

Supplementary Online Content for “Association between physician *U.S. News & World Report* medical school ranking and patient outcomes and costs of care: observational study”

eTable 1. *U.S. News & World Report* rankings

(A) Research rankings

2002		2009	
Rank	School	Rank	School
1	Harvard University	1	Harvard University
2	Johns Hopkins University	2	Johns Hopkins University
3	Duke University	3	Washington University in St. Louis
4	University of Pennsylvania	4	University of Pennsylvania
4	Washington University in St. Louis	5	University of California- San Francisco
6	Columbia U. College of Physicians and Surgeons	6	Duke University
7	University of California- San Francisco	6	University of Washington
8	Yale University	8	Stanford University
9	Stanford University	9	University of California- Los Angeles
9	University of Michigan	9	Yale University
11	Baylor College of Medicine	11	Columbia U. College of Physicians and Surgeons
11	Cornell University (Weill)	11	University of Michigan
11	University of Washington	13	Baylor College of Medicine
14	University of California- Los Angeles	14	University of California- San Diego
15	Mayo Medical School	14	University of Pittsburgh
16	Vanderbilt University	16	University of Chicago
17	Case Western Reserve University	16	Vanderbilt University
17	University of Chicago	18	Cornell University (Weill)
17	U. of Texas Southwestern Medical Center- Dallas	19	University of North Carolina- Chapel Hill
20	Northwestern University	20	Emory University
20	University of Pittsburgh	20	Northwestern University
22	Emory University	22	U. of Texas Southwestern Medical Center- Dallas
23	Mount Sinai School of Medicine	23	Case Western Reserve University
24	New York University	23	Mayo Medical School
24	University of California- San Diego	23	Mount Sinai School of Medicine
24	University of North Carolina- Chapel Hill	23	University of Virginia
27	University of Alabama-Birmingham	27	University of Alabama-Birmingham
28	University of Virginia	27	University of Colorado- Denver
29	University of Iowa	27	University of Wisconsin-Madison
30	University of Wisconsin-Madison	30	Ohio State University
31	University of Rochester	31	Brown University
32	Yeshiva University (Einstein)	31	Dartmouth Medical School
33	University of Colorado Health Sciences Center	31	University of Iowa
34	Dartmouth Medical School	34	New York University
35	Oregon Health Sciences University	35	Oregon Health Sciences University
35	University of Minnesota- Twin Cities	36	University of Minnesota Medical School
37	Boston University	36	University of Rochester
37	Tufts University	36	University of Southern California
39	University of Utah	36	Yeshiva University
40	Brown University	40	Georgetown University
40	Ohio State University	40	University of Cincinnati
40	University of Florida	42	Wake Forest University
43	Georgetown University	43	Boston University
43	Indiana University- Indianapolis	43	University of California- Irvine
43	University of Maryland	43	University of Maryland
43	University of Southern California	46	Indiana University- Indianapolis
43	Wake Forest University	46	Tufts University
48	University of Cincinnati	48	University of California- Davis
48	University of Massachusetts- Worcester	48	University of Florida
50	Jefferson Medical College	50	University of Utah
50	Medical College of Wisconsin		

(B) Primary care rankings

2002		2009	
Rank	School	Rank	School
1	University of Washington	1	University of Washington
2	Oregon Health Science University	2	Oregon Health Science University
3	University of New Mexico	2	University of North Carolina- Chapel Hill
4	University of California- San Francisco	4	University of Colorado- Denver
4	University of Massachusetts- Worcester	5	University of Vermont
6	Michigan State University	6	University of California- San Francisco
6	University of North Carolina- Chapel Hill	7	Baylor College of Medicine
8	University of Colorado Health Sciences Center	7	Harvard University
8	University of Iowa	7	Michigan State University
8	University of Minnesota- Duluth	7	University of Iowa
11	Harvard University	7	University of Minnesota Medical School
11	University of Minnesota- Twin Cities	12	University of California- Los Angeles
11	University of Missouri- Columbia	13	Dartmouth Medical School
14	Case Western Reserve University	13	University of Massachusetts- Worcester
14	University of Rochester	13	University of Wisconsin- Madison
14	University of Wisconsin- Madison	13	Washington University in St. Louis
17	East Carolina University (Brody)	17	East Carolina University (Brody)
17	Johns Hopkins University	17	University of Michigan- Ann Arbor
17	University of California- Davis	19	University of Rochester
17	University of California- Los Angeles	20	University of Nebraska College of Medicine
21	Duke University	20	University of Pittsburgh
21	Mich. State U. Coll. Of Osteopathic Medicine	22	Michigan State University
21	Southern Illinois University- Springfield	23	Brown University
24	Dartmouth Medical School	23	Medical University of South Carolina
24	East Tennessee State University	23	University of Missouri- Columbia
26	SUNY- Stony Brook	26	Indiana University- Indianapolis
26	University of Michigan- Ann Arbor	26	Johns Hopkins University
28	Brown University	26	University of California- Davis
28	Mayo Medical School	26	U. of Texas Southwestern Medical Center- Dallas
28	University of Pittsburgh	26	Yeshiva University
28	University of Virginia	31	Ohio State University
32	University of Maryland- Baltimore	31	University of New Mexico
32	University of Pennsylvania	31	University of Pennsylvania
32	University of Vermont	31	University of Utah
32	West Virginia School of Osteopathic Medicine	35	Mayo Medical School
32	Wright State University	35	University of Arkansas for Medical Sciences
37	Baylor College of Medicine	35	University of California- San Diego
37	Okla. State U. Coll. Of Osteopathic Medicine	35	University of Maryland
37	Washington University in St. Louis	35	University of Virginia
37	Yale University	35	Wake Forest University
41	Emory University	41	Duke University
41	Jefferson Medical College	41	Tufts University
41	Medical College of Georgia	43	University of Alabama- Birmingham
41	Medical College of Wisconsin	43	University of Connecticut
41	University of Alabama- Birmingham	43	University of Kansas Medical Center
41	University of Nebraska College of Medicine	43	U. of N. Texas Health Sci. Center.
47	UMDNJ- Robert Wood Johnson Medical School	43	West Virginia School of Osteopathic Medicine
47	University of Connecticut	48	Emory University
47	Wake Forest University	49	Medical College of Wisconsin
50	Cornell University	49	Vanderbilt University
50	Ohio State University		
50	University of Cincinnati		
50	University of Utah		
50	Yeshiva University		

eTable 2. Patient and physician characteristics, according to a physician’s medical school research ranking. Values are numbers (percentages) unless stated otherwise

