

University of Chicago Law School

**Chicago Unbound**

---

Coase-Sandor Working Paper Series in Law and Economics Coase-Sandor Institute for Law and Economics

---

2021

## **Framing Vaccine Mandates: Messenger and Message Effects**

Christopher Buccafusco

Daniel Hemel

Follow this and additional works at: [https://chicagounbound.uchicago.edu/law\\_and\\_economics](https://chicagounbound.uchicago.edu/law_and_economics)



Part of the **Law Commons**

---

# Framing Vaccine Mandates: Messenger and Message Effects

Christopher Buccafusco & Daniel J. Hemel

JOURNAL OF LAW & THE BIOSCIENCES (forthcoming 2022)

— DRAFT —

Last updated: June 20, 2022

**ABSTRACT:** In September 2021, President Biden announced that the Occupational Safety and Health Administration would require large employers to ensure workers are vaccinated against Covid-19 or tested weekly. Although widely characterized as “Biden’s vaccine mandate,” the policy could be described with equal accuracy as “OSHA’s testing mandate.” Some commentators speculated that reframing the policy as a testing mandate would boost support. This study investigates how framing effects shape attitudes toward vaccination policies.

Before the Supreme Court struck down the vaccinate-or-test rule, we presented 1500 U.S. adults with different descriptions of the same requirement. Reframing “Biden’s vaccine mandate” as “OSHA’s testing mandate” significantly increased support, boosting net approval by 13 percentage points. The effect was driven by changing the “messenger frame” (replacing “Biden” with “OSHA”) rather than changing the “message frame” (replacing “vaccine mandate” with “testing mandate”).

Our results suggest that messenger framing can meaningfully affect public opinion even after a policy is widely known. Our study also reveals a potential cost of presidential administration when partisan divisions are deep. Framing a regulatory policy as an extension of the president can elicit strong—here, negative—reactions that may be avoidable if the policy is framed as the work of a bureaucratic agency.

**KEYWORDS:** framing effects; vaccine mandates; presidential administration; risk regulation

## Introduction

In September 2021, President Biden announced that all employers with 100 or more employees would be required to ensure that their workers are fully vaccinated against Covid-19 or show a negative test for the virus at least once a week. “Biden’s vaccine mandate”—as it was characterized by virtually every national news outlet<sup>1</sup>—elicited widespread debate and polar responses in the weeks after its announcement. Notwithstanding its framing as “Biden’s vaccine mandate,” though, the policy did not in fact require anyone to be vaccinated, since once-a-week testing also was a permissible compliance option. Moreover, although Biden announced the policy in an address from the White House, the President did not impose the vaccinate-or-test requirement himself. The Occupational Safety and Health Administration (OSHA), an agency within the Department of Labor, promulgated the requirement as an emergency temporary standard pursuant to section 6(c)(1) of the Occupational Safety and Health Act (29 U.S.C. § 655(c)(1)), a statute that delegates authority to the Secretary of Labor rather than the President.

Initially, the White House embraced the framing of OSHA’s vaccinate-or-test policy as “Biden’s vaccine mandate.” White House Press Secretary Jen Psaki told reporters that President Biden had “announced *his* vaccine mandates for businesses,” and in late September 2021 she spoke in defense of “Biden’s vaccine mandate.”<sup>2</sup> Later on, though, the Biden administration

---

<sup>1</sup> Chip Cutter, *Biden’s Covid-19 Vaccine Mandate Divides U.S. Companies, Like the Country*, Wall St. J. (Nov. 4, 2021), <https://www.wsj.com/articles/bidens-covid-19-vaccine-mandate-divides-u-s-companies-like-the-country-11636047345>; Lauren Hirsch & Isabella Grullón Paz, *A Court Temporarily Blocks Biden’s Vaccine Mandate*, N.Y. Times (Nov. 6, 2021), <https://www.nytimes.com/2021/11/06/world/americas/biden-osha-vaccine-mandate-blocked.html>; Meryl Kornfield et al., *Republicans Ramp Up Challenges of Biden Vaccine Mandate*, Wash. Post (Nov. 4, 2021), <https://www.washingtonpost.com/nation/2021/11/04/covid-delta-variant-live-updates>.

<sup>2</sup> *Press Briefing by Press Secretary Jen Psaki*, White House (Oct. 12, 2021), <https://www.whitehouse.gov/briefing-room/press-briefings/2021/10/12/press-briefing-by-press-secretary-jen-psaki-october-12-2021>; *Press Briefing by Press Secretary Jen Psaki*, White House

backed away from the “vaccine mandate” framing. For example, during a briefing on November 5, 2021, White House Principal Deputy Press Secretary Karine Jean-Pierre said that the widespread characterization of the policy as a “vaccine mandate” was “misinformation or disinformation.” According to Jean-Pierre: “As has been explicit for months, it is a standard for a safe workplace to either comply with weekly testing *or* to be vaccinated.”<sup>3</sup> The *Washington Post* suggested that recharacterizing the requirement “as a mandate for testing with a vaccination opt-out” might boost public support for the policy.<sup>4</sup>

The fight over framing continued all the way to the Supreme Court, where twenty-seven states and dozens of employers and trade associations challenged the mandate. The six-Justice majority, which stayed the requirement, repeatedly referred to the policy as a “vaccine mandate.”<sup>5</sup> The three dissenters—Justices Breyer, Sotomayor, and Kagan—pushed back against that framing: the OSHA standard “does not impose a vaccine mandate,” the dissenters wrote, emphasizing the once-a-week testing alternative.<sup>6</sup> The dissenters lost the framing fight not only at the Supreme Court, but also in much of the mainstream media. For example, the front-page

---

(Sept. 29, 2021), <https://www.whitehouse.gov/briefing-room/press-briefings/2021/09/29/press-briefing-by-press-secretary-jen-psaki-september-29-2021>.

<sup>3</sup> *Press Briefing by Principal Deputy Press Secretary Karine Jean-Pierre*, White House (Nov. 5, 2021), <https://www.whitehouse.gov/briefing-room/press-briefings/2021/11/05/press-briefing-by-principal-deputy-press-secretary-karine-jean-pierre-4> (emphasis added).

<sup>4</sup> Aaron Blake, *The Reality of the Testing Option in Biden’s Vaccine-or-Testing Mandate*, Wash. Post (Nov. 9, 2021), <https://www.washingtonpost.com/politics/2021/11/09/testing-option-vaccine-mandate>.

<sup>5</sup> *Nat’l Fed’n of Indep. Bus. v. Dep’t of Lab.*, 142 S. Ct. 661, 662, 664, 665, 666 (2022) (per curiam).

<sup>6</sup> *Id.* at 675 (Breyer, Sotomayor, and Kagan, JJ., dissenting). The same day that it struck down the OSHA policy, the Supreme Court voted 5-4 to uphold a Department of Health and Human Services (HHS) rule requiring facilities that receive Medicare and Medicaid funding to ensure that their staff members are vaccinated against Covid-19. *See Biden v. Missouri*, 142 S. Ct. 647 (2022). The HHS rule, unlike the OSHA standard, unequivocally imposes a vaccine mandate: once-a-week testing is not a permissible compliance option (though staff members may be exempted on medical or religious grounds).

headline in the *New York Times* the day after the decision read: “Justices Reverse Vaccine Mandate on Big Employers.”<sup>7</sup> *USA Today*’s front page similarly announced: “Justices block vaccine mandate.”<sup>8</sup>

If citizens were completely rational and perfectly informed, then these different characterizations of the same vaccinate-or-test requirement should not affect public support for the policy. The descriptive invariance axiom implies that an agent’s choice among options should not depend on the way those options are described, provided that the alternative descriptions are all accurate.<sup>9</sup> Yet a long and rich literature in behavioral social science finds strong evidence of *framing effects*, or changes in respondents’ attitudes and behaviors resulting from different descriptions of the same substantive choice.<sup>10</sup> These framing effects arise both from the *messenger* (*who* presents the choice) and the *message* (*how* the choice is presented), with the relative strength of messenger and message framing effects varying across contexts.<sup>11</sup>

In the context of a federal agency promulgating a controversial new policy, the framing-effects phenomenon intersects with an active debate among legal scholars and political scientists

---

<sup>7</sup> Adam Liptak, *Justices Reverse Vaccine Mandate on Big Employers*, *N.Y. Times*, Jan. 14, 2022, at A1.

