

Supplementary Online Content

Mehta SJ, Mallozzi C, Shaw PA, et al. Effect of text messaging and behavioral interventions on COVID-19 vaccination uptake: a randomized clinical trial. *JAMA Netw Open*. 2022;5(6):e2216649. doi:10.1001/jamanetworkopen.2022.16649

eTable 1. Vaccine Received Prior to Outreach

eTable 2. Dose 1 Completion in One Month by Subgroup (Scheduling Modality)

eTable 3. Dose 1 Completion in One Month by Subgroup (Messaging Content)

eTable 4. Final Text Response

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Vaccine Received Prior to Outreach

Study Group	Outbound Phone Only	Text + Outbound Call				Text + Inbound Call				Total
		Standard Messaging	Clinician Endorsement	Scarcity	Endowment	Standard Messaging	Clinician Endorsement	Scarcity	Endowment	
N	472	2,393	2,389	2,392	2,385	2,380	2,382	2,383	2,378	19,554
Rcv'd 1 Dose Prior, N (%)	82 (17.4)	422 (17.6)	404 (16.9)	415 (17.4)	428 (18.0)	462 (19.4)	447 (18.8)	449 (18.8)	400 (16.8)	3,509 (18.0)
Rcv'd Full Series¹ Prior, N (%)	52 (11.0)	279 (11.7)	262 (11.0)	278 (11.6)	273 (11.5)	327 (13.7)	274 (11.5)	315 (13.2)	255 (10.7)	2,315 (11.8)

¹ All patients that received the full series are included in the group that received 1 dose.

eTable 2. Dose 1 Completion in One Month by Subgroup (Scheduling Modality)

	Outbound Phone Only N (%)	Text + Outbound Call N (%)	Text + Inbound Call N (%)	Treatment Effect Size Log OR (95% CI) (Text + Outbound Call v Outbound Call Only)	Treatment Effect Size Log OR (95% CI) (Text + Inbound Call v Outbound Call Only)
Overall	14/390	243/7,890	253/7,765	-0.14 (-0.69 – 0.41)	-0.07 (-0.62 – 0.49)
Sex					
Male	7/155 (4.5)	104/3,237 (3.2)	94/3,235 (2.9)	-0.38 (-1.73 – 0.97)	-0.47 (-1.81 – 0.88)
Female	7/235 (3.0)	139/4,653 (3.0)	159/4,530 (3.5)	0.05 (-0.71 – 0.82)	0.23 (-0.54 – 0.99)
Race					
White	2/189 (1.1)	87/4,117 (2.1)	73/4,039 (1.8)	0.43 (-0.67 – 1.53)	0.27 (-0.83 – 1.37)
Black	8/127 (6.3)	117/2,338 (5.0)	137/2,241 (6.1)	-0.26 (-2.00 – 1.47)	-0.05 (-1.78 – 1.69)
Asian/Pacific Islander	3/26 (11.5)	18/600 (3.0)	17/614 (2.8)	-1.46 (-3.45 – 0.53)	-1.48 (-3.48 – 0.51)
Other ¹	1/48 (2.1)	21/835 (2.5)	26/871 (3.0)	0.74 (-2.70 – 4.18)	0.27 (-0.83 – 1.37)
Ethnicity					
Hispanic	1/26 (3.9)	19/486 (3.9)	21/455 (4.6)	0.21 (-2.48 – 2.91)	0.34 (-2.35 – 3.03)
Not-Hispanic	13/352 (3.7)	217/7,238 (3.0)	226/7,136 (3.2)	-0.20 (-4.05 – 3.66)	-0.12 (-3.97 – 3.72)
Other ²	0/12 (0.0)	7/166 (4.2)	6/174 (3.4)	1.49 (-2.50 – 5.47)	1.32 (-2.67 – 5.31)
Age Category					
18-29	7/129 (5.4)	72/2,162 (3.3)	72/2,187 (3.3)	-0.35 (-1.22 – 0.52)	-0.36 (-1.23 – 0.51)
30-39	2/127 (1.6)	74/3,129 (2.4)	65/3,034 (2.1)	0.27 (-1.50 – 2.04)	0.16 (-1.61 – 1.93)
40-49	2/73 (2.7)	48/1,386 (4.2)	56/1,379 (4.1)	0.03 (-1.77 – 1.82)	0.24 (-1.55 – 2.03)
50-64	3/60 (5.0)	48/1,143 (4.2)	57/1,109 (5.1)	-0.21 (-1.94 – 1.51)	0.00 (-1.72 – 1.71)
65+	0/1 (0.0)	1/70 (1.4)	3/56 (5.4)	-1.32 (-4.60 – 1.95)	0.54 (-2.22 – 3.30)
Income Quartile³					
< \$35,000 / Unknown ⁴	7/112 (6.3)	88/2,180 (4.0)	100/2,104 (4.8)	-0.49 (-1.27 – 0.29)	-0.28 (-1.05 – 0.50)
\$35,000 – 59,999	6/92 (6.5)	81/1,999 (4.1)	82/1,959 (4.2)	-0.48 (-1.90 – 0.94)	-0.46 (-1.87 – 0.96)
\$60,000 – 76,099	1/68 (1.5)	33/1,507 (2.2)	29/1,517 (1.9)	0.76 (-1.98 – 3.51)	0.60 (-2.14 – 3.34)
≥ \$76,100	0/118 (0.0)	41/2,204 (1.9)	42/2,185 (1.9)	3.82 (2.66 – 4.98)	3.85 (2.69 – 5.01)
Patient Portal Status					
Active	12/308 (3.9)	206/6,419 (3.2)	207/6,335 (3.3)	-0.38 (-1.73 – 0.97)	-0.47 (-1.81 – 0.88)
Inactive	2/82 (2.4)	37/1,471 (2.5)	46/1,430 (3.2)	-0.04 (-1.49 – 1.40)	0.25 (-1.19 – 1.69)
Insurance Coverage Type					
Commercial	9/308 (2.9)	176/6,309 (2.8)	176/6,252 (2.8)	0.02 (-0.68 – 0.71)	0.02 (-0.67 – 0.71)
Medicaid	4/59 (6.8)	51/1,135 (4.5)	63/1,089 (5.8)	-0.57 (-1.99 – 0.85)	-0.27 (-1.68 – 1.15)
Medicare	0/5 (0)	10/138 (7.2)	7/112 (6.3)	0.61 (-0.92 – 2.14)	0.53 (-1.06 – 2.13)
Other ⁵	1/18 (5.6)	6/308 (1.9)	7/312 (2.2)	-0.56 (-3.72 – 2.60)	-0.39 (-3.53 – 2.75)
Last Patient Visit					
≤ 2 Years	12/316 (3.8)	227/6,456 (3.5)	242/6,336 (3.8)	-0.05 (-2.35 – 2.25)	0.05 (-2.29 – 2.38)
> 2 Years	2/74 (2.7)	16/1,431 (1.1)	11/1,429 (0.8)	-0.80 (-2.37 – 0.77)	-1.17 (-2.77 – 0.43)

