Health or Satisfaction? Investigating the Link Between Patient Satisfaction Scores and Provider Prescribing Patterns

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Identification Strategy

We use a multilevel linear probability with hospital and time fixed effects. Our identification comes from two main interaction terms:

- Model 1: Interaction Between Hospital Owner and Score
- Model 2: Interaction Between Grey Cases and Score

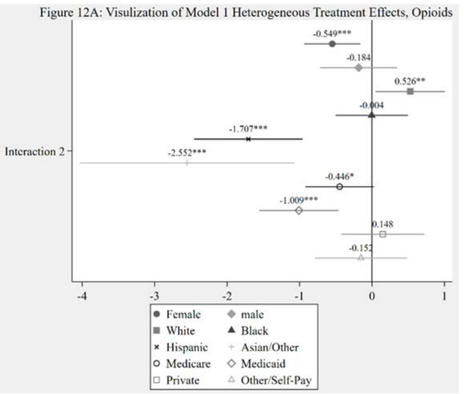
We interact different iterations of the score:

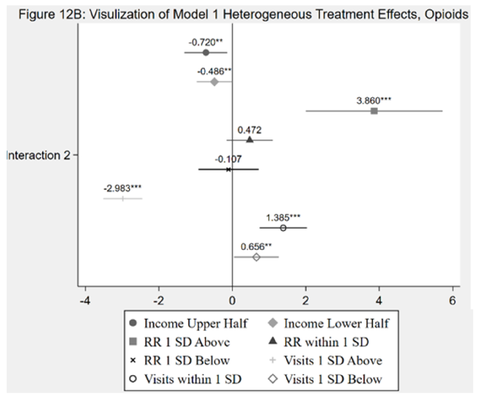
- present year's score; prior year's score; difference in score between last year and this year (or two years ago and last year); and difference between this year's score (prior year) and the average score across all hospitals

We also explore heterogeneity across four subgroups of the patient population and two markers of hospital demand:

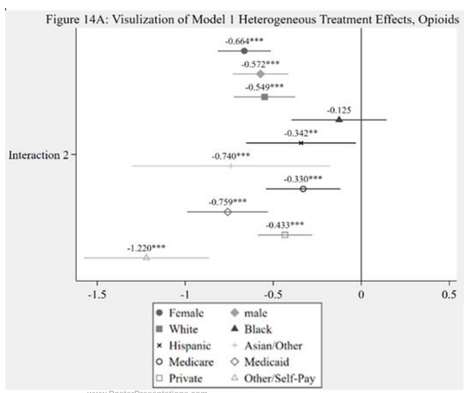
- The patient's gender, race, insurance, and income background
- Markers of hospital demand: survey response rate and log number of monthly patients visits

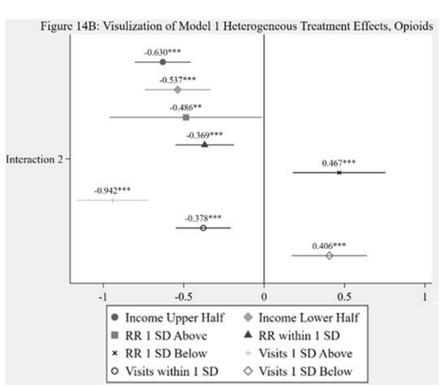
Heterogenous Treatment Effects - Model 1 (only Opioids shown)





Heterogenous Treatment Effects - Model 2 (only Opioids shown)





Motivation

Healthcare systems have begun to focus their institutional model on catering to patient happiness and satisfaction – particularly in general medicine – drifting towards a concierge-style environment. One way this directly shows up is with patient satisfaction surveys – which potentially adds a friction in the provider's health-related formulation of care that is not

Research Question

Does the presence of satisfaction scores distort prescribing behavior (opioids and antibiotics) in general medicine?

Conclusions

Our findings show that patient satisfaction scores do impact prescribing patterns. Particularly:

- When hospital systems have higher satisfaction scores their incentive to prescribe is depressed → Preferences to raise scores are not monotonic
- What is important to hospital systems is establishing a public perception that is better than their peers
- Generally, public hospitals are less influenced by scores than private hospitals.
- Women, minority racial and ethnic groups, and self-paying (uninsured) patients face the most consistent differential treatment across both of our models and clinical settings → These subgroups tend on average to be less likely to receive a prescription

Contact

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Data

Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Reporting from the Center for Medicare and Medicaid Services (CMS) from 2008-2022:

- 9 score categories, with scores ranging from 0-100 (100 being the best)
- Identify hospital ownership (public, private, church, other non-profit)
- Observe survey response rates
- Use American Medical Association (AMA) survey to merge with SASD hospitals