<sup>8</sup> John Fritze, *Justices Block Vaccine Mandate*, *USA Today*, Jan. 14, 2022, at A1.

<sup>9</sup> David R. Mandel, *Do framing effects reveal irrational choice?*, 143 *J. Experimental Psychol: Gen.* 1185 (2014).

<sup>10</sup> Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 *Science* 453 (1981). For a recent literature review and meta-analysis, see Eran Amsalem & Alon Zoizner, *Real, but Limited: A Meta-Analytic Assessment of Framing Effects in the Political Domain*, *Brit. J. Pol. Sci.* 1 (2020) (first view).

<sup>11</sup> See James N. Druckman, *On the Limits of Framing Effects: Who Can Frame?*, 63 *J. Pol.* 1041 (2001); Mark Joslyn & Donald Haider-Markel, *Should We Really “Kill” the Messenger? Framing Physician-Assisted Suicide and the Role of Messengers*, 23 *Pol. Communication* 85 (2006); Emily Diamond & Jack Zhou, *Whose policy is it anyway? Public support for clean energy policy depends on the message and the messenger*, *Env’t Pol.* 1 (2021).

regarding *presidential administration*.<sup>12</sup> As defined by then-Professor Elena Kagan, “presidential administration” refers to a form of governance in which the regulatory activity of the executive branch becomes “an extension of the President’s own policy and political agenda.”<sup>13</sup> If messenger framing effects are robust, then the trend toward presidential administration in recent decades may have important consequences for public attitudes toward—and potentially, for compliance with—federal regulations.

Our study seeks to shed light on the relative strength of messenger and message framing effects and the attitudinal implications of presidential administration. In October 2021, we presented a sample of 1500 U.S. adults with different descriptions of the same vaccinate-or-test policy, varying both the *messenger frame* and the *message frame*. To test the effect of the messenger frame, we alternately described the policy as promulgated by President Biden and by OSHA. To test the effect of the message frame, we alternately described the policy as a requirement that workers be vaccinated (with an exception for employees who are tested for Covid-19 once a week) and as a requirement that workers be tested for Covid-19 once a week (with an exception for vaccinated workers). We randomly assigned each participant to receive one of four possible frames (“President Biden’s vaccine mandate”; “President Biden’s testing mandate”; “OSHA’s vaccine mandate”; “OSHA’s testing mandate”).

In the base case, where we used the messenger and message frames initially embraced by the White House (i.e., “President Biden’s vaccine mandate”), 48.7 percent of participants supported the policy and 41.2 percent opposed—a net approval margin of 7.5 percentage points.

---

<sup>12</sup> See Elena Kagan, *Presidential Administration*, 114 Harv. L. Rev. 2245 (2001); Thomas W. Merrill, *Presidential Administration and the Traditions of Administrative Law*, 115 Colum. L. Rev. 1953 (2015); Jerry Mashaw & David Berke, *Presidential Administration in a Regime of Separated Powers: An Analysis of Recent Experience*, 35 Yale J. on Reg. 549 (2018).

<sup>13</sup> Kagan, *supra* note 12, at 2448.

When we changed both the messenger and the message (i.e., “OSHA’s testing mandate” instead of “Biden’s vaccine mandate”), 50.9 percent of participants supported the policy and 30.0 percent oppose—a net approval margin of 20.9 percentage points. The effect of reframing was particularly strong among self-identified Republicans, who overwhelmingly opposed the policy when it was framed as President Biden’s vaccine mandate (22.3 percent in favor; 66.2 percent opposed) but were more evenly split when the policy was framed as OSHA’s testing mandate (36.9 percent in favor; 44.3 percent opposed). By contrast, reframing did not have a significant effect on attitudes among self-identified Democrats.

Our research design allows us to disentangle messenger framing effects from message framing effects. In our study, changing the messenger frame from President Biden to OSHA produced a substantively and statistically significant positive effect on support for the policy. However, changing the message frame from a vaccination requirement (with a testing exception) to a testing requirement (with a vaccination exception) generated substantively small and statistically insignificant effects. In other words, the messenger mattered much more than the message in our study—and at least in the fall of 2021, for this particular policy, the President was not the most popular messenger.

Our results suggest that messenger framing can have meaningful effects on public attitudes toward a policy even after the policy is widely known. The famous framing-effect result in Tversky and Kahneman’s 1981 study involved hypothetical epidemiological interventions to address an imaginary disease.<sup>14</sup> By contrast, our study involved a much-publicized policy to

---

<sup>14</sup> In that study, researchers asked respondents to “[i]magine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people.” The researchers then presented two “alternative programs”: one that would reduce the death toll to 400, and another that would reduce the death toll to zero with 1/3 probability and have no effect with 2/3 probability. Respondents favored the first program when researchers emphasized the number of

address a pandemic that participants had been living amid for more than a year and a half. Approximately two-thirds of participants in our study who were asked whether they had heard about President Biden’s vaccine mandate responded affirmatively. Nonetheless, redescribing the policy as emanating from an executive branch agency—rather than the President himself—reduced opposition by more than a quarter.

Beyond the Covid-19 context, our study points to a potential cost of presidential administration when partisan divisions are deep. Our results suggest that framing a regulatory policy as an extension of the President can elicit strong—and in this case, negative—reactions that may be avoidable if the same policy is framed as the work of a bureaucratic agency. Some skeptics of presidential administration have argued that delegating risk regulation to bureaucratic agencies will help to insulate policymaking from the vicissitudes of public opinion.<sup>15</sup> Our study highlights a corollary phenomenon: delegating risk regulation to bureaucratic agencies may help to insulate public opinion regarding regulatory policies from attitudes toward the President.

## Research Design

To evaluate messenger and message framing effects in the context of the federal government’s vaccinate-or-test policy, we administered an online two-by-two between-subjects

---

lives saved but favored the second program when researchers emphasized the number of lives lost. See Tversky & Kahneman, *supra* note 10. For a meta-analysis of follow-on studies replicating and modifying Tversky and Kahneman’s “Asian disease problem,” see Anton Kühberger, *The Influence of Framing on Risky Decisions: A Meta-analysis*, 75 *Org. Behav. & Hum. Dec. Processes* 23 (1998).

<sup>15</sup> See, e.g., Stephen Breyer, *Breaking the Vicious Cycle: Toward Effective Risk Regulation* (1993); Soleil Shah & Howard Forman, *The Case for Independent Centers for Disease Control and Prevention—Protecting Public Health from Politics*, 1 *JAMA Health Forum* e201139 (2020).



survey experiment to 1500 participants from October 20 to 28, 2021.<sup>16</sup> To put the survey period in temporal context: Our survey launched approximately six weeks after President Biden first announced the vaccinate-or-test policy on September 9. The survey concluded one week before OSHA issued the emergency temporary standard on November 4, and more than two months before the Supreme Court granted a stay preventing the standard from taking effect.

We partnered with the survey research firm Dynata to recruit a sample of survey participants that broadly matched the demographic characteristics of the U.S. adult population along key dimensions. We requested that Dynata fill quotas by gender, age, race, Latino/Hispanic background, and political party identification from its nationwide market research panel. We report exact quotas in the margin.<sup>17</sup> We discuss the advantages and limitations of our sampling approach in the “Implications and Limitations” section below.

