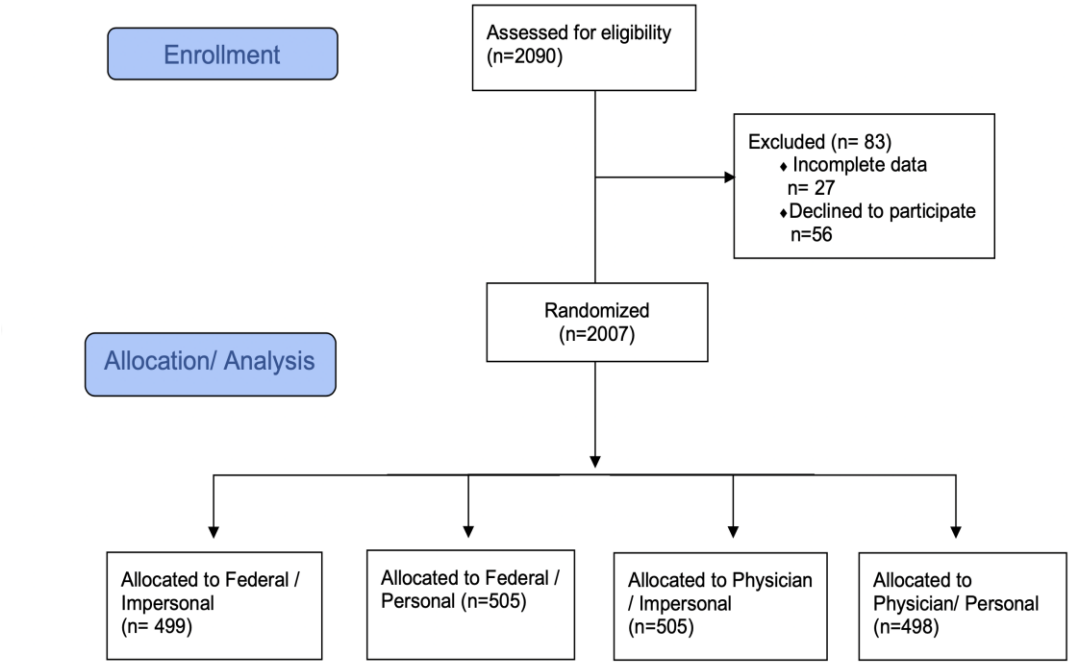
# Data Supplement S1. Supplemental material

## Emergency Physicians and Personal Narratives Improve the Perceived Effectiveness of COVID-19 Public Health Recommendations on Social Media: A Randomized Experiment

# 1. CONSORT participant flow diagram
## Figure S1

**Figure S1. CONSORT diagram: Recruitment, Randomization and Analysis of Participants**




*Study participant flow: 27 participants had incomplete data meaning they entered the study and did not complete any additional questions after the consent. Those with "incomplete data" agreed to participate but did not answer further questions beyond the attention check and thus were not randomized. No subjects were dropped once randomized*

# 2. Survey Weighting Table S1 & Table S2

We created survey weights to balance the sample demographics to match estimates for the national population with Internet access using data from the 2017 US Census (the latest date with available national estimates on internet and demographic data) on age, education, race and ethnicity. (Broadband Adoption and Computer Use by year, state, demographic characteristics - Data.gov [Internet]. [cited 2020 Nov 19];Available from: https://catalog.data.gov/dataset/broadband-adoption-and-computer-use-by-year-state-demographic-characteristics). When compared to our sample distributions the group characteristics were similar but varied on education attainment (**Table S1**). Our population was more educated than national estimates, our sample included only 2.3% with no diploma versus 12.3% and our sample included 56% with college graduates versus 34.1% nationally. However, when we weighted our sample to account for these educational differences, we still did not observe an appreciable impact on our treatment effects or confidence intervals (**Table S2**) so the analysis is presented unweighted. Raking method was chosen over more advanced methods as raking has been suggested to reduce bias nearly as well as more advanced methods, especially with small sample sizes.[1]

**Table S1. Comparison of Study Sample to National Distribution on Select Demographics**

| | Study Sample | Census Estimates |
|---|---|---|
| | No.(%) of participants | % of U.S. population |
| Race/ ethnicity (%) | | |
| American Indian or Alaskan Native | 16 ( 0.8) | 0.60% |
| Asian | 110 ( 5.5) | 6.00% |
| Black or African American | 214 (10.6) | 11.30% |
| Hispanic | 234 (11.6) | 15.40% |
| Other | 61 ( 3.0) | 1.80% |
| White | 1375 (68.4) | 64.90% |
| Education level | | |
| No Diploma | 47 ( 2.3) | 12.30% |
| High School Grad | 430 (21.4) | 24.90% |
| College Grad | 1122 (56.0) | 34.10% |
| Some College | 406 (20.2) | 28.70% |
| Age categories | | |
| 18-24 | 257 (13.3) | 17.40% |
| 25-44 | 720 (37.2) | 34.90% |
| 45-64 | 635 (32.8) | 32.40% |
| 65+ | 323 (16.7) | 15.30% |

**Table S2. Comparison of Main Outcome Means by Treatment Arm in Unweighted versus Weighted Samples**

| | | Unweighted Mean | 95% CI | | Weighted Mean | 95% CI | |
|---|---|---|---|---|---|---|---|
| **Outcome** | **Treatment** | | | | | | |
| PME | Federal Impersonal | 25.32 | 24.71 | 25.93 | 24.89 | 24.17 | 25.61 |
| | Federal Personal | 28.04 | 27.49 | 28.59 | 28.25 | 27.62 | 28.89 |
| | Physician Impersonal | 26.99 | 26.43 | 27.55 | 26.78 | 26.11 | 27.44 |
| | Physician Personal | 28.52 | 27.92 | 29.12 | 28.49 | 27.81 | 29.18 |
| | | | | | | | |
| PAE | Federal Impersonal | 9.77 | 9.46 | 10.08 | 9.54 | 9.12 | 9.97 |
| | Federal Personal | 10.58 | 10.26 | 10.89 | 10.72 | 10.31 | 11.13 |
| | Physician Impersonal | 10.35 | 10.05 | 10.66 | 10.25 | 9.90 | 10.59 |
| | Physician Personal | 11.02 | 10.70 | 11.34 | 10.93 | 10.50 | 11.35 |
| | | | | | | | |
| Share | Federal Impersonal | 4.59 | 4.40 | 4.77 | 4.43 | 4.19 | 4.67 |
| | Federal Personal | 4.76 | 4.59 | 4.94 | 4.89 | 4.68 | 5.10 |
| | Physician Impersonal | 4.94 | 4.77 | 5.12 | 4.96 | 4.74 | 5.18 |
| | Physician Personal | 4.99 | 4.81 | 5.18 | 4.99 | 4.78 | 5.20 |
| | | | | | | | |
| Letter | Federal Impersonal | 0.47 | 0.43 | 0.52 | 0.44 | 0.38 | 0.49 |
| | Federal Personal | 0.45 | 0.41 | 0.50 | 0.42 | 0.37 | 0.47 |
| | Physician Impersonal | 0.44 | 0.40 | 0.48 | 0.43 | 0.38 | 0.49 |
| | Physician Personal | 0.51 | 0.46 | 0.55 | 0.48 | 0.43 | 0.54 |

Note: Letter to continue restrictions is specific to participants who wrote a letter in support of continuing restrictions and doesn't include those who wrote letters to lift restrictions. PME= Perceived message effects (35-point scale); PAE= perceived attitude effect (15-point scale); Share= likelihood to share (7-point scale)

# 3. Baseline Characteristics Table S3

The baseline participant characteristics for which space constraints limited report in the manuscript Table are reported in **Table S3**. These items were collected for the purposes of creating covariate profiles for inclusion into heterogeneous treatment effect exploration via Causal Forest. Of note, none of the following variables were found to be significant for effect heterogeneity by Causal Forest analysis.

