

## **SUPPLEMENTAL MATERIALS FOR**

Basu S, Phillips RS, Bitton A, Song Z, Landon BE. Finance and time use implications of team documentation for primary care: a microsimulation. *Ann Fam Med*. 2018;16(4):308-313.

## Appendix

**Appendix Table 1:** Input data on state variations in scribe and MA-related practice costs, and revenues to practices, based on state price parities for labor and medical expenditure.<sup>27</sup> Dollar values are in 2017 U.S. Dollars adjusted for inflation based on the Consumer Price Index.

State	Scribe wage plus benefit cost	MA wage plus benefit cost	Per-visit revenue
Alabama	\$24227 (19822, 35240)	\$37472 (30915, 44030)	\$97 (87, 107)
Alaska	\$28372 (23214, 41269)	\$43883 (36203, 51562)	\$120 (107, 133)
Arizona	\$26714 (21857, 38857)	\$41319 (34088, 48549)	\$99 (88, 109)
Arkansas	\$23880 (19538, 34734)	\$36934 (30471, 43398)	\$96 (86, 106)
California	\$29602 (24220, 43058)	\$45786 (37773, 53798)	\$110 (98, 122)
Colorado	\$26474 (21660, 38507)	\$40946 (33781, 48112)	\$106 (95, 118)
Connecticut	\$29549 (24176, 42980)	\$45703 (37705, 53701)	\$91 (81, 101)
Delaware	\$27730 (22689, 40335)	\$42890 (35385, 50396)	\$114 (101, 126)
District of Columbia	\$30886 (25270, 44925)	\$47771 (39411, 56131)	\$112 (100, 124)
Florida	\$26741 (21879, 38896)	\$41360 (34122, 48598)	\$97 (86, 107)
Georgia	\$25350 (20741, 36873)	\$39209 (32348, 46071)	\$84 (75, 93)
Hawaii	\$31046 (25402, 45158)	\$48019 (39616, 56422)	\$112 (100, 124)
Idaho	\$25003 (20457, 36368)	\$38672 (31904, 45439)	\$111 (99, 123)
Illinois	\$26848 (21967, 39052)	\$41525 (34258, 48792)	\$106 (94, 117)
Indiana	\$24602 (20129, 35784)	\$38051 (31392, 44710)	\$105 (93, 116)
Iowa	\$23880 (19538, 34734)	\$36934 (30471, 43398)	\$108 (97, 120)
Kansas	\$24174 (19779, 35162)	\$37389 (30846, 43933)	\$105 (94, 116)
Kentucky	\$23987 (19625, 34890)	\$37100 (30607, 43592)	\$97 (86, 107)
Louisiana	\$24896 (20369, 36212)	\$38506 (31768, 45245)	\$97 (87, 108)
Maine	\$26019 (21288, 37846)	\$40243 (33201, 47286)	\$87 (78, 97)
Maryland	\$29495 (24133, 42902)	\$45620 (37637, 53604)	\$88 (79, 98)
Massachusetts	\$28720 (23498, 41774)	\$44421 (36647, 52194)	\$103 (92, 114)
Michigan	\$25484 (20851, 37068)	\$39416 (32518, 46314)	\$86 (77, 95)
Minnesota	\$25885 (21179, 37651)	\$40036 (33030, 47043)	\$115 (102, 127)
Mississippi	\$23773 (19450, 34579)	\$36769 (30334, 43204)	\$95 (85, 106)
Missouri	\$23719 (19407, 34501)	\$36686 (30266, 43106)	\$99 (89, 110)
Montana	\$25110 (20544, 36523)	\$38837 (32041, 45634)	\$114 (102, 126)
Nebraska	\$24120 (19735, 35084)	\$37307 (30778, 43835)	\$107 (95, 118)