---

<sup>16</sup> In total, 1578 participants started the survey. After excluding individuals who did not agree to the terms of the consent form and individuals who were under the age of 18, we ended up with 1500 participants who completed the survey.

<sup>17</sup> Dynata sought to provide a sample with the following characteristics:

Gender: Male (48%); Female (52%)

Age: 18-24 (11%); 25-34 (18%); 35-44 (17%); 45-54 (16%); 55-64 (17%); 65-74 (13%); 75+ (9%)

Race: White (74%); Black/African-American (12%); Asian (6%); Other (8%)

Hispanic/Non-Hispanic: Not Hispanic (84%); Hispanic (16%)

Political Party: Democratic (31%); Republican (25%); Independent (41%).

Demographic quotas reflect Dynata’s standard Census-matched breakdown. The partisan quotas reflect results of a December 2020 Gallup poll querying political party affiliation. *See Party Affiliation*, GALLUP, <https://news.gallup.com/poll/15370/party-affiliation.aspx> (last visited Apr. 10, 2022) (data for December 1 through 17, 2020).

At the outset, we collected information on participants' age, gender, race/ethnicity, ZIP code,<sup>18</sup> and political party identification. After collecting demographic and political data,<sup>19</sup> we presented participants with information about the federal government's vaccinate-or-test policy, manipulating both the messenger frame (whether the policy was proposed by President Biden or by OSHA) and the message frame (a vaccine mandate with a testing exception or a testing mandate with a vaccine exception). Our manipulation produced four different descriptions of the vaccinate-or-test policy, with each participant randomly assigned to receive one of the four descriptions:

**President Biden's Vaccine Mandate.** *President Biden plans to issue a rule mandating all employers with 100 or more employees to require that their employees are vaccinated against Covid-19. Employees will not have to be vaccinated if they are tested for Covid once a week.*

**President Biden's Testing Mandate.** *President Biden plans to issue a rule mandating all employers with 100 or more employees to require that their employees are tested for Covid-19 once a week. Employees will not have to be tested if they have been vaccinated against Covid.*

---

<sup>18</sup> For our presentation of sample characteristics and our regression analysis with covariates, we match ZIP codes to regions based on U.S. Census Bureau region definitions. See U.S. Census Bureau, 2010 Census Regions and Divisions of the United States (2010), [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf).

<sup>19</sup> To avoid post-treatment bias, we collected demographic and political data before presenting participants with information about the policy in question. See Jacob N. Montgomery, Brendan Nyhan & Michelle Torres, *How Conditioning on Posttreatment Variables Can Ruin Your Experiment and What to Do About It*, 62 AM. J. POL. SCI. 760 (2018).

**OSHA's Vaccine Mandate.** *The U.S. Occupational Safety and Health Administration (OSHA) plans to issue a rule mandating all employers with 100 or more employees to require that their employees are vaccinated against Covid-19. Employees will not have to be vaccinated if they are tested for Covid once a week.*

**President Biden's Testing Mandate.** *The U.S. Occupational Safety and Health Administration (OSHA) plans to issue a rule mandating all employers with 100 or more employees to require that their employees are tested for Covid-19 once a week. Employees will not have to be tested if they have been vaccinated against Covid.*

After presenting one of these four descriptions, we asked participants to rate their level of support for the policy on a five-point Likert scale:

Strongly oppose (0)

Somewhat oppose (1)

Neither support nor oppose (2)

Somewhat support (3)

Strongly support (4)

Next, we asked participants whether they believed that President Biden (or, for the OSHA groups, OSHA) had proposed a mandate like the one described previously. At the end of

the survey, we presented participants with an instructional manipulation check to test attentiveness.<sup>20</sup>

## Results

### *Sample Characteristics*

[Table 1 about here]

Table 1 reports sample characteristics for each treatment group.<sup>21</sup> Demographic and partisan differences across treatment groups are well within the range that we might expect from random assignment.<sup>22</sup> A sizeable portion of the sample failed the instructed-response attention

---

<sup>20</sup> Following the suggestion of David J. Hauser & Norbert Schwarz, *It's a Trap! Instructional Manipulation Checks Prompt Systematic Thinking on "Tricky" Tasks*, *SAGE Open* 1 (2015), we placed the attention check at the end of the survey to avoid the possibility that the attention check would itself affect substantive responses. The attention check asked:

We are interested in learning how people view different sorts of policy interventions. But we want to make sure that participants are paying attention so our results are valid. Below, please ignore the question, click "other" and enter the name of your favorite band or musician.

Which is your least favorite federal agency?

The multiple-choice options were FDA, NHTSA, USDA, and "Other."

<sup>21</sup> Our survey asked participants, "What is your race/ethnicity?", with options of "American Indian or Alaska Native," "Asian," "Black or African-American," "Latino/a or Hispanic," "Multiple races/ethnicities," "Native Hawaiian or Pacific Islander," "White," and "Other." As a result, some participants who identify as Latino/a or Hispanic may have chosen another option. The percentage of respondents who answered "Latino/a or Hispanic" is therefore significantly smaller than the percentage of the population that identifies as Latino/a or Hispanic when Hispanic status is separately queried.

<sup>22</sup> To test randomization, we ran a multinomial logistic regression model with frame assignment as the left-hand-side variable and age, gender, race/ethnicity, region, and political party identification variables on the right-hand side (probability  $> \chi^2 = 0.96$ ). For doubts about the need for randomization checks in the analysis of survey experiments, see Diana C. Mutz, Robin Pemantle & Philip Pham, *The Perils of Balance Testing in Experimental Design: Messy Analyses of Clean Data*, 73 *Am. Statistician* 32 (2019).

check at the end of the survey (45.6 percent across all four frames). Failure rates nearing 50 percent for instructed-response attention checks are not unusual: for example, Daniel Oppenheimer and coauthors report a 46 percent failure rate for a similar question in a sample primarily composed of Stanford University undergraduates who were considering a major or minor in psychology.<sup>23</sup> Adam Berinsky and coauthors note that although screening out inattentive subjects can reduce noise in survey data, it also introduces the risk of bias because performance on attention checks is potentially correlated with politically relevant characteristics.<sup>24</sup> For example, in our study, participants who passed the attention check were significantly older than those who failed (50.9 years vs. 40.6 years). Moreover, screening out inattentive subjects may inflate the magnitude of framing effects that depend upon subtle variations in word choice.<sup>25</sup> Following Berinsky et al.'s suggestion, we therefore report results both for the full sample and for the subsample that passed the attention check.

### *Summary Statistics*

[Figures 1a and 1b about here]

Figure 1a reports the mean Likert score and the standard error of the mean for each of the four frames for the full sample; Figure 1b reports the means and standard errors for participants who passed the attention check. Across the full sample and the subsample of participants who

---

<sup>23</sup> See Daniel M. Oppenheimer, Tom Meyvis & Nicolas Davidenko, *Instructional manipulation checks: Detecting satisficing to increase statistical power*, 45 J. Experimental Soc. Psychol. 867 (2009).

<sup>24</sup> See Adam J. Berinsky, Michele F. Margolis & Michael W. Sances, *Separating the Shirkers from the Workers? Making Sure Respondents Pay Attention on Self-Administered Surveys*, 58 Am. J. Pol. Sci. 739 (2014).

<sup>25</sup> See Eva Anduiza & Carol Galais, *Answering Without Reading: IMCs and Strong Satisficing in Online Surveys*, 29 Int'l J. Pub. Op. Res. 497 (2017).

passed the attention check, mean scores are higher for the OSHA-Vaccine and OSHA-Testing frames than for the Biden-Vaccine and Biden-Testing frames.

