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**THE COVID STATES PROJECT:
A 50-STATE COVID-19 SURVEY
REPORT #40: COVID-19 VACCINE ATTITUDES
AMONG HEALTHCARE WORKERS**

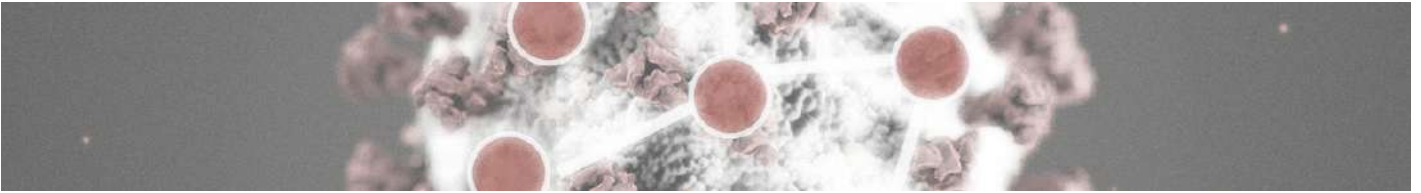
USA, February 2021

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Report of January 19, 2021, v.1

The COVID States Project

From: The COVID-19 Consortium for Understanding the Public's Policy Preferences Across States

A joint project of:

Northeastern University, Harvard University, Rutgers University, and Northwestern University

Authors: David Lazer (Northeastern University); Roy H. Perlis (Harvard Medical School); Katherine Ognyanova (Rutgers University); Matthew A. Baum (Harvard University); Matthew Simonson (Northeastern University); Jon Green (Northeastern University); James Druckman (Northwestern University); Adina Gitomer (Northeastern University); Jennifer Lin (Northwestern University); Mauricio Santillana (Harvard Medical School), and Alexi Quintana (Northeastern University)

This report is based on work supported by the National Science Foundation under grants SES-2029292 and SES-2029297. Any opinions, findings, and conclusions or recommendations expressed here are those of the authors and do not necessarily reflect the views of the National Science Foundation.

This research was partly supported by a grant from the *Knight Foundation*.

We also received generous support from the *Russell Sage Foundation*.

Our data collection was supported in part by *Amazon*.



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COVER MEMO

Summary Memo — January 19, 2020

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From April 2020 through January 2021, we conducted multiple waves of a large, 50-state survey, some results of which are presented here. You can find previous reports online at covidstates.org.

Note on methods:

Between December 16, 2020 and January 11, 2021, we surveyed 25,640 individuals across all 50 states plus the District of Columbia. Among those were 1,797 healthcare workers who are the subject of this report. The survey was conducted by PureSpectrum via an online, nonprobability sample, with state-level representative quotas for race/ethnicity, age, and gender (for methodological details on the other waves, see covidstates.org). In addition to balancing on these dimensions, we reweighted our data using demographic characteristics to match the U.S. population with respect to race/ethnicity, age, gender, education, and living in urban, suburban, or rural areas.

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Or visit us at www.covidstates.org.

COVID-19 vaccine attitudes among healthcare workers

Executive summary: In this report, we examine the demographic correlates of vaccination, vaccine hesitancy, and vaccine resistance among the subset of 1,797 respondents in the COVID states survey who indicated that they are healthcare workers. We find that education, income, gender, race/ethnicity, and partisanship are strong predictors of vaccination rates recorded thus far, as well as of vaccine hesitancy and resistance.

Healthcare workers represent a microcosm of US society, and a consequential one. They are polarized in terms of income and education, ranging from physicians with extensive postgraduate education, to cleaning staff with less than a high school education. Healthcare workers also have taken a disproportionate brunt of the national response to COVID-19, in terms of the physical and emotional labor to care for millions of sick people; to bid goodbye to hundreds of thousands; and to confront, by the nature of their work, the increased risks of exposure to the virus.