Nevada	\$26554 (21726, 38624)	\$41070 (33883, 48258)	\$104 (93, 115)
New Hampshire	\$28238 (23104, 41074)	\$43676 (36033, 51319)	\$98 (88, 109)
New Jersey	\$29816 (24395, 43369)	\$46116 (38046, 54187)	\$117 (104, 129)
New Mexico	\$25163 (20588, 36601)	\$38920 (32109, 45731)	\$107 (96, 119)
New York	\$30511 (24964, 44380)	\$47192 (38933, 55450)	\$104 (93, 115)
North Carolina	\$24816 (20304, 36095)	\$38382 (31665, 45099)	\$97 (87, 108)
North Dakota	\$23586 (19297, 34306)	\$36480 (30096, 42863)	\$108 (97, 120)
Ohio	\$24308 (19888, 35356)	\$37596 (31017, 44176)	\$101 (90, 112)
Oklahoma	\$24308 (19888, 35356)	\$37596 (31017, 44176)	\$97 (86, 107)
Oregon	\$26072 (21332, 37924)	\$40326 (33269, 47383)	\$103 (92, 114)
Pennsylvania	\$26393 (21595, 38390)	\$40822 (33678, 47966)	\$94 (84, 104)
Rhode Island	\$26688 (21835, 38818)	\$41277 (34054, 48501)	\$86 (77, 95)
South Carolina	\$24655 (20172, 35862)	\$38134 (31460, 44807)	\$97 (87, 108)
South Dakota	\$23318 (19078, 33917)	\$36066 (29754, 42377)	\$109 (97, 121)
Tennessee	\$24468 (20019, 35590)	\$37844 (31222, 44467)	\$97 (87, 107)
Texas	\$26099 (21354, 37962)	\$40367 (33303, 47432)	\$105 (93, 116)
Utah	\$25564 (20916, 37185)	\$39540 (32621, 46460)	\$106 (95, 117)
Vermont	\$26661 (21813, 38779)	\$41236 (34020, 48452)	\$87 (78, 96)
Virginia	\$27570 (22557, 40102)	\$42642 (35180, 50105)	\$102 (91, 113)
Washington	\$27276 (22317, 39674)	\$42187 (34804, 49570)	\$101 (90, 112)
West Virginia	\$23719 (19407, 34501)	\$36686 (30266, 43106)	\$97 (86, 107)
Wisconsin	\$24762 (20260, 36018)	\$38299 (31597, 45002)	\$106 (95, 118)
Wyoming	\$25538 (20894, 37146)	\$39499 (32587, 46411)	\$113 (101, 125)

**Appendix Table 2:** Variations in minimum hours saved, newly empaneled patients, and visit slots to be added, to ensure no loss of net revenue from a team documentation strategy, after year 1, across states. Legend: CDA = clerical documentation assistant; aTBC = advanced team-based care.

(A) Under fee-for-service

State	CDA model		aTBC model	
	Minutes that must be saved per encounter (95% CI)	Additional visit slots that would need to be opened (95% CI)	Minutes that must be saved per encounter (95% CI)	Additional visit slots that would need to be opened (95% CI)
Alabama	3.4 (3.4, 3.6)	310.6 (274.7, 383.4)	7.4 (3.4, 10.2)	724.7 (476.8, 881.5)
Alaska	4.4 (4.5, 4.6)	396 (365.8, 485.7)	9.8 (3.3, 13)	949 (461, 1118.8)
Arizona	3.3 (3, 3.5)	301.1 (246.5, 376)	6.9 (4.6, 10)	671 (650.3, 861.4)
Arkansas	3.4 (3.4, 3.6)	308 (273.3, 380.1)	7.4 (3.3, 10.2)	720.2 (464.3, 873.9)
California	3.7 (3.4, 4)	337.4 (278.3, 420.9)	7.8 (5, 11.2)	755.2 (709.3, 964.6)
Colorado	3.8 (3.7, 3.9)	339.8 (300.7, 419.5)	8.2 (3.7, 11.2)	793.3 (519.8, 964.4)
Connecticut	2.7 (1.8, 2.9)	240.3 (146, 310.7)	4.7 (7.1, 8.2)	454.4 (999, 704.6)
Delaware	4.1 (4.1, 4.3)	368.7 (332.5, 453.9)	8.9 (3.6, 12.1)	870.6 (505.9, 1044.4)
District of Columbia	3.7 (3.3, 4)	338.1 (271.3, 423.3)	7.7 (5.6, 11.3)	744.7 (782.1, 969.1)
Florida	3.2 (2.8, 3.4)	289.5 (230.5, 362.8)	6.5 (4.9, 9.6)	634.7 (686.9, 830.4)
Georgia	2.6 (2.1, 2.8)	237.7 (168.4, 302.4)	5 (5.4, 8)	487.8 (761.9, 689)

