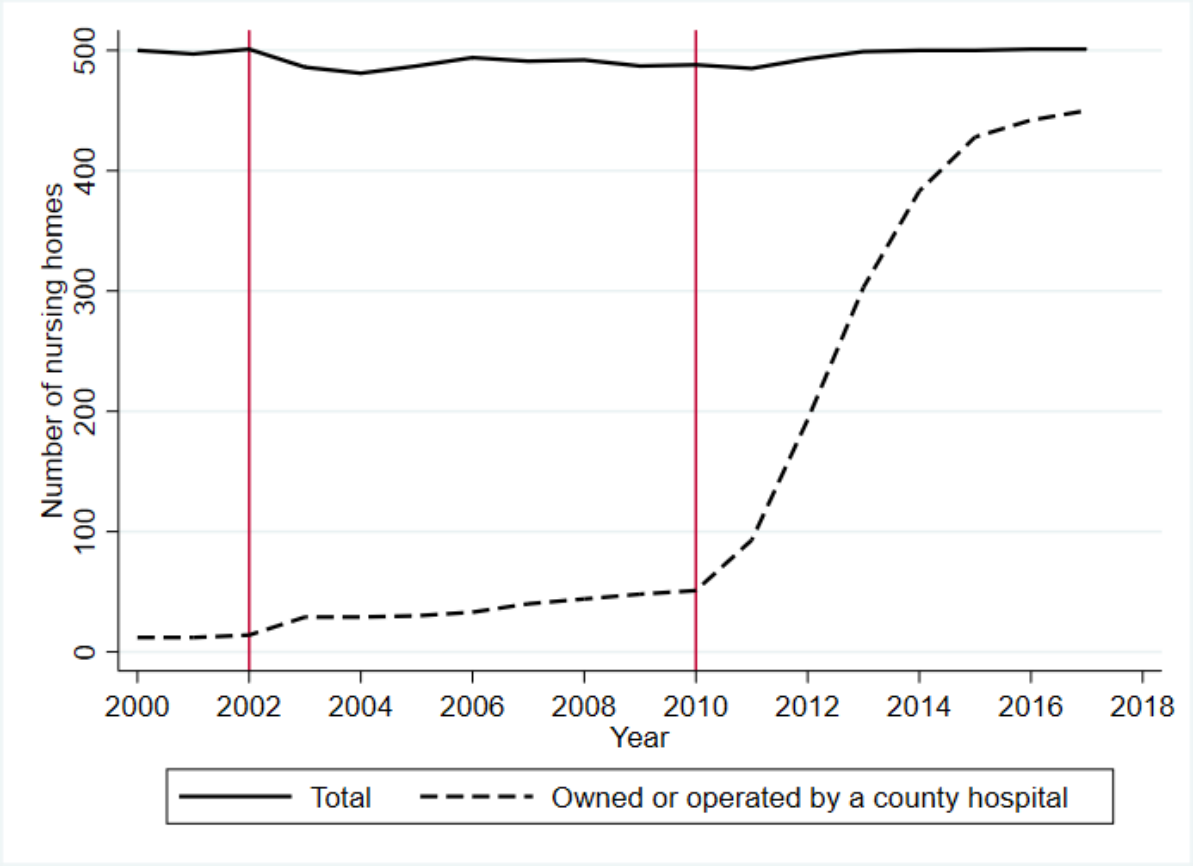
Back to OIG audits

Creative Financing: Indiana 2.0



1. Indiana spends $34M in SP to hospital-owned SNF
2. Triggers $66M in federal matching funds
3. $87.1M-$96.8m passed on to county hospital
4. $35.5¡ returned back to state budget via IGT

County-Owned SNFs in Indiana 2000-2017



- 2010 amendments facilitated acquisitions via 'lease structure'
- 24 hospitals adopted HHC approach: 90% of SNFs county-owned in 2017, 5% in 2002

To main slides

HHC Role in Money Scheme (I)

- 2023 Supreme Court Ruling clarifies timeline and role of HHC

Ruling: *"[...] private citizens can sue under Section 1983, including for Medicare programs, if the government had deprived them of 'any rights, privileges, or immunities secured by the Constitution and laws' [...]"*

No. 21-806

IN THE

Supreme Court of the United States

HEALTH AND HOSPITAL CORPORATION OF MARION COUNTY, *et al.*,

Petitioners,

—v.—

IVANKA TALEVSKI, Personal Representative of the Estate of Gorgi Talevski, Deceased,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT

BRIEF FOR *AMICUS CURIAE* DANIEL L. HATCHER

HHC Role in Money Scheme (II)

- *"Over the past two decades, Indiana's county and municipal health care systems have engaged in a campaign to transform virtually all of the state's nursing homes into government- owned entities."*
- *"They did so [...] as part of a scheme to maximize revenue from federal Medicaid matching payments. That scheme has been wildly successful, [...]"*
- *"Indiana's municipal health care systems routinely divert [the funds] to unrelated projects like the construction of glittering new hospitals."*

To main slides

HHC Role

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To main slides

HHC Role in Money Scheme (III)

- *"In the early 2000s, [HHC] was 'on the verge of economic collapse' before it 'zeroed in on a federal funding stream for government-owned nursing homes."*
- Convinced state officials to run pilot, paid for admin and fees, even incurred losses initially.

2001: Indiana State Senate approves Act 309

- (c) ***"Each governmental transfer or other payment mechanism that the office implements under this chapter must maximize the amount of federal financial participation that the state can obtain through the intergovernmental transfer or other payment mechanism."***

To main slides

HHC Role in Money Scheme (IV)

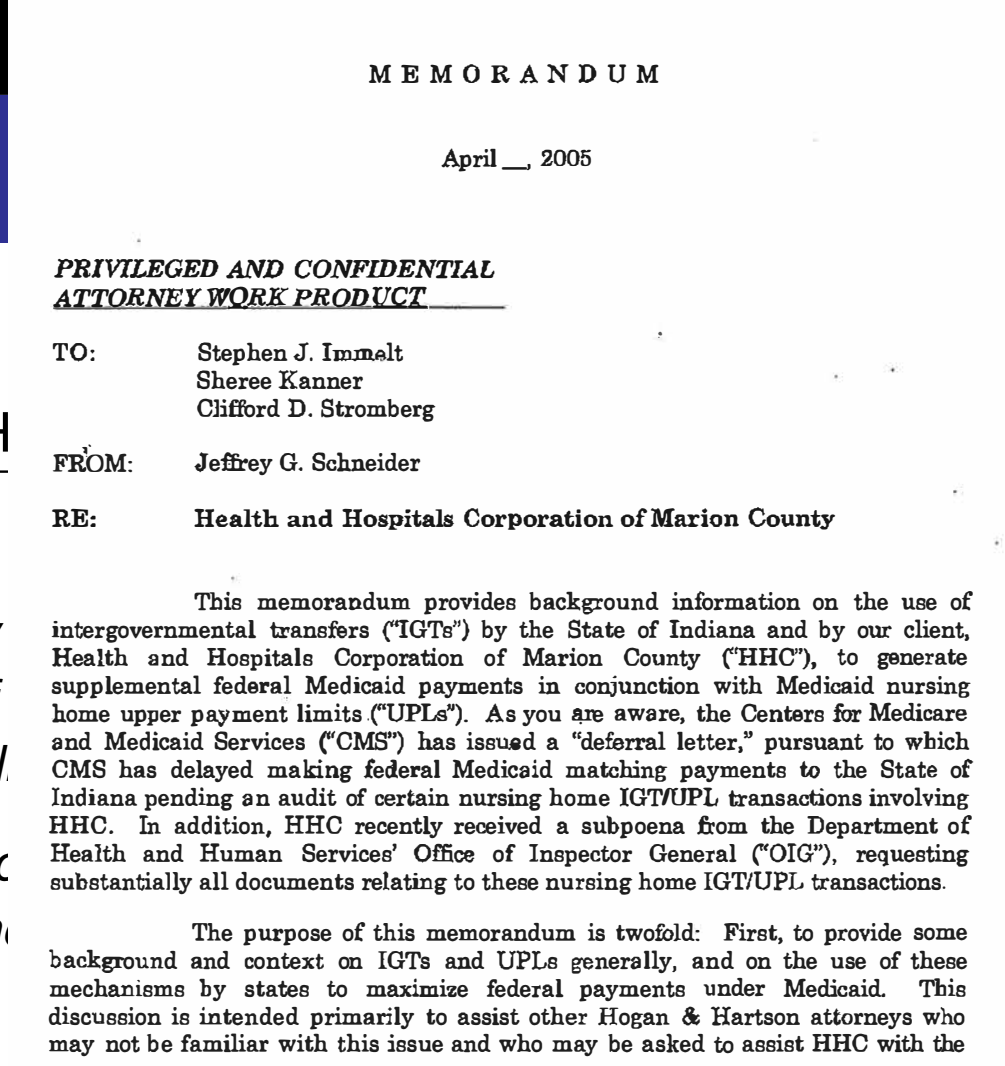
Memorandum by HHC attorneys provides detailed account of timeline, schem