[Table 2 and Figures 2a and 2b about here]

Table 2 and Figures 2a and 2b provide more granular detail on the distribution of Likert scores across the four frames. The most striking observation from visual inspection is the drop in the percentage of respondents who strongly oppose the policy as we move from the Biden-Vaccine frame to the OSHA-Testing frame. The share of respondents who strongly oppose the policy falls from 32.1 percent in the Biden-Vaccine frame to 18.8 percent in the OSHA-Testing frame across the full sample and from 32.2 percent to 14.1 percent among participants who passed the attention check.<sup>26</sup>

An intuitive way to interpret the findings—though one that lacks the nuance of examining the full distribution—is to consider the change in the net support margin across the conditions (i.e., the percentage of respondents who say that they “strongly support” or “somewhat support” the policy minus the percentage of respondents who say that they “strongly oppose” or “somewhat oppose” the policy). In the full sample, net support rises from +7.5 percentage points under the Biden-Vaccine frame to +23.3 percentage points under the OSHA-Testing frame and +20.9 percentage points under the OSHA-Vaccine frame. Among participants

---

<sup>26</sup> Using a nonparametric Kolmogorov-Smirnov test, we can reject the null hypothesis that the distributions of Likert scores for the Biden-Vaccine and OSHA-Testing frames are identical at the  $p < 0.01$  level in both the full sample and the attention-check subsample. We also can reject the null hypothesis that the distributions of Likert scores for the Biden-Testing and OSHA-Testing frames are identical at the  $p < 0.01$  level in the full sample and at the  $p < 0.05$  level in the sample of participants who passed the attention check ( $p = 0.02$ ). Interestingly, although the mean scores for the OSHA-Vaccine and OSHA-Testing frames are similar, we cannot reject the null hypothesis of equality of distributions between either of the Biden frames and the OSHA-Vaccine frame. No significant differences emerge between the Biden-Vaccine and Biden-Testing frames or between the OSHA-Vaccine and OSHA-Testing frames.

who passed the attention check, net support rises from +13.1 percentage points under the Biden-Vaccine frame to +27.9 percentage points under the OSHA-Testing frame and +35.6 percentage points under the OSHA-Vaccine frame. These results indicate the possibility of a substantial effect from changing the messenger, but little or no effect from changing the framing of the message.

After collecting our primary outcome-variable data, as noted above, we asked participants whether—to the best of their knowledge—President Biden (or for the OSHA treatment groups, OSHA) actually had proposed the policy in question. Approximately two-thirds (66.4 percent) of participants in the Biden-Vaccine treatment group answered affirmatively. Given that assignment to treatment groups was random, we would expect that approximately the same percentage of participants in the other treatment groups had been exposed to the policy. Self-reported recognition rates were in fact significantly lower in the other treatment groups, which may be attributable to two factors. First, some of the participants in the Biden-Testing, OSHA-Vaccine, and OSHA-Testing groups may not have realized the policy presented to them is identical to the Biden vaccine mandate. Second, we conducted our survey before OSHA had formally published the emergency temporary standard. Thus, highly knowledgeable participants may have believed—arguably correctly—that the answer at the time to the question of whether OSHA had put forward a vaccinate-or-test policy was no.

### *Regression Analysis*

[Table 3 about here]

Table 3 reports the results of ordinary least squares (OLS) and ordered logistic regressions with Likert score as the outcome variable and controls for demographic and partisan

characteristics. OLS regression imposes artificial structure on the data (implicitly assuming an equal distance between each level on the Likert scale), but it brings the benefit that coefficients are easily interpretable. We place greater emphasis on the ordered logistic regression models, which reflect the ordinal structure of the outcome variable.

Across all six models in Table 3, the effects of the OSHA-Vaccine and OSHA-Testing frames (relative to the Biden-Vaccine baseline) are positive and statistically significant at the  $p < 0.1$  level or below. The sizes of the framing effects are not enormous, but they are still large enough to be meaningful. Using the OLS coefficients for ease of interpretation, a switch from the Biden-Vaccine frame to the OSHA-Testing frame has an effect approximately one-third as large as a switch from Republican to independent in the full sample (more than two-fifths as large as a switch from Republican to independent among participants who passed the attention check).

Several of the demographic and partisan covariates also show statistically significant and substantively meaningful correlations with overall support for the Biden/OSHA vaccinate-or-test policy in Table 3. Support for the policy is lower among younger age groups (relative to the 75-and-up age group, which is the omitted condition). Support for the policy is higher among individuals who reported Latino or Asian as their race/ethnicity. And unsurprisingly, support is higher among Democrats and lower among Republicans (relative to independents—the omitted condition). While we did not set out to study the relationship between age or race/ethnicity and support for vaccinate-or-test policies, we investigate the role of partisan affiliation at greater length below (see Tables 5 and 6).

[Table 4 about here]

Table 4 disentangles messenger framing effects from message framing effects. We again report results of OLS and ordered logistic regressions for the full sample and for the subsample



of participants who passed the attention check. Coefficients on the OSHA messenger frame are positive and statistically significant at the  $p < 0.01$  level across all six models, while coefficients on the Testing message frame are inconsistently signed and insignificant. These results strongly indicate that the change in messenger—not the change in message—is the driving force behind differences across frames. Based on the straightforwardly interpretable OLS coefficients, the effect of switching from Biden as messenger to OSHA as messenger is more than one-third as large as the effect of switching from Republican to independent.

### *Analysis by Political Party*

[Tables 5 and 6 about here]

Tables 5 and 6 repeat the analysis in Tables 3 and 4 with results broken down by political party. The subgroup analysis reveals that framing effects are strongest among self-identified Republicans. The effect of the OSHA-Testing frame, in particular, is large and positive among Republicans: an increase of more than seven-tenths of a point on the zero-to-four Likert scale relative to the Biden-Vaccine baseline across the full-sample and attention-check subsample OLS models. Across all models, the messenger framing effect among Republicans is substantively and statistically significant ( $p < 0.01$ ): reframing the policy as promulgated by OSHA rather than the president boosts support. A more modest but similarly signed messenger framing effect appears among independents.

The positive effect among Republicans and independents of reframing the policy as promulgated by OSHA rather than President Biden is not neutralized by a negative effect among Democrats. As Table 6 illustrates, the effect of reframing the policy as promulgated by OSHA rather than Biden is negatively signed but substantively and statistically insignificant (an OLS

point estimate of approximately -0.1 on the zero-to-four Likert scale). In other words, framing the vaccinate-or-test policy as coming from Biden rather than OSHA depresses support among Republicans but does little to lift support among Democrats.

## **Discussion**

Our results raise two distinct questions: (1) Why did participants (and in particular, self-identified Republicans) respond more favorably to the vaccinate-or-test policy when we changed the messenger frame from President Biden to OSHA?; and (2) Why *didn't* our manipulation of the message frame produce a detectable response? While our research design does not allow us to answer these questions definitively, our results point to several possible explanations.

At the time of our study, President Biden's approval rating hovered below 44 percent in the FiveThirtyEight average of all polls, while his disapproval rating exceeded 50 percent.<sup>27</sup> Negative attitudes toward President Biden may have influenced responses to the vaccinate-or-test requirement when the policy was framed as emanating from the president. This would help to explain why the shift from President Biden to OSHA as promulgator produced a stronger positive effect among self-identified Republicans and independents than among self-identified Democrats. The monthly Harvard-Harris poll for October 2021, conducted at the end of our study period (October 27 to 28), found that Biden's approval rating was 9 percent among self-identified Republicans and 35 percent among independents versus 83 percent among

---

<sup>27</sup> *How unpopular is Joe Biden?*, FiveThirtyEight, <https://projects.fivethirtyeight.com/biden-approval-rating> (last visited Nov. 14, 2021).

Democrats.<sup>28</sup> It may be unsurprising, then, that President Biden as messenger would dampen support for the policy among Republicans and—to a lesser extent—independents.