	USNWR ranking (research), 2002		P-value
	Top 20	≥21	
Physician characteristics			
No of physicians	4071	26 251	—
Mean (SE) physician’s age	47.9 (0.2)	44.8 (0.08)	<0.001
Women	1217 (29.9)	8243 (31.4)	0.17
Credentials			
MD (allopathic)	3968 (97.5)	23 062 (87.9)	<0.001
DO (osteopathic)	103 (2.5)	3189 (12.1)	
Patient characteristics			
No of Medicare hospital admissions, 2011-15	100 004	896 212	—
Mean (SE) patient’s age	76.0 (0.02)	76.0 (0.08)	0.78
Women	59 902 (59.9)	535 756 (59.8)	0.71
Race/ethnicity			
White	80 403 (80.4)	716 970 (80.0)	0.07
Black	12 400 (12.4)	110 234 (12.3)	0.85
Hispanic	4100 (4.1)	40 330 (4.5)	0.001
Other races	3101 (3.1)	28 678 (3.2)	0.30
Mean (SE) of median household income (\$)	56 413 (101)	56 277 (29)	0.21
Medicaid status	27 601 (27.6)	254 524 (28.4)	0.003
Comorbidities			
Congestive heart failure	29 591 (29.6)	256 675 (28.6)	<0.001
COPD	23 001 (23.0)	203 440 (22.7)	0.19
Diabetes	26 181 (26.2)	230 864 (25.8)	0.04
Hypertension	51 992 (52.0)	459 757 (51.3)	0.01
Chronic kidney disease	30 821 (30.8)	271 731 (30.3)	0.03
Ischemic heart disease	33 901 (33.9)	229 156 (33.4)	0.03
Cancer	10 220 (10.2)	89 711 (10.0)	0.11
Depression	21 921 (21.9)	195 374 (21.8)	0.29

eTable 3. Association between physician medical school ranking and patient outcomes, restricted to physicians who graduated from medical schools within 4 years of the 2002 rankings (i.e., 1997-2007)

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted difference (95%CI)	p-for-trend
Primary care	1-10	10.2% (9.6% to 10.7%)	Reference	0.35	15.8% (15.2% to 16.4%)	Reference	0.053	\$1016 (\$991 to \$1040)	Reference	0.17
	11-20	10.3% (9.7% to 10.9%)	+0.1% (-0.7% to +0.9%)		15.8% (15.2% to 16.5%)	+0.03% (-0.8% to +0.9%)		\$1099 (\$1070 to \$1128)	+\$83 (+\$46 to +\$120)	
	21-30	10.6% (9.9% to 11.3%)	+0.4% (-0.5% to +1.3%)		16.5% (15.7% to 17.2%)	+0.7% (-0.3% to +1.6%)		\$1055 (\$1024 to \$1086)	+\$40 (-\$0.20 to +\$79)	
	31-40	10.5% (9.8% to 11.1%)	+0.3% (-0.5% to +1.2%)		15.6% (14.9% to 16.3%)	-0.2% (-1.1% to +0.7%)		\$1058 (\$1033 to \$1083)	+\$43 (+\$8 to +\$77)	
	41-50	11.0% (10.6% to 11.4%)	+0.8% (+0.1% to +1.6%)		16.2% (15.8% to 16.7%)	+0.4% (-0.3% to +1.2%)		\$1046 (\$1026 to \$1066)	+\$30 (-\$1 to +\$62)	
	≥50	10.5% (10.4% to 10.6%)	+0.3% (-0.2% to +0.9%)		16.3% (16.2% to 16.4%)	+0.5% (-0.1% to +1.1%)		\$1064 (\$1057 to \$1070)	+\$48 (+\$22 to +\$74)	
Research	1-10	10.2% (9.4% to 11.1%)	Reference	0.06	16.4% (15.6% to 17.3%)	Reference	0.51	\$1053 (\$1018 to \$1088)	Reference	0.052
	11-20	9.8% (9.3% to 10.4%)	-0.4% (-1.4% to +0.6%)		16.5% (15.9% to 17.1%)	+0.05% (-1.0% to +1.1%)		\$1040 (\$1011 to \$1069)	-\$14 (-\$57 to +\$29)	
	21-30	10.3% (9.7% to 11.0%)	+0.1% (-1.0% to +1.2%)		16.1% (15.5% to 16.8%)	-0.3% (-1.4% to +0.7%)		\$1028 (\$998 to \$1058)	-\$25 (-\$72 to +\$21)	
	31-40	10.6% (10.1% to 11.1%)	+0.4% (-0.6% to +1.4%)		16.3% (15.8% to 16.9%)	-0.1% (-1.1% to +0.9%)		\$1077 (\$1051 to \$1103)	+\$25 (-\$19 to +\$66)	
	41-50	11.0% (10.6% to 11.5%)	+0.8% (-0.1% to +1.8%)		15.8% (15.3% to 16.3%)	-0.6% (-1.6% to +0.4%)		\$1038 (\$1015 to \$1061)	-\$15 (-\$57 to +\$26)	
	≥50	10.5% (10.4% to 10.7%)	+0.3% (-0.6% to +1.2%)		16.2% (16.1% to 16.4%)	-0.2% (-1.1% to +0.7%)		\$1066 (\$1059 to \$1072)	+\$12 (-\$24 to +\$49)	

Analysis of 343,362 (8,646), 337,245 (8,633) and 361,950 (8,685) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 4. Association between physician medical school ranking and patient outcomes, using 2009 *U.S. News & World Report* rankings