Hawaii	3.7 (3.3, 3.9)	335.3 (266.5, 420.4)	7.5 (5.7, 11.2)	734.5 (799.8, 962.1)
Idaho	4.2 (4.5, 4.3)	377.9 (361.8, 460.7)	9.5 (2.3, 12.3)	925.8 (319.2, 1063.2)
Illinois	3.7 (3.6, 3.9)	335.9 (293.2, 415.6)	8 (3.9, 11.1)	777.6 (553.2, 954.8)
Indiana	3.8 (4, 4)	347.2 (322.3, 425.4)	8.6 (2.8, 11.4)	834.6 (388.3, 980.2)
Iowa	4.1 (4.4, 4.2)	370.3 (358.3, 450.6)	9.4 (2, 12.1)	913.3 (276.6, 1040.5)
Kansas	3.9 (4.1, 4)	352 (331.5, 430.3)	8.8 (2.5, 11.5)	853.6 (348.9, 992.2)
Kentucky	3.4 (3.4, 3.6)	310.3 (275.8, 382.8)	7.5 (3.3, 10.2)	726.3 (463.6, 880.3)
Louisiana	3.4 (3.3, 3.6)	306.5 (265.1, 379.8)	7.3 (3.8, 10.1)	705.7 (527.9, 872.2)
Maine	2.7 (2.2, 3)	248.2 (178.6, 315.1)	5.3 (5.5, 8.3)	513.9 (769.1, 718.5)
Maryland	2.5 (1.5, 2.8)	225.1 (125.6, 293.4)	4.2 (7.4, 7.7)	407.9 (1041.6, 663.9)
Massachusetts	3.4 (3, 3.6)	308.8 (244.6, 387.3)	6.9 (5.3, 10.3)	675.1 (744.1, 886.2)
Michigan	2.7 (2.2, 2.9)	246.1 (178.9, 312)	5.3 (5.3, 8.3)	512.4 (744.5, 711.6)
Minnesota	4.3 (4.5, 4.4)	387.3 (369.2, 472.5)	9.7 (2.4, 12.7)	946.4 (342.2, 1090.3)
Mississippi	3.4 (3.3, 3.5)	306.2 (271.5, 377.9)	7.4 (3.3, 10.1)	715.7 (463.4, 868.9)
Missouri	3.6 (3.7, 3.8)	326.3 (299.3, 400.6)	8 (2.8, 10.7)	778.6 (399.7, 922.6)
Montana	4.3 (4.7, 4.5)	390 (377.7, 474.6)	9.9 (2.1, 12.7)	962.5 (288.7, 1096)

