A Denial a Day Keeps the Doctor Away: Supplementary Appendix

For Online Publication Only

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January 14, 2023

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Table S.2 shows the estimates of the model parameters (analogous to Appendix Table A.4) obtained by adding the diagnosis and primary procedure of a visit to the set of conditioning observables, relaxing Assumption SUF (described in Appendix B).

Table S.3 shows summary statistics for variants of our π and τ indices, computed using different samples, controls, and weighting schemes.

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Table S.12 adds interactions with the size of the physician group, measured as the number of other physicians in the group besides the index physician (i.e. total group size minus 1). We include the -1 term in this definition so that the main effects of Post-Move $\times\Delta\tau$ and Post-Move $\times\Delta \log \text{Fee}$ can be interpreted as the coefficients applicable to sole practitioners.

Table S.13 adds group-by-year fixed effects to the cross-state group specification.

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Tables S.15 and S.16 show results from both of our empirical strategies, analogous to Tables 6 and 7 in the paper, when adding controls for commercial insurance reimbursements in the market (in changes or levels, as appropriate).

Tables S.17 and S.18 account for differences between Medicaid MCOs and Medicaid fee-for-service. We estimate the model separately for Medicaid MCO and FFS plans. Since we cannot see the physician's acceptance decision separately for MCO and FFS Medicaid, we construct a state-level index by aggregating the model estimates up to the state level, averaging between the MCO and FFS claims. We then repeat both of our empirical strategies using the regressors constructed in this more granular way.

Tables S.19 and S.20 change the dependent variable in the cross-state groups strategy to the share of Medicaid patients.

Figure S.2 shows the variation in Medicaid acceptance decisions within a group-state-year cell, weighting cells by group size. This is analogous to Figure A.2 but with weights. For this Figure, we first compute the standard deviation of physicians' Medicaid acceptance decisions within each group-state-year cell. Each panel plots the distribution of these standard deviations, with a few variations. Panel (a) shows the distribution across all observations, weighted by group size (the number of physicians in the group). Panel (b) excludes the mass point with zero standard deviation—i.e. where all physicians make the same choice—to highlight the variation among the rest. Panel (a) shows that there is certainly a large share at this zero point, i.e. just over 40 percent of physicians make the same decision within the cell in question. But this still leaves a lot of individual variation—60 percent of physicians are in groups where there appears to be some scope for individual choice.

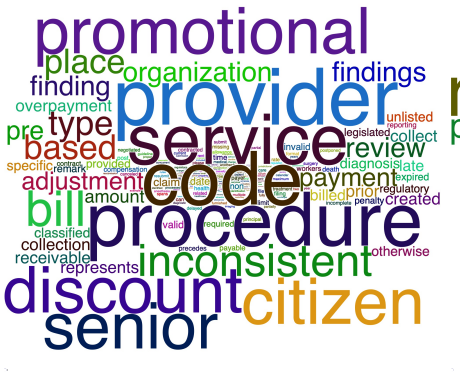
Figure S.3 shows level curves for the function $\tau(\pi, d)$. The origin for both axes is normalized to the observed level in the data, and each value on the vertical (horizontal) axis corresponds to a relative change in d (π).[1] The figure shows that, as expected, higher values of d increase τ. More importantly, the model predicts that increases in π lower τ: physicians

[1]Precisely, a value of 10% on the vertical axis means that we change the distribution $F(\pi, d)$ to obtain, for each visit, a denial probability of $1.1d$ rather than d. We do the same for the horizontal axis in terms of π.

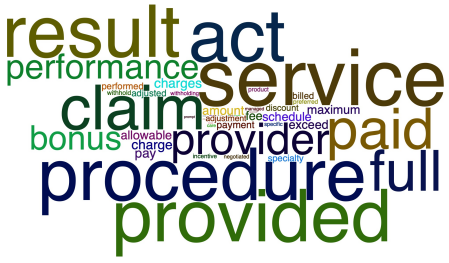
resubmit more, ceteris paribus, and this reduces CIP; this increase is on average larger than the increase in the denominator of (2).

