

# The Secret Menu in Health Care: A Cash Market for Imaging in California

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Epstein, J., Nicholson, S., Wang, L. X., Hempstead, K., & Asin, S. (2020). The Secret Menu in Health Care: A Cash Market for Imaging in California. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 57. [doi] [MPI discussion paper] (the first three authors contributed equally & are ordered alphabetically)

## Price Transparency & Cash Price Option

- Rising health care costs and growing high deductible health plans call for price transparency and new payment options
- *Cash price*: price for patients without or not using insurance
  - Can be paid via cash, check, tax-adv. health account, cards
- Relevant to: 1) uninsured patients; 2) in-network insured facing high shadow price; 3) insured who want to go out-of-network or prefer not to wait for in-network appointment

Q: Can we reduce health care costs using the cash price option?

# Research Questions

Can we reduce health care costs using the cash price option?

- Visualize price variation within procedure across payer-facility
- Compare private & cash prices across procedure-facility pairs
- Potential savings to privately insured patients & insurers if
  - Cash and/or insurer-negotiated prices were observed
  - Allow price search within a county vs over the SF Bay

# The Market for Imaging Services

- *Radiology industry*: large market size and utilization rate
  - \$100B imaging/year, 12,000+sites, ~50% utilization
- Incredibly competitive and fragmented market structure
  - 6,800+ independent sites, largest <5% market share
- Fairly homogeneous goods with extreme price dispersion
- An early context for cash price as a new payment option

# Data Sources: Healthcare-IT & Public Information

- Price data: in the greater San Francisco Bay Area
  - Prices for 194 procedures provided by 142 imaging facilities
  - Negotiated in-network prices with 5 large private insurers
- Utilization data: volume and facility information
  - CMS state level provider utilization and payment data
  - Information on imaging facilities: id, affiliation, location, etc.
- Deductible data: generated for 753 insured people
  - Time points: 1/1/2015, 12/27/2015, 1/1/2016, 5/29/2016
  - Info: deductible; oop max remaining; co-insurance and co-pay

# Data: Summary Statistics

**Table 1.** Sample Statistics.

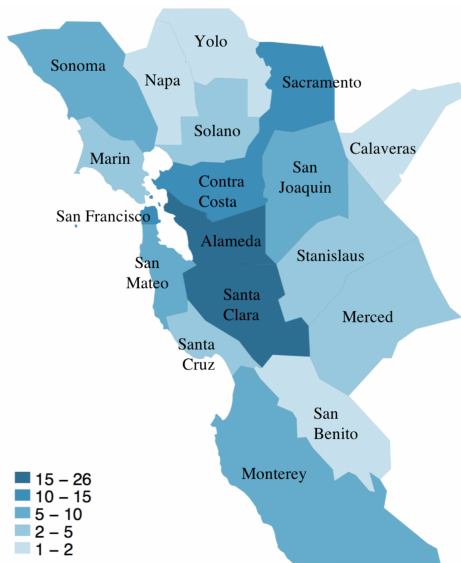
Facility-service-level data

	N	Mean (\$)	Median (\$)	SD (\$)	Min (\$)	Max (\$)
Medicaid price	6818	245.6	105.1	283.4	15.6	2027
Medicare price	7595	262.4	238.8	215.6	26.2	817.5
Private 1 price	7811	511.8	285.0	824.7	2.9	10674.1
Private 2 price	7811	489.9	310.2	703.8	23.0	10674.1
Private 3 price	7811	527.3	317.3	723.3	23.1	10674.1
Private 4 price	7811	439.0	308.9	677.2	23.1	10674.1
Private 5 price	7811	489.5	329.9	735.3	23.1	10674.1
Cash price	7811	528.4	365.0	1127.1	30.0	10000.0

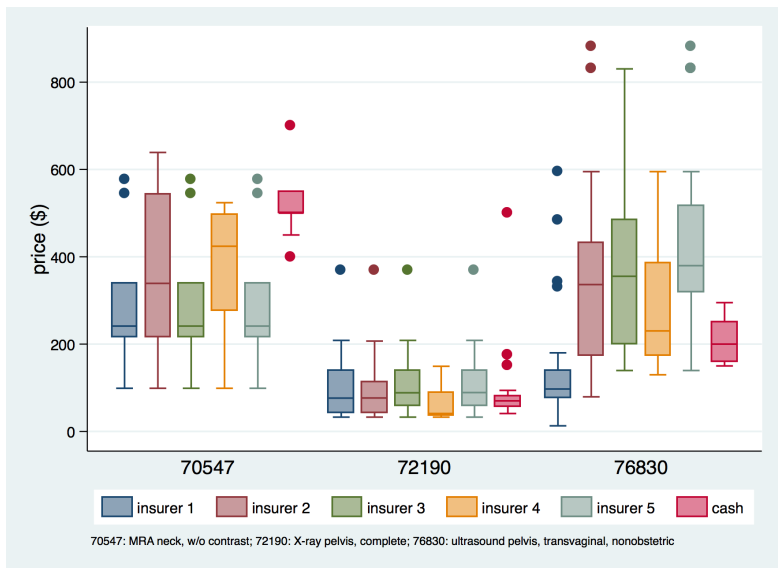
Consumer's insurance benefits and use of in-network medical care