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted difference (95%CI)	p-for-trend
Primary care	1-10	10.0% (9.5% to 10.5%)	Reference	0.64	15.8% (15.5% to 16.1%)	Reference	0.03	\$1016 (\$995 to \$1037)	Reference	0.01
	11-20	10.3% (9.8% to 10.8%)	-0.3% (-0.7% to +0.1%)		15.7% (15.4% to 16.1%)	-0.1% (-0.5% to +0.4%)		\$1079 (\$1053 to \$1105)	+\$0 (-\$20 to +\$19)	
	21-30	10.6% (10.0% to 11.2%)	+0.1% (-0.4% to +0.5%)		16.1% (15.7% to 16.4%)	+0.3% (-0.2% to +0.7%)		\$1048 (\$1022 to \$1075)	+\$31 (+\$10 to +\$52)	
	31-40	10.3% (9.8% to 10.9%)	+0.2% (-0.2% to +0.7%)		15.9% (15.5% to 16.2%)	+0.1% (-0.4% to +0.5%)		\$1051 (\$1028 to \$1074)	+\$5 (-\$15 to +\$24)	
	41-50	10.7% (10.3% to 11.1%)	+0.4% (-0.04% to +0.8%)		16.1% (15.8% to 16.4%)	+0.3% (-0.1% to +0.7%)		\$1045 (\$1027 to \$1063)	+\$12 (-\$6 to +\$33)	
	≥50	10.4% (10.3% to 10.5%)	+0.003% (-0.3% to +0.3%)		16.1% (16.0% to 16.2%)	+0.3% (-0.04% to +0.6%)		\$1059 (\$1053 to \$1065)	+\$19 (+\$5 to +\$33)	
Research	1-10	10.7% (10.3% to 11.1%)	Reference	0.99	15.8% (15.4% to 16.2%)	Reference	0.34	\$1050 (\$1031 to \$1069)	Reference	<0.001
	11-20	10.6% (10.3% to 10.9%)	-0.04% (-0.5% to +0.4%)		16.0% (15.7% to 16.4%)	+0.2% (-0.3% to +0.7%)		\$1049 (\$1034 to \$1063)	-\$1 (-\$24 to +\$22)	
	21-30	10.6% (10.3% to 10.9%)	-0.1% (-0.6% to +0.4%)		16.0% (15.7% to 16.3%)	+0.2% (-0.4% to +0.7%)		\$1040 (\$1026 to \$1054)	-\$10 (-\$34 to +\$14)	
	31-40	10.6% (10.4% to 10.9%)	-0.02% (-0.5% to +0.5%)		16.0% (15.6% to 16.3%)	+0.2% (-0.4% to +0.7%)		\$1044 (\$1029 to \$1059)	-\$6 (-\$30 to +\$18)	
	41-50	10.9% (10.5% to 11.2%)	+0.2% (-0.3% to +0.7%)		15.9% (15.6% to 16.3%)	+0.1% (-0.4% to +0.6%)		\$1060 (\$1043 to \$1077)	+\$10 (-\$15 to +\$36)	
	≥50	10.6% (10.5% to 10.7%)	-0.04% (-0.5% to +0.4%)		16.1% (16.0% to 16.1%)	+0.2% (-0.2% to +0.7%)		\$1066 (\$1061 to \$1070)	+\$16 (-\$4 to +\$36)	

Analysis of 996,212 (30,322), 973,484 (30,310) and 1,047,103 (30,605) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 5. Characteristics of patients treated by hospitalist physicians. Values are numbers (percentages) unless stated otherwise

(A) Primary care ranking

	USNWR ranking (primary care), 2002		P-value
	Top 20	≥21	
Physician characteristics			
No of physicians	1464	8957	—
Mean (SE) physician's age	45.0 (0.3)	43.7 (0.1)	<0.001
Women	567 (38.7)	3036 (33.9)	0.01
Credentials			
MD (allopathic)	1444 (98.6)	7694 (85.9)	<0.001
DO (osteopathic)	20 (1.4)	1263 (14.1)	
Patient characteristics			
No of Medicare hospital admissions, 2011-15	47 661	373 157	—
Mean (SE) patient's age	75.6 (0.08)	75.7 (0.02)	0.40
Women	28 215 (59.2)	221 282 (59.3)	0.70
Race/ethnicity			
White	38 510 (80.8)	300 765 (80.6)	0.50
Black	5290 (11.1)	42 540 (11.4)	0.12
Hispanic	2145 (4.5)	17 538 (4.7)	0.14
Other races	1716 (3.6)	12 314 (3.3)	0.02
Mean (SE) of median household income (\$)	57 059 (123)	56 961 (34)	0.46
Medicaid status	13 154 (27.6)	102 991 (27.6)	0.88
Comorbidities			
Congestive heart failure	14 537 (30.5)	111 947 (30.0)	0.08
COPD	11 248 (23.6)	88 065 (23.6)	0.81
Diabetes	13 774 (28.9)	104 857 (28.1)	0.01
Hypertension	27 882 (58.5)	214 938 (57.6)	0.01
Chronic kidney disease	16 634 (34.9)	125 754 (33.7)	<0.001
Ischemic heart disease	17 253 (36.2)	133 217 (35.7)	0.08
Cancer	5243 (11.0)	41 420 (11.1)	0.70
Depression	11 486 (24.1)	89 931 (24.1)	0.88

We compared physicians within the same hospital by fitting ordinary least square regression models adjusting for hospital fixed effects, and then calculating standard marginalization. Standard errors were clustered at physician level.

(B) Research ranking

	USNWR ranking (primary care), 2002		P-value
	Top 20	≥21	
Physician characteristics			
No of physicians	1289	9132	—
Mean (SE) physician's age	45.6 (0.3)	43.7 (0.1)	<0.001
Women	442 (34.3)	3160 (34.6)	0.86
Credentials			
MD (allopathic)	1248 (96.8)	7899 (86.5)	<0.001
DO (osteopathic)	41 (3.2)	1233 (13.5)	
Patient characteristics			
No of Medicare hospital admissions, 2011-15	40 852	379 966	—
Mean (SE) patient's age	75.6 (0.09)	75.7 (0.02)	0.28
Women	24 225 (59.3)	225 320 (59.3)	0.89
Race/ethnicity			
White	32 886 (80.5)	306 253 (80.6)	0.75
Black	4698 (11.5)	42 936 (11.3)	0.27
Hispanic	1797 (4.4)	17 585 (4.7)	0.14
Other races	1471 (3.6)	12 919 (3.4)	0.41
Mean (SE) of median household income (\$)	57 109 (120)	56 957 (35)	0.24
Medicaid status	11 234 (27.5)	104 871 (27.6)	0.79
Comorbidities			
Congestive heart failure	12 542 (30.7)	113 990 (30.0)	0.04
COPD	9764 (23.9)	89 672 (23.6)	0.34
Diabetes	11 765 (28.8)	106 770 (28.1)	0.01
Hypertension	23 776 (58.2)	218 860 (57.6)	0.17
Chronic kidney disease	14 176 (34.7)	128 429 (33.8)	0.01
Ischemic heart disease	14 748 (36.1)	135 648 (35.7)	0.23
Cancer	4535 (11.1)	42 176 (11.1)	0.88
Depression	9845 (24.1)	91 572 (24.1)	0.89

We compared physicians within the same hospital by fitting ordinary least square regression models adjusting for hospital fixed effects, and then calculating standard marginalization. Standard errors were clustered at physician level.