Figure S.1: Frequent Words in the Reasons for Denial, by Category

(a) Administrative



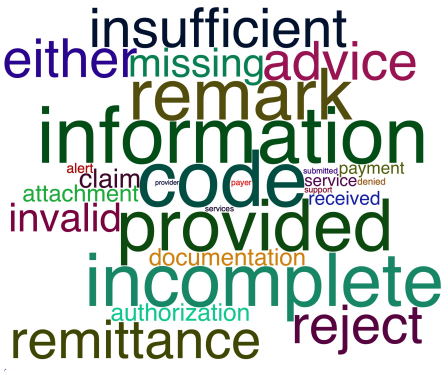
(b) Contractual



(c) Coverage

(d) Duplicate

(e) Information



NOTE: Each word cloud summarizes the text description of the reasons for denials observed in the IQVIA remittance data. We observe over 350 different reason codes, each associated with a brief description of the issue raised by the payer. After grouping these codes in the five categories that we use for our analysis, we count the frequency of each (non elementary) word in the corresponding descriptions. The word clouds weight each such word by the frequency in which it appears in the descriptions of the corresponding category.

Table S.1: Model Estimates When Relaxing Assumption IND

	Medicaid					Medicare					Commercial				
	All phys.	All phys.	All phys.	Small group.	Large group.	All phys.	All phys.	All phys.	Small group	Large group	All phys.	All phys.	All phys.	Small group	Large group
Average τ	0.142	0.178	0.179	0.185	0.177	0.033	0.049	0.049	0.060	0.045	0.019	0.025	0.025	0.031	0.023
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
Average CIP	9.80	12.73	12.76	13.31	12.56	2.68	4.07	4.08	5.11	3.75	1.78	2.38	2.39	3.01	2.22
	(0.011)	(0.013)	(0.013)	(0.025)	(0.015)	(0.003)	(0.003)	(0.003)	(0.008)	(0.004)	(0.002)	(0.003)	(0.003)	(0.006)	(0.003)
μ^0, all	0	13.01				0	8.26				0	11.04			
		(.03)					(.02)					(.03)			
μ^0, Admin. ρ			16.03	14.27	16.50			10.37	9.38	12.38			21.31	17.00	21.65
			(.05)	(.07)	(.06)			(.03)	(.05)	(.04)			(.07)	(.09)	(.09)
μ^0, Contr. ρ			9.24	8.05	10.15			6.74	6.66	7.00			8.34	7.61	8.75
			(.04)	(.07)	(.05)			(.02)	(.04)	(.03)			(.04)	(.05)	(.05)
μ^0, Cov. ρ			14.70	13.45	14.89			12.21	12.59	12.47			21.76	20.66	21.55
			(.05)	(.08)	(.04)			(.03)	(.05)	(.03)			(.11)	(.1)	(.09)
μ^0, Dup. ρ			20.14	17.85	19.18			11.45	12.99	11.77			21.84	19.87	21.16
			(.08)	(.11)	(.07)			(.04)	(.07)	(.05)			(.11)	(.22)	(.11)
μ^0, Info. ρ			14.47	12.20	14.45			10.15	8.42	11.66			19.23	17.42	14.15
			(.06)	(.08)	(.05)			(.03)	(.06)	(.04)			(.15)	(.15)	(.36)
Observations	0	1,133,130	1,133,130	317,740	815,390	0	1,218,096	1,218,096	329,026	889,070	0	708,954	708,954	162,742	546,212
Log Likelihood	0	-792,957	-620,615	-176,799	-514,699	0	-1,751,666	-1,686,528	-389,028	-1,224,408	0	-679,952	-530,858	-121,811	-506,640

NOTE: This table is analogous to Table A.4 in the main paper, but it is estimated on the subsample of visits with only one line item denied. This relaxes Assumption IND in Appendix B.