- *"Each [...] facility receives supplemental payments in proportion to that facility's share of Medicaid days to the total Medicaid days of all participating facilities."*
- *"Nothing in applicable federal or state law requires that nursing home buildings be owned by the entity that owns the license or operates the facility."*
- *"Acquisitions did not result in any material operational changes for most of the acquired facilities."*

To main slides

HHC

Memorandum by HH ... meline, schem



MEMORANDUM

April __, 2005

PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT

TO: Stephen J. Immelt
Sheree Kanner
Clifford D. Stromberg

FROM: Jeffrey G. Schneider

RE: **Health and Hospitals Corporation of Marion County**

This memorandum provides background information on the use of intergovernmental transfers ("IGTs") by the State of Indiana and by our client, Health and Hospitals Corporation of Marion County ("HHC"), to generate supplemental federal Medicaid payments in conjunction with Medicaid nursing home upper payment limits ("UPLs"). As you are aware, the Centers for Medicare and Medicaid Services ("CMS") has issued a "deferral letter," pursuant to which CMS has delayed making federal Medicaid matching payments to the State of Indiana pending an audit of certain nursing home IGT/UPL transactions involving HHC. In addition, HHC recently received a subpoena from the Department of Health and Human Services' Office of Inspector General ("OIG"), requesting substantially all documents relating to these nursing home IGT/UPL transactions.

The purpose of this memorandum is twofold: First, to provide some background and context on IGTs and UPLs generally, and on the use of these mechanisms by states to maximize federal payments under Medicaid. This discussion is intended primarily to assist other Hogan & Hartson attorneys who may not be familiar with this issue and who may be asked to assist HHC with the

- *"Each [...] facility ... to that facility's share of ... participating facil...*
- *"Nothing in applic... home buildings be own... es the facility."*
- *"Acquisitions did not result in any material operational changes for most of the acquired facilities."*

To main slides

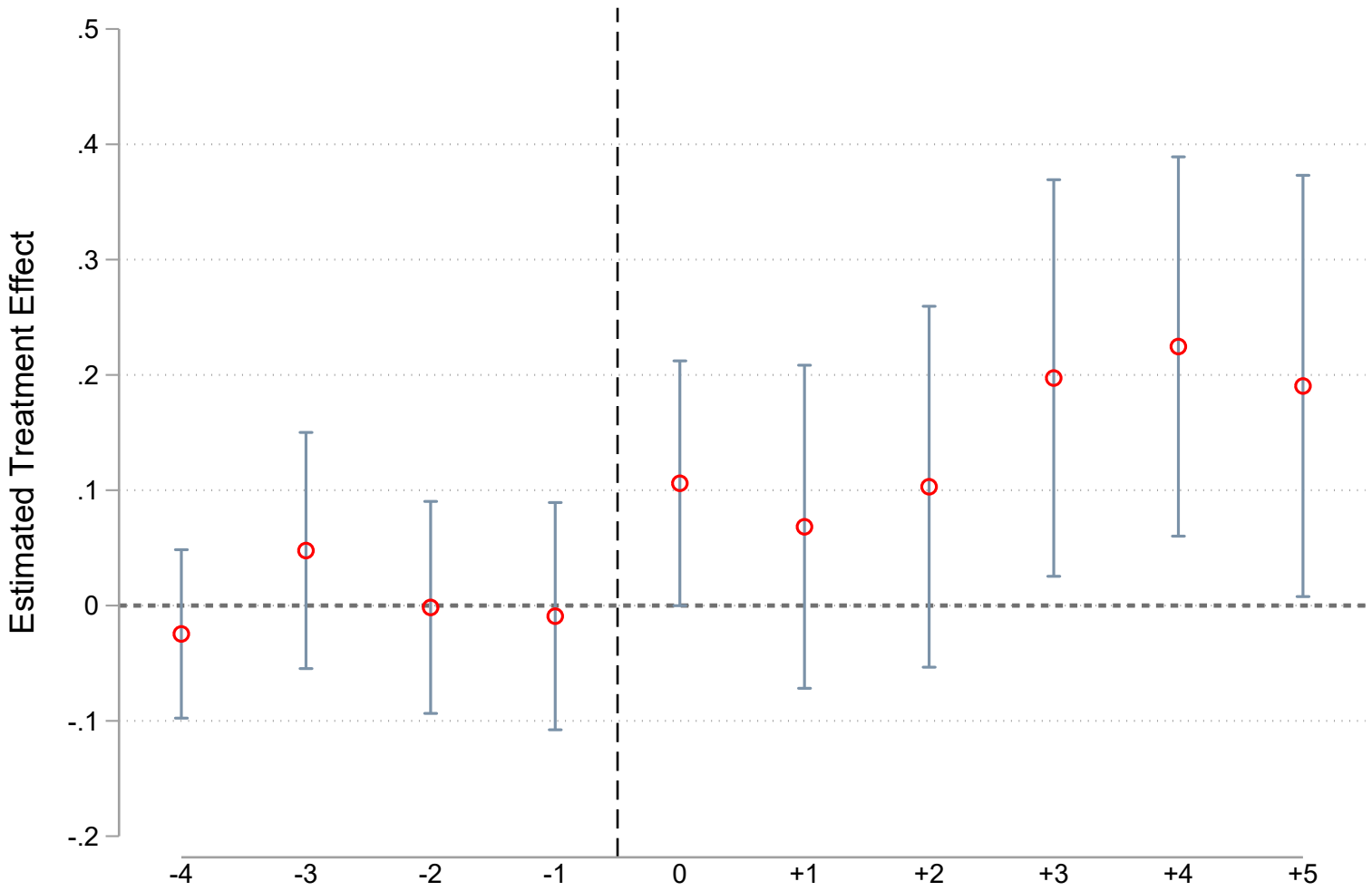
HHC Role in Money Scheme (V)

Indystar Investigation and Reporting (2020):

- IN is nations largest receiver of federal matching funds for SNFs: $679M (more than CA, TX,...)
- Since 2003, estimated to have redirected between $1 and $3bn
- *"To get that money, [...] Matthew Gutwein [...] has been hailed as a visionary. He balanced the budget and built a gleaming new hospital without raising taxes."*
- *"But Gutwein didn't perform a fiscal miracle. What he did is game the Medicaid system."*