eTable 6. Association between physician medical school ranking and patient outcomes, patients treated by hospitalists

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted difference (95%CI)	p-for-trend
Primary care	1-10	9.9% (9.4% to 10.3%)	Reference	0.70	13.3% (12.8% to 13.8%)	Reference	0.002	\$970 (\$953 to \$988)	Reference	0.01
	11-20	9.6% (9.1% to 10.1%)	-0.3% (-0.9% to +0.4%)		13.8% (13.3% to 14.2%)	+0.5% (-0.2% to +1.1%)		\$991 (\$968 to \$1014)	+\$20 (-\$8 to +\$48)	
	21-30	10.1% (9.6% to 10.6%)	+0.2% (-0.4% to +0.9%)		14.1% (13.5% to 14.7%)	+0.8% (+0.1% to +1.5%)		\$975 (\$954 to \$997)	+\$5 (-\$23 to +\$32)	
	31-40	10.0% (9.4% to 10.5%)	+0.1% (-0.6% to +0.8%)		13.5% (13.0% to 14.1%)	+0.2% (-0.5% to +0.9%)		\$990 (\$969 to \$1011)	+\$19 (-\$8 to +\$46)	
	41-50	9.8% (9.4% to 10.1%)	-0.1% (-0.7% to +0.5%)		14.1% (13.7% to 14.4%)	+0.7% (+0.2% to +1.3%)		\$975 (\$962 to \$989)	+\$4 (-\$17 to +\$26)	
	≥50	9.9% (9.8% to 10.0%)	+0.03% (-0.4% to +0.5%)		14.1% (14.0% to 14.2%)	+0.8% (+0.3% to +1.3%)		\$996 (\$991 to \$1001)	+\$25 (+\$7 to +\$44)	
Research	1-10	10.1% (9.5% to 10.8%)	Reference	0.40	13.9% (13.3% to 14.6%)	Reference	0.10	\$979 (\$954 to \$1003)	Reference	0.007
	11-20	9.5% (9.1% to 10.0%)	-0.6% (-1.3% to +0.2%)		13.9% (13.4% to 14.3%)	-0.1% (-0.9% to +0.7%)		\$982 (\$963 to \$1000)	+\$3 (-\$27 to +\$33)	
	21-30	9.7% (9.2% to 10.2%)	-0.4% (-1.2% to +0.4%)		13.6% (13.1% to 14.1%)	-0.3% (-1.2% to +0.5%)		\$970 (\$952 to \$987)	-\$9 (-\$39 to +\$21)	
	31-40	9.9% (9.5% to 10.4%)	-0.2% (-0.9% to +0.6%)		14.0% (13.6% to 14.4%)	+0.05% (-0.7% to +0.8%)		\$986 (\$970 to \$1002)	+\$7 (-\$22 to +\$36)	
	41-50	9.7% (9.3% to 10.1%)	-0.4% (-1.1% to +0.3%)		13.5% (13.1% to 13.9%)	-0.4% (-1.2% to +0.4%)		\$965 (\$950 to \$980)	-\$14 (-\$43 to +\$14)	
	≥50	9.9% (9.8% to 10.0%)	-0.2% (-0.9% to +0.4%)		14.1% (14.0% to 14.2%)	+0.2% (-0.5% to +0.9%)		\$997 (\$992 to \$1003)	+\$18 (-\$7 to +\$44)	

Analysis of 420,816 (10,421), 415,561 (10,424) and 444,147 (10,481) hospitalizations (the number of hospitalists) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 7. Association between physician medical school ranking and patient outcomes, attributing patient outcomes to physicians billed the largest number of evaluation-and-management claims

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Primary care	1-10	10.2% (9.8% to 10.5%)	Reference	0.11	15.6% (15.3% to 16.0%)	Reference	0.01	\$1062 (\$1048 to \$1077)	Reference	<0.001
	11-20	9.9% (9.6% to 10.2%)	-0.3% (-0.7% to +0.2%)		15.9% (15.5% to 16.3%)	+0.3% (-0.3% to +0.8%)		\$1070 (\$1055 to \$1084)	+\$7 (-\$12 to +\$27)	
	21-30	10.2% (9.9% to 10.5%)	+0.05% (-0.4% to +0.5%)		15.6% (15.2% to 16.0%)	-0.03% (-0.6% to +0.5%)		\$1058 (\$1044 to \$1072)	-\$4 (-\$24 to +\$16)	
	31-40	9.9% (9.5% to 10.3%)	-0.2% (-0.8% to +0.3%)		15.6% (15.1% to 16.0%)	-0.1% (-0.6% to +0.5%)		\$1073 (\$1057 to \$1089)	+\$10 (-\$11 to +\$32)	
	41-50	9.9% (9.7% to 10.1%)	-0.3% (-0.7% to +0.2%)		16.2% (15.9% to 16.4%)	+0.5% (+0.1% to +1.0%)		\$1078 (\$1066 to \$1089)	+\$15 (-\$3 to +\$33)	
	≥50	9.9% (9.8% to 10.0%)	-0.3% (-0.6% to +0.1%)		16.1% (16.0% to 16.2%)	+0.4% (+0.01% to +0.8%)		\$1083 (\$1079 to \$1087)	+\$21 (+\$6 to +\$36)	
Research	1-10	10.1% (9.7% to 10.5%)	Reference	0.83	15.9% (15.5% to 16.4%)	Reference	0.047	\$1070 (\$1053 to \$1087)	Reference	0.003
	11-20	9.8% (9.6% to 10.1%)	-0.3% (-0.8% to +0.2%)		15.9% (15.5% to 16.2%)	-0.1% (-0.7% to +0.5%)		\$1064 (\$1051 to \$1077)	-\$6 (-\$27 to +\$15)	
	21-30	9.9% (9.5% to 10.2%)	-0.2% (-0.7% to +0.3%)		15.4% (15.1% to 15.8%)	-0.5% (-1.1% to +0.1%)		\$1064 (\$1050 to \$1078)	-\$6 (-\$27 to +\$16)	
	31-40	9.9% (9.6% to 10.2%)	-0.2% (-0.7% to +0.2%)		16.1% (15.7% to 16.4%)	+0.1% (-0.4% to +0.7%)		\$1083 (\$1070 to \$1096)	+\$13 (-\$8 to +\$34)	
	41-50	10.1% (9.8% to 10.3%)	-0.04% (-0.5% to +0.4%)		15.9% (15.6% to 16.2%)	-0.1% (-0.6% to +0.5%)		\$1074 (\$1062 to \$1086)	+\$4 (-\$17 to +\$24)	
	≥50	9.9% (9.8% to 10.0%)	-0.2% (-0.6% to +0.2%)		16.1% (16.0% to 16.2%)	+0.1% (-0.4% to +0.6%)		\$1082 (\$1078 to \$1086)	+\$12 (-\$6 to +\$30)	