Table S.2: Model Estimates When Relaxing Assumption SUF

	Medicaid					Medicare					Commercial				
	All phys.	All phys.	All phys.	Small group.	Large group.	All phys.	All phys.	All phys.	Small group	Large group	All phys.	All phys.	All phys.	Small group	Large group
Average τ	0.142 (0.0001)	0.172 (0.0001)	0.173 (0.0001)	0.180 (0.0003)	0.171 (0.0002)	0.033 (0.0000)	0.047 (0.0000)	0.047 (0.0000)	0.058 (0.0001)	0.044 (0.0000)	0.019 (0.0000)	0.024 (0.0000)	0.024 (0.0000)	0.031 (0.0001)	0.023 (0.0000)
Average CIP	9.79 (0.011)	12.53 (0.013)	12.58 (0.013)	13.15 (0.025)	12.38 (0.015)	2.68 (0.003)	4.04 (0.003)	4.04 (0.003)	5.08 (0.008)	3.71 (0.004)	1.78 (0.002)	2.37 (0.003)	2.37 (0.003)	2.99 (0.006)	2.20 (0.003)
μ^0, all	0	3.67 (.04)				0	2.67 (.02)				0	2.59 (.02)			
μ^1, all	0	0.62 (0.03)				0	-24.83 (0.03)				0	-21.94 (0.03)			
μ^0, Admin. ρ			6.38 (.05)	3.96 (48.42)	7.10 (.06)			3.71 (.03)	1.85 (16.55)	4.91 (.05)			7.24 (.06)	4.22 (57.87)	8.30 (.06)
μ^1, Admin. ρ			-0.05 (0.09)	1.81 (0.17)	-0.69 (0.10)			3.40 (0.07)	5.87 (0.14)	2.26 (0.08)			8.29 (0.22)	1.26 (0.39)	8.85 (0.23)
μ^0, Contr. ρ			1.30 (.04)	-2.48 (214.7)	1.62 (.06)			0.98 (.02)	0.40 (.05)	1.06 (.03)			1.66 (.02)	-1.16 (78.5)	1.91 (.02)
μ^1, Contr. ρ			1.31 (0.05)	4.02 (0.22)	0.90 (0.06)			-38.83 (0.05)	-21.23 (0.11)	-39.28 (0.05)			-22.76 (0.04)	-23.70 (0.16)	-22.70 (0.04)
μ^0, Cov. ρ			5.64 (.05)	4.79 (.1)	5.59 (.05)			5.21 (.03)	3.61 (10.1)	5.88 (.05)			6.66 (.07)	3.09 (.31)	6.74 (.07)
μ^1, Cov. ρ			-0.04 (0.23)	1.80 (0.39)	0.39 (0.26)			-1.10 (0.07)	5.28 (0.42)	-1.82 (0.07)			3.60 (0.79)	3.53 (7.75)	3.78 (0.92)
μ^0, Dup. ρ			5.44 (.07)	7.29 (.1)	4.72 (.08)			5.34 (.04)	4.17 (.15)	6.22 (.05)			8.37 (.08)	4.30 (64.18)	9.17 (.09)
μ^1, Dup. ρ			-2.52 (1.12)	0.00 (.)	-2.91 (1.13)			-4.01 (0.09)	-1.09 (0.40)	-4.24 (0.10)			-7.60 (0.60)	0.00 (.)	-9.83 (0.65)
μ^0, Info. ρ			5.51 (.05)	0.20 (232.91)	5.94 (.07)			3.17 (.03)	2.38 (.06)	3.63 (.05)			4.66 (.07)	3.58 (69.18)	4.88 (.09)
μ^1, Info. ρ			-1.31 (0.12)	3.79 (0.45)	-1.40 (0.12)			-0.97 (0.13)	-1.78 (0.22)	-0.54 (0.17)			-14.60 (0.85)	-16.27 (1.12)	-11.68 (0.78)
Observations	0	585,800	585,800	140,152	445,648	0	950,470	950,470	221,122	729,348	0	433,328	433,328	75,852	357,476
Log Likelihood	0	-793,688	-640,521	-137,420	-483,817	0	-1,085,620	-908,881	-191,441	-710,133	0	-470,817	-381,530	-65,316	-312,767

NOTE: This table is analogous to Table A.4 in the main paper, but it is obtained by adding the diagnosis and primary procedure of a visit to the set of conditioning observables, relaxing Assumption SUF (described in Appendix B).