To main slides

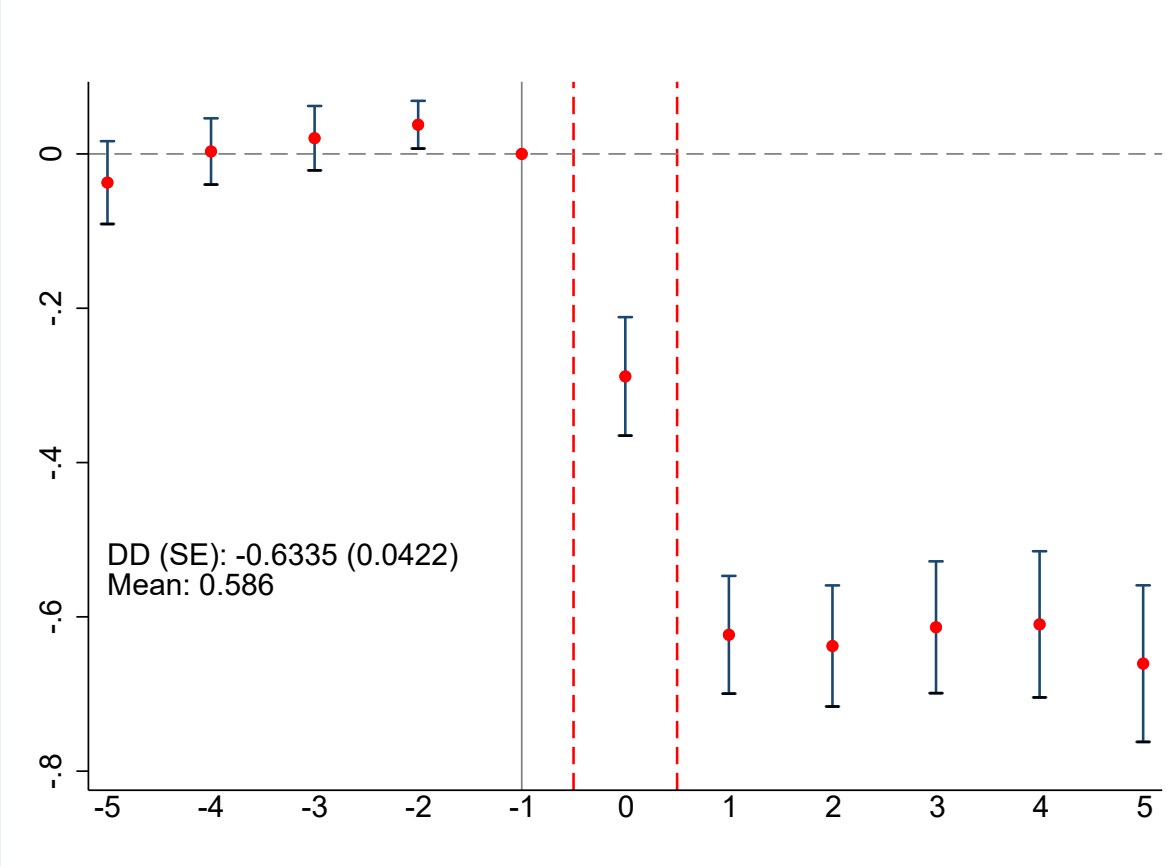
Mechanism: PAs/NPs



- Data: LTC Focus 1999-2017

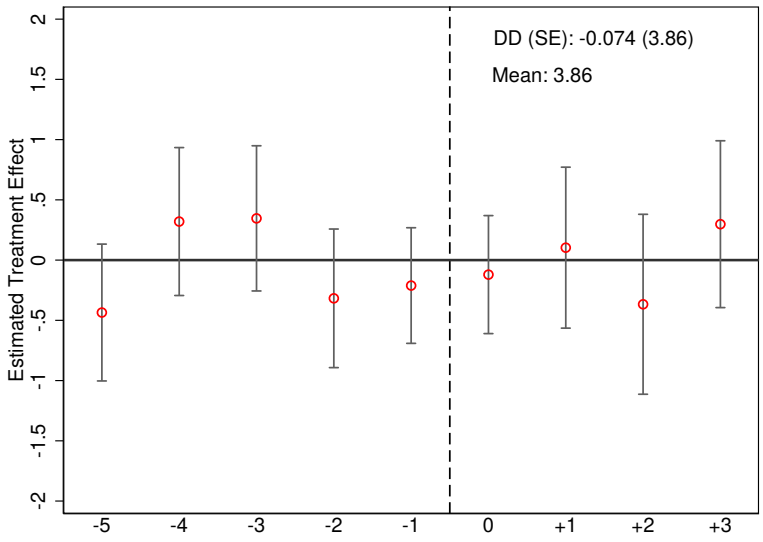
To evidence on SNF inputs

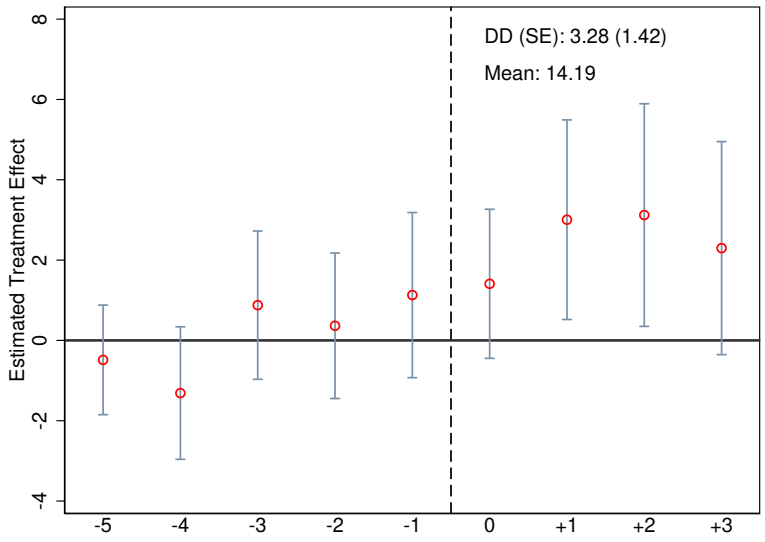
TWFE Event Studies: SNF For-Profit Status



- Data: LTC Focus ’99-’17 + hand-collected SNF acquisition dates
- 60% of acquired SNFs were for-profits (40% not-for-profit)
- Full ownership conversion effective from year $\tau = 1$ onward

Mechanism: Discharged from Home vs. Hospitals

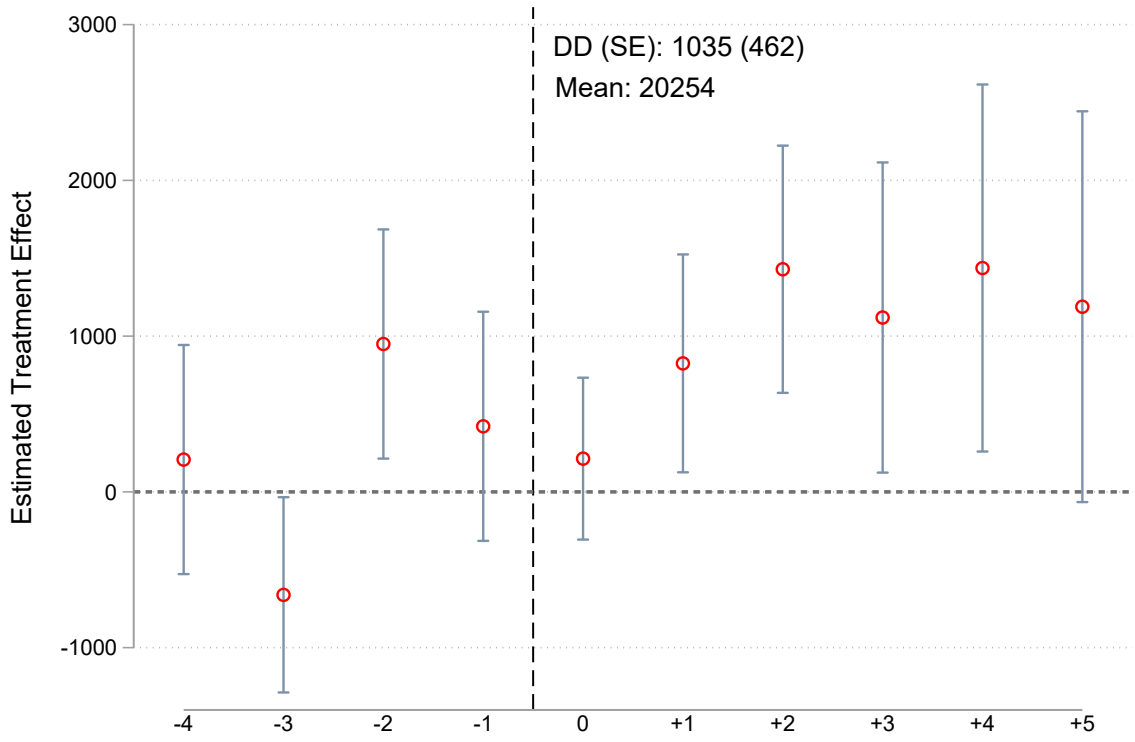




- SNF Patient micro data: Minimum Dat Set 1999-2015

To evidence on SNF inputs

Public Moral Hazard: Medicaid Days (I)