| Table S3. Participant Baseline Characteristics | | | | |
|---|---|---|---|---|
| | No.(%) of participants by treatment arm | | | |
| | Federal Impersonal | Federal Personal | Physician Impersonal | Physician Personal |
| | (n=499) | (n=505) | (n=505) | (n=498) |
| **Baseline Covariates** | | | | |
| Media bias exposure | | | | |
| Conservative only | 46 ( 9.2) | 57 (11.3) | 55 (10.9) | 55 (11.0) |
| Liberal only | 124 (24.8) | 150 (29.7) | 153 (30.3) | 130 (26.1) |
| Mixed sources | 329 (65.9) | 298 (59.0) | 297 (58.8) | 313 (62.9) |
| Trust in physicians | | | | |
| Missing | 6 ( 1.2) | 6 ( 1.2) | 7 ( 1.4) | 4 ( 0.8) |
| Very low | 13 ( 2.6) | 11 ( 2.2) | 15 ( 3.0) | 17 ( 3.4) |
| Low | 51 (10.2) | 41 ( 8.1) | 42 ( 8.3) | 28 ( 5.6) |
| High | 203 (40.7) | 199 (39.4) | 193 (38.2) | 208 (41.8) |
| Very high | 226 (45.3) | 248 (49.1) | 248 (49.1) | 241 (48.4) |
| Trust in fed officials | | | | |
| Missing | 7 ( 1.4) | 6 ( 1.2) | 7 ( 1.4) | 5 ( 1.0) |
| Very low | 106 (21.2) | 92 (18.2) | 85 (16.8) | 91 (18.3) |
| Low | 170 (34.1) | 192 (38.0) | 205 (40.6) | 182 (36.5) |
| High | 141 (28.3) | 165 (32.7) | 143 (28.3) | 163 (32.7) |
| Very high | 75 (15.0) | 50 ( 9.9) | 65 (12.9) | 57 (11.4) |
| Social media use | | | | |
| Missing | 6 ( 1.2) | 6 ( 1.2) | 7 ( 1.4) | 4 ( 0.8) |
| Never | 41 ( 8.2) | 47 ( 9.3) | 42 ( 8.3) | 53 (10.6) |
| Occasionally | 60 (12.0) | 52 (10.3) | 67 (13.3) | 63 (12.7) |
| Several times a week | 74 (14.8) | 63 (12.5) | 65 (12.9) | 56 (11.2) |
| Every day | 108 (21.6) | 125 (24.8) | 110 (21.8) | 117 (23.5) |
| Several times a day | 210 (42.1) | 212 (42.0) | 214 (42.4) | 205 (41.2) |
| Political engagement | | | | |
| None | 114 (22.8) | 141 (27.9) | 132 (26.1) | 140 (28.1) |
| One activity | 287 (57.5) | 259 (51.3) | 282 (55.8) | 237 (47.6) |
| Two activities | 49 ( 9.8) | 61 (12.1) | 57 (11.3) | 76 (15.3) |
| Over two | 49 ( 9.8) | 44 ( 8.7) | 34 ( 6.7) | 45 ( 9.0) |

# 4. Individual and State-level Covariates

We asked frequency of news exposure and from which news media network to investigate whether the bias of the individual's media consumption contributed to a differential impact of the Twitter message. For the news media bias measure, we created an average media bias variable from the news media network selected based on rankings created by AllSides.[6] Individuals who selected only right or left media sources were coded as "Right Only" or "Left Only", while individuals who had sources from a Center source, or if selected Left or Right in addition to a Center source, were coded as "Mixed".

Previous research has demonstrated the importance of state of residence as a contextual variable for understanding Americans' differences on policy positions.[7] In recognition that where someone lives geographically could influence perspectives on COVID-19 restrictions, we took into account a number of state-based variables: 1) COVID-19 cases per capita 2) the Cook Partisan Voter Index, a measure of how partisan a state is based on Democratic or Republican voting data,[8] and finally 3) a measure of current state restrictions on non-essential business closures based on data from the Kaiser Family Foundation.[9]

Last, we asked measures of empathy and social media use. In recognition that participants with varying levels of empathy may be more receptive to a personal story of loss, we adapted an empathy subscale from a brief form of the Interpersonal Reactivity Index.[10] Social media often contributes to the information silos and can exacerbate potential biases in their news sources.[11] Thus, we asked participants to rank the frequency of social media use and frequency of COVD-19 discussion.

# 5. Details on Main and Secondary Outcomes Table S4

Mean values and percentages across treatment arms are provided in **Table S4**. Some participants wrote a letter to discontinue restrictions, contrary to the persuasive intent of our message. We only counted letters from participants who wanted to continue restrictions ( those who selected they wanted to continue restrictions in the question directly prior to the letter writing question). Of note, including all letters, regardless of content to continue or lift restrictions, did result in differences in proportions participating per arm.

## Perceived Attitudinal Effect (PAE)

The original PAE scale is as follows: (1) This message makes me concerned about the health effects of smoking; (2) This message makes smoking seem unpleasant to me; (3)This message discourages me from wanting to smoke. Attitudes gauged after briefly viewed health messages have been found to predict actual ad effectiveness in smoking cessation research.[2,3] As they were adapted from a study on smoking cessation, we replaced "smoking" with "lifting restrictions" to fit our context. The original scale, referred to by the authors as the UNC PME Scale, or the effects perception scale used a 5-point Likert scale from "strongly disagree" to "strongly agree" (coded as 1–5), but to decrease acquiescence response bias[4] we asked effectiveness [(1) Not effective at all to (5) Extremely effective)].[5]

The original PAE scale had an alpha=.93, and the general factor for PME accounted for 82.6% of the variance. (Baig SA, Noar SM, Gottfredson NC, Boynton MH, Ribisl KM, Brewer NT. UNC Perceived Message Effectiveness: Validation of a Brief Scale. Ann Behav Med [Internet] 2019;53(8):732–42. Available from: http://dx.doi.org/10.1093/abm/kay080)

Analysis of our modified PAE scale showed principal component analysis revealing a strong one-factor dimension with an eigenvalue of 2.44, accounting for 81.3% of the variance. Scale reliability was high (Cronbach's $\alpha = 0.88$ $m = 10.38$, $SD = 3.55$)

## Perceived Message Effect (PME)

The original PME scale included the following statements: (1) These ads are worth remembering; (2) these ads grabbed my attention; (3) these ads are powerful; (4) these ads are informative; (5) these ads are meaningful; and (6) these ads are convincing. We modified the scale by removing the subscale on "informative" because of cause of information saturation on COVID-19. We modified 'worth remembering' with 'memorable' for clarity. Additionally we increased from a 5-point Likert to 7-point to capture more detail at the extremes given the likelihood for ceiling effects.

The original PME scale had the following properties: "The initial factor analysis yielded a strong one-factor solution with an eigenvalue of 4.22, and factor loadings ranging from 0.76 to 0.87 across the six items in the scale. All other factor eigenvalues were small and negative. The total proportion of variance accounted for by this single factor was 70% and scale reliability was high (Cronbach's alpha = .94)." (Davis KC, Nonnemaker J, Duke J, Farrelly MC. Perceived

effectiveness of cessation advertisements: the importance of audience reactions and practical implications for media campaign planning. Health Commun [Internet] 2013;28(5):461–72. Available from: http://dx.doi.org/10.1080/10410236.2012.696535)

Analysis of our modified PME scale showed principal component analysis of the adapted PME scale revealed a strong one-factor dimension with an eigenvalue of 3.96, accounting for 79.2% of the variance. Scale reliability was high (Cronbach's α = 0.93 m = 27.2 SD = 6.75)

**Table S4. Means or Proportions by Treatment Arm in Primary and Secondary Outcome**

| | Treatment arm | | | | | |
|---|---|---|---|---|---|---|
| | **Federal Impersonal** | **Federal Personal** | **Physician Impersonal** | **Physician Personal** | | **Total** |
| **Mean (SD)** | **(n=499)** | **(n=505)** | **(n=505)** | **(n=498)** | **p-value** | **(n=2007)** |
| **Main Outcomes** | | | | | | |
| Letter to Continue Restrictions (%) | 236 (47.3) | 229 (45.3) | 222 (44.0) | 252 (50.6) | 0.17 | 939 (46.8) |
| PME | 25.32 (6.95) | 28.04 (6.30) | 26.99 (6.45) | 28.52 (6.81) | <0.001 | 27.21 (6.73) |
| PAE | 9.77 (3.54) | 10.58 (3.60) | 10.35 (3.51) | 11.02 (3.66) | <0.001 | 10.43 (3.60) |
| Share | 4.59 (2.13) | 4.76 (2.05) | 4.94 (1.96) | 4.99 (2.09) | 0.007 | 4.82 (2.06) |
| | | | | | | |
| **Secondary Outcome** | | | | | | |
| Pledge | | | | | 0.999 | pledge (%) |
| Missing | 6 ( 1.2) | 6 ( 1.2) | 7 ( 1.4) | 5 ( 1.0) | | 24 ( 1.2) |
| No | 44 ( 8.8) | 43 ( 8.5) | 44 ( 8.7) | 42 ( 8.4) | | 173 ( 8.6) |
| Yes | 449 (90.0) | 456 (90.3) | 454 (89.9) | 451 (90.6) | | 1810 (90.2) |

Note: Letter to continue restrictions is specific to participants who wrote a letter in support of continuing restrictions and doesn't include those who wrote letters to lift restrictions. PME= Perceived message effects (35-point scale); PAE= perceived attitude effect (15-point scale); Share= likelihood to share (7-point scale)

# 6. Four-Level Regressions Table S5 & Table S6

We present the unadjusted (**Table S5**) as well as the covariate-adjusted (**Table S6)** estimated treatment effects from ordinary least squares regression with control group (simulated federal impersonal message). Of note, **Table S6** is the tabular form of manuscript **Figure 3.** Regression adjusted by covariates: race/ ethnicity, marital (married, single, other), party, gender, anxiety about COVID-19, news frequency (very frequent, frequent, other), and economy versus public health trade-off.