Analysis of 811,341 (29,300), 795,141 (29,297) and 841,904 (29,513) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 8. Association between physician medical school ranking and patient outcomes, attributing patient outcomes to physicians who billed the first evaluation-and-management claims

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Primary care	1-10	9.6% (9.3% to 10.0%)	Reference	0.48	15.7% (15.3% to 16.0%)	Reference	0.10	\$1096 (\$1084 to \$1107)	Reference	<0.001
	11-20	9.7% (9.4% to 10.0%)	+0.04% (-0.4% to +0.5%)		15.9% (15.6% to 16.3%)	+0.3% (-0.3% to +0.8%)		\$1109 (\$1096 to \$1121)	+\$13 (-\$3 to +\$29)	
	21-30	10.0% (9.6% to 10.3%)	+0.3% (-0.1% to +0.8%)		16.0% (15.6% to 16.5%)	+0.4% (-0.2% to +1.0%)		\$1093 (\$1081 to \$1106)	-\$2 (-\$19 to +\$14)	
	31-40	9.5% (9.2% to 9.9%)	-0.1% (-0.6% to +0.4%)		15.9% (15.5% to 16.4%)	+0.3% (-0.3% to +0.9%)		\$1097 (\$1082 to \$1111)	+\$9 (-\$18 to +\$20)	
	41-50	9.6% (9.4% to 9.8%)	-0.02% (-0.4% to +0.4%)		16.1% (15.8% to 16.4%)	+0.5% (-0.01% to +0.9%)		\$1107 (\$1099 to \$1116)	+\$12 (-\$3 to +\$26)	
	≥50	9.6% (9.6% to 9.7%)	-0.01% (-0.4% to +0.3%)		16.1% (16.0% to 16.2%)	+0.4% (+0.002% to +0.8%)		\$1115 (\$1112 to \$1118)	+\$19 (+\$7 to +\$31)	
Research	1-10	10.0% (9.6% to 10.4%)	Reference	0.23	16.2% (15.7% to 16.6%)	Reference	0.50	\$1091 (\$1074 to \$1108)	Reference	0.001
	11-20	9.6% (9.3% to 9.9%)	-0.4% (-0.9% to +0.1%)		16.0% (15.6% to 16.3%)	-0.2% (-0.8% to +0.4%)		\$1103 (\$1092 to \$1114)	+\$12 (-\$8 to +\$31)	
	21-30	9.7% (9.4% to 10.0%)	-0.3% (-0.8% to +0.2%)		15.6% (15.2% to 16.0%)	-0.6% (-1.2% to +0.04%)		\$1099 (\$1086 to \$1113)	+\$8 (-\$13 to +\$29)	
	31-40	9.7% (9.4% to 9.9%)	-0.3% (-0.8% to +0.1%)		16.2% (15.9% to 16.6%)	+0.1% (-0.5% to +0.7%)		\$1111 (\$1100 to \$1122)	+\$20 (+\$1 to +\$40)	
	41-50	9.7% (9.4% to 9.9%)	-0.4% (-0.8% to +0.1%)		15.9% (15.5% to 16.2%)	-0.3% (-0.9% to +0.3%)		\$1101 (\$1090 to \$1111)	+\$10 (-\$9 to +\$30)	
	≥50	9.6% (9.5% to 9.7%)	-0.4% (-0.8% to +0.01%)		16.1% (16.0% to 16.2%)	-0.1% (-0.6% to +0.4%)		\$1114 (\$1111 to \$1118)	+\$24 (+\$7 to +\$41)	

Analysis of 800,186 (28,947), 780,541 (29,055) and 828,179 (29,253) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 9. Association between physician medical school ranking and patient outcomes, using logistic regression models

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Primary care	1-10	10.6% (10.3% to 10.9%)	Reference	1.00	15.6% (15.3% to 16.0%)	Reference	0.005
	11-20	10.6% (10.3% to 11.0%)	1.00 (0.94 to 1.06)		16.0% (15.6% to 16.3%)	1.03 (0.99 to 1.07)	
	21-30	10.7% (10.3% to 11.0%)	1.00 (0.95 to 1.06)		15.8% (15.5% to 16.2%)	1.01 (0.97 to 1.05)	
	31-40	10.7% (10.3% to 11.1%)	1.01 (0.95 to 1.07)		15.5% (15.1% to 15.9%)	0.99 (0.95 to 1.03)	
	41-50	10.7% (10.5% to 11.0%)	1.01 (0.96 to 1.07)		16.1% (15.9% to 16.4%)	1.04 (1.005 to 1.07)	
	≥50	10.6% (10.6% to 10.7%)	1.00 (0.96 to 1.05)		16.1% (16.0% to 16.2%)	1.04 (1.01 to 1.07)	
Research	1-10	10.8% (10.4% to 11.2%)	Reference	0.68	16.0% (15.6% to 16.5%)	Reference	0.30
	11-20	10.4% (10.1% to 10.6%)	0.94 (0.89 to 1.0003)		15.9% (15.6% to 16.3%)	0.99 (0.95 to 1.03)	
	21-30	10.7% (10.4% to 11.0%)	0.98 (0.92 to 1.05)		15.7% (15.4% to 16.0%)	0.98 (0.94 to 1.02)	
	31-40	10.7% (10.4% to 10.9%)	0.98 (0.92 to 1.04)		16.1% (15.8% to 16.4%)	1.01 (0.97 to 1.05)	
	41-50	10.8% (10.5% to 11.0%)	0.99 (0.93 to 1.05)		16.0% (15.7% to 16.3%)	1.00 (0.97 to 1.04)	
	≥50	10.7% (10.6% to 10.7%)	0.98 (0.93 to 1.03)		16.1% (16.0% to 16.2%)	1.00 (0.97 to 1.04)	

Analysis of 994,504 (30,179) and 972,806 (30,221) hospitalizations (the number of physicians) for mortality and readmissions, respectively. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 10. Association between physician medical school ranking and Part B spending, using generalized linear model with log-link and normal distribution