- Here: LTC Focus 1999-2017

Certified Nursing Assistant Hours Per Resident Day

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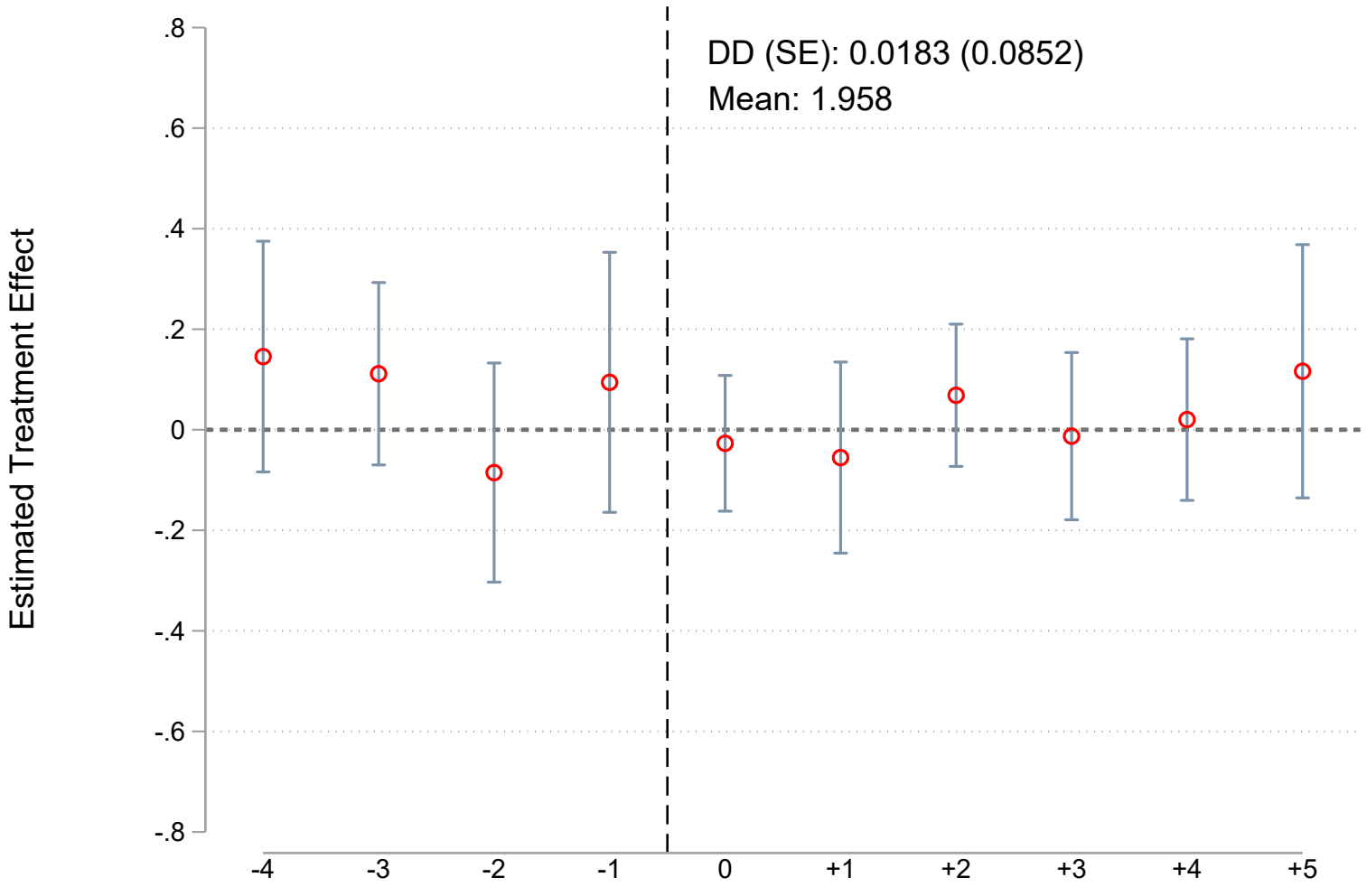

Registered Nurses Hours Per Resident Day

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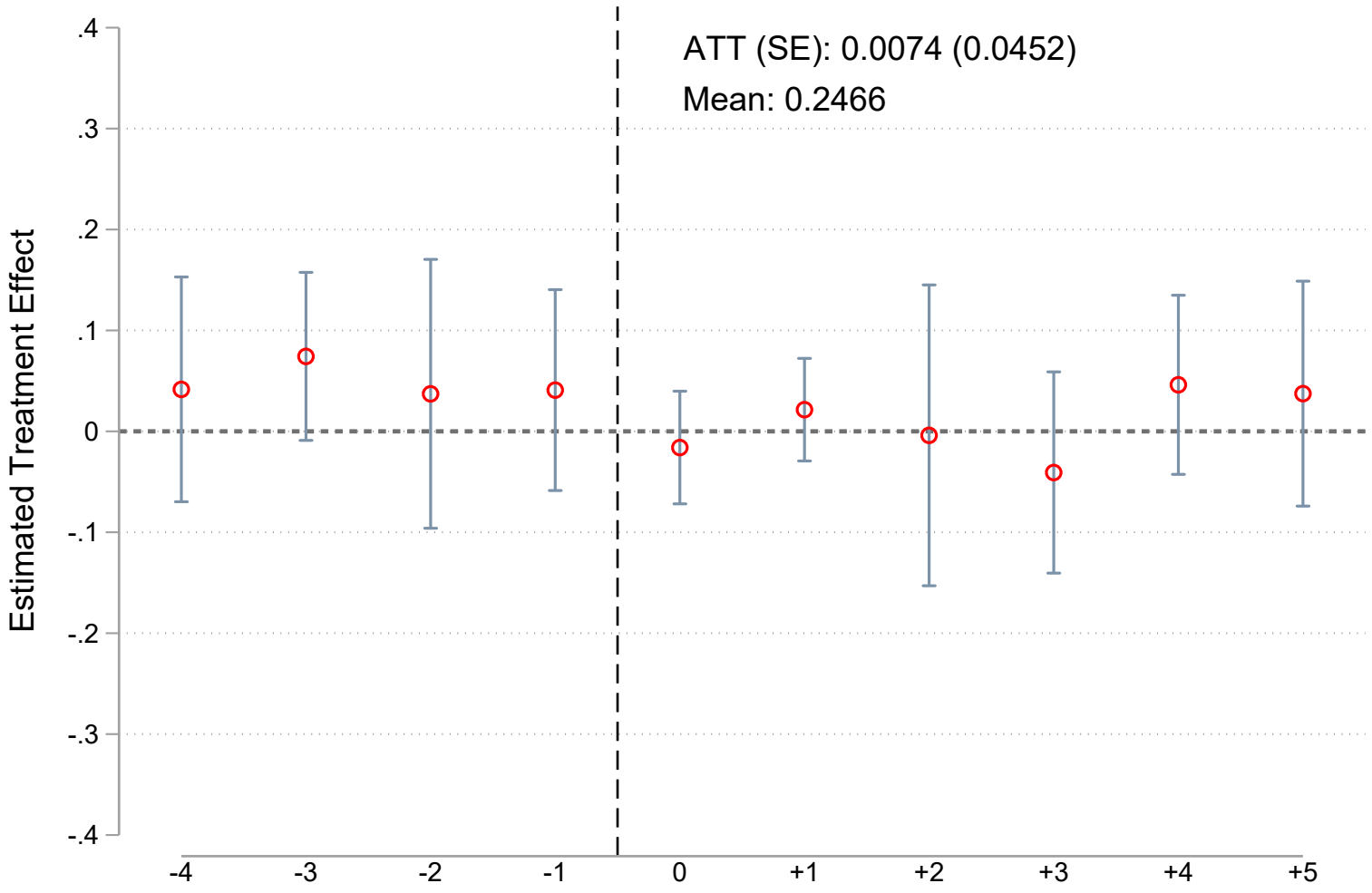

Licensed Practical Nurse Hours Per Resident Day

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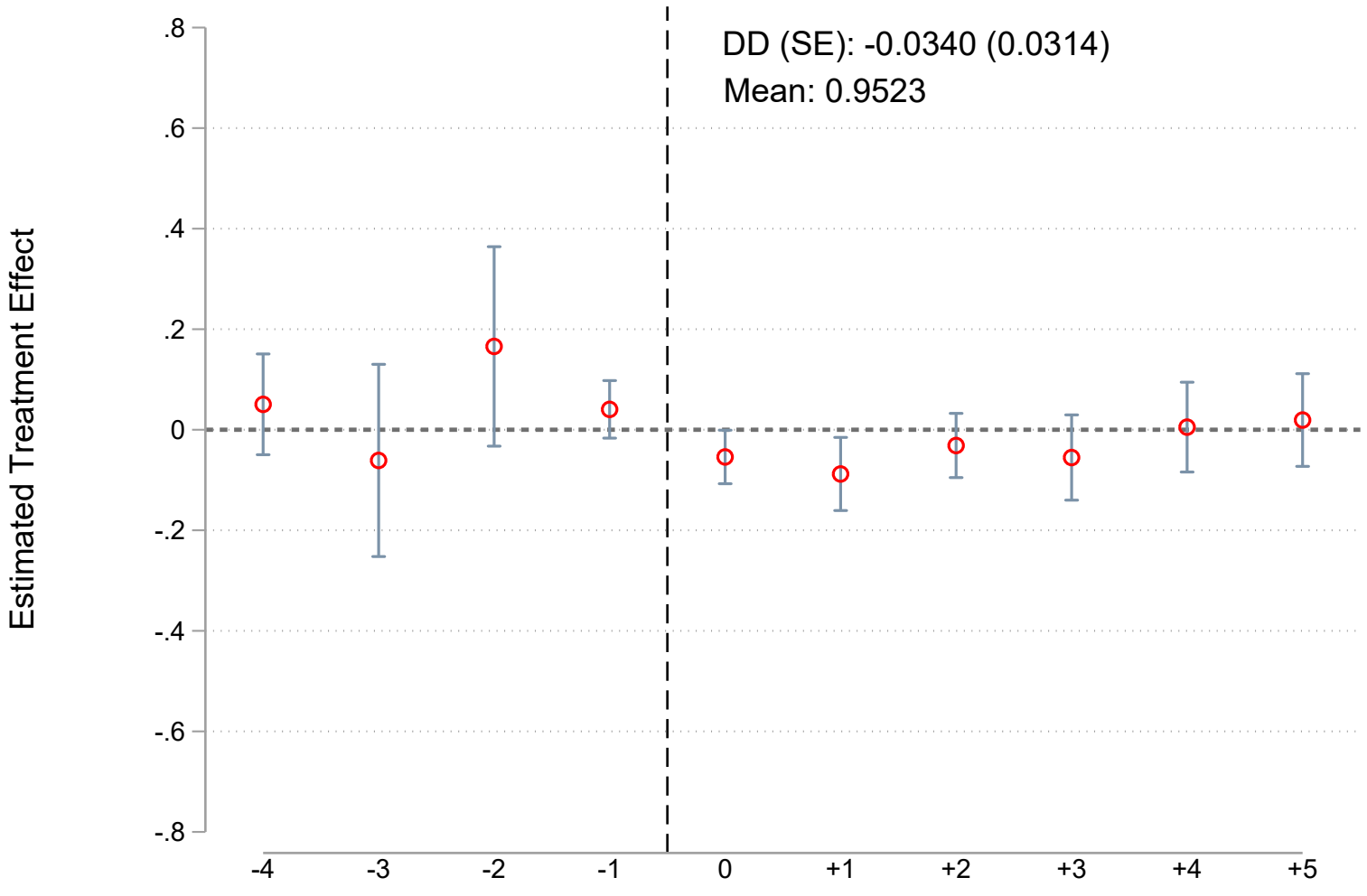