**Table S5. Unadjusted Estimated Treatment Effects on Primary Outcomes by Treatment Arm Compared to the Federal, Impersonal Condition**

| | | Unadjusted Model | | | |
|---|---|---|---|---|---|
| | | Estimates | 95% CI | | p-value |
| **Outcome** | **Treatment arm** | | | | |
| Perceived Message Effect (PME) | Federal Personal | 2.71 | 1.89 | 3.53 | <0.001 |
| | Physician Impersonal | 1.67 | 0.85 | 2.49 | <0.001 |
| | Physician Personal | 3.2 | 2.37 | 4.02 | <0.001 |
| | | | | | |
| Perceived Attitude Effect (PAE) | Federal Personal | 0.81 | 0.37 | 1.25 | <0.001 |
| | Physician Impersonal | 0.59 | 0.15 | 1.03 | 0.009 |
| | Physician Personal | 1.26 | 0.81 | 1.7 | <0.001 |
| | | | | | |
| Likelihood to Share | Federal Personal | 0.18 | 0.08 | 0.43 | 0.173 |
| | Physician Impersonal | 0.36 | 0.1 | 0.61 | 0.006 |
| | Physician Personal | 0.4 | 0.15 | 0.66 | 0.002 |
| | | | | | |
| Letter-write | Federal Personal | 0.92 | 0.72 | 1.19 | 0.54 |
| | Physician Impersonal | 0.87 | 0.68 | 1.12 | 0.29 |
| | Physician Personal | 1.14 | 0.89 | 1.46 | 0.30 |
| | | **Z-Test for Proportions** | | | |
| Letter-write | Physician Personal | 50.60% | -0.030 | 0.100 | 0.326 |

Note: Unadjusted treatment effects from ordinary least squares regression and logistic regression with federal impersonal as reference. Estimates shown on original scales, 35-point scale PME= Perceived message effect; 15-point scale PAE= Perceived attitude effect; 7-point scale Share= likelihood to share; yes/no scale for Letter writing. Letter also presented as estimated probability based on Z-test of proportions

**Table S6: Covariate Adjusted Estimated Treatment Effects on Primary Outcomes by Treatment Arm Compared to the Federal, Impersonal Condition**

| | | Covariate-adjusted Model | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Estimates | 95% CI | | Cohen's D | 95% CI | | p.value |
| Outcome | Treatment arm | | | | | | | |
| PME | Federal Personal | 2.65 | 1.93 | 3.36 | 0.39 | 0.29 | 0.50 | <0.001 |
| | Physician Impersonal | 1.46 | 0.75 | 2.18 | 0.22 | 0.11 | 0.32 | <0.001 |
| | Physician Personal | 2.90 | 2.18 | 3.62 | 0.43 | 0.32 | 0.54 | <0.001 |
| | | | | | | | | |
| PAE | Federal Personal | 0.80 | 0.43 | 1.16 | 0.22 | 0.12 | 0.32 | <0.001 |
| | Physician Impersonal | 0.48 | 0.11 | 0.85 | 0.13 | 0.03 | 0.24 | 0.011 |
| | Physician Personal | 1.14 | 0.77 | 1.51 | 0.32 | 0.21 | 0.42 | <0.001 |
| | | | | | | | | |
| Share | Federal Personal | 0.19 | -0.03 | 0.41 | 0.09 | -0.02 | 0.20 | 0.097 |
| | Physician Impersonal | 0.32 | 0.10 | 0.55 | 0.16 | 0.05 | 0.26 | 0.004 |
| | Physician Personal | 0.38 | 0.16 | 0.61 | 0.19 | 0.08 | 0.29 | 0.001 |
| | | | | | | | | |
| Letter | Federal Personal | -0.11 | -0.39 | 0.16 | 0.89 | 0.68 | 1.18 | 0.429 |
| | Physician Impersonal | -0.19 | -0.47 | 0.08 | 0.83 | 0.63 | 1.09 | 0.171 |
| | Physician Personal | 0.12 | -0.16 | 0.40 | 1.13 | 0.86 | 1.49 | 0.396 |

Note: Point estimates with 95% CIs, corresponding to manuscript **Figure 3**. Estimates are presented using Cohen's D standardized effect sizes and original scales. Cohen's D scales outcomes by pooled SD between groups. A Cohen's D of 0.2 is a small effect and 0.5, medium. Perceived message effectiveness (PME, 35-point scale); perceived attitude effectiveness (PAE, 15-point scale); likelihood to share post (7-point Likert scale); letter-writing (letter, yes/ no binary scale). Regression adjusted by covariates: race/ ethnicity, marital (married, single, other), party, gender, anxiety about COVID-19, news frequency (very frequent, frequent, other), and economy versus public health tradeoff.

# 7. Pooled effects Table S7

Pooled effects, the average treatment effect across treatment arms, are presented with and without interaction terms and with and without covariate-adjustment in **Table S7**. There was a significant negative interaction such that the physician did not increase the effect of the personal message as much as it did for the impersonal message. The other outcome measures had no significant interaction terms. A similar pattern was seen for PAE. Personal versus Impersonal was 0.20 (95%CI 0.13 to 0.27;P<0.001) and Physician versus Federal was 0.11 (95%CI 0.04 to 0.19; P<0.05). For likelihood to share, the Personal message had no significant impact, 0.06 (95%CI -0.02 to 0.14; P=0.12), while Physician was 0.13 (95%CI 0.05 to 0.20;P<0.05).