Table S.3: Variation in Fee and CIP Indices Across Alternative Specifications

	Mean	SD	10th Percentile	50th Percentile	90th Percentile	Observations
Panel a: log π Index						
$\ln \pi_\ell$	3.25	0.20	2.99	3.25	3.47	50
$\ln \pi_\ell$ (PCP specialty specific)	3.25	0.21	3.00	3.26	3.50	50
$\ln \pi_\ell$ (including imputations)	3.23	0.19	3.00	3.24	3.45	50
$\ln \pi_\ell$ (RVU weighted)	4.56	0.22	4.26	4.58	4.82	50
Panel b: τ Index (Physician Fixed Effects)						
τ	0.18	0.10	0.07	0.15	0.33	50
τ (RVU weighted)	0.13	0.09	0.05	0.11	0.24	50
τ (first visit only)	0.18	0.10	0.08	0.16	0.28	50
τ (first visit excluded)	0.18	0.11	0.06	0.15	0.36	50
τ (local income control)	0.18	0.10	0.07	0.15	0.33	50
τ (ICD9 codes only)	0.18	0.10	0.07	0.16	0.33	50
τ (pregnant patients only)	0.18	0.14	0.08	0.15	0.27	50
Denial Rate Index	0.23	0.11	0.11	0.22	0.40	50
Panel c: τ Index (Heckmann Correction)						
τ	0.18	0.11	0.07	0.15	0.30	50
τ (RVU weighted)	0.13	0.09	0.05	0.10	0.23	50
τ (first visit only)	0.18	0.11	0.08	0.15	0.27	50
τ (first visit excluded)	0.18	0.11	0.07	0.15	0.33	50
τ (local income control)	0.18	0.11	0.07	0.15	0.31	50
τ (ICD9 codes only)	0.18	0.10	0.07	0.15	0.30	50
τ (pregnant patients only)	0.18	0.13	0.08	0.15	0.27	50

NOTE: This table provides the summary of the τ and log-π indices used as the main dependent variables in Tables 6 and 7 in the paper. Panel (a) contains the baseline log-π index, and alternative versions used in robustness checks. Panel (b) contains the baseline τ index, and alternative versions used in robustness checks. Additionally, the Denial Rate Index in Panel (d) corresponds to the instrumental variable used in the 2SLS specifications. Panel (c) repeats Panel (b) using the selection correction.

Table S.4: Mover estimates, using separate fee indices by specialty

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0746***	-0.0819***	-0.0779***	-0.0820***
	(0.0219)	(0.0248)	(0.0187)	(0.0239)
Post-move $\times\Delta \log \pi$ index	0.0255**	0.0252*	0.0249*	0.0248*
	(0.0126)	(0.0126)	(0.0125)	(0.0126)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it uses indices estimated separately across PCPs and specialists.

Table S.5: Cross-state group estimates, using separate fee indices by specialty

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1560***	-0.1623***	-0.1307**	-0.1667***
	(0.0529)	(0.0478)	(0.0544)	(0.0484)
$\log \pi$ index	0.0635*	0.0633	0.0637*	0.0628
	(0.0379)	(0.0378)	(0.0378)	(0.0377)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	807,599	807,599	807,599	807,599
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it uses indices estimated separately across PCPs and specialists.

Table S.6: Mover estimates, no resubmission costs

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0764***	-0.0883***	-0.0815***	-0.0903***
	(0.0209)	(0.0283)	(0.0177)	(0.0283)
Post-move $\times\Delta \log \pi$ index	0.0285**	0.0270**	0.0261**	0.0248*
	(0.0129)	(0.0134)	(0.0128)	(0.0134)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it uses a τ index that ignores resubmission costs. This corresponds to the first column in Table A.4, which estimates CIP and τ considering only lost revenues.