1/1/2015-12/27/2015	Individual policies (n=700)			Family policies (n=556)		
	Mean (\$)	SD (\$)	Range (\$)	Mean (\$)	SD (\$)	Range (\$)
Deductible	996	1188	0-6600	2106	2391	0-13200
Out-of-pocket maximum	3349	1636	0-8850	6761	3333	0-15000
Deductible remaining on 12/27, <i>conditional on a positive balance</i>	1022	1272	8.2-6316	1556	1556	0-15000
% with deductible remaining		63.3			73.4	

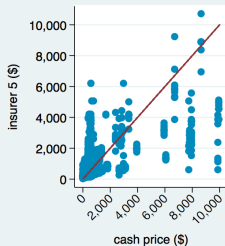
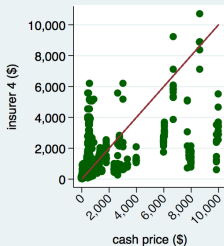
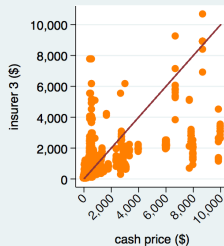
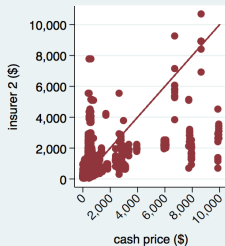
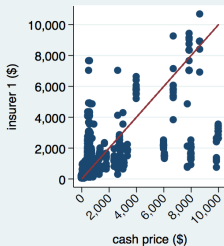
# Data: Distribution of Imaging Facilities in the SF Bay Area



# Variation of In-Network Prices and Cash Prices



# Price Comparison: Cash vs. Private Prices (Procedure-Facility Level)



# Simulation 1: Private vs Cash Prices, On the Spot

- Joint cost savings to patients and private insurers combined
- Upper bound: a privately-insured patient always pay the lesser of the cash price or the in-network private price

$$\sum_i \max\{private_i - cash_i, 0\} \times \frac{volume_i}{\sum volume_i}$$

- More conservative: only enrollees who do not exhaust their deductible by the end of year (63%) would ask for cash prices

	Saving measures	Insurer 1	Insurer 2	Insurer 3	Insurer 4	Insurer 5
Upper-bound	average per service	\$58	\$77	\$96	\$40	\$81
	as % of in-network price	15.0%	18.1%	22.2%	10.1%	21.5%
More conservative	average per service	\$37	\$49	\$61	\$25	\$51
	as % of in-network price	9.5%	11.5%	14.1%	6.4%	13.6%

## Simulation 2: In-Network Private Price Shopping

- Patients pay the lowest in-network price in a county or the Bay area (i.e., price shopping for in-network private prices only)

$$\sum_i \max \left\{ \text{private}_i - \min_{i \in C_i} \{ \text{private}_i \}, 0 \right\} \times \text{weight}_i$$

	Saving measures	Insurer 1	Insurer 2	Insurer 3	Insurer 4	Insurer 5
County	per service	\$172	\$178	\$203	\$130	\$182
	as % of in-network price	38.3%	37.0%	41.5%	26.5%	39.5%
Bay Area	per service	\$258	\$257	\$280	\$191	\$280
	as % of in-network price	64.0%	58.8%	63.0%	45.4%	63.2%

## Simulation 3: Private & Cash Price Shopping

- Patients pay the lowest in-network or cash price in a county or the Bay area (i.e., price shopping for private & cash prices)

$$\sum_i \max \left\{ \text{private}_i - \min_{i \in C_i} \{ \text{private}_i, \text{cash}_i \}, 0 \right\} \times \text{weight}_i$$

	Saving measures	Insurer 1	Insurer 2	Insurer 3	Insurer 4	Insurer 5
County	per service	\$184	\$194	\$220	\$147	\$212
	as % of in-network price	41.7%	40.8%	46.9%	30.8%	46.7%
Bay Area	per service	\$259	\$258	\$283	\$196	\$284
	as % of in-network price	64.1%	59.1%	63.9%	46.8%	64.0%

## Conclusion and Discussion

- Patients can save 10-22% of their insurer's in-network price by paying cash and 45-64% when shop both prices in the Bay
- More transparent private and cash prices can reduce costs
- Need joint effort from public and private sectors to implement