Notwithstanding Biden’s popularity among Democrats, though, the shift from President Biden to OSHA as promulgator did not have a significant negative effect on support among Democrats. One potential reason is that support for the vaccinate-or-test policy is strong among Democrats across all four frames. Across all treatment groups, 54.7 percent of self-identified Democrats “strongly support” the policy and 71.4 percent “strongly support” or “somewhat support” it. Thus, among Democrats, framing has less work to do.

Another possible explanation for our messenger-frame results relates to perceptions of and attitudes toward expertise. While President Biden is a politician, OSHA is a federal agency staffed by professionals—and in many cases, experts—who are responsible for the health of the country’s workforce. Thus, participants may trust OSHA more than they do the President when it comes to determining health policies. This expertise-based account contrasts with the view of the six-Justice Supreme Court majority, which—in striking down the vaccinate-or-test policy—opined that “public health” beyond the workplace “falls outside of OSHA’s sphere of expertise.”<sup>29</sup> (The dissenting Justices contested that characterization of OSHA’s competence, emphasizing that the agency has “a half century of experience and expertise in handling workplace health and safety issues” and has “long regulated risks that arise both inside and outside of the workplace.”<sup>30</sup>)

---

<sup>28</sup> Harvard-Harris Poll: October 2021 (2021), [https://harvardharrispoll.com/wp-content/uploads/2021/11/HHP\\_October2021\\_Crosstabs.pdf](https://harvardharrispoll.com/wp-content/uploads/2021/11/HHP_October2021_Crosstabs.pdf).

<sup>29</sup> Nat’l Fed’n of Indep. Bus. v. Dep’t of Lab., 142 S. Ct. 661, 665 (2022) (per curiam).

<sup>30</sup> *Id.* at 673, 677 (Breyer, Sotomayor, and Kagan, J.J., dissenting). The expertise-based account fails to explain why the messenger framing effect was so muted among self-identified Democrats, though again, the high baseline level of support among Democrats may have left less work for framing effects. Conceivably, our messenger frame results also could imply that

In contrast to the robust messenger framing effect, our study failed to detect a substantively or statistically significant message framing effect. Again, we cannot say definitively why message reframing failed to lift support. One speculative possibility is that participants perceived the once-a-week testing option to be onerous in its own right. Another possibility is that participants perceived vaccination to be more effective than testing. Emphasizing the more efficacious compliance option may have offset negative reactions from participants who perceived a vaccination mandate to be intrusive.

### **Implications and Limitations**

Our results contribute to scholarly understandings of public attitudes toward regulatory policies. The determinants of public attitudes toward regulatory policies are significant for several reasons. For one, public support may affect voluntary compliance with regulatory requirements.<sup>31</sup> Without widespread voluntary compliance, it would have been difficult for the Biden administration and OSHA to enforce a vaccinate-or-test requirement for 84 million workers effectively.<sup>32</sup> Our results underscore the importance of messenger choice in building public support. Moreover, regulators and legislators may use polling data or survey experiments as inputs into policy choices—perhaps because they view public resistance as a barrier to

---

Democrats adhere more closely to the descriptive invariance axiom than independents and Republicans do.

<sup>31</sup> Cf. Julie Berry Cullen, Nicholas Turner & Ebonya Washington, *Political Alignment, Attitudes toward Government, and Tax Evasion*, 13 Am. Econ. J.: Econ. Pol’y 135 (2021) (finding that county-level support for the president is correlated with measures of voluntary compliance with federal tax laws).

<sup>32</sup> For an estimate of the number of workers who would have been subject to the requirement, see *Fact Sheet: Biden Administration Announces Details of Two Major Vaccination Policies*, The White House (Nov. 4, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/04/fact-sheet-biden-administration-announces-details-of-two-major-vaccination-policies>.

regulatory success, or perhaps because they see strong opposition from potential regulatees as a reason to second-guess the wisdom of a policy.<sup>33</sup> Careful attention to question framing—and, in particular, messenger framing—may help policymakers disentangle attitudes toward the proposed policy from attitudes toward the messenger. And one step removed from policymaking, our results reinforce the point that members of the media should scrutinize a survey’s messenger and message framing when reporting on public opinion polls. Such scrutiny is particularly important in light of evidence of a “bandwagon effect,” whereby information on public opinion toward a policy shapes individual attitudes toward that policy.<sup>34</sup>

While our results speak to the importance of messenger framing broadly, our research design allows us to estimate framing effects only in a particular historical, political, and epidemiological context: October 2021, at a time when the President’s net approval ratings were modestly negative, and in the period between the Delta and Omicron waves of the Covid-19 pandemic. Our key finding—that public attitudes toward the vaccinate-or-test requirement are more favorable when the requirement is framed as emanating from a bureaucratic agency rather than from the President—may not apply in other periods. For example, a messenger framing that highlights the President’s promulgation role may have a positive effect on support for a policy when the President’s popularity is higher. Moreover, different epidemiological conditions may moderate or magnify framing effects. For instance, near the peak of a pandemic’s first wave, baseline support for public health interventions may be so strong that there is little room for framing to give an extra lift.

---

<sup>33</sup> On the use of polling in administrative law, see Daniel E. Rauch, Comment, *Two Track E-Commenting*, 33 *Yale J. on Reg.* 303, 306-311 (2016).

<sup>34</sup> On the bandwagon effect, see generally David Rothschild & Neil Malhotra, *Are Public Opinion Polls Self-Fulfilling Prophecies?*, 1 *Res. & Pol.* no. 2 (2014).

Our conclusions also come with the standard limitations of survey experiments. Achieving a truly random sample of the U.S. adult population is a practical impossibility. For example, random digit dialing oversamples individuals with multiple telephone lines. Moreover, since members of the same household may have different propensities to answer a landline, random digit dialing may result in a nonrandom draw from age and gender distributions.<sup>35</sup> Since researchers cannot conscript adults into completing a survey, efforts to achieve a random sample through random digit dialing or physical address-based sampling also will be hampered by differential response rates.<sup>36</sup> Our reliance on Dynata’s online panel of U.S. adults who already have indicated their willingness to complete questionnaires allows us to minimize nonresponse at the survey stage, but this approach still faces the challenge of nonresponse at the recruitment stage (i.e., when Dynata and its partners solicit potential panel members).<sup>37</sup> Our quota sampling approach enables us to achieve a sample that roughly matches the U.S. adult population on specified demographic and partisan dimensions, but we cannot rule out the possibility that unobserved differences between our sample and the general population affect our results.

Finally, our research design involved a particular manipulation—changing the identity of the promulgator and changing nine words in the description of the policy—while real-world manipulations of messenger and message framing effects may be more or less salient. For example, messenger framing effects may be stronger when individuals see images or video footage of the messenger (e.g., the President or an agency administrator announcing the policy at a press conference). Likewise, message framing effects may be weaker when individuals are

---

<sup>35</sup> See Mick P. Couper, *New Developments in Survey Data Collection*, 43 Annual Rev. Sociol. 121, 124-27 (2017). Address-based sampling faces a similar challenge. See *id.* at 123-24.

<sup>36</sup> See *id.* at 125.

<sup>37</sup> See *id.* at 131.

confronted with more information about the relevant policy in a newspaper article or television broadcast segment (our prompts were about the length of a Twitter post). While our results are suggestive as to messenger and message framing effects in nonexperimental settings, the higher or lower salience of the messenger or message in other contexts may shape attitudes in subtle ways that our research design does not allow us to observe.

## **Conclusion**

Our results are broadly consistent with the notion that views about government policies can be influenced by the ways in which those policies are framed. By redescribing President Biden's vaccine mandate (with a testing exception) as OSHA's testing mandate (with a vaccine exception), we were able to boost support and substantially reduce opposition. The magnitude of the framing effect—though not enormous—is nonetheless consequential: more than a third as large as the effect of a shift from Republican to independent self-identification.