Nebraska	4 (4.2, 4.1)	361.7 (345.1, 441.2)	9.1 (2.3, 11.8)	884.4 (316.4, 1018.1)
Nevada	3.6 (3.5, 3.8)	328.3 (284.5, 406.5)	7.8 (4, 10.8)	756.8 (559.1, 933.8)
New Hampshire	3.2 (2.7, 3.4)	286.5 (217.1, 361.4)	6.3 (5.6, 9.6)	610.7 (783.3, 825.5)
New Jersey	4.1 (3.9, 4.3)	368 (318.7, 455.8)	8.7 (4.5, 12.2)	847.9 (629.7, 1046.8)
New Mexico	3.9 (4.1, 4.1)	355.4 (330.1, 435.4)	8.8 (2.8, 11.7)	854.5 (396.3, 1003.4)
New York	3.3 (2.7, 3.5)	297.3 (218, 376.6)	6.4 (6.3, 10)	622 (883.1, 859.3)
North Carolina	3.4 (3.3, 3.6)	306.6 (265.7, 379.7)	7.3 (3.7, 10.1)	706.8 (523, 872.2)
North Dakota	4.1 (4.5, 4.3)	373.5 (364.6, 453.9)	9.5 (1.8, 12.2)	926.3 (249.6, 1048.6)
Ohio	3.6 (3.7, 3.8)	329.7 (300.3, 405.2)	8 (3, 10.8)	783.2 (423.9, 932.8)
Oklahoma	3.4 (3.3, 3.6)	307.9 (270.5, 380.5)	7.4 (3.5, 10.2)	715.6 (489.6, 874.5)
Oregon	3.6 (3.5, 3.8)	326.2 (284.7, 403.6)	7.8 (3.8, 10.8)	755.1 (537.3, 927.2)
Pennsylvania	3.1 (2.7, 3.3)	280.2 (219.9, 351.8)	6.3 (4.9, 9.3)	609.3 (694.7, 804.8)
Rhode Island	2.6 (2, 2.8)	236.4 (158.4, 302.7)	4.8 (6, 8)	470.7 (843.7, 688.4)
South Carolina	3.4 (3.3, 3.6)	308.9 (269.8, 382.1)	7.4 (3.6, 10.2)	715.3 (506.8, 877.9)
South Dakota	4.2 (4.6, 4.3)	378.1 (372.5, 458.8)	9.7 (1.6, 12.3)	943.2 (220.1, 1060.4)
Tennessee	3.4 (3.3, 3.6)	308.7 (270.7, 381.7)	7.4 (3.5, 10.2)	716.7 (496.3, 877.1)

Texas	3.7 (3.7, 3.9)	335.9 (297.7, 414.5)	8.1 (3.6, 11.1)	784.8 (509.7, 953.1)
Utah	3.8 (3.9, 4)	346.1 (315, 425.5)	8.4 (3.2, 11.4)	821.9 (447.6, 979.5)
Vermont	2.7 (2, 2.9)	241.3 (165.2, 308.1)	5 (5.9, 8.1)	486.1 (827.4, 701.4)
Virginia	3.4 (3.1, 3.6)	311.3 (255.1, 388.6)	7.1 (4.8, 10.3)	694 (669.6, 890.4)
Washington	3.4 (3.1, 3.6)	307.3 (251.4, 383.7)	7 (4.7, 10.2)	684.5 (664.6, 879)
West Virginia	3.4 (3.5, 3.6)	312.3 (280.2, 384.8)	7.6 (3.1, 10.3)	735.2 (441.9, 885.2)
Wisconsin	3.9 (4.1, 4.1)	353.7 (330.3, 433.1)	8.8 (2.7, 11.6)	853.4 (377.9, 998.2)
Wyoming	4.2 (4.5, 4.4)	382.7 (365, 466.8)	9.6 (2.4, 12.5)	935.4 (335.9, 1077.1)

## (B) Under capitation

State	CDA model		aTBC model	
	New patients that must be empaneled per full-time physician (95% CI)	Additional visit slots that would need to be opened (95% CI)	New patients that must be empaneled per full-time physician (95% CI)	Additional visit slots that would need to be opened (95% CI)
Alabama	124.4 (71.7, 182)	273.3 (143.5, 437)	228.5 (120.8, 260.4)	502.3 (358.4, 625)
Alaska	158.7 (95.5, 230.5)	348.5 (191.1, 553.5)	299.2 (116.8, 330.4)	657.7 (346.5, 793.3)
Arizona	120.6 (64.4, 178.4)	265 (128.8, 428.4)	211.6 (164.7, 254.4)	465 (488.8, 610.8)
Arkansas	123.4 (71.4, 180.4)	271.1 (142.8, 433.1)	227.1 (117.6, 258.1)	499.1 (349, 619.7)
California	135.2 (72.7, 199.8)	297 (145.4, 479.6)	238.1 (179.7, 284.9)	523.4 (533.1, 684)
Colorado	136.1 (78.5, 199.1)	299 (157.1, 478)	250.1 (131.7, 284.8)	549.8 (390.7, 683.8)
Connecticut	96.3 (38.1, 147.5)	211.5 (76.3, 354.1)	143.3 (253.1, 208.1)	315 (750.9, 499.6)
Delaware	147.7 (86.8, 215.4)	324.5 (173.7, 517.2)	274.5 (128.2, 308.5)	603.3 (380.3, 740.5)
District of Columbia	135.5 (70.9, 200.9)	297.6 (141.7, 482.4)	234.8 (198.1, 286.2)	516.1 (587.9, 687.2)
Florida	116 (60.2, 172.2)	254.8 (120.4, 413.5)	200.1 (174, 245.3)	439.9 (516.3, 588.8)
Georgia	95.2 (44, 143.5)	209.2 (88, 344.6)	153.8 (193, 203.5)	338.1 (572.7, 488.5)
Hawaii	134.3 (69.6, 199.5)	295.1 (139.2, 479.1)	231.6 (202.6, 284.2)	509.1 (601.2, 682.2)