Average Acuity Index

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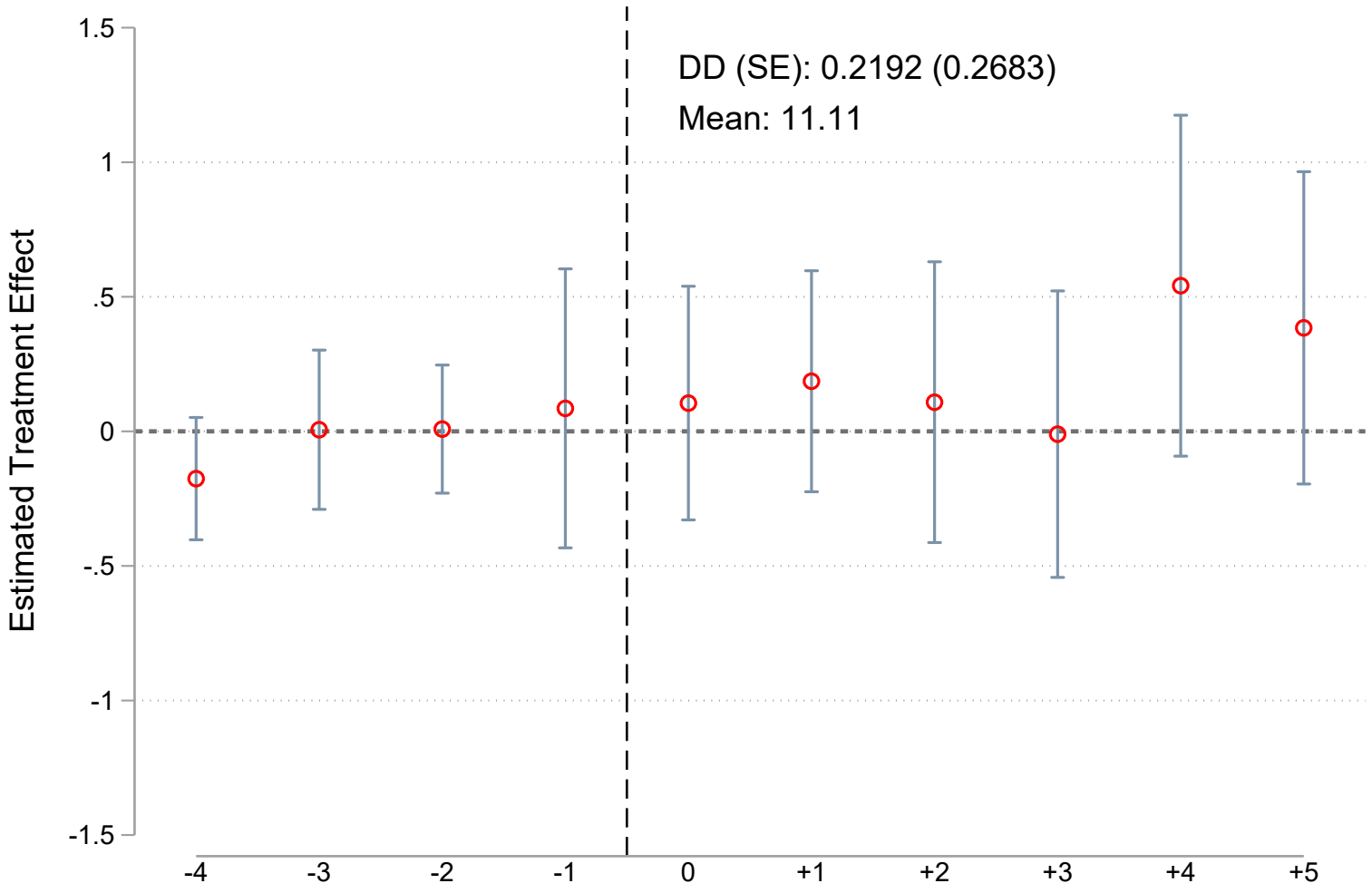


Sample of Dementia Patients in Hospitals

Medicare claims data on acute hospital discharges 2000-2012:

- Identify dementia patients via ICD codes (286K discharges)
- Find (if any) follow-up SNF stay
- Non-matched stays choose outside good (mostly home care)
- Merge distance & SNF info to each discharge
- All SNFs within 50 miles of patient's zipcode centroid
- All SNFs with at least 50 admissions

Back

Sample Cuts

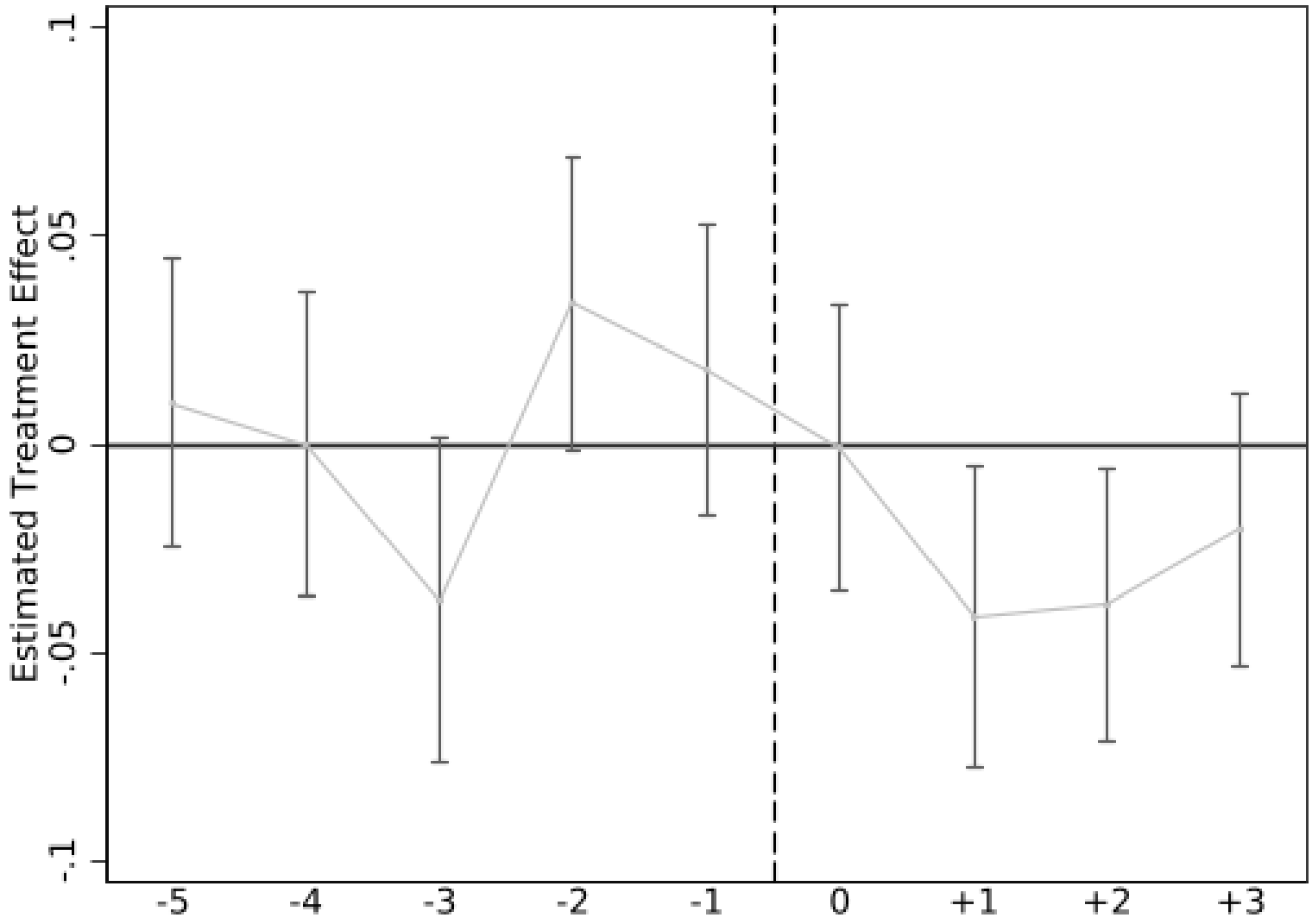
Sample	Observations
Dementia Patients in Indiana Hospitals	313,133
Dropping if Zip Code Missing or Outside Indiana	285,843
Restrict to 2000-2012	218,645
Keeping Patient 65+ in Acute Care Hospitals	208,825
Drop SNFs outside 50 miles or haven't entered	206,833

Source: Medicare claims data, MDS data, authors' own calculation.