As it turned out, manipulating the messenger had a much stronger effect in our study than did manipulating the message. Changing the promulgator from President Biden to OSHA elicited much more favorable responses to the policy, especially from self-identified Republicans. By contrast, switching from a vaccine mandate (with a testing exception) to a testing mandate (with a vaccine exception) had little discernible effect on our participants, notwithstanding the emphasis that the Biden administration and the Supreme Court dissenters ultimately placed on the testing option.

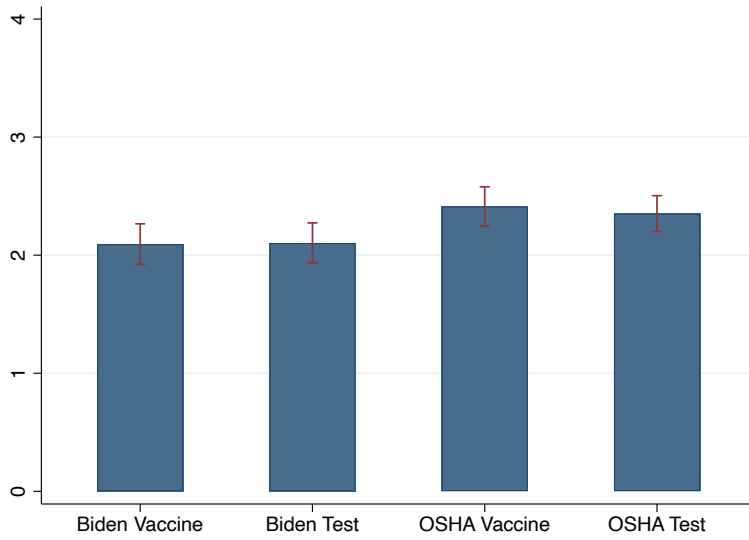
To be sure, no government official enjoys complete control over the messenger frame. Opponents might have cast the vaccinate-or-test requirement as Biden's mandate even if it had been announced by an OSHA administrator rather than by the President. Nonetheless, the fact

DRAFT

that our messenger manipulation produced the change that it did—when most participants already said they had heard about the relevant policy—suggests that the messenger framing effect is not entirely negated by significant exposure to alternative framings. Future research—testing different policies in different survey settings at different points in the political cycle—can shed further light on whether the phenomenon observed here is specific to the Covid-19 vaccination context or reflects a generalizable consequence of presidential administration in a deeply polarized society.

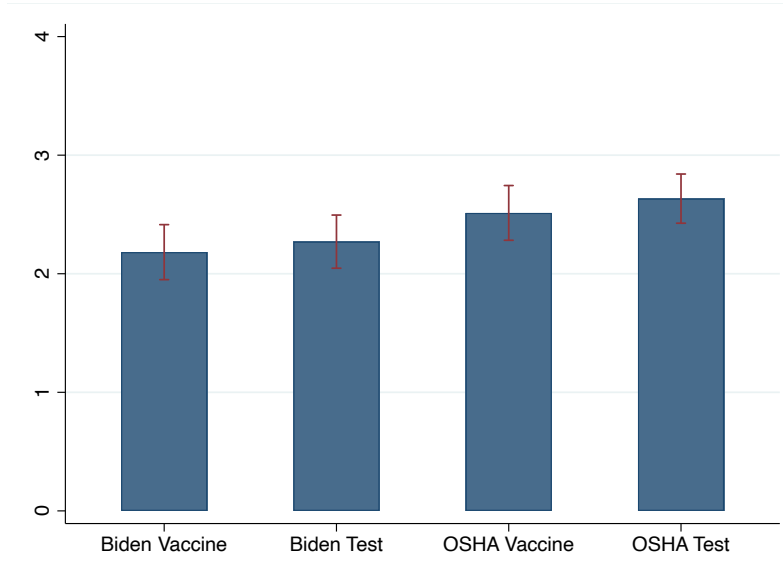


**Figure 1a. Mean and 95% Confidence Interval for Four Frames (Full Sample)**



**Notes:** Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4).

**Figure 1b. Mean and 95% Confidence Interval for Four Frames (Passed Attention Check)**



**Notes:** Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4).

Figure 2a. Attitudes by Frame (Full Sample)

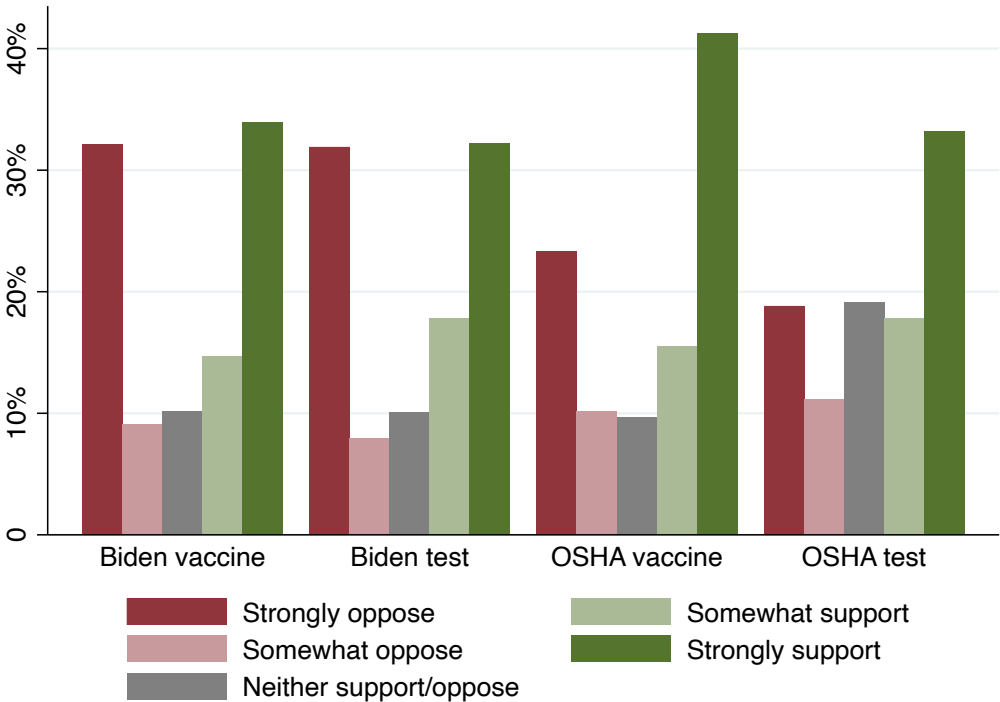
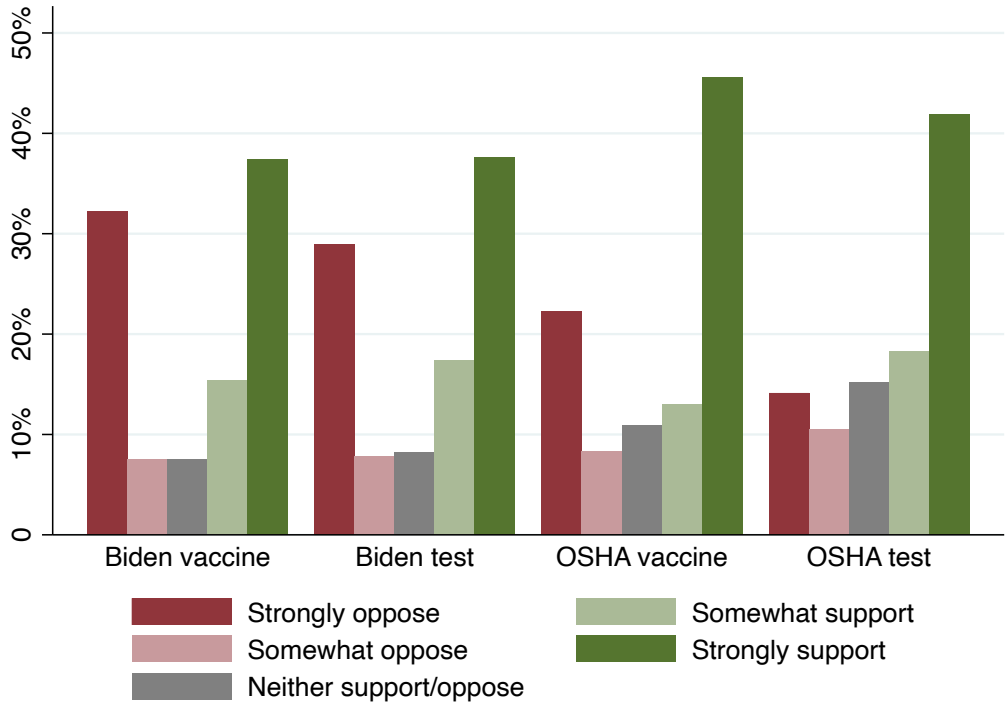