¹ Other was combined with American Indian, Unknown, and Refused due to very small sample size

² Other was combined with Unknown and Refused due to very small sample size

³ American Community Survey (2015-2019) Median Household Income in 2019 inflation adjusted dollars

⁴ Missing/Unknown was combined with <\$35,000 due to very small sample size

⁵ Other was combined with No Insurance and Unknown due to very small sample size

eTable 3. Dose 1 Completion in One Month by Subgroup (Messaging Content)

	Standard Msg, N (%)	Clinician Endorse, N (%)	Scarcity, N (%)	Endowment, N (%)	Treatment Effect Size Log OR (95% CI) (Endorsement v Standard Msg)	Treatment Effect Size Log OR (95% CI) (Scarcity v Standard Msg)	Treatment Effect Size Log OR (95% CI) (Endowment v Standard Msg)
Sex							
Male	43/1,611 (2.7)	54/1,622 (3.3)	48/1,575 (3.1)	53/1,664 (3.2)	0.20 (-0.42 – 0.81)	0.07 (-0.59 – 0.73)	0.16 (-0.44 – 0.77)
Female	75/2,278 (3.3)	81/2,298 (3.5)	52/2,336 (2.2)	90/2,271 (4.0)	0.11 (-0.22 – 0.43)	-0.38 (-0.74 - -0.02)	0.19 (-0.12 – 0.51)
Race							
White	49/2,031 (2.4)	44/2,041 (2.2)	29/2,032 (1.4)	38/2,052 (1.9)	-0.13 (-0.55 – 0.28)	-0.53 (-1.00 - -0.07)	-0.30 (-0.73 – 0.13)
Black	49/1,131 (4.3)	73 /1,147 (6.4)	53/1,151 (4.6)	79/1,150 (6.9)	0.44 (-0.25 – 1.13)	0.06 (-0.71 – 0.83)	0.50 (-0.21 – 1.21)
Asian/Pacific Islander	8/295 (2.7)	12/314 (3.8)	6/298 (2.0)	9/307 (2.9)	0.31 (-0.77 – 1.39)	-0.37 (-1.62 – 0.88)	0.05 (-1.08 – 1.19)
Other ¹	12/432 (2.8)	6/418 (1.4)	12/430 (2.8)	17/426 (4.0)	-0.65 (-1.81 – 0.50)	-0.06 (-1.10 – 0.99)	0.34 (-0.63 – 1.31)
Ethnicity							
Hispanic	13/234 (5.6)	15/245 (6.1)	2/229 (0.9)	10/233 (4.3)	0.21 (-0.59 – 1.00)	-1.98 (-3.58 - -0.39)	-0.31 (-1.18 – 0.55)
Not-Hispanic	103/3,566 (2.9)	119/3,585 (3.3)	94/3,608 (2.6)	127/3,615 (3.5)	0.15 (-1.01 – 1.30)	-0.12 (-2.40 – 2.16)	0.21 (-1.05 – 1.46)
Other ²	2/89 (2.2)	1/90 (1.1)	4/74 (5.4)	6/87 (6.9)	-0.88 (-3.57 – 1.82)	0.79 (-1.90 – 3.48)	0.85 (-1.11 – 2.80)
Age							
18-29	36/1,080 (3.3)	38/1,019 (3.7)	28/1,123 (2.5)	42/1,127 (3.7)	0.14 (-0.32 – 0.61)	-0.28 (-0.79 – 0.23)	0.09 (-0.37 – 0.43)