**Table S7: Pooled Estimated Treatment Effects on Main Outcomes by Treatment Arm, Unadjusted and Adjusted Model**

| | | Model with Interaction Term | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Adjusted | | | | | | | Unadjusted | | | | | |
| **Outcome** | **Treatment arm** | **Estimate** | **95% CI** | | **Cohen's D** | **95% CI** | | **p.value** | **Estimate** | **95% CI** | | **Cohen's D** | **95% CI** | | **p.value** |
| PME | Personal | 2.65 | 1.93 | 3.36 | 0.39 | 0.29 | 0.50 | <0.001 | 2.71 | 1.89 | 3.53 | 0.40 | 0.28 | 0.52 | <0.001 |
| | Physician | 1.46 | 0.75 | 2.18 | 0.22 | 0.11 | 0.32 | <0.001 | 1.67 | 0.85 | 2.49 | 0.25 | 0.13 | 0.37 | <0.001 |
| | Interaction | -1.21 | -2.22 | -0.20 | -0.18 | -0.33 | -0.03 | 0.019 | -1.18 | -2.35 | -0.02 | -0.18 | -0.35 | 0.00 | 0.045 |
| | | | | | | | | | | | | | | | |
| PAE | Personal | 0.80 | 0.43 | 1.16 | 0.22 | 0.12 | 0.32 | <0.001 | 0.81 | 0.37 | 1.25 | 0.22 | 0.10 | 0.35 | <0.001 |
| | Physician | 0.48 | 0.11 | 0.85 | 0.13 | 0.03 | 0.24 | 0.011 | 0.59 | 0.15 | 1.03 | 0.16 | 0.04 | 0.29 | 0.009 |
| | Interaction | -0.14 | -0.66 | 0.39 | -0.04 | -0.18 | 0.11 | 0.606 | -0.14 | -0.77 | 0.48 | -0.04 | -0.21 | 0.13 | 0.654 |
| | | | | | | | | | | | | | | | |
| Share | Personal | 0.19 | -0.03 | 0.41 | 0.09 | -0.02 | 0.20 | 0.097 | 0.18 | -0.08 | 0.43 | 0.09 | -0.04 | 0.21 | 0.173 |
| | Physician | 0.32 | 0.10 | 0.55 | 0.16 | 0.05 | 0.26 | 0.004 | 0.36 | 0.10 | 0.61 | 0.17 | 0.05 | 0.30 | 0.006 |
| | Interaction | -0.13 | -0.44 | 0.18 | -0.06 | -0.21 | 0.09 | 0.423 | -0.13 | -0.49 | 0.23 | -0.06 | -0.24 | 0.11 | 0.480 |
| | | | | | | | | | | | | | | | |
| Letter | Personal | -0.11 | -0.39 | 0.16 | 0.89 | 0.68 | 1.18 | 0.429 | -0.08 | -0.33 | 0.17 | 0.92 | 0.72 | 1.19 | 0.536 |
| | Physician | -0.19 | -0.47 | 0.08 | 0.83 | 0.63 | 1.09 | 0.171 | -0.13 | -0.38 | 0.11 | 0.87 | 0.68 | 1.12 | 0.289 |
| | Interaction | 0.42 | 0.04 | 0.81 | 1.53 | 1.04 | 2.25 | 0.033 | 0.35 | -0.01 | 0.70 | 1.41 | 0.99 | 2.01 | 0.054 |
| | | Model no Interaction Term | | | | | | | | | | | | |
| | | Adjusted | | | | | | | Unadjusted | | | | | |
| **Outcome** | **Treatment arm** | **Estimate** | **95% CI** | | **Cohen's D** | **95% CI** | | **p.value** | **Estimate** | **95% CI** | | **Cohen's D** | **95% CI** | | **p.value** |
| PME | Personal | 2.05 | 1.54 | 2.55 | 0.30 | 0.23 | 0.38 | <0.001 | 2.12 | 1.54 | 2.70 | 0.31 | 0.23 | 0.40 | <0.001 |
| | Physician | 0.86 | 0.35 | 1.37 | 0.13 | 0.05 | 0.20 | 0.001 | 1.08 | 0.50 | 1.66 | 0.16 | 0.07 | 0.25 | <0.001 |
| | | | | | | | | | | | | | | | |
| PAE | Personal | 0.73 | 0.47 | 0.99 | 0.20 | 0.13 | 0.27 | <0.001 | 0.74 | 0.43 | 1.05 | 0.21 | 0.12 | 0.29 | <0.001 |
| | Physician | 0.41 | 0.15 | 0.68 | 0.11 | 0.04 | 0.19 | 0.002 | 0.52 | 0.20 | 0.83 | 0.14 | 0.06 | 0.23 | 0.001 |
| | | | | | | | | | | | | | | | |
| Share | Personal | 0.12 | -0.03 | 0.28 | 0.06 | -0.02 | 0.14 | 0.122 | 0.11 | -0.07 | 0.29 | 0.05 | -0.03 | 0.14 | 0.222 |
| | Physician | 0.26 | 0.10 | 0.42 | 0.13 | 0.05 | 0.20 | 0.001 | 0.29 | 0.11 | 0.47 | 0.14 | 0.05 | 0.23 | 0.001 |
| | | | | | | | | | | | | | | | |
| Letter | Personal | 0.10 | -0.09 | 0.30 | 1.11 | 0.91 | 1.34 | 0.303 | 0.09 | -0.08 | 0.27 | 1.10 | 0.92 | 1.31 | 0.293 |
| | Physician | 0.02 | -0.17 | 0.21 | 1.02 | 0.84 | 1.24 | 0.838 | 0.04 | -0.14 | 0.21 | 1.04 | 0.87 | 1.24 | 0.667 |

Note: Covariate-adjusted and unadjusted pooled treatment effects from ordinary least squares regression pooled by messenger and message, with reference being the federal official for the physician arm, and the impersonal message for the personal arm.. Estimates are standardized using Cohen's D, which scales outcomes by the pooled SD. A Cohen's D of 0.2 is considered a small effect and 0.5 a medium effect. Regression adjusted by covariates: race/ ethnicity, marital (married, single, other), party, gender, anxiety about COVID-19, news frequency (very frequent, frequent, other), and economy versus public health tradeoff.

# 8. Attention Check Questions Table S8 & Figure S2

Participants were asked two attention checks to gauge levels and different types of attention to the survey experiment. “Manipulation Check” refers to passing the question that asked what was the occupation of the Twitter messenger. “Instruction Check” refers to the first question which asked for the participant to read an instruction paragraph which had the intended answer embedded in the instructions of selecting a favorite color. For most of the outcomes, participants who passed both checks demonstrate a stronger treatment effect than those who “passed last check,” than “all respondents,” the total sample population inclusive of participants who did not pass either or both attention checks.

Details on the covariate profiles of those who failed the different attention checks are shown in **Table S8**. Briefly, those who passed both attention checks differed from those who passed by higher news frequency, income, higher proportion of Democrats and Liberals, older, female, and lower trust in physicians.

Treatment effect estimates were stronger for higher levels of attention as shown both in **Figure S2.** Though the magnitude of the effect was slightly different, most of the confidence intervals overlap and the direction of the effect is qualitatively similar regardless of the attention check level.

**Table S8.Participants Characteristics by Attention Check Level**

| No. (%) | Passed none | Passed both | |
|---|---|---|---|
| **Demographics** | **(n= 961)** | **(n=1046)** | **p-value** |
| Female | 456 (47.5) | 575 (55.0) | 0.001 |
| Age category | | | <0.001 |
| 18-24 | 118 (12.8) | 139 (13.8) | |
| 25-44 | 385 (41.7) | 332 (32.9) | |
| 45-64 | 293 (31.7) | 342 (33.9) | |
| 65+ | 127 (13.8) | 196 (19.4) | |
| Region (%) | | | 0.149 |
| Midwest | 165 (17.2) | 222 (21.2) | |
| Northeast | 202 (21.0) | 212 (20.3) | |
| South | 381 (39.6) | 390 (37.3) | |
| West | 213 (22.2) | 222 (21.2) | |
| Race/Ethnicity | | | 0.694 |
| American Indian | 6 ( 0.6) | 10 ( 1.0) | |
| Asian | 56 ( 5.8) | 53 ( 5.1) | |
| Black | 108 (11.2) | 106 (10.1) | |
| Hispanic | 117 (12.2) | 117 (11.2) | |
| Other | 31 ( 3.2) | 30 ( 2.9) | |
| White | 643 (66.9) | 730 (69.8) | |
| Education | | | 0.082 |
| No Diploma | 29 ( 3.0) | 18 ( 1.7) | |
| High School Grad | 218 (22.8) | 211 (20.2) | |
| Some College | 182 (19.0) | 223 (21.4) | |
| College Grad | 529 (55.2) | 592 (56.7) | |
| Income | | | 0.015 |
| <25k | 260 (27.1) | 237 (22.7) | |
| 25k-49k | 200 (20.8) | 260 (24.9) | |
| 50k-74k | 149 (15.5) | 193 (18.5) | |
| 75k-99k | 112 (11.7) | 132 (12.6) | |
| >99k | 211 (22.0) | 190 (18.2) | |
| Unknown | 29 ( 3.0) | 34 ( 3.3) | |
| Marital status | | | 0.211 |
| Married | 468 (48.7) | 470 (44.9) | |
| Other | 232 (24.1) | 280 (26.8) | |
| Single | 261 (27.2) | 296 (28.3) | |
| Health status | | | <0.001 |
| Missing | 24 ( 2.5) | 1 ( 0.1) | |
| Poor | 33 ( 3.4) | 20 ( 1.9) | |
| Fair | 124 (12.9) | 165 (15.8) | |
| Good | 351 (36.5) | 413 (39.5) | |
| Very good | 280 (29.1) | 328 (31.4) | |
| Excellent | 149 (15.5) | 119 (11.4) | |