Idaho	151.4 (94.5, 218.7)	332.6 (189, 525)	291.9 (80.8, 314)	641.7 (239.9, 753.9)
Illinois	134.6 (76.6, 197.2)	295.6 (153.1, 473.6)	245.2 (140.1, 282)	538.9 (415.8, 677)
Indiana	139.1 (84.2, 201.9)	305.6 (168.4, 484.8)	263.1 (98.4, 289.5)	578.4 (291.9, 695.1)
Iowa	148.3 (93.6, 213.9)	325.9 (187.2, 513.5)	287.9 (70.1, 307.3)	633 (207.9, 737.8)
Kansas	141 (86.6, 204.2)	309.8 (173.2, 490.3)	269.1 (88.4, 293)	591.6 (262.3, 703.5)
Kentucky	124.3 (72, 181.7)	273.1 (144.1, 436.3)	229 (117.4, 260)	503.4 (348.5, 624.2)
Louisiana	122.8 (69.2, 180.2)	269.8 (138.5, 432.8)	222.5 (133.7, 257.6)	489.1 (396.8, 618.4)
Maine	99.5 (46.7, 149.6)	218.5 (93.3, 359.1)	162 (194.8, 212.2)	356.2 (578.1, 509.5)
Maryland	90.2 (32.8, 139.3)	198.1 (65.6, 334.4)	128.6 (263.9, 196.1)	282.7 (782.9, 470.7)
Massachusetts	123.7 (63.9, 183.8)	271.8 (127.8, 441.3)	212.8 (188.5, 261.7)	467.9 (559.3, 628.4)
Michigan	98.6 (46.7, 148.1)	216.6 (93.5, 355.5)	161.5 (188.6, 210.2)	355.1 (559.6, 504.5)
Minnesota	155.2 (96.4, 224.3)	340.9 (192.9, 538.5)	298.4 (86.7, 322)	655.9 (257.2, 773.1)
Mississippi	122.7 (70.9, 179.4)	269.5 (141.8, 430.7)	225.6 (117.4, 256.6)	496 (348.3, 616.1)
Missouri	130.7 (78.2, 190.2)	287.2 (156.4, 456.6)	245.5 (101.2, 272.5)	539.6 (300.4, 654.2)
Montana	156.3 (98.7, 225.3)	343.3 (197.3, 540.9)	303.5 (73.1, 323.7)	667.1 (217, 777.1)
Nebraska	144.9 (90.1, 209.4)	318.3 (180.3, 502.8)	278.8 (80.2, 300.7)	612.9 (237.9, 721.9)