Table S.7: Cross-state group estimates, no resubmission costs

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1291**	-0.1635***	-0.1009*	-0.1717***
	(0.0512)	(0.0474)	(0.0599)	(0.0496)
$\log \pi$ index	0.1110***	0.1063***	0.1143***	0.1042***
	(0.0188)	(0.0195)	(0.0205)	(0.0206)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	807,599	807,599	807,599	807,599
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it uses a τ index that ignores resubmission costs. This corresponds to the first column in Table A.4, which estimates CIP and τ considering only lost revenues.

Table S.8: Mover estimates, weighted indices

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0673**	-0.0964***	-0.0675***	-0.0953***
	(0.0290)	(0.0310)	(0.0224)	(0.0299)
Post-move $\times\Delta \log \pi$ index	0.0264**	0.0245**	0.0250**	0.0227**
	(0.0107)	(0.0111)	(0.0106)	(0.0112)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it uses a log-π index weighted by RVUs, and a τ index weighted by fees.

Table S.9: Cross-state group estimates, weighted indices

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1580**	-0.1829***	-0.1319*	-0.1926***
	(0.0691)	(0.0553)	(0.0736)	(0.0567)
$\log \pi$ index	0.0892***	0.0875***	0.0899***	0.0838***
	(0.0176)	(0.0177)	(0.0185)	(0.0187)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	807,599	807,599	807,599	807,599
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it uses a log-π index weighted by RVUs, and a τ index weighted by fees.

Table S.10: Mover estimates, unrestricted sample

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0562**	-0.0660**	-0.0555**	-0.0661**
	(0.0259)	(0.0288)	(0.0234)	(0.0283)
Post-move $\times\Delta \log \pi$ index	0.0289**	0.0279**	0.0271**	0.0257*
	(0.0136)	(0.0139)	(0.0134)	(0.0140)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	No	No	No	No
N. Physicians	9,748	9,748	9,748	9,748
N. Physicians-Years	56,886	56,886	56,886	56,886
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it does not restrict the sample to physicians accepting Medicare.

Table S.11: Cross-state group estimates, unrestricted sample

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1090*	-0.1247**	-0.0703	-0.1278**
	(0.0617)	(0.0588)	(0.0679)	(0.0599)
$\log \pi$ index	0.1259***	0.1242***	0.1292***	0.1219***
	(0.0229)	(0.0232)	(0.0238)	(0.0237)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	No	No	No	No
N. Physicians	283,204	283,204	283,204	283,204
N. Physicians-Years	974,156	974,156	974,156	974,156
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it does not restrict the sample to physicians accepting Medicare.

Table S.12: Mover Estimates With Heterogeneity by Group Size

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.084***	-0.101***	-0.087***	-0.107***
	(0.025)	(0.029)	(0.025)	(0.030)
Post-move $\times\Delta\tau$ index $\times$ Other Physicians in Group	0.000045	0.000073	0.000035	0.000083
	(0.000046)	(0.000048)	(0.000044)	(0.000051)
Post-move $\times\Delta\log\pi$ index	0.047***	0.045***	0.045***	0.043***
	(0.014551)	(0.015)	(0.014)	(0.015)
Post-move $\times\Delta\log\pi$ index $\times$ Other Physicians in Group	-0.000079**	-0.000074**	-0.000084**	-0.000073**
	(0.000035)	(0.000034)	(0.000036)	(0.000034)
Other Physicians in Group	0.000028***	0.000028***	0.000028***	0.000028***
	(0.000006)	(0.000006)	(0.000006)	(0.000006)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Two-Way Interactions	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it includes interaction of our main coefficients of interest with an indicator for the number of other physicians in the group (the total group size minus one).