**Table S8. (continued)**

| No. (%) | Passed none | Passed both | |
|---|---|---|---|
| **Characteristics** | **(n= 961)** | **(n=1046)** | **p-value** |
| News consumption | | | <0.001 |
| Frequently | 258 (26.8) | 337 (32.2) | |
| Other | 211 (22.0) | 151 (14.4) | |
| Very frequently | 492 (51.2) | 558 (53.3) | |
| Media bias exposure | | | 0.005 |
| Conservative only | 88 ( 9.2) | 125 (12.0) | |
| Liberal only | 246 (25.6) | 311 (29.7) | |
| Mixed news source | 627 (65.2) | 610 (58.3) | |
| Public health over economy | 758 (79.8) | 853 (81.5) | 0.348 |
| Political party | | | 0.012 |
| Democrat | 400 (41.6) | 504 (48.2) | |
| Independent | 133 (13.8) | 134 (12.8) | |
| Republican | 428 (44.5) | 408 (39.0) | |
| Political ideology | | | <0.001 |
| Missing | 25 ( 2.6) | 5 ( 0.5) | |
| Very conservative | 200 (20.8) | 211 (20.2) | |
| Conservative | 139 (14.5) | 205 (19.6) | |
| Moderate | 175 (18.2) | 124 (11.9) | |
| Liberal | 354 (36.8) | 423 (40.4) | |
| Very liberal | 68 ( 7.1) | 78 ( 7.5) | |
| Trust in federal officials | | | <0.001 |
| Missing | 23 ( 2.4) | 0 ( 0.0) | |
| High | 369 (38.4) | 434 (41.5) | |
| Low | 101 (10.5) | 61 ( 5.8) | |
| Very high | 431 (44.8) | 532 (50.9) | |
| Very low | 37 ( 3.9) | 19 ( 1.8) | |
| Trust in physicians | | | <0.001 |
| Missing | 25 ( 2.6) | 0 ( 0.0) | |
| High | 324 (33.7) | 288 (27.5) | |
| Low | 304 (31.6) | 445 (42.5) | |
| Very high | 152 (15.8) | 95 ( 9.1) | |
| Very low | 156 (16.2) | 218 (20.8) | |
| Anxious | | | <0.001 |
| Missing | 19 ( 2.0) | 0 ( 0.0) | |
| More than half the days | 174 (18.1) | 215 (20.6) | |
| Nearly every day | 252 (26.2) | 233 (22.3) | |
| Not at all | 187 (19.5) | 242 (23.1) | |
| Several days | 329 (34.2) | 356 (34.0) | |
| Social media use | | | <0.001 |
| Missing | 23 ( 2.4) | 0 ( 0.0) | |
| Never | 79 ( 8.2) | 104 ( 9.9) | |
| Occasionally | 111 (11.6) | 131 (12.5) | |
| Several times a week | 132 (13.7) | 126 (12.0) | |
| Several times a day | 393 (40.9) | 448 (42.8) | |
| Every day | 223 (23.2) | 237 (22.7) | |
| Political engagement | | | 0.002 |
| 0 activities | 217 (22.6) | 310 (29.6) | |
| 1 activities | 547 (56.9) | 518 (49.5) | |
| 2 activities | 117 (12.2) | 126 (12.0) | |
| >2 activities | 80 ( 8.3) | 92 ( 8.8) | |

Figure S2. Estimated Treatment Effects on Primary Outcomes by Treatment Arm by Levels of Attention Check Correct

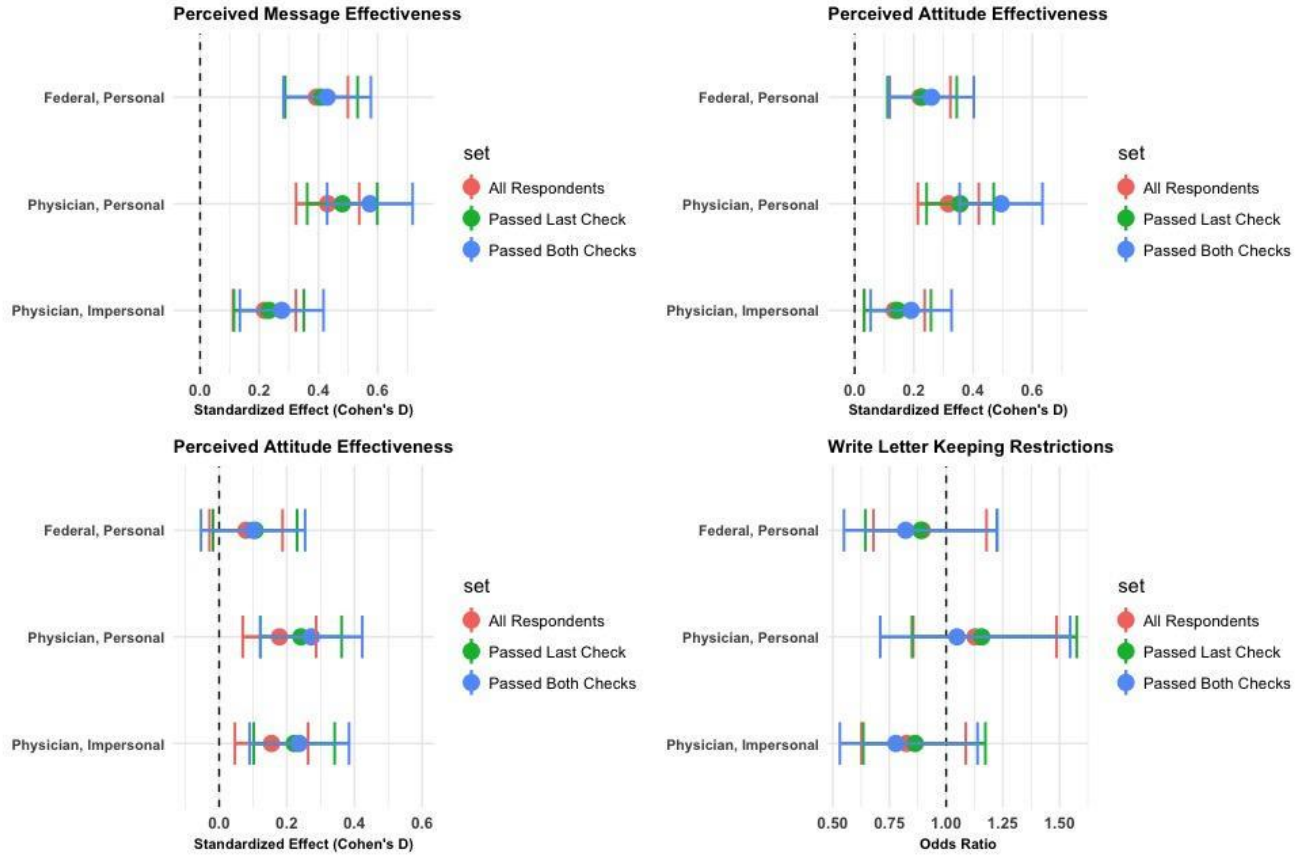



*Figure S2 Note: Covariate-adjusted treatment effects from ordinary least squares regression (and logistic regression for Write Letter Keeping Restrictions) with control group (simulated federal impersonal message). Estimates are standardized using Cohen's D, which scales outcomes by the pooled SD. A Cohen's D of 0.2 is considered a small effect and 0.5 a medium effect.[12] Regression adjusted by covariates: race/ ethnicity, marital (married, single, other), party, gender, anxiety about COVID-19, news frequency (very frequent, frequent, other), and economy versus public health tradeoff. "Passed Last Check" refers to passing the question that asked what was the occupation of the Twitter messenger. "Passed Both Checks" refers to passing the occupation check and the first question which asked for the participant to read a long instruction paragraph which had the intended answer embedded in the instructions.to the question of what is the participant's favorite color.*

# Citations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# 9. Pre-analysis Plan

Based on Aspredicted.org template

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

Whether the message (personal versus impersonal) and type of messenger (federal government official versus doctor on the front lines) of a social media post about coronavirus causes the general public to give a higher rating of a) perceived message effectiveness, b) perceived attitude effectiveness, c) willingness to like/share the message to their social network, and d) writing a letter to their state governor to continue coronavirus restrictions. The null hypothesis being tested is that there are no differences across four treatment arms that randomize the message and messenger of the social medial post.

3) Describe the key dependent variable(s) specifying how they will be measured.