Figure 2b. Attitudes by Frame (Passed Attention Check)



## DRAFT

Table 1. Sample Characteristics

	Biden Vaccine	Biden Testing	OSHA Vaccine	OSHA Testing	Across All Frames
<b>FULL SAMPLE</b>					
Age 18—24	8.6%	7.7%	8.6%	8.8%	8.4%
Age 25—34	20.1%	19.4%	21.4%	17.0%	19.5%
Age 35—44	23.5%	24.2%	26.8%	27.1%	25.4%
Age 45—54	16.0%	18.6%	14.5%	12.5%	15.4%
Age 55—64	14.4%	14.6%	13.4%	18.3%	15.2%
Age 65—74	10.2%	10.4%	8.3%	9.5%	9.6%
Age ≥75	7.2%	5.1%	7.0%	6.9%	6.5%
Female	51.6%	46.8%	50.4%	51.7%	50.1%
White	74.1%	73.4%	70.0%	72.4%	72.5%
Black or African-American	12.6%	11.4%	12.9%	11.9%	12.2%
Latino/a or Hispanic	4.8%	6.1%	7.2%	6.4%	6.1%
Asian	5.6%	5.1%	7.2%	5.8%	5.9%
Northeast	17.4%	17.6%	17.7%	17.0%	17.4%
Midwest	22.5%	23.7%	21.2%	20.4%	21.9%
South	42.3%	39.9%	44.0%	41.9%	42.0%
West	17.1%	18.6%	16.6%	20.7%	18.3%
Democratic	37.4%	38.6%	44.0%	38.5%	39.6%
Republican	34.8%	31.4%	30.3%	32.4%	32.2%
Independent	27.5%	30.1%	25.5%	28.9%	28.0%
N	374	376	373	377	1500
<b>PASSED ATTENTION CHECK</b>					
Age 18—24	5.6%	4.6%	4.7%	5.2%	5.0%
Age 25—34	15.0%	11.9%	16.6%	14.7%	14.5%
Age 35—44	16.4%	19.7%	22.8%	18.8%	19.4%
Age 45—54	17.8%	22.0%	14.5%	14.1%	17.3%
Age 55—64	20.1%	19.3%	19.2%	21.5%	20.0%
Age 65—74	15.9%	15.6%	11.9%	16.2%	15.0%
Age ≥75	9.3%	6.9%	10.4%	9.4%	8.9%
Female	51.9%	45.4%	55.4%	54.5%	51.6%
White	72.4%	72.9%	67.4%	71.2%	71.1%
Black or African-American	11.7%	12.4%	14.0%	10.5%	12.1%
Latino/a or Hispanic	6.1%	6.4%	6.7%	7.3%	6.6%
Asian	6.1%	5.5%	7.8%	7.3%	6.6%
Northeast	20.1%	19.3%	20.7%	18.3%	19.6%
Midwest	22.0%	23.4%	17.6%	20.4%	21.0%
South	40.7%	37.6%	47.2%	41.4%	41.5%
West	16.4%	19.3%	14.0%	19.9%	17.4%
Democratic	35.5%	36.2%	39.4%	38.7%	37.4%
Republican	37.9%	30.7%	31.1%	29.8%	32.5%
Independent	26.6%	33.0%	29.5%	31.4%	30.1%
N	214	218	193	191	816

Table 2. Descriptive Statistics

	Biden Vaccine	Biden Testing	OSHA Vaccine	OSHA Testing	Across All Frames
<b>FULL SAMPLE</b>					
Strongly support	34.0%	32.2%	41.3%	33.2%	35.1%
Somewhat support	14.7%	17.8%	15.5%	17.8%	16.5%
Neither support nor oppose	10.2%	10.1%	9.7%	19.1%	12.3%
Somewhat oppose	9.1%	8.0%	10.2%	11.1%	9.6%
Strongly oppose	32.1%	31.9%	23.3%	18.8%	26.5%
0-4 Likert scale (mean)	2.09	2.10	2.41	2.35	2.24
0-4 Likert scale (SD)	1.70	1.68	1.64	1.50	1.63
Total support	48.7%	50.0%	56.8%	50.9%	51.6%
Total oppose	41.2%	39.9%	33.5%	30.0%	36.1%
Net support	7.5 ppts	11.1 ppts	23.3 ppts	20.9 ppts	15.5 ppts
Prior knowledge of policy	66.4%	56.5%	44.4%	38.6%	51.3%
N	374	376	373	377	1500
<b>PASSED ATTENTION CHECK</b>					
Strongly support	37.4%	37.6%	45.6%	41.9%	40.4%
Somewhat support	15.4%	17.4%	13.0%	18.3%	16.1%
Neither support nor oppose	7.5%	8.3%	10.9%	15.2%	10.3%
Somewhat oppose	7.5%	7.8%	8.3%	10.5%	8.5%
Strongly oppose	32.2%	28.9%	22.3%	14.1%	24.8%
0-4 Likert scale (mean)	2.18	2.27	2.51	2.63	2.39
0-4 Likert scale (SD)	1.73	1.69	1.64	1.46	1.64
Total support	52.8%	55.0%	58.5%	60.2%	56.5%
Total oppose	39.7%	36.7%	30.6%	24.6%	33.2%
Net support	13.1 ppts	18.3 ppts	27.9 ppts	35.6 ppts	23.3 ppts
Prior knowledge of policy	62.9%	51.2%	30.9%	29.2%	44.2%
N	214	218	193	191	816

**Table 3. Multiple Regression Analysis—Comparing Four Frames**

	FULL SAMPLE				PASSED ATTENTION CHECK			
	OLS		Ordered Logit		OLS		Ordered Logit	
<b>FRAME</b>								
Biden Testing	0.010 (0.119)	-0.018 (0.109)	-0.004 (0.133)	-0.077 (0.137)	0.088 (0.158)	0.040 (0.140)	0.086 (0.176)	0.016 (0.185)
OSHA Vaccine	0.319*** (0.119)	0.234** (0.109)	0.366*** (0.134)	0.264* (0.138)	0.331** (0.163)	0.255* (0.145)	0.380** (0.183)	0.333* (0.193)
OSHA Testing	0.259** (0.119)	0.219** (0.109)	0.240* (0.130)	0.215* (0.135)	0.451*** (0.163)	0.341** (0.145)	0.432** (0.179)	0.421** (0.189)
<b>DEMOGRAPHIC AND PARTISAN COVARIATES</b>								
Age 18—24		-0.555*** (0.202)		-0.755*** (0.252)		-0.524* (0.285)		-0.737** (0.364)
Age 25—34		-0.629*** (0.175)		-0.863*** (0.224)		-1.034*** (-0.220)		-1.386*** (0.293)
Age 35—44		-0.449*** (0.171)		-0.604*** (0.221)		-0.757*** (0.211)		-0.972*** (0.281)
Age 45—54		-0.540*** (0.181)		-0.727*** (0.231)		-0.823*** (0.214)		-1.057*** (0.284)
Age 55—64		-0.231 (0.181)		-0.336 (0.233)		-0.560*** (0.207)		-0.686** (0.277)
Age 65—74		-0.005 (0.196)		-0.057 (0.254)		-0.298 (0.217)		-0.374 (0.294)
Female		-0.118 (0.078)		-0.187* (0.097)		-0.035 (0.103)		-0.082 (0.136)
White		0.326 (0.219)		0.382 (0.266)		0.515* (0.280)		0.631* (0.367)
Black		0.194 (0.242)		0.158 (0.294)		0.300 (0.311)		0.231 (0.408)
Latino		0.542** (0.264)		0.643* (0.324)		0.771** (0.338)		0.967** (0.448)
Asian		0.781*** (0.266)		0.879*** (0.325)		0.732** (0.339)		0.866* (0.443)
Northeast		0.250* (0.130)		0.254 (0.160)		0.114 (0.170)		0.116 (0.223)
Midwest		-0.021 (0.124)		-0.001 (0.156)		-0.197 (0.170)		-0.206 (0.223)
South		-0.026 (0.110)		0.0157 (0.138)		-0.051 (0.150)		0.033 (0.201)