30-39	34/1,565 (2.2)	39/1,587 (2.5)	29/1,520 (1.9)	37/1,491 (2.5)	0.12 (-0.69 – 0.93)	-0.15 (-1.03 – 0.73)	0.13 (-0.68 – 0.94)
40-49	22/673 (3.3)	30/718 (4.2)	26/669 (3.9)	26/705 (3.7)	0.25 (-0.61 – 1.12)	0.17 (-0.75 – 1.10)	0.15 (-0.73 – 1.02)
50-64	25/541 (4.6)	28/571 (4.9)	17/565 (3.0)	35/575 (6.1)	0.11 (-0.75 – 0.97)	-0.48 (-1.44 – 0.48)	0.35 (-0.49 – 1.19)
65+	1/30 (3.3)	0/25 (0.0)	0/34 (0.0)	3/37 (8.1)	-7.0 (-9.26 - -4.75)	-6.27 (-8.53 - -4.02)	0.56 (-1.97 – 3.10)
Income³							
< \$35,000 / Unknown ⁴	46/1,056 (4.4)	54/1,090 (5.0)	34/1,080 (3.1)	54/1,058 (5.1)	0.15 (-0.26 – 0.55)	-0.35 (-0.80 – 0.10)	0.15 (-0.25 – 0.56)
\$35,000 – 59,999	38/984 (3.9)	36/951 (3.8)	38/1,007 (3.8)	51/1,016 (5.0)	-0.01 (-0.75 – 0.73)	-0.03 (-0.83 - 0.76)	0.27 (-0.45 – 0.99)
\$60,000 – 76,099	20/765 (2.6)	18/758 (2.4)	13/740 (1.8)	11/761 (1.5)	-0.14 (-1.00 – 0.73)	-0.41 (-1.36 – 0.55)	-0.61 (-1.55 – 0.33)
≥ \$76,100	14/1,084 (1.3)	27/1,121 (2.4)	15/1,084 (1.4)	27/1,100 (2.5)	0.66 (-0.22 – 1.54)	0.08 (-0.91 – 1.06)	0.66 (-0.22 – 1.54)
Patient Portal Status							
Active	99/3,134 (3.2)	112/3,200 (3.5)	83/3,162 (2.6)	119/3,258 (3.7)	0.11 (-0.81 – 1.04)	-0.14 (-0.80 – 0.53)	0.15 (-0.76 – 1.07)
Inactive	19/755 (2.5)	23/720 (3.2)	17/749 (2.3)	24/677 (3.6)	0.27 (-0.36 – 0.89)	-0.20 (-1.19 – 0.79)	0.31 (-0.31 – 0.92)
Insurance Coverage Type							
Commercial	79/3,149 (2.5)	98/3,133 (3.1)	68/3,131 (2.2)	107/3,148 (3.4)	0.23 (-0.08 – 0.53)	-0.16 (-0.49 – 0.17)	0.30 (0.00 – 0.59)
Medicaid	27/548 (4.9)	32/537 (6.0)	27/569 (4.7)	28/570 (4.9)	0.23 (-0.46 – 0.91)	-0.04 (-0.77 – 0.68)	0.03 (-0.66 – 0.73)
Medicare	7/54 (12.9)	2/70 (2.9)	3/62 (4.8)	5/64 (7.8)	-1.65 (-3.42 – 0.11)	-1.06 (-2.57 – 0.46)	-0.56 (-1.86 – 0.73)
Other ⁵	5/138 (3.6)	3/180 (1.7)	2/149 (1.3)	3/153 (2.0)	-0.67 (-2.20 – 0.86)	-0.92 (-2.61 – 0.77)	-0.57 (-2.11 – 0.97)
Last Patient Visit							
<= 2 Years	107/3,184 (3.4)	128/3,182 (4.0)	96/3,210 (3.0)	138/3,219 (4.3)	0.19 (-1.17 – 1.56)	-0.13 (-1.79 (1.52)	0.25 (-1.29 (1.79)
> 2 Years	11/705 (1.6)	7/738 (0.9)	4/701 (0.6)	5/716 (0.7)	-0.50 (-1.45 – 0.45)	-1.00 (-2.15 – 0.16)	-0.85 (-1.92 – 0.22)