**Main Outcome Measures:**

1. Perceived Message Effect:
    a. Linear sum of the following five items (i-v) ranked on a scale of (1) Strongly disagree to (7) Strongly agree
        i. This message is memorable
        ii. This message grabbed my attention
        iii. This message was powerful
        iv. This message was meaningful
        v. This message was convincing
2. Likelihood to share
    a. Scale of (1) Extremely unlikely to (7) Extremely likely
    b. *If you had a social media account where you posted, how likely would you be to LIKE or SHARE a post like this with your friends or your followers?*
3. Perceived Attitude Effect:
    a. Linear sum of the following three items (i-iii) ranked on a scale of (1) Not effective at all to (5) Extremely effective
    *b.* *Thinking about what you just read, rate your opinion on the effectiveness of the message for these statements:*
        i. This message made me concerned about the health effects of lifting restrictions on public activity
        ii. This message made lifting restrictions less appealing to me
        iii. This message discourages me supporting opening America up right now
4. Writing a letter to the State governor for continuing restrictions or lifting restrictions
    a. Free text written: Yes or No
        i. (Exploratory: Length of time spent on free text page/ words written)

**Secondary Outcome:**

1. Pledge to stay home when possible

4) How many and which conditions will participants be assigned to?

Subjects will be randomly assigned to one of four possible conditions, and condition groups will be forced to equal sample sizes. The conditions assigned involve two interventions: 1) (messenger: doctor on the front lines vs. federal government official) and 2) (message: personal vs. impersonal), creating a 2x2 factorial experimental design.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We plan to create survey weights to balance the sample demographics to match estimates for the national population with internet access using data from the Census Bureau's 2016 American Community Survey (ACS) on sex, age, education, race, Hispanic origin, and region along with data from the 2010 Census on population density.

Descriptive analysis, linear regression for composite outcome, and ordinal logistic regression for ordinal outcome (likerts) of the treatment assignment (with Doctor Personal message as the omitted category) on main and secondary outcomes, with robust standard errors incorporating sample weights. Descriptive analysis will be reported for secondary outcome.

We plan to conduct the same regression models with adjusted for the following covariates. These assumptions are drawn from estimates of groups who had varying levels of self-reported social distancing and prior literature on health behavior and thus may be more likely to experience different exposure effects:

1) Sex (male or female)
2) Political party identification (Republican, Independent, Democrat)
3) Population density (Large city / Town / Rural area)
4) Region
5) Self-rated coronavirus impact -anxiety
6) Marital status
7) Economic versus public health preference
8) Trust in doctors/ federal officials
9) Frequency of exposure to coronavirus news
10) Political engagement

We plan to do a subgroup analysis on the following groups to examine heterogeneity of treatment effects:

1) Preference for prioritizing measures to help economy versus public health

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Participants that complete less than 80% of survey questions, or those that do not have demographic meta-data collected from Lucid, will be analyzed separately from main analysis but will be reported in supplementary material.

We will include two attention checks to assess data quality: a) pre-exposure instructional check and b) post-outcome manipulation check. These subgroups will be assessed separately as a robustness check for effect heterogeneity and reported in the supplement. Those who fail the attention check will be combined into the total sample if there is no evidence of heterogeneity.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will collect 2000 in total for a target of 0.80 power to estimate a Minimum Detectable Effect (MDE) of 0.2 standard units (Cohen's d) assuming equal variances for the primary outcome variable of letter writing based on pilot data of a variation of this study.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Exploratory analysis
We also plan to conduct exploratory analyses of treatment effect heterogeneity beyond the previously stated variables using RandomForest with multiple comparison considerations.

We will conduct an exploratory structural equation modeling mediation analysis to explain the effect of our treatment on our main outcomes through effects on our covariates.

**Covariates**

1. Anxiety about coronavirus
    a. (1) Not at all - (4) Nearly every day
2. Trust (rate the honesty and ethical standards) in medical doctors; federal government;
    a. (1) Very low - (4) Very high
3. Which do you think is more important
    a. (1) Economic growth, even if it leads to more cases of coronavirus
    b. (2) Preventing the spread of coronavirus, even if it costs jobs or economic growth
4. Empathy scale adapted from Brief Interpersonal Reactivity Index (Does not describe me well (1) - Describes me very well (5) )
    a. "When I see someone being taken advantage of, I feel protective toward them."
    b. "I would describe myself as a soft-hearted person"
5. Cooperation with physical distancing
    a. *Imagine that public health officials have issued warnings that coronavirus continues to be a threat in your community. A close friend invited you over to attend a small gathering at his or her house.* Please estimate how you would react to this invitation.
        i. (1) I WOULD go to the gathering
        ii. (2) I WOULD go to the gathering and try to minimize my contact with others

iii. (3) I WOULD NOT go to the gathering, and I would say nothing further on why not
iv. (4) I WOULD NOT go to the gathering, and I would say they should RECONSIDER having the event because of the need to stay home
v. (5) I WOULD NOT go to the gathering, and I would say they should PROBABLY NOT have the event because of the need to stay home
vi. (6) I WOULD NOT go to the gathering, and I would say they should DEFINITELY NOT have the event because of the need to stay home

6. Media and discussion exposure
    a. In the past month, how often have you been using social media (ie Facebook, Instagram, Pinterest, Twitter, LinkedIn etc?)
        i. (1) Never, Occasionally, Several times a week, Everyday, (5)Several times a day
    b. How often do you discuss (either online, in-person or over the phone) coronavirus with your friends and family?
        i. (1) Never, Very rarely, Rarely, Occasionally, Frequently, (6) Very frequently
    c. Where do you get information about coronavirus? Select all that apply
        i. Various types listed
    d. What media networks do you get most of your news from? Select all that apply
        i. Various media outlets listed
7. Political engagement scale
    a. Select which of the activities you have participated in during the past two years: attending a political event or rally, volunteering for a political campaign, contacting an elected official, contributing money to a candidate or campaign and attending a government or community meeting, signed a politically oriented petition.
8. Basic demographics
    a. Overall health
    b. Marital status
    c. Age
    d. Education
    e. Race
    f. Ethnicity
    g. Sex
    h. Income
    i. State
    j. Population density (rural – large city spectrum)
    k. Number of people in household
    l. Employment status
    m. Political views (conservative - liberal spectrum)

# 10 Survey instrument

consent We're doing a study to learn more about coronavirus messaging. You must be 18 or older to participate. We expect that the survey may take about 10-15 minutes to complete. In the study, you will view a social media post about the novel coronavirus (COVID-19) and then you will then be asked to answer some questions about the message, yourself and your views.
Answering this survey is voluntary. You don't have to answer it if you'd rather not. You can skip any questions that you don't want to answer, whatever the reason, and you don't have to tell us why. It's possible that some of the questions may make you feel uncomfortable. If a question makes you uncomfortable, you can just skip it and go to the next question. Answering our survey won't benefit you directly. We hope what we learn will help other people in the future. To keep your information confidential, your survey responses will be completely anonymous. No one, including members of our study team, will know which subjects gave which answers as we are not asking you to disclose any individually identifiable information. If you have any questions about this study, you can contact the research team at this email address hum00179706@gmail.com If you would like to participate, simply check the "I agree to participate" box below, then click the ">>" blue button to begin.

- ○ I agree to participate in this study (1)
- ○ I do not agree to participate in this study (0)

**End of Block: Consent**

**Start of Block: Pre-exposure attn check**

attnchk_color We would like to get a sense of your general preferences.

Most modern theories of decision making recognize that decisions do not take place in a vacuum. Individual preferences can greatly impact the decision process. To demonstrate that you've read this much, select both red and green among the options below, no matter what your favorite color is. Yes, ignore the question below and select both of those options.

What is your favorite color?

- ☐ White (6)

- [ ] Black (4)
- [ ] Red (1)
- [ ] Pink (3)
- [ ] Green (2)
- [ ] Blue (5)

**End of Block: Pre-exposure attn check**

**Start of Block: Fedpersonal**

manipFP Read this social media post written by a federal government official:

The text is copied here in larger font:

Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "My best friend of 20 years just died from COVID-19. Now he's gone, leaving behind his wife and 2 kids. My whole body feels numb. Heartbroken....I hear people are talking about opening up America. We MUST continue restrictions or this will come back even worse than it is now."

NOTE: The next page button ">>" is paused for 15 seconds.

timerecordFP Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Page Break

dv_msgFP Please REVIEW this social media post written by a federal government official:

Review the text from the post above copied here in larger font:

Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "My best friend of 20 years just died from COVID-19. Now he's gone, leaving behind his wife and 2 kids. My whole body feels numb. Heartbroken....I hear people are talking about opening up America. We MUST continue restrictions or this will come back even worse than it is now."

Thinking about what you just read, to what extent do you agree or disagree with the following statements about this message?