Table S.13: Group-by-year fixed effects

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1043**	-0.1099**	-0.0890	-0.1118**
	(0.0482)	(0.0441)	(0.0532)	(0.0436)
$\log \pi$ index	0.1129***	0.1123***	0.1128***	0.1102***
	(0.0188)	(0.0190)	(0.0197)	(0.0194)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	806,449	806,449	806,449	806,449
Group-Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it uses group-by-year fixed effects rather than group fixed effects.

Table S.14: Cross-state group estimates, controlling for the specialty composition of a group's doctors within each state

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1318***	-0.1465***	-0.1047*	-0.1512***
	(0.0464)	(0.0429)	(0.0529)	(0.0435)
$\log \pi$ index	0.1154***	0.1139***	0.1165***	0.1112***
	(0.0200)	(0.0201)	(0.0211)	(0.0210)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	807,599	807,599	807,599	807,599
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but adds a control for the share of primary care physicians in a group within each state.

Table S.15: Mover estimates, controlling for change in commercial fees

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0637***	-0.0733***	-0.0697***	-0.0732***
	(0.0228)	(0.0257)	(0.0190)	(0.0246)
Post-move $\times\Delta \log \pi$ index	0.0335**	0.0326**	0.0309**	0.0305**
	(0.0130)	(0.0133)	(0.0128)	(0.0133)
Post-move $\times\Delta$ mean log commercial fee	-0.0174	-0.0170	-0.0200	-0.0200
	(0.0127)	(0.0128)	(0.0128)	(0.0128)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it also controls for the average commercial fee in the state.

Table S.16: Cross-state group estimates, controlling for commercial fees

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1395***	-0.1555***	-0.1044*	-0.1574***
	(0.0486)	(0.0448)	(0.0537)	(0.0450)
$\log \pi$ index	0.1137***	0.1120***	0.1159***	0.1098***
	(0.0201)	(0.0203)	(0.0216)	(0.0215)
Mean log commercial fee	0.0263	0.0276	0.0188	0.0207
	(0.0202)	(0.0201)	(0.0197)	(0.0201)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	232,590	232,590	232,590	232,590
N. Physicians-Years	807,599	807,599	807,599	807,599
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it also controls for the average commercial fee in the state.

Table S.17: Movers Estimation; Separate Indices by MCO/FFS

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
Post-move $\times\Delta\tau$ index	-0.0755***	-0.0846***	-0.0783***	-0.0857***
	(0.0234)	(0.0264)	(0.0205)	(0.0260)
Post-move $\times\Delta \log \pi$ index	0.0276**	0.0267*	0.0248*	0.0237*
	(0.0133)	(0.0136)	(0.0132)	(0.0137)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	8,182	8,182	8,182	8,182
N. Physicians-Years	47,806	47,806	47,806	47,806
Physician FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Control for State Level MCO Share	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 6 in the main text, but it uses indices estimated separately by MCO and FFS Medicaid visits.

Table S.18: Cross-State Group Estimation; Separate Indices by MCO/FFS

	Accept Medicaid Patients?			
	(1)	(2)	(3)	(4)
τ index	-0.1228***	-0.1359***	-0.1020*	-0.1415***
	(0.0440)	(0.0402)	(0.0511)	(0.0406)
$\log \pi$ index	0.1152***	0.1138***	0.1161***	0.1113***
	(0.0191)	(0.0192)	(0.0201)	(0.0200)
Estimator	OLS	2SLS	OLS	2SLS
Subsample Accepting Medicare	Yes	Yes	Yes	Yes
N. Physicians	249,996	249,996	249,996	249,996
N. Physicians-Years	1,154,997	1,154,997	1,154,997	1,154,997
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Control for State Level MCO Share	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but it uses indices estimated separately by MCO and FFS Medicaid visits.