U.S. News & World Report ranking of medical school attended by physician		Adjusted Part B spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Primary care	1-10	\$1004 (\$982 to \$1028)	Reference	<0.001
	11-20	\$1051 (\$1024 to \$1077)	+4.5% (+1.2% to +8.1%)	
	21-30	\$1038 (\$1014 to \$1062)	+3.3% (-0.01% to +6.7%)	
	31-40	\$1042 (\$1021 to \$1063)	+3.7% (+0.6% to +6.8%)	
	41-50	\$1051 (\$1034 to \$1067)	+4.5% (+1.7% to +7.5%)	
	≥50	\$1060 (\$1055 to \$1065)	+5.5% (+3.0% to +8.0%)	
Research	1-10	\$1037 (\$1012 to \$1062)	Reference	<0.001
	11-20	\$1032 (\$1010 to \$1054)	-0.4% (-3.6% to +2.8%)	
	21-30	\$1019 (\$996 to \$1042)	-1.7% (-4.9% to +1.5%)	
	31-40	\$1050 (\$1031 to \$1069)	+1.2% (-1.8% to +4.4%)	
	41-50	\$1045 (\$1025 to \$1065)	+0.8% (-2.3% to +4.0%)	
	≥50	\$1062 (\$1057 to \$1067)	+2.4% (-0.1% to +5.0%)	

Analysis of 1,047,102 hospitalizations treated by 30,605 physicians. Adjusted for patient characteristics, physician characteristics, and hospital fixed effects. Standard errors were clustered at physician-level.

eTable 11. Stratified analysis by years since completion of residency programs*

(A) Primary care ranking

U.S. News & World Report ranking of medical school		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Year 1-10	1-10	9.6% (9.1% to 10.1%)	Reference	0.04	15.9% (15.4% to 16.4%)	Reference	0.01	\$996 (\$977 to \$1015)	Reference	0.30
	11-20	9.9% (9.3% to 10.4%)	+0.3% (-0.4% to +1.0%)		16.0% (15.4% to 16.5%)	+0.1% (-0.7% to +0.9%)		\$1058 (\$1037 to \$1079)	+\$62 (+\$34 to +\$90)	
	21-30	10.1% (9.5% to 10.7%)	+0.5% (-0.2% to +1.3%)		16.0% (15.4% to 16.7%)	+0.2% (-0.6% to +1.0%)		\$1025 (\$1001 to \$1049)	+\$29 (-\$1 to +\$60)	
	31-40	9.7% (9.1% to 10.2%)	+0.1% (-0.7% to +0.8%)		15.5% (14.8% to 16.1%)	-0.4% (-1.2% to +0.4%)		\$1022 (\$1000 to \$1044)	+\$26 (-\$3 to +\$55)	
	41-50	10.4% (10.0% to 10.8%)	+0.8% (+0.2% to +1.4%)		16.3% (15.9% to 16.7%)	+0.4% (-0.2% to +1.1%)		\$1020 (\$1006 to \$1035)	+\$25 (+\$1 to +\$48)	
	≥50	10.1% (10.0% to 10.2%)	+0.5% (+0.04% to +1.0%)		16.4% (16.2% to 16.5%)	+0.5% (-0.05% to +1.0%)		\$1029 (\$1024 to \$1034)	+\$33 (+\$12 to +\$53)	
Year 11-20	1-10	10.6% (10.0% to 11.2%)	Reference	0.48	15.7% (15.0% to 16.3%)	Reference	0.52	\$1041 (\$1015 to \$1068)	Reference	0.003
	11-20	10.5% (9.9% to 11.1%)	-0.1% (-1.0% to +0.8%)		16.2% (15.5% to 16.9%)	+0.5% (-0.4% to +1.5%)		\$1037 (\$1006 to \$1069)	-\$4 (-\$45 to +\$36)	
	21-30	10.2% (9.6% to 10.8%)	-0.4% (-1.2% to +0.5%)		15.8% (15.1% to 16.5%)	+0.1% (-0.8% to +1.1%)		\$1046 (\$1017 to \$1076)	+\$5 (-\$36 to +\$45)	
	31-40	10.9% (10.1% to 11.7%)	+0.3% (-0.7% to +1.3%)		16.0% (15.3% to 16.8%)	+0.3% (-0.7% to +1.3%)		\$1061 (\$1028 to \$1095)	+\$20 (-\$23 to +\$63)	
	41-50	10.7% (10.3% to 11.2%)	+0.2% (-0.6% to +0.9%)		15.8% (15.3% to 16.2%)	+0.1% (-0.7% to +0.9%)		\$1069 (\$1048 to \$1090)	+\$27 (-\$8 to +\$62)	
	≥50	10.6% (10.5% to 10.8%)	+0.1% (-0.6% to +0.7%)		16.0% (15.9% to 16.2%)	+0.4% (-0.3% to +1.1%)		\$1072 (\$1065 to \$1079)	+\$31 (+\$3 to +\$59)	
Year ≥20	1-10	11.9% (11.1% to 12.8%)	Reference	0.01	15.5% (14.8% to 16.2%)	Reference	0.08	\$1040 (\$1004 to \$1076)	Reference	<0.001
	11-20	11.8% (11.1% to 12.5%)	-0.1% (-1.2% to +0.9%)		15.5% (14.9% to 16.1%)	+0.02% (-0.9% to +0.9%)		\$1094 (\$1062 to \$1125)	+\$54 (+\$8 to +\$99)	
	21-30	11.8% (11.2% to 12.5%)	-0.1% (-1.2% to +1.0%)		15.1% (14.4% to 15.8%)	-0.4% (-1.4% to +0.5%)		\$1061 (\$1029 to \$1093)	+\$21 (-\$27 to +\$70)	
	31-40	12.0% (11.2% to 12.7%)	+0.03% (-1.1% to +1.2%)		15.3% (14.5% to 16.0%)	-0.2% (-1.3% to +0.8%)		\$1115 (\$1083 to \$1146)	+\$75 (+\$27 to +\$123)	
	41-50	11.4% (11.0% to 11.9%)	-0.5% (-1.5% to +0.5%)		16.2% (15.7% to 16.7%)	+0.7% (-0.1% to +1.5%)		\$1085 (\$1065 to \$1105)	+\$45 (+\$4 to +\$86)	
	≥50	11.2% (11.1% to 11.4%)	-0.7% (-1.6% to +0.2%)		15.8% (15.6% to 16.0%)	+0.3% (-0.4% to +1.0%)		\$1110 (\$1102 to \$1118)	+\$70 (+\$32 to +\$108)	

*Calculated using the data on when physicians graduated from medical schools, assuming that they underwent 3 years of residency programs.