Table: Summary statistics

Variable	Mean	(Std. Dev.)	N
age	0.8258	(0.072)	206833
White	0.8994	(0.3007)	206833
Black	0.0872	(0.2822)	206833
Female	0.6207	(0.4852)	206833
hosplos	5.5642	(4.5465)	206833
threeday	0.8097	(0.3925)	206833
Death	0.3293	(0.47)	206833
Home_Discharge	0.3257	(0.4686)	206833
HomeCare_Discharge	0.1389	(0.3459)	206833
SNF_Discharge	0.3685	(0.4824)	206833
ICF_Discharge	0.0332	(0.1793)	206833
Hospice_Discharge	0.0215	(0.145)	206833
SNF_MDSmatch	0.3761	(0.4844)	206833
Home_nonmatch	0.7061	(0.4555)	129039
MAdays	185.8092	(469.9024)	76272
MA_stay	0.1238	(0.3293)	77794
readm30	0.1743	(0.3794)	206833
readm90	0.3111	(0.4629)	206833

1-Year Mortality



Mixed Logit Model w/ Home Care as Outside Good

Back

Indirect conditional utility:

$$u_{ijt} = \begin{cases} \delta_j + x'_{ijt}\beta^x + z'_{ij}\beta^z + \eta_{ij} & \text{if j in } i\text{'s SNF choice } J_i^{SNF} \\ \pi_i + \gamma_t + \eta_{io} & \text{if outside good} \end{cases}$$

$$\begin{aligned} \eta_{ij} &\sim \text{i.i.d. extreme value} \\ \pi_i &\sim N(0, \sigma^2) \end{aligned} \tag{1}$$

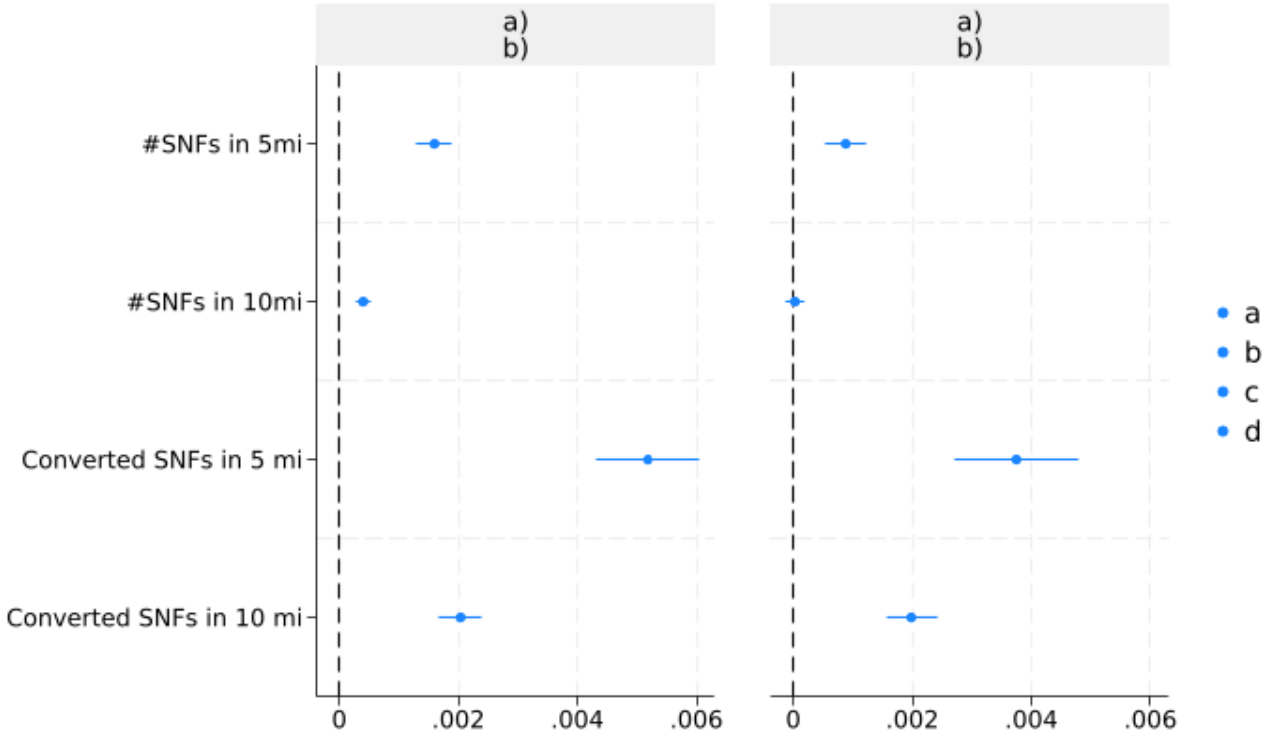
z_{ij} : excluded instruments in health equation below: distance to SNF

Health Equation:

$$m_{ijt} = \alpha_j + \alpha_t + x'_{ijt}\alpha^x + \varepsilon_{it}, \tag{2}$$

First Stage: Extensive Margin

Discharge to any SNF= $\beta_0 + \beta_1 \times \#SNFs\_in\_Radius + \beta_2 \times \#ConvertedSNFs$
ε



Mixed Logit SNF Demand Estimates

	Coefficient	95% CI Lower	95% CI Upper
SNF Choice.			
Log Distance to SNF	-1.51	-1.51	-1.50
Municipalized SNF	0.05	0.01	0.09
Hospital length of stay	-0.29	-0.30	-0.28
Outside Good.			
Age	-18.01	-18.91	-17.10
Female	-0.65	-0.74	-0.56
White	-1.82	-1.99	-1.66
σ	7.63	7.32	7.94

Source: Medicare claims data, MDS data. Demand equation is estimated and demand predictors shown. σ is std. dev. on random coefficient, capturing heterogeneity in preferences between SNF and outside good. Effect size equals 42 life years:-18.01$\times$0.42=7.56