Nevada	131.5 (74.3, 192.9)	288.9 (148.6, 463.3)	238.6 (141.6, 275.8)	524.5 (420.3, 662.1)
New Hampshire	114.8 (56.7, 171.5)	252.1 (113.4, 411.8)	192.5 (198.4, 243.8)	423.2 (588.8, 585.3)
New Jersey	147.4 (83.2, 216.3)	323.9 (166.5, 519.4)	267.3 (159.5, 309.2)	587.6 (473.3, 742.3)
New Mexico	142.4 (86.2, 206.7)	312.8 (172.4, 496.2)	269.4 (100.4, 296.4)	592.2 (297.9, 711.5)
New York	119.1 (56.9, 178.8)	261.7 (113.9, 429.2)	196.1 (223.7, 253.8)	431.1 (663.8, 609.3)
North Carolina	122.8 (69.4, 180.2)	269.9 (138.8, 432.8)	222.8 (132.5, 257.6)	489.8 (393.1, 618.5)
North Dakota	149.6 (95.2, 215.5)	328.7 (190.4, 517.3)	292 (63.2, 309.7)	642 (187.6, 743.6)
Ohio	132.1 (78.4, 192.3)	290.2 (156.9, 461.8)	246.9 (107.4, 275.5)	542.8 (318.6, 661.4)
Oklahoma	123.3 (70.7, 180.6)	271 (141.3, 433.6)	225.6 (124, 258.3)	496 (368, 620.1)
Oregon	130.7 (74.4, 191.5)	287.1 (148.7, 459.9)	238.1 (136.1, 273.9)	523.3 (403.9, 657.5)
Pennsylvania	112.3 (57.4, 167)	246.6 (114.9, 400.9)	192.1 (176, 237.7)	422.3 (522.2, 570.6)
Rhode Island	94.7 (41.4, 143.6)	208.1 (82.7, 344.9)	148.4 (213.7, 203.3)	326.2 (634.2, 488.1)
South Carolina	123.7 (70.5, 181.3)	271.9 (140.9, 435.4)	225.5 (128.4, 259.3)	495.8 (381, 622.5)
South Dakota	151.5 (97.3, 217.8)	332.8 (194.6, 522.9)	297.4 (55.8, 313.2)	653.7 (165.4, 751.9)
Tennessee	123.7 (70.7, 181.2)	271.7 (141.4, 435)	226 (125.7, 259.1)	496.7 (373.1, 622)
Texas	134.6 (77.8, 196.7)	295.6 (155.5, 472.4)	247.4 (129.1, 281.5)	543.9 (383.1, 675.8)

Utah	138.7 (82.3, 201.9)	304.6 (164.5, 484.9)	259.1 (113.4, 289.3)	569.6 (336.4, 694.5)
Vermont	96.7 (43.2, 146.2)	212.4 (86.3, 351.2)	153.3 (209.6, 207.1)	336.9 (621.9, 497.3)
Virginia	124.7 (66.6, 184.4)	273.9 (133.2, 442.8)	218.8 (169.6, 263)	481 (503.3, 631.3)
Washington	123.1 (65.7, 182.1)	270.4 (131.3, 437.2)	215.8 (168.3, 259.6)	474.4 (499.5, 623.3)
West Virginia	125.1 (73.2, 182.6)	274.9 (146.4, 438.5)	231.8 (111.9, 261.4)	509.5 (332.2, 627.6)
Wisconsin	141.7 (86.3, 205.5)	311.3 (172.6, 493.5)	269.1 (95.7, 294.8)	591.4 (284, 707.8)
Wyoming	153.3 (95.3, 221.6)	336.8 (190.7, 532)	294.9 (85.1, 318.1)	648.3 (252.5, 763.8)

**Appendix Table 3:** Additional sensitivity analyses analyzing changes in the introductory period before productivity gains, turnover rate, and to trade-offs between salary and turnover rate. For the latter, we simulated how much a 1% increase in salary would affect results if it resulted in a 1% decrease in turnover. All results are for year 1 of implementation, and results correspond to changes relative to the mean result shown in Table 2 of the main text.

(A) Under fee-for-service

<b>State</b>	<b>CDA model</b>	<b>aTBC model</b>
	<b>Change in minutes that must be saved per encounter (95% CI)</b>	<b>Change in minutes that must be saved per encounter (95% CI)</b>
Introductory period shortens/lengths by 2 months	+/-2.2	+/-4.6
Turnover rate halved/doubled	+/-0.4	+/-0.1
1% increase in salary and 1% decrease in turnover rate, or vice versa	+/-0.1	+/-0.2

(B) Under capitation

<b>State</b>	<b>CDA model</b>	<b>aTBC model</b>
	<b>Change in # of new patients that must be empaneled per full-time physician (95% CI)</b>	<b>Change in # of new patients that must be empaneled per full-time physician (95% CI)</b>
Introductory period shortens/lengths by 2 months	+/-36	+/-61
Turnover rate halved/doubled	+/-6	+/-1
1% increase in salary and 1% decrease in turnover rate, or vice versa	+/-4	+/-3