Table S.19: Impact on Medicaid Share of Patients: Unconditional

	Share of Medicaid Patients			
	(1)	(2)	(3)	(4)
τ index	-0.1569	-0.2192**	-0.1887**	-0.2329**
	(0.0951)	(0.0976)	(0.0911)	(0.1045)
$\log \pi$ index	0.1521	0.1462	0.1482	0.1437
	(0.1048)	(0.0995)	(0.1032)	(0.0990)
N. Physicians	17,562	17,562	17,562	17,562
N. Physicians-Years	25,777	25,777	25,777	25,777
Estimator	OLS	2SLS	OLS	2SLS
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

NOTE: This table is analogous to Table 7 in the main text, but the dependent variable is the physician's share of Medicaid patients (relative to the total in the year).

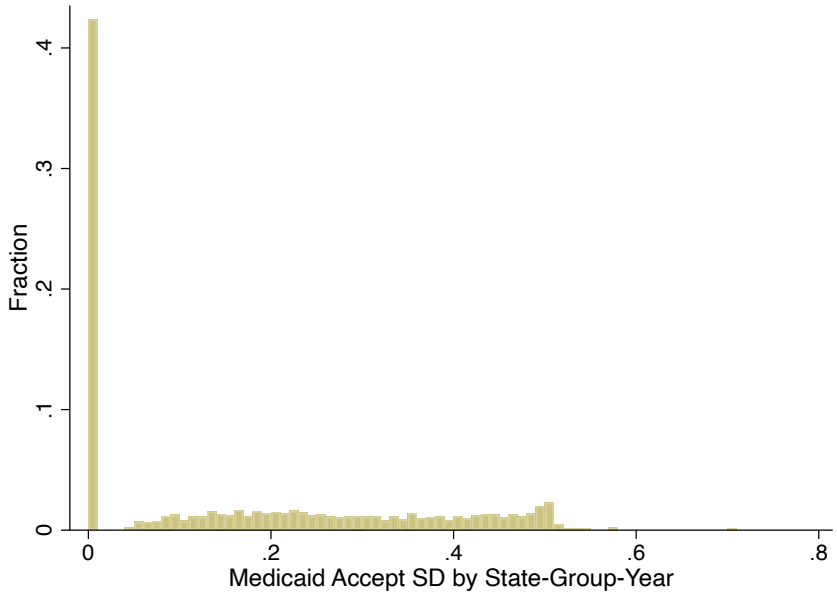
Table S.20: Impact on Medicaid Share of Patients: Conditional on Positive Medicaid Share

	Share of Medicaid Patients			
	(1)	(2)	(3)	(4)
τ index	-0.1764	-0.1837	-0.1940	-0.1957
	(0.1634)	(0.1701)	(0.1655)	(0.1802)
$\log \pi$ index	0.0085	0.0078	0.0078	0.0077
	(0.0739)	(0.0740)	(0.0734)	(0.0745)
N. Physicians	7,038	7,038	7,038	7,038
N. Physicians-Years	9,733	9,733	9,733	9,733
Estimator	OLS	2SLS	OLS	2SLS
Group FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
τ index:				
Physician FE	Yes	Yes	No	No
Selection Correction	No	No	Yes	Yes

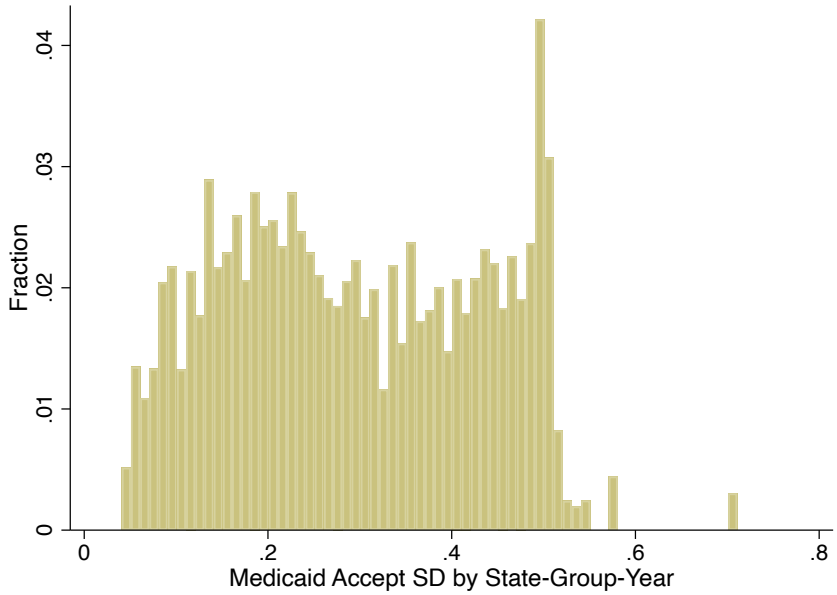
NOTE: This table is analogous to Table 7 in the main text, but the dependent variable is the physician's share of Medicaid patients (relative to the total in the year), restricting the sample to the physicians for which this share is nonzero.