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| ... is memorable (dv_msgFP_1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...grabbed my attention (dv_msgFP_2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was powerful (dv_msgFP_3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was meaningful (dv_msgFP_4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was convincing (dv_msgFP_5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Page Break

dv_behaveFP
Please REVIEW this social media post written by a federal government official:

Review the text from the post above copied here in larger font:

Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "My best friend of 20 years just died from COVID-19. Now he's gone, leaving behind his wife and 2 kids. My whole body feels numb. Heartbroken....I hear people are talking about opening up America. We MUST continue restrictions or this will come back even worse than it is now."

Thinking about what you just read, rate your opinion on the effectiveness of the message for these statements:

| | Not effective at all (1) | Slightly effective (2) | Somewhat effective (3) | Very effective (4) | Extremely effective (5) |
|---|---|---|---|---|---|
| It made me concerned about the health effects of lifting restrictions on public activity (dv_behaveFP_1) | ○ | ○ | ○ | ○ | ○ |
| It made lifting restrictions less appealing (dv_behaveFP_2) | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| It discourages me from supporting opening America up right now (dv_behaveFP_3) | ○ | ○ | ○ | ○ | ○ |

Page Break

shareFP Please REVIEW the social media post from the federal government official:

If you had or have a social media account where you posted, how likely would you be to LIKE or SHARE the above message with your friends or your followers?

- ○ Extremely likely (7)
- ○ Moderately likely (6)
- ○ Slightly likely (5)
- ○ Neither likely nor unlikely (4)
- ○ Slightly unlikely (3)
- ○ Moderately unlikely (2)
- ○ Extremely unlikely (1)

Page Break

attnFP Please select who wrote the social media post:

- Doctor on the front lines (1)
- University professor (2)
- Federal government official (3)
- TV personality (4)
- Not sure (5)

**End of Block: Fedpersonal**

**Start of Block: Fedimpersonal**

manipFI Read this social media post written by a federal government official:

The text is copied here in large font:
Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "Even if you are young and healthy, you are at risk for COVID19. As we consider guidelines for opening up America, it is critical we continue to adhere to State guidelines maintaining restrictions on public activities. This will mitigate the risk of resurgence."

NOTE: The next page button ">>" is paused for 15 seconds.

timerecordFI Timing
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Click Count (4)

Page Break

dv_msgFI Please REVIEW this social media post written by a federal government official:

Review the text from the post above copied here in a larger font:
Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "Even if you are young and healthy, you are at risk for COVID19. As we consider guidelines for opening up America, it is critical we continue to adhere to State guidelines maintaining restrictions on public activities. This will mitigate the risk of resurgence."

Thinking about what you just read, to what extent do you agree or disagree with the following statements about this message?

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| ... is memorable (dv_msgFI_1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...grabbed my attention (dv_msgFI_2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was powerful (dv_msgFI_3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ...was meaningful (dv_msgFI_4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was convincing (dv_msgFI_5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Page Break

dv_behaveFI
Please REVIEW this social media post written by a federal government official:

The text is copied here in a large font:

Written by Kevin Miller, an Advisor at the Federal Agency for Community Living: "Even if you are young and healthy, you are at risk for COVID19. As we consider guidelines for opening up America, it is critical we continue to adhere to State guidelines maintaining restrictions on public activities. This will mitigate the risk of resurgence."

Thinking about what you just read, rate your opinion on the effectiveness of the message for these statements:

| | Not effective at all (1) | Slightly effective (2) | Somewhat effective (3) | Very effective (4) | Extremely effective (5) |
|---|---|---|---|---|---|
| It made me concerned about the health effects of lifting restrictions on public activity | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| (dv_behaveFI_1) | | | | | |
| It made lifting restrictions less appealing (dv_behaveFI_2) | ○ | ○ | ○ | ○ | ○ |
| It discourages me from supporting opening America up right now (dv_behaveFI_3) | ○ | ○ | ○ | ○ | ○ |

Page Break

shareFI Please REVIEW the social media post from the federal government official:

If you had or have a social media account where you posted, how likely would you be to LIKE or SHARE the above message with your friends or your followers?

- ○ Extremely likely (7)
- ○ Moderately likely (6)

- ○ Slightly likely (5)
- ○ Neither likely nor unlikely (4)
- ○ Slightly unlikely (3)
- ○ Moderately unlikely (2)
- ○ Extremely unlikely (1)

Page Break

attnFI Please select who wrote the social media post:

- ○ Doctor on the front lines (1)
- ○ University professor (2)
- ○ Federal government official (3)
- ○ TV personality (4)
- ○ Not sure (5)

**End of Block: Fedimpersonal**

**Start of Block: Doctorimpersonal**

manipDI Read this social media post written by a doctor on the front lines:

The text is copied here in a larger font:
Written by Dr. Kevin Miller, an Emergency doctor at ABEM General Hospital: "Even if you are young and healthy, you are at risk for COVID19. As we consider guidelines for opening up America, it is critical we continue to adhere to State guidelines maintaining restrictions on public activities. This will mitigate the risk of resurgence."
NOTE: The next page button ">>" is paused for 15 seconds.

timerecordDI Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Page Break

dv_msgDI REVIEW this social media post written by a doctor on the front lines:

The text is copied here in a larger font: Written by Dr. Kevin Miller, an Emergency doctor at ABEM General Hospital: "Even if you are young and healthy, you are at risk for COVID19. As we consider guidelines for opening up America, it is critical we continue to adhere to State guidelines maintaining restrictions on public activities. This will mitigate the risk of resurgence."

Thinking about what you just read, to what extent do you agree or disagree with the following statements about this message?

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ... is memorable (dv_msgDI_1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...grabbed my attention (dv_msgDI_2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was powerful (dv_msgDI_3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was meaningful (dv_msgDI_4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was convincing (dv_msgDI_5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Page Break

dv_behaveDI
Please REVIEW this social media post written by a doctor on the front lines:

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Thinking about what you just read, rate your opinion on the effectiveness of the message for these statements:

| | Not effective at all (1) | Slightly effective (2) | Somewhat effective (3) | Very effective (4) | Extremely effective (5) |
|---|---|---|---|---|---|
| It made me concerned about the health effects of lifting restrictions on public activity (dv_behaveDI_1) | ○ | ○ | ○ | ○ | ○ |
| It made lifting restrictions less appealing (dv_behaveDI_2) | ○ | ○ | ○ | ○ | ○ |
| It discourages me from supporting opening America up right now (dv_behaveDI_3) | ○ | ○ | ○ | ○ | ○ |

Page Break

shareDI
Please REVIEW the social media post from the federal government official:

If you had or have a social media account where you posted, how likely would you be to LIKE or SHARE the above message with your friends or your followers?

- Extremely likely (7)
- Moderately likely (6)
- Slightly likely (5)
- Neither likely nor unlikely (4)
- Slightly unlikely (3)
- Moderately unlikely (2)
- Extremely unlikely (1)

Page Break

attnDI Please select who wrote the social media post:

- Doctor on the front lines (1)
- University professor (2)
- Federal government official (3)
- TV personality (4)

○ Not sure (5)

**End of Block: Doctorimpersonal**

**Start of Block: Doctorpersonal**

manipDP Read this social media post written by a doctor on the front lines:

The text is copied here in a larger font: Written by Dr. Kevin Miller, an Emergency doctor at ABEM General Hospital: "My best friend of 20 years just died from COVID-19. Now he's gone, leaving behind his wife and 2 kids. My whole body feels numb. Heartbroken....I hear people are talking about opening up America. We MUST continue restrictions or this will come back even worse than it is now."
NOTE: The next page button ">>" is paused for 15 seconds.

timerecordDP Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Page Break

dv_msgDP REVIEW this social media post written by a doctor on the front lines:

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Thinking about what you just read, to what extent do you agree or disagree with the following statements about this message?

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|---|---|---|---|---|---|---|---|
| ... is memorable (dv_msgDP_1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...grabbed my attention (dv_msgDP_2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was powerful (dv_msgDP_3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was meaningful (dv_msgDP_4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...was convincing (dv_msgDP_5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Page Break

dv_behaveDP

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|---|---|---|---|---|---|
| It made me concerned about the health effects of lifting restrictions on public activity (dv_behaveDP_1) | ○ | ○ | ○ | ○ | ○ |
| It made lifting restrictions less appealing (dv_behaveDP_2) | ○ | ○ | ○ | ○ | ○ |
| It discourages me from supporting opening America up right now (dv_behaveDP_3) | ○ | ○ | ○ | ○ | ○ |

Page Break

shareDP
Please REVIEW the social media post from the federal government official:

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- Slightly likely (5)
- Neither likely nor unlikely (4)
- Slightly unlikely (3)
- Moderately unlikely (2)
- Extremely unlikely (1)

Page Break

attnDP Please select who wrote the social media post:

- Doctor on the front lines (1)
- University professor (2)

- ○ Federal government official (3)
- ○ TV personality (4)
- ○ Not sure (5)

End of Block: Doctorpersonal

Start of Block: State response and letter

economy Which do you think is more important?