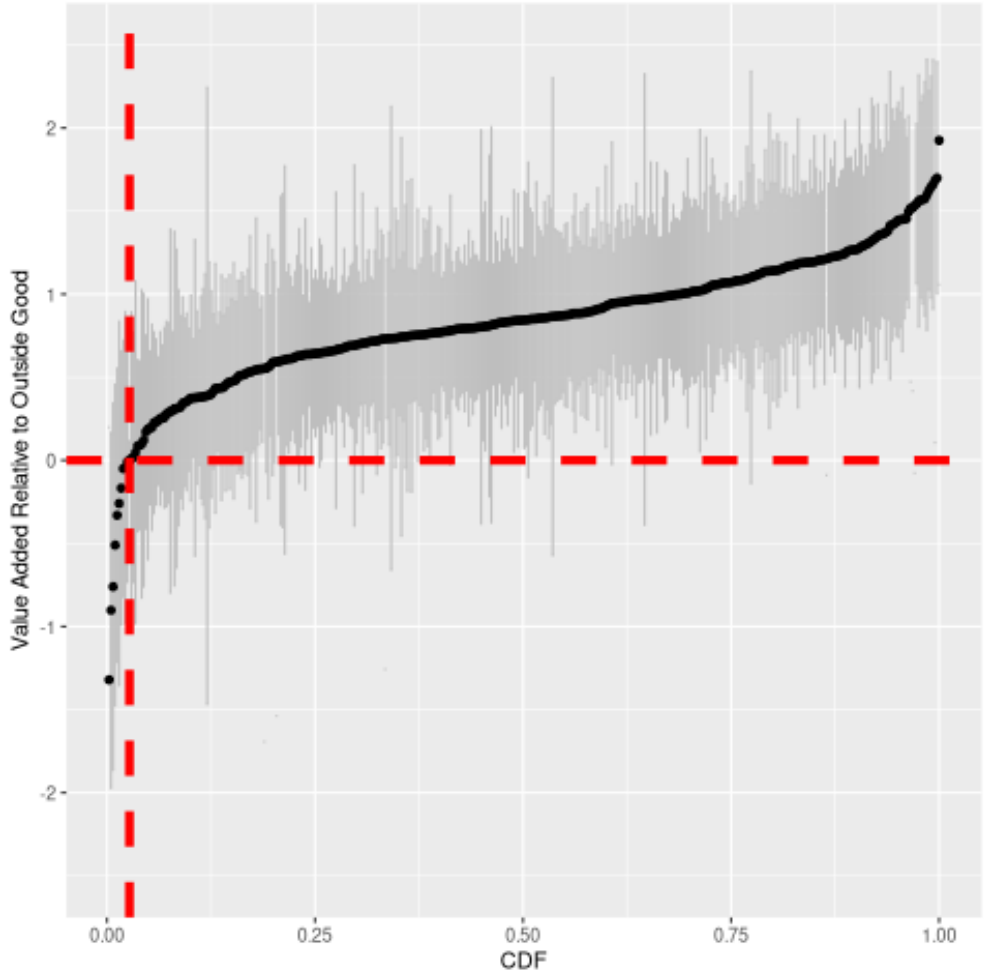
Mixed Logit Health Outcome Estimates

	Coefficient	95% CI Lower	95% CI Upper
Age	-3.09	-3.18	-3.00
Female	0.30	0.29	0.32
White	-0.01	-0.03	0.01
Municipalized SNF	0.02	-0.02	0.07
Hospital length of stay	-0.01	-0.01	-0.01
ψ	-0.02	-0.03	0.00
ρ	0.11	-0.04	0.26
ρ_ψ	-0.24	-0.32	-0.16

Source: Medicare claims data, MDS data. Health equation is estimated. The outcome is the one-year survival rate so coefficients reflect positive health effects. Columns 2 and 3 show the 95% confidence interval. Excluded instruments are the distance to an SNF from hospitalized former home address as well as the number of converted SNFs. Ψ (selection coefficient) corrects for remaining corr btw demand shocks and value added at SNF_j. ρ and ρ_ψ capture selection on random coefficients.

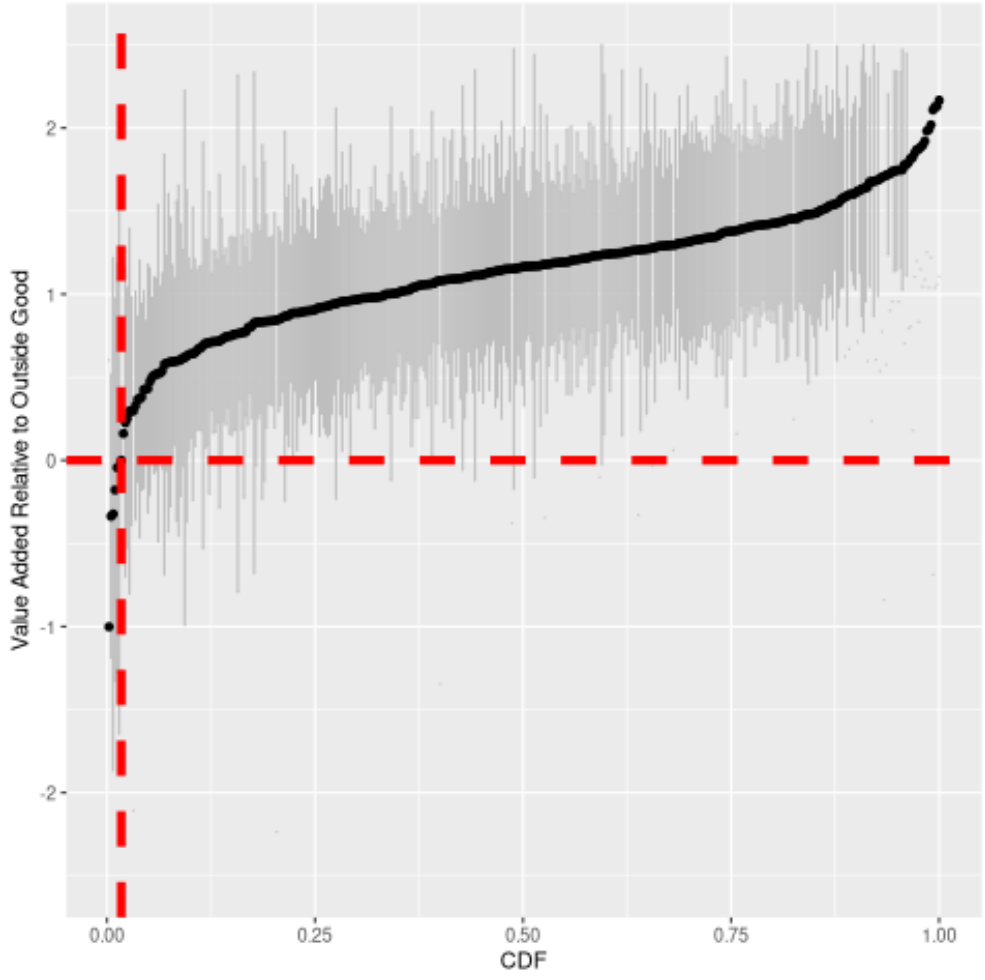
Value Added Distribution: 90-Day Readmission

Figure: Relative to Outside Good



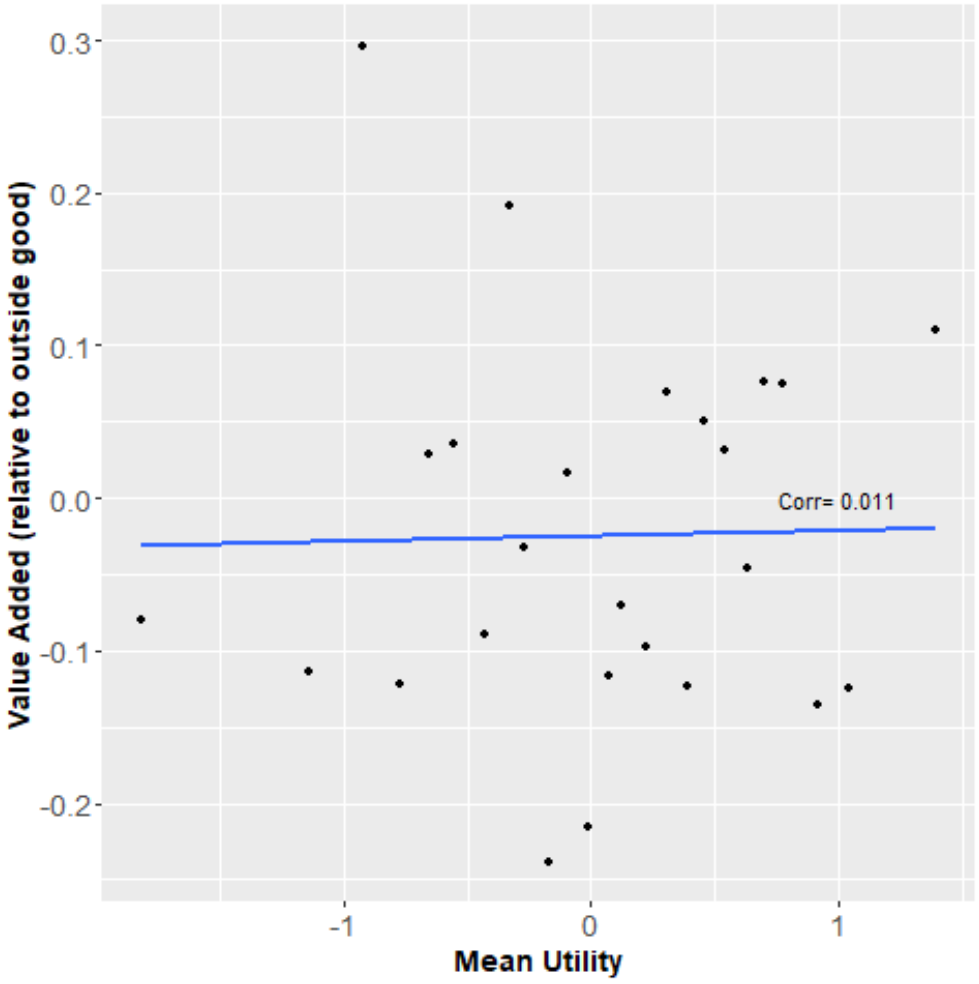
Value Added Distribution: 30-Day Readmission