Figure S.2: Medicaid Acceptance Within Group-Year (Weighted by Group Size)

(a) All observations, weighted by group size

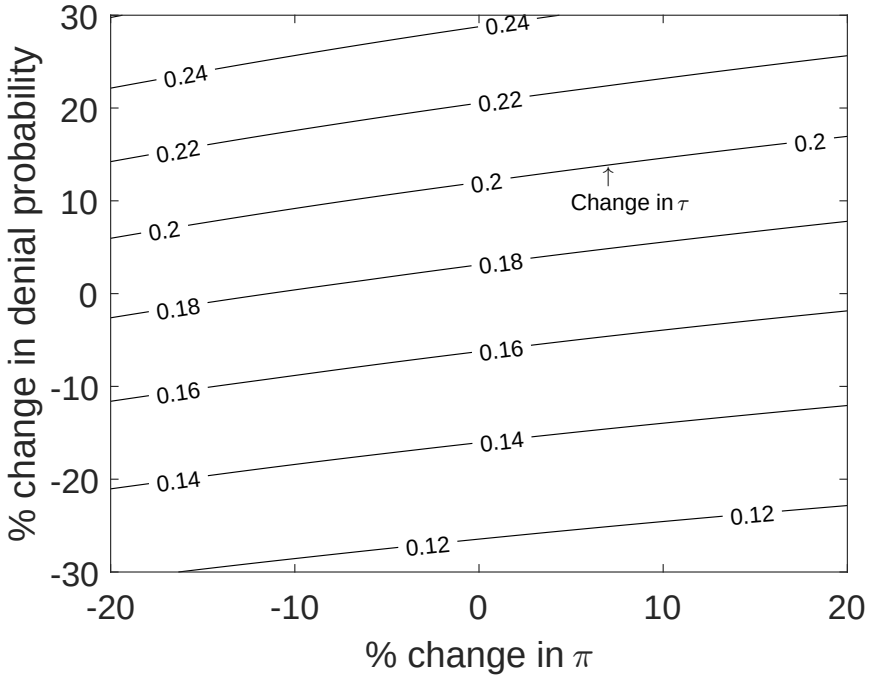


(b) Excluding SD=0, weighted by group size



NOTE: This figure is analogous to Appendix Figure A.2, weights each group by the number of physicians in the group.

Figure S.3: Changes in τ Induced by Changes in Fees and Denial Probabilities



NOTE: This figure shows level curves for the function $\bar{\tau}(F)$, obtained as detailed in footnote 33. The origin for both axes is normalized to the observed level in the data, and each value on the vertical axis corresponds to a percentage change in d, while each value on the horizontal axis corresponds to a percentage change in π. Precisely, a value of $+10$ on the vertical axis means that we change the distribution $F(\pi, d)$ to obtain, for each visit, a denial probability of $1.1d$ rather than d; i.e. it becomes $F(\pi, 1.1d)$. We do the same for the horizontal axis in terms of π. The figure shows that, as expected, higher values of d increase τ. More importantly, the model predicts that increases in π lower τ: physicians resubmit more claims, *ceteris paribus*, and this reduces CIP. This increase is on average larger than the increase in the denominator of (2).