(B) Research ranking

U.S. News & World Report ranking of medical school		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Year 1-10	1-10	9.8% (9.1% to 10.5%)	Reference	0.003	16.3% (15.5% to 17.1%)	Reference	0.68	\$1028 (\$1000 to \$1056)	Reference	0.02
	11-20	9.2% (8.7% to 9.6%)	-0.6% (-1.4% to +0.2%)		16.3% (15.7% to 16.8%)	-0.1% (-1.0% to +0.9%)		\$998 (\$979 to \$1017)	-\$30 (-\$62 to +\$2)	
	21-30	10.1% (9.6% to 10.7%)	+0.4% (-0.5% to +1.3%)		16.2% (15.7% to 16.8%)	-0.1% (-1.1% to +0.8%)		\$1014 (\$992 to \$1036)	-\$14 (-\$48 to +\$21)	
	31-40	9.9% (9.5% to 10.4%)	+0.2% (-0.7% to +1.0%)		16.0% (15.5% to 16.5%)	-0.3% (-1.2% to +0.6%)		\$1035 (\$1017 to \$1053)	+\$7 (-\$25 to +\$39)	
	41-50	10.4% (10.0% to 10.8%)	+0.6% (-0.2% to +1.4%)		16.0% (15.5% to 16.5%)	-0.3% (-1.2% to +0.6%)		\$1009 (\$991 to \$1028)	-\$19 (-\$51 to +\$14)	
	≥50	10.2% (10.0% to 10.3%)	+0.4% (-0.3% to +1.1%)		16.3% (16.2% to 16.4%)	-0.01% (-0.8% to +0.8%)		\$1031 (\$1026 to \$1037)	+\$3 (-\$26 to +\$32)	
Year 11-20	1-10	10.8% (10.1% to 11.5%)	Reference	0.99	16.3% (15.6% to 17.1%)	Reference	0.87	\$1076 (\$1037 to \$1115)	Reference	0.18
	11-20	10.5% (10.0% to 11.0%)	-0.3% (-1.2% to +0.6%)		16.0% (15.4% to 16.6%)	-0.3% (-1.3% to +0.6%)		\$1050 (\$1021 to \$1079)	-\$26 (-\$74 to +\$22)	
	21-30	10.3% (9.7% to 10.8%)	-0.5% (-1.5% to +0.4%)		15.6% (14.9% to 16.2%)	-0.8% (-1.8% to +0.3%)		\$1034 (\$1008 to \$1060)	-\$42 (-\$89 to +\$4)	
	31-40	10.9% (10.4% to 11.5%)	+0.1% (-0.7% to +1.0%)		16.1% (15.5% to 16.8%)	-0.2% (-1.2% to +0.8%)		\$1058 (\$1032 to \$1083)	-\$18 (-\$64 to +\$28)	
	41-50	11.2% (10.6% to 11.7%)	+0.4% (-0.5% to +1.3%)		16.2% (15.7% to 16.8%)	-0.1% (-1.1% to +0.9%)		\$1095 (\$1071 to \$1120)	+\$19 (-\$27 to +\$66)	
	≥50	10.6% (10.4% to 10.7%)	-0.2% (-1.0% to +0.5%)		16.0% (15.8% to 16.1%)	-0.4% (-1.2% to +0.5%)		\$1068 (\$1061 to \$1076)	-\$8 (-\$48 to +\$33)	
Year ≥20	1-10	11.9% (11.2% to 12.6%)	Reference	0.04	15.1% (14.4% to 15.9%)	Reference	0.04	\$1080 (\$1044 to \$1117)	Reference	0.04
	11-20	11.5% (10.9% to 12.1%)	-0.4% (-1.3% to +0.5%)		15.7% (15.1% to 16.2%)	+0.5% (-0.4% to +1.5%)		\$1104 (\$1079 to \$1130)	+\$24 (-\$21 to +\$69)	
	21-30	12.1% (11.5% to 12.6%)	+0.2% (-0.7% to +1.1%)		15.2% (14.6% to 15.7%)	+0.04% (-0.9% to +1.0%)		\$1072 (\$1043 to \$1102)	-\$8 (-\$54 to +\$38)	
	31-40	11.3% (10.8% to 11.8%)	-0.6% (-1.5% to +0.3%)		15.9% (15.3% to 16.4%)	+0.7% (-0.2% to +1.6%)		\$1081 (\$1054 to \$1109)	+\$1 (-\$45 to +\$48)	
	41-50	11.2% (10.8% to 11.8%)	-0.7% (-1.7% to +0.2%)		16.0% (15.4% to 16.6%)	+0.9% (-0.1% to +1.8%)		\$1071 (\$1048 to \$1094)	-\$9 (-\$52 to +\$34)	
	≥50	11.3% (11.1% to 11.5%)	-0.6% (-1.3% to +0.1%)		15.8% (15.7% to 16.0%)	+0.7% (-0.1% to +1.5%)		\$1110 (\$1101 to \$1119)	+\$30 (-\$9 to +\$69)	

eTable 12. Association between physician medical school ranking and patient outcomes, comparing physicians across hospitals (without hospital fixed effects)