DRAFT

Democrat		0.793*** (0.097)		1.046*** (0.122)		0.928*** (0.130)		1.313*** (0.176)
Republican		-0.679*** (0.100)		-0.795*** (0.123)		-0.801*** (0.130)		-0.965*** (0.167)
<b>CONSTANT</b>	2.094*** (0.084)	2.130*** (0.278)			2.182*** (0.112)	2.330*** (0.346)		
<b>R<sup>2</sup>/Pseudo R<sup>2</sup></b>	0.008	0.187	0.003	0.069	0.012	0.243	0.004	0.094
<b>N</b>	1500	1500	1500	1500	816	816	816	816
<p><b>Notes:</b> Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4).  <b>Omitted conditions:</b> <u>Frame:</u> Biden Vaccine; <u>Age:</u> ≥75; <u>Gender:</u> Male/nonbinary; <u>Race/ethnicity:</u> American Indian/Alaska Native, Native Hawaiian/Pacific Islander, Multiple races, and Other; <u>Region:</u> West; <u>Political party:</u> Independent. <b>Significance key:</b> *p≤0.1; **p≤0.05; ***p≤0.01</p>								



DRAFT

**Table 4. Multiple Regression Analysis—Messenger Frame vs. Message Frame**

	FULL SAMPLE				PASSED ATTENTION CHECK			
	OLS		Ordered Logit		OLS		Ordered Logit	
<b>FRAMING EFFECT</b>								
<b>Messenger Frame (OSHA)</b>	0.284*** (0.084)	0.236*** (0.079)	0.302*** (0.093)	0.278*** (0.096)	0.347*** (0.115)	0.278*** (0.102)	0.363*** (0.128)	0.370*** (0.135)
<b>Message Frame (Testing)</b>	-0.025 (0.084)	-0.017 (0.077)	-0.066 (0.093)	-0.063 (0.096)	0.104 (0.115)	0.062 (0.102)	0.070 (0.127)	0.050 (0.135)
<b>Demographic/Political Covariates</b>	No	Yes	No	Yes	No	Yes	No	Yes
<b>CONSTANT</b>	2.111*** (0.073)	2.130*** (0.275)			2.175*** (0.098)	2.319*** (0.343)		
<b>R<sup>2</sup>/Pseudo R<sup>2</sup></b>	0.008	0.187	0.002	0.069	0.012	0.243	0.004	0.094
<b>N</b>	1500	1500	1500	1500	816	816	816	816
<p><b>Notes:</b> Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4).  <b>Demographic/political covariates:</b> Age, gender, race/ethnicity, geographic region, political party identification (see Table 3). <b>Significance key:</b> *p≤0.1; **p≤0.05; ***p≤0.01</p>								

DRAFT

**Table 5. Multiple Regression Analysis—Comparing Four Frames (by Political Party Identification)**

	FULL SAMPLE						PASSED ATTENTION CHECK					
	Democrat		Independent		Republican		Democrat		Independent		Republican	
	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit
<b>FRAME</b>												
Biden Testing	0.020 (0.169)	-0.105 (0.236)	-0.177 (0.206)	-0.279 (0.253)	0.074 (0.198)	0.062 (0.248)	0.150 (0.199)	0.085 (0.350)	-0.244 (0.278)	-0.318 (0.335)	0.191 (0.267)	0.264 (0.333)
OSHA Vaccine	0.080 (0.165)	0.055 (0.233)	0.181 (0.218)	0.215 (0.264)	0.510** (0.200)	0.626** (0.248)	-0.034 (0.201)	-0.064 (0.352)	0.295 (0.298)	0.409 (0.358)	0.517* (0.274)	0.683** (0.335)
OSHA Testing	-0.206 (0.170)	-0.397* (0.235)	0.231 (0.209)	0.209 (0.246)	0.686*** (0.197)	0.829*** (0.235)	-0.002 (0.204)	-0.008 (0.360)	0.313 (0.292)	0.319 (0.340)	0.667** (0.279)	0.838** (0.323)
<b>Demographic Covariates</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>CONSTANT</b>	2.757*** (0.413)		2.646*** (0.505)		0.788 (0.532)		3.183*** (0.481)		2.469*** (0.641)		1.168 (0.696)	
<b>R<sup>2</sup>/Pseudo R<sup>2</sup></b>	0.070	0.033	0.073	0.023	0.080	0.029	0.149	0.068	0.096	0.030	0.111	0.041
<b>N</b>	594	594	420	420	483	483	305	305	246	246	265	265
<b>Notes:</b> Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4). <b>Demographic covariates:</b> Age, gender, race/ethnicity, geographic region (see Table 3). <b>Significance key:</b> *p≤0.1; **p≤0.05; ***p≤0.01												

**Table 6. Multiple Regression Analysis—Messenger Frame vs. Message Frame (by Political Party Identification)**

	FULL SAMPLE						PASSED ATTENTION CHECK					
	Democrat		Independent		Republican		Democrat		Independent		Republican	
	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit	OLS	Ordered Logit
<b>FRAMING EFFECT</b>												
<b>Messenger Frame (OSHA)</b>	-0.070 (0.118)	-0.123 (0.164)	0.302** (0.149)	0.364** (0.178)	0.561*** (0.142)	0.698*** (0.174)	-0.093 (0.144)	-0.078 (0.253)	0.437** (0.204)	0.536** (0.241)	0.498*** (0.200)	0.628*** (0.237)
<b>Message Frame (Testing)</b>	-0.139 (0.117)	0.288 (0.163)	-0.068 (0.149)	-0.143 (0.179)	0.124 (0.143)	0.135 (0.173)	0.091 (0.143)	0.071 (0.254)	-0.121 (0.203)	-0.208 (0.242)	0.173 (0.201)	0.211 (0.241)
<b>Demographic Covariates</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>CONSTANT</b>	2.812*** (0.411)		2.599*** (0.501)		0.757 (0.524)		3.200*** (0.479)		2.406*** (0.632)		1.180 (0.686)	
<b>R<sup>2</sup>/Pseudo R<sup>2</sup></b>	0.068	0.032	0.072	0.022	0.080	0.028	0.148	0.068	0.094	0.030	0.111	0.041
<b>N</b>	594	594	420	420	483	483	305	305	246	246	265	265
<b>Notes:</b> Dependent variable is 0-4 score: Strongly oppose (0); Somewhat oppose (1); Neither support nor oppose (2); Somewhat support (3); Strongly support (4). <b>Omitted condition:</b> <u>Messenger:</u> Biden; <u>Message:</u> Vaccine. <b>Demographic covariates:</b> Age, gender, race/ethnicity, geographic region (see Table 3). <b>Significance key:</b> *p≤0.1; **p≤0.05; ***p≤0.01												