- ○ Preventing the spread of coronavirus, even if it costs jobs or economic growth (2)
- ○ Economic growth, even if it leads to more cases of coronavirus (1)

Page Break

state What state do you live in?

▼ Alabama (11) ... District of Columbia (67)

statesupport Considering your state's response to coronavirus, which do you think your state should be doing right now?

- ○ CONTINUE restrictions on public activity (2)

○ LIFT restrictions on public activity (1)

Page Break

letter_interest Your state governor will have important decisions to make about continuing or lifting restrictions on public activity as part of the coronavirus response. Would you be interested in expressing your opinions to your Governor on either **continuing restrictions OR lifting restrictions** on public activity?

○ Yes, I am interested (2)

○ No, thank you (1)

Page Break

*Display This Question:*

*If letter_interest = 2*

letter_text Please use the space below to write your thoughts to your Governor to either **continue restrictions OR lift restrictions** on public activity. The research team will compile these entries and submit them in a letter to your Governor using the state information you provided. Do not write your name or other identifying information.

_____

_____

_____

_____

letter_time Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

**End of Block: State response and letter**

**Start of Block: Pledge**

pledge Everyone's individual actions can make a difference in helping to contain and limit the spread of coronavirus infections. Will you take this pledge?

I pledge to follow my local guidelines and stay at home whenever possible to help slow the spread of coronavirus.

- ○ Yes, I will make this pledge (1)
- ○ No, I will not make this pledge (2)

**End of Block: Pledge**

**Start of Block: covariates**

soc_gath Imagine that public health officials have issued warnings that coronavirus continues to be a threat in your community. A close friend invited you over to attend a small gathering at his or her house. How would you react to this invitation?

- ○ I WOULD go to the gathering (1)
- ○ I WOULD go to the gathering and try to minimize my contact with others (2)
- ○ I WOULD NOT go to the gathering and say nothing further on why not (3)

○ I WOULD NOT go to the gathering and say they should RECONSIDER having the event because of the need to stay home (4)

○ I WOULD NOT go to the gathering and say they should PROBABLY NOT have the event because of the need to stay home (5)

○ I WOULD NOT go to the gathering and say they should DEFINITELY NOT have the event because of the need to stay home (6)

Page Break

anxious Thinking of how you felt over the PAST TWO WEEKS, to what extent does the following statement apply to you? I've felt anxious about coronavirus

○ Not at all (1)

○ Several days (2)

○ More than half the days (3)

○ Nearly every day (4)

Page Break

ethical How would you rate the honesty and ethical standards of people in each of the following fields:

| | Very low (1) | Low (2) | High (3) | Very high (4) |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Medical doctors (ethical_1) | ○ | ○ | ○ | ○ |
| Federal government officials (ethical_2) | ○ | ○ | ○ | ○ |

End of Block: covariates

Start of Block: media exposure

socmed_freq In the past month, how often have you been using social media (i.e. Facebook, Instagram, Twitter, Pinterest, LinkedIn etc)?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Several times a week (3)
- ○ Every day (4)
- ○ Several times a day (5)

Page Break

discuss_freq How often do you discuss (either online, in-person or over the phone) coronavirus with your friends and family?

- ○ Very frequently (6)
- ○ Frequently (5)
- ○ Occasionally (4)
- ○ Rarely (3)
- ○ Very rarely (2)
- ○ Never (1)

Page Break

news_type Where do you get information about coronavirus? Select all that apply

- ☐ Broadcast television (1)
- ☐ Social media (i.e. Facebook, Twitter, Instagram) (4)
- ☐ Online platforms (i.e newspaper websites) (5)
- ☐ Print publications (i.e. printed newspaper) (10)
- ☐ Government websites (6)
- ☐ Friends and family (7)

- [ ] Radio or Podcasts (9)
- [ ] Other (8) _____

Page Break

news_source What media networks do you get most of your news from? Select all that apply

- [ ] ABC (3)
- [ ] American Spectator (4)
- [ ] Associated Press (5)
- [ ] Atlantic (6)
- [ ] BBC (7)
- [ ] Blaze (8)
- [ ] Bloomberg (9)
- [ ] Breitbart (10)
- [ ] Buzzfeed (11)

- [ ] CBN (12)
- [ ] CBS (13)
- [ ] CNN (14)
- [ ] CNN (15)
- [ ] Daily Caller (16)
- [ ] Daily Mail (17)
- [ ] Daily Wire (18)
- [ ] Economist (19)
- [ ] Examiner (20)
- [ ] Federalist (21)
- [ ] Fox (22)
- [ ] Fox News (23)
- [ ] Guardian (24)
- [ ] Hill (25)
- [ ] Huffington Post (26)

- [ ] MSNBC (27)
- [ ] Nation (28)
- [ ] National Review (29)
- [ ] NBC (30)
- [ ] New York Post (31)
- [ ] New York Times (32)
- [ ] New Yorker (33)
- [ ] NPR (34)
- [ ] Politico (35)
- [ ] Reuters (36)
- [ ] Slate (37)
- [ ] USA Today (38)
- [ ] Vox (39)
- [ ] Wall Street Journal (40)
- [ ] Washington Post (41)

- [ ] Washington Times (42)
- [ ] OTHER (43)

Page Break

News_freq In the past month, how often do you get news about coronavirus?

- ○ Very frequently (6)
- ○ Frequently (5)
- ○ Occasionally (4)
- ○ Rarely (3)
- ○ Very rarely (2)
- ○ Never (1)

**End of Block: media exposure**

**Start of Block: Empathy Brief scale**

empathy Please select the extent to which the follow statements describe you:

| | DOES NOT describe me well 1 (1) | 2 (2) | 3 (3) | 4 (4) | Describes me VERY WELL 5 (5) |
|---|---|---|---|---|---|
| When I see someone being taken advantage of, I feel protective toward them. (empathy_1) | ○ | ○ | ○ | ○ | ○ |
| I would describe myself as a soft-hearted person (empathy_2) | ○ | ○ | ○ | ○ | ○ |
| I often have concerned feelings for people less fortunate than me (empathy_3) | ○ | ○ | ○ | ○ | ○ |

**End of Block: Empathy Brief scale**

**Start of Block: political engagement scale**

pol_engage Over the past two years, which of the following political activities have participated in? Select all that apply (or none if you have not done any).

- ☐ Attended a political event or rally (1)
- ☐ Volunteered for a political campaign (2)

- [ ] Contacted an elected official (3)
- [ ] Contributed money to a candidate or campaign (4)
- [ ] Attended a government or community meeting or town hall (5)
- [ ] Signed a politically oriented petition (6)

**End of Block: political engagement scale**

**Start of Block: Demographics (Base/Universal)**

health In general, how would you rate your overall health?

- ○ Poor (1)
- ○ Fair (2)
- ○ Good (3)
- ○ Very good (4)
- ○ Excellent (5)

Page Break

marital What best describes your marital status?

- ○ Married (1)
- ○ Living with a partner (2)
- ○ Widowed (3)
- ○ Divorced (4)
- ○ Separated (5)
- ○ Single (6)

rural What best describes the type of area you currently live in?

- ○ Large city (1)
- ○ Small city (2)
- ○ Suburb of a small city (3)
- ○ Suburb of a large city (4)
- ○ Town (5)
- ○ Rural area (6)

hh_num How many people, including yourself, are currently living or staying at the household where you live?

- ○ 1 (1)

- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ More than 6 (7)

employ Which statement best describes your current employment status?

- ○ Working (paid employee) (1)
- ○ Working (self-employed) (2)
- ○ Not working (temporary layoff from a job) (3)
- ○ Not working (looking for work) (4)
- ○ Not working (retired) (5)
- ○ Not working (disabled) (6)
- ○ Student (7)
- ○ Prefer not to answer (8)

liberal In general, how would you describe your political views?

- ○ Very conservative (1)
- ○ Conservative (2)
- ○ Moderate (3)
- ○ Liberal (4)
- ○ Very liberal (5)

**End of Block: Demographics (Base/Universal)**