Figure: Relative to Outside Good



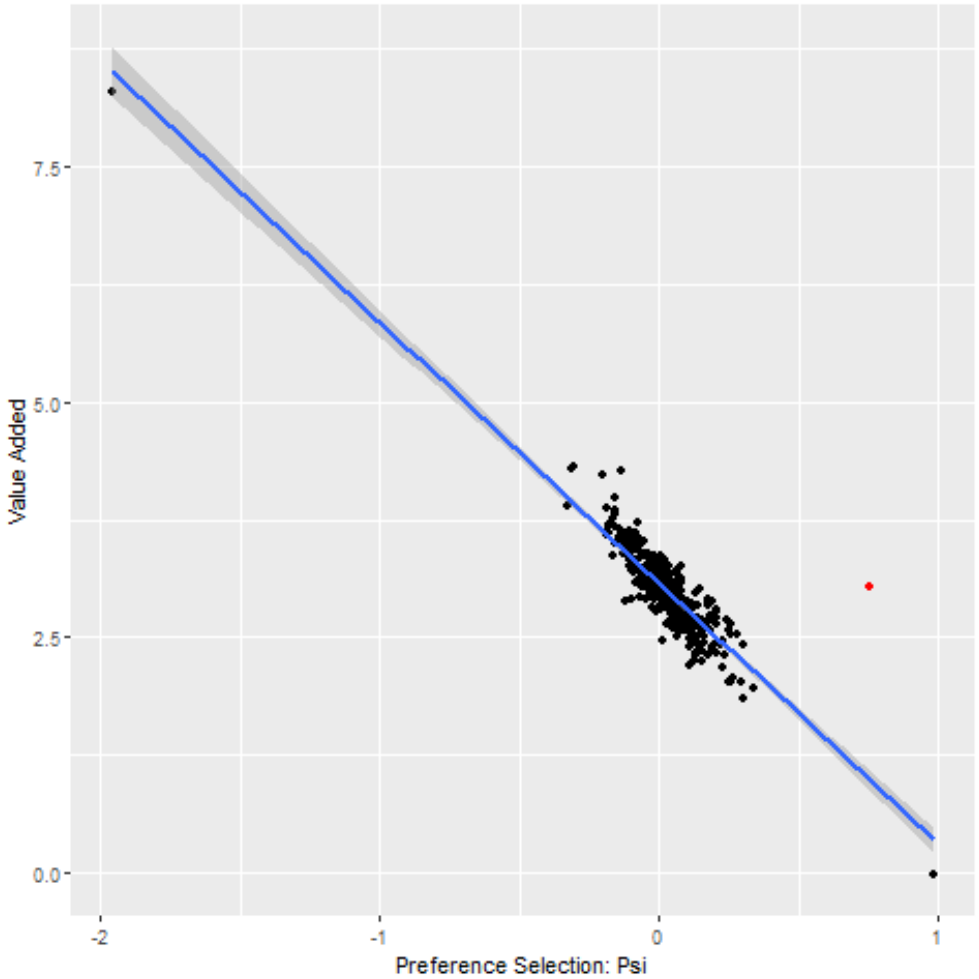
Value Added vs. Mean Utility

Figure: Mixed Logit Model



Roy Type Selection

Figure: Value Added Relative to Outside Good

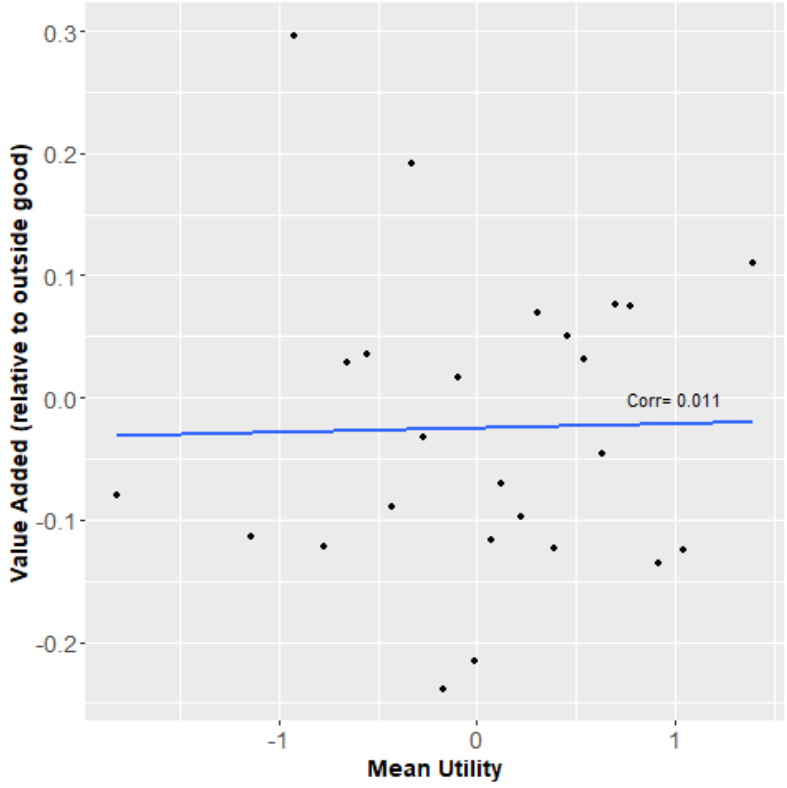


High vs. Low VA SNFs

	SNF Quality	
	High	Low
Std. Mean Utility	-0.065 (1.002)	-0.253 (1.067)
Std. Mortality VA	1.163 (1.288)	-1.117 (0.709)
Std. 30-Day Readmission VA	0.247 (1.198)	-0.359 (0.938)
Std. 90-Day Readmission VA	0.429 (1.071)	-0.537 (1.194)
Occupancy Rate	78.912 (12.674)	81.581 (9.112)
RN to Nurse Ratio	0.265 (0.129)	0.213 (0.065)
RN hours per Patient-Day	0.680 (1.075)	0.325 (0.383)
CMS Star Rating	2.870 (1.334)	2.486 (1.096)
Nurse Practitioner pre-acq.	0.421 (0.497)	0.316 (0.468)
Share acquired pre 2017	0.877 (0.331)	0.963 (0.190)
N	81 (20.0%)	81 (20.0%)

Source: Medicare claims data, MDS, authors' calculation. Tables shows SNF characteristics for bottom vs. top 20% of SNFs in terms of value added.

Can Consumer Demand Discipline Low Value Expansion?



- Patients not more likely to pick high quality SNFs.
- Negative preference selection coefficient suggests adverse selection.

Correlation with Other Markers

Variable	Mean Utility	VA: Mort	VA: Read 30	VA: Read
SNF Characteristics				
Nurse Practitioner	0.103	-0.01	-0.024	-0.028
Alzheimer's Unit	0.178	-0.041	-0.012	-0.02
RN Staffing Ratio	0.193	0.074	0.037	0.036
LPN Staffing Ratio	0.264	0.059	0.015	0.007
Occupancy Rate	-0.029	-0.001	-0.076	-0.043
Total Beds	0.101	-0.12	-0.021	0.003
Hospital Based	0.23	0.067	0.04	0.022
CMS Star Rating				
Overall Rating	0.175	0.104	0.065	0.126
Survey Rating	0.198	0.108	0.043	0.087
Quality Rating	-0.02	0.015	-0.02	0.023
Staffing Rating	0.113	0.015	0.046	0.083
RN Staffing Rating	0.045	0.047	0.093	0.112

Rates, Quantity & Creative Financing (CF)

- FMAP: federal share of Medicaid spending
- Q: Volume of Medicaid services
- θ: provider per-diem rate (actually paid)
- P: nominal rate, billed to federal gov.
- $B(\theta, Q)$: social benefit from SNF care with $B_\theta, B_Q > 0$

States' maximization problem w/out creative financing:

1. **Without** creative financing: $P = \theta$:

$$\max_{Q,\theta} B(\theta, Q) - (1 - FMAP) \cdot \theta \cdot Q \tag{2}$$

2. **With** CF: $P \neq \theta$:

$$\max_{Q,\theta,P} B(\theta, Q) - Q \cdot \theta + FMAP \cdot P \cdot Q \tag{3}$$

$$s.t. \qquad P \leq \overline{P} = UPL \tag{4}$$

Rates, Quantity & Creative Financing (CF)

- **Without CF** ($P = \theta$): $\max_{Q,\theta} B(\theta, Q) - (1 - FMAP) \cdot \theta \cdot Q$

$$Rates \quad : \quad B_\theta(\theta, Q)/Q = 1 - FMAP \tag{5}$$

$$Quantity \quad : \quad B_Q(\theta, Q)/\theta = 1 - FMAP \tag{6}$$

- **With CF** ($P \neq \theta$): $\max_{Q,\theta,P} B(\theta, Q) - Q \cdot \theta + FMAP \cdot P \cdot Q$

$$Rates \quad : \quad B_\theta(\theta, Q)/Q = 1 \tag{7}$$

$$Quantity \quad : \quad B_Q(\theta, Q)/\theta = 1 - FMAP \cdot \frac{P}{\theta} \tag{8}$$

CF biases rate and quantity setting in opposing directions:

1. Actual rates biased downward: **Public markdown**=$\frac{P-\theta}{\theta}$

$$Effective\ Price\ FMAP = 0$$

2. Quantities biased upward: **Public moral hazard**:

$$Effective\ Quantity\ FMAP = FMAP \cdot \frac{P}{\theta}$$