U.S. News & World Report ranking of medical school attended by physician		30-day mortality rate			30-day readmission rate			Part B spending		
		Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
Primary care	1-10	10.2% (9.9% to 10.5%)	Reference	<0.001	14.9% (14.5% to 15.2%)	Reference	<0.001	\$915 (\$897 to \$934)	Reference	<0.001
	11-20	10.0% (9.7% to 10.4%)	-0.2% (-0.6% to +0.3%)		15.7% (15.4% to 16.1%)	+0.8% (+0.4% to +1.4%)		\$986 (\$962 to \$1010)	+\$71 (+\$41 to +\$101)	
	21-30	10.5% (10.1% to 10.8%)	+0.2% (-0.2% to +0.7%)		16.1% (15.7% to 16.5%)	+1.2% (+0.7% to +1.7%)		\$1028 (\$1004 to \$1053)	+\$113 (+\$82 to +\$144)	
	31-40	10.9% (10.5% to 11.3%)	+0.7% (+0.2% to +1.2%)		15.7% (15.3% to 16.2%)	+0.9% (+0.4% to +1.4%)		\$1016 (\$988 to \$1043)	+\$100 (+\$67 to +\$133)	
	41-50	10.7% (10.5% to 10.9%)	+0.5% (+0.1% to +0.9%)		15.9% (15.7% to 16.2%)	+1.1% (+0.7% to +1.5%)		\$1050 (\$1033 to \$1067)	+\$134 (+\$109 to +\$159)	
	≥50	10.7% (10.6% to 10.8%)	+0.5% (+0.2% to +0.8%)		16.2% (16.1% to 16.3%)	+1.3% (+1.0% to +1.7%)		\$1084 (\$1076 to \$1092)	+\$169 (+\$148 to +\$189)	
Research	1-10	10.4% (10.0% to 10.9%)	Reference	<0.001	16.5% (16.0% to 16.9%)	Reference	0.01	\$1029 (\$1000 to \$1058)	Reference	<0.001
	11-20	10.1% (9.9% to 10.4%)	-0.3% (-0.8% to +0.2%)		15.7% (15.3% to 16.0%)	-0.8% (-1.4% to -0.3%)		\$1004 (\$983 to \$1026)	-\$25 (-\$61 to +\$11)	
	21-30	10.6% (10.2% to 10.9%)	+0.1% (-0.4% to +0.6%)		15.5% (15.1% to 15.8%)	-1.0% (-1.6% to -0.5%)		\$994 (\$973 to \$1015)	-\$35 (-\$70 to +\$1)	
	31-40	10.3% (10.0% to 10.6%)	-0.1% (-0.6% to +0.4%)		15.9% (15.6% to 16.2%)	-0.6% (-1.1% to -0.04%)		\$1015 (\$995 to \$1036)	-\$14 (-\$49 to +\$22)	
	41-50	10.6% (10.3% to 10.9%)	+0.1% (-0.3% to +0.6%)		15.7% (15.4% to 16.0%)	-0.8% (-1.3% to -0.2%)		\$1011 (\$993 to \$1030)	-\$18 (-\$52 to +\$16)	
	≥50	10.7% (10.7% to 10.8%)	+0.3% (-0.1% to +0.7%)		16.1% (16.0% to 16.2%)	-0.3% (-0.8% to +0.1%)		\$1084 (\$1076 to \$1091)	+\$55 (+\$24 to +\$85)	

Analysis of 996,216 (30,322), 973,488 (30,310) and 1,047,107 (30,605) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics and physician characteristics. Standard errors were clustered at physician-level.

eTable 13. Association between a physician’s medical school ranking based on social mission score* and patient outcomes/costs of care

Ranking of medical school based on social mission score*	30-day mortality rate			30-day readmission rate			Part B spending		
	Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
1-10	10.5% (10.3% to 10.8%)	Reference	0.29	16.2% (15.9% to 16.5%)	Reference	0.49	\$1063 (\$1048 to \$1079)	Reference	0.36
11-20	10.5% (10.2% to 10.8%)	-0.01% (-0.4% to +0.4%)		15.9% (15.6% to 16.3%)	-0.3% (-0.7% to +0.2%)		\$1048 (\$1034 to \$1062)	-\$15 (-\$36 to +\$6)	
21-30	10.5% (10.2% to 10.9%)	-0.03% (-0.5% to +0.4%)		16.0% (15.6% to 16.3%)	-0.2% (-0.7% to +0.2%)		\$1051 (\$1036 to \$1067)	-\$12 (-\$34 to +\$10)	
31-40	10.8% (10.4% to 11.1%)	+0.2% (-0.2% to +0.7%)		16.2% (15.8% to 16.5%)	-0.04% (-0.5% to +0.4%)		\$1071 (\$1056 to \$1086)	+\$7 (-\$14 to +\$29)	
41-50	10.4% (10.0% to 10.8%)	-0.1% (-0.6% to +0.4%)		16.7% (16.3% to 17.1%)	+0.5% (-0.06% to +1.0%)		\$1049 (\$1033 to \$1065)	-\$14 (-\$37 to +\$8)	
≥50	10.7% (10.6% to 10.8%)	+0.1% (-0.2% to +0.4%)		16.0% (15.9% to 16.1%)	-0.2% (-0.6% to +0.1%)		\$1062 (\$1058 to \$1067)	-\$1 (-\$18 to +\$16)	

*Based on Mullan et al.

Analysis of 996,212 (30,322), 973,483 (30,310) and 1,047,103 (30,605) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics and physician characteristics. Standard errors were clustered at physician-level.

eTable 14. Association between a physician’s medical school ranking based on National Institute of Health funding and patient outcomes/costs of care

Ranking of medical school based on NIH funding	30-day mortality rate			30-day readmission rate			Part B spending		
	Adjusted mortality rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted readmission rate (95%CI)	Adjusted risk difference (95%CI)	p-for-trend	Adjusted spending (95%CI)	Adjusted risk difference (95%CI)	p-for-trend
1-10	10.7% (10.4% to 11.1%)	Reference	0.85	16.0% (15.6% to 16.4%)	Reference	0.03	\$1030 (\$1011 to \$1049)	Reference	<0.001
11-20	10.8% (10.5% to 11.1%)	+0.04% (-0.5% to +0.5%)		15.7% (15.3% to 16.0%)	-0.3% (-0.8% to +0.2%)		\$1044 (\$1029 to \$1059)	+\$15 (-\$9 to +\$38)	
21-30	10.4% (10.1% to 10.7%)	-0.4% (-0.8% to +0.1%)		16.1% (15.7% to 16.4%)	+0.1% (-0.4% to +0.6%)		\$1047 (\$1034 to \$1061)	+\$18 (-\$5 to +\$41)	
31-40	10.6% (10.3% to 11.0%)	-0.1% (-0.6% to +0.4%)		15.8% (15.5% to 16.2%)	-0.1% (-0.7% to +0.3%)		\$1061 (\$1046 to \$1075)	+\$31 (+\$7 to +\$55)	
41-50	10.8% (10.5% to 11.1%)	+0.04% (-0.4% to +0.5%)		15.8% (15.5% to 16.1%)	-0.2% (-0.7% to +0.3%)		\$1044 (\$1029 to \$1060)	+\$15 (-\$10 to +\$39)	
≥50	10.6% (10.5% to 10.7%)	-0.1% (-0.5% to +0.3%)		16.1% (16.0% to 16.2%)	+0.1% (-0.3% to +0.6%)		\$1067 (\$1063 to \$1072)	+\$38 (+\$18 to +\$58)	

Analysis of 996,212 (30,322), 973,483 (30,310) and 1,047,103 (30,605) hospitalizations (the number of physicians) for mortality, readmissions, and health spending, respectively. Adjusted for patient characteristics and physician characteristics. Standard errors were clustered at physician-level.