State Ambulatory Surgery and Services Databases (SASD) for NYS - 2003-2017

- Observe individual provider-patient interactions
- Detailed information on patient demographics (including income and insurance)
- Detailed information on diagnoses, procedures, charges, visits to the facility, admission rates, discharge locations, and capable of tracking patients through time
- Limited to observing in-clinic administration of drugs

We focus on 2009-2014

Main Results – Model 1: Hospital Owner and Score

Table 6: Hospital Type and Score Interaction Conditional on Opioids

	(1) OLS	(2) Present Year's Score	(3) Last Year's Score	(4) Self-Updating	(5) Relative to Competition
Iteration of Score	0.029	0.490***	0.016	0.537***	0.410***
	(0.1277)	(0.1218)	(0.0943)	(0.0756)	(0.1257)
1(Public Hospital)	-0.809***	0.237*	1.558***	-0.036*	0.008
	(0.1462)	(0.1299)	(0.1630)	(0.0193)	(0.0119)
1(Public Hospital) x Iteration of Score	1.091***	-0.400**	-2.640***	0.992***	0.752***
	(0.2256)	(0.1993)	(0.2700)	(0.1884)	(0.2355)
Observations	781,152	781,151	637,735	637,735	781,151
Adjusted R-Squared	0.150	0.352	0.366	0.366	0.352
Hospital FE		YES	YES	YES	YES
Year FE		YES	YES	YES	YES
Month FE		YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Hospital Type and Score Interaction Conditional on Antibiotics

	(1) OLS	(2) Present Year's Score	(3) Last Year's Score	(4) Self-Updating	(5) Relative to Competition
Iteration of Score	-0.580***	0.225***	-0.010	0.244***	0.206***
	(0.0580)	(0.0600)	(0.0641)	(0.0557)	(0.0608)
1(Public Hospital)	-1.215***	-0.131*	1.028***	-0.062***	0.007
	(0.0849)	(0.0749)	(0.0976)	(0.0099)	(0.0063)
1(Public Hospital) x Iteration of Score	1.848***	0.195*	-1.802***	0.864***	0.328***
	(0.1297)	(0.1156)	(0.1662)	(0.1391)	(0.1076)
Observations	781,152	781,151	637,735	637,735	781,151
Adjusted R-Squared	0.140	0.253	0.255	0.255	0.253
Hospital FE		YES	YES	YES	YES
Year FE		YES	YES	YES	YES
Month FE		YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Main Results – Model 2: Grey Cases and Score

Table 8: Expected Case and Score Interaction Conditional on Opioids

	(1) OLS	(2) Present Year's Score	(3) Last Year's Score	(4) Self-Updating	(5) Relative to Competition
Iteration of Score	1.695***	0.944***	0.356***	1.752***	0.759***
	(0.1318)	(0.1300)	(0.1126)	(0.1322)	(0.1328)
1(Grey Case)	1.182***	0.321***	0.301***	-0.085***	-0.100***
	(0.0623)	(0.0457)	(0.0520)	(0.0033)	(0.0032)
1(Grey Case) x Iteration of Score	-1.897***	-0.612***	-0.581***	-1.473***	-0.365***
	(0.0920)	(0.0680)	(0.0775)	(0.1419)	(0.0806)
Observations					
Adjusted R-Squared	781,152	781,151	637,735	637,735	781,151
Hospital FE	0.151	0.353	0.366	0.367	0.352
Year FE		YES	YES	YES	YES
Month FE		YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Expected Case and Score Interaction Conditional on Antibiotics

	(1) OLS	(2) Present Year's Score	(3) Last Year's Score	(4) Self-Updating	(5) Relative to Competition
Iteration of Score	-0.563***	0.403***	0.082	0.283***	0.387***
	(0.0598)	(0.0646)	(0.0645)	(0.0563)	(0.0646)
1(Grey Case)	-0.268***	0.300***	0.326***	-0.100***	-0.097***
	(0.0503)	(0.0466)	(0.0529)	(0.0043)	(0.0041)
1(Grey Case) x Iteration of Score	0.285***	-0.574***	-0.624***	0.146	-0.531***
	(0.0739)	(0.0700)	(0.0796)	(0.1125)	(0.0816)
Observations	781,152	781,151	637,735	637,735	781,151
Adjusted R-Squared	0.138	0.253	0.255	0.254	0.253
Hospital FE		YES	YES	YES	YES
Year FE		YES	YES	YES	YES
Month FE		YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1