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eTable 4. Final Text Response

Outcome	Text + Outbound Call				Text + Inbound Call				Total (n=15,655)
	Standard Msg (n=1,971)	Clinician Endorse (n=1,985)	Scarcity (n=1,977)	Endowment (n=1,957)	Standard Msg (n=1,918)	Clinician Endorse (n=1,935)	Scarcity (n=1,934)	Endowment (n=1,978)	
Message Fail, N (%)	87 (4.4)	100 (5.0)	84 (4.3)	101 (5.2)	90 (4.7)	86 (4.4)	76 (3.9)	99 (5.0)	723 (4.6)
No Response ID, N (%)	670 (34.0)	625 (31.5)	636 (32.2)	646 (33.0)	661 (34.5)	594 (30.7)	666 (34.4)	620(31.3)	5,118 (32.7)
No Response Offer, N (%)	60 (3.0)	54 (2.7)	55 (2.8)	51 (2.6)	64 (3.3)	48 (2.5)	53 (2.7)	41 (2.1)	426 (2.7)
Yes, N (%)	47 (2.4)	51 (2.6)	55 (2.8)	52 (2.7)	68 (3.6)	58 (3.0)	58 (3.0)	69 (3.5)	458 (2.9)
Info, N (%)	12 (0.6)	19 (1.0)	19 (1.0)	23 (1.2)	9 (0.5)	17 (0.9)	14 (0.7)	18 (0.9)	131 (0.8)
Not Now, N (%)	85 (4.3)	84 (4.2)	74 (3.7)	86 (4.4)	68 (3.6)	75 (3.9)	68 (3.5)	87 (4.4)	627 (4.0)
Done, N (%)	435 (22.1)	480 (24.2)	467 (23.6)	445 (22.7)	445 (23.2)	486 (25.1)	435 (22.5)	468 (23.7)	3,661 (23.4)
Call Me, ¹ N (%)	6 (0.3)	3 (0.2)	4 (0.2)	6 (0.3)	0 (0.0)	4 (0.2)	5 (0.3)	5 (0.3)	33 (0.2)
Stop, N (%)	416 (21.1)	447 (22.5)	423 (21.4)	401 (20.5)	387 (20.2)	422 (21.8)	407 (21.0)	399 (20.2)	3,302 (21.1)
Unstop, N (%)	8 (0.4)	4 (0.2)	11 (0.6)	7 (0.4)	5 (0.3)	10 (0.5)	9 (0.5)	0 (0.0)	54 (0.3)
Wrong Patient, N (%)	138 (7.0)	113 (5.7)	139 (7.0)	121 (6.2)	111 (5.8)	128 (6.6)	133 (6.9)	158 (8.0)	1,041 (6.7)
Recode Already Vaccinated, ² N (%)	7 (0.4)	5 (0.3)	10 (0.5)	18 (0.9)	10 (0.5)	7 (0.4)	10 (0.5)	14 (0.7)	81 (0.5)

¹ Patients who texted 'Not Now' or 'Info' were given an option to reply 'Call Me' if they decided to schedule a vaccine appointment at a later date.

² Patients who did not reply DONE but who otherwise indicated by free text they had completed vaccination were recoded as "Already Vaccinated."