They have also been among the first wave of recipients of COVID-19 vaccinations; and as such, they are doubly important. First, they may be predictive of what is to come in the rest of the US's vaccination campaign. Healthcare workers represent the first diverse population that has the opportunity to get vaccinated. As such, their responses regarding vaccine willingness are more proximate and less hypothetical than they are with our other survey respondents. Second, they [may directly affect the willingness](#) of other Americans to be vaccinated, by dint of their high perceived credibility regarding issues of health.

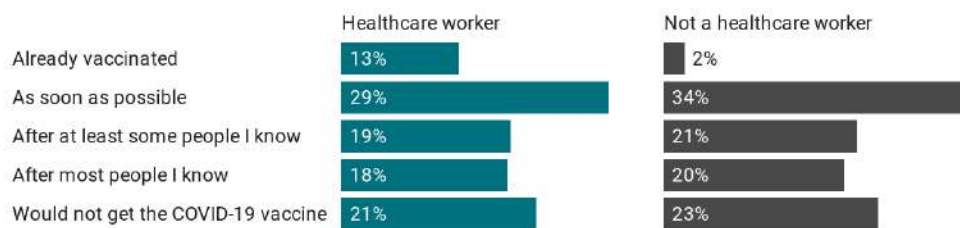
Here, we review the results of our most recent survey, zooming in on the 1,797 healthcare worker respondents, and looking at who among them was part of the initial wave of vaccinations, who is vaccine hesitant, and who is vaccine resistant. We examine the relationship between their vaccine preferences and their race/ethnicity, gender, education, partisanship, and income.

In our survey, we ask respondents, "If you were able to choose when to get a COVID-19 vaccine, would you get it..."; the responses are displayed in Figure 1. We define an individual to be *vaccine hesitant* if they are willing to receive a vaccine but would prefer not to be among the first vaccinated, and *vaccine resistant* if they are unwilling to be vaccinated. Specifically, someone is classified as *vaccine hesitant* if they respond that they will get vaccinated "After at least some people I know" or "After most people I know," and as *vaccine resistant* if they respond that they "Would not get the COVID-19 vaccine."

The first thing to note is that, overall, healthcare workers have attitudes regarding vaccination that are very similar to US society overall (Figure 1). The only significant difference is that more healthcare workers were “already vaccinated” than non-healthcare workers (13% vs. 2% in our current survey wave). Otherwise, vaccine hesitancy (37% vs. 41%) and resistance (21% vs. 23%) are slightly lower among healthcare workers than non-healthcare workers.

Vaccine preference and work in the healthcare system

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



National sample, N = 25,640, Time period: 12/16/2020-01/10/2021

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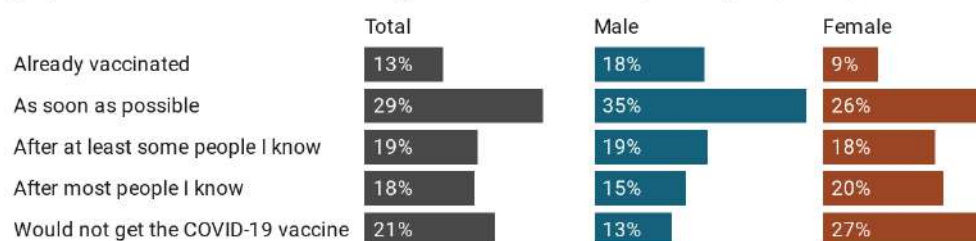
Figure 1.

Turning to the findings among healthcare workers, we find that gender, race, education, income, and partisanship are all strongly related to vaccination rates, hesitancy, and resistance. The remainder of the report summarizes these findings.

As shown in Figure 2, men are much more likely to already be vaccinated, and to have lower vaccine resistance and hesitancy than women. Further, male healthcare workers are roughly twice as likely to already be vaccinated than female (18% vs. 9%) somewhat less likely to be vaccine hesitant (34% vs. 38%), and about half as likely to be vaccine resistant (13% vs. 27%).

Healthcare worker vaccine preferences by gender

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



Healthcare workers, N = 1,797, Time period: 12/16/2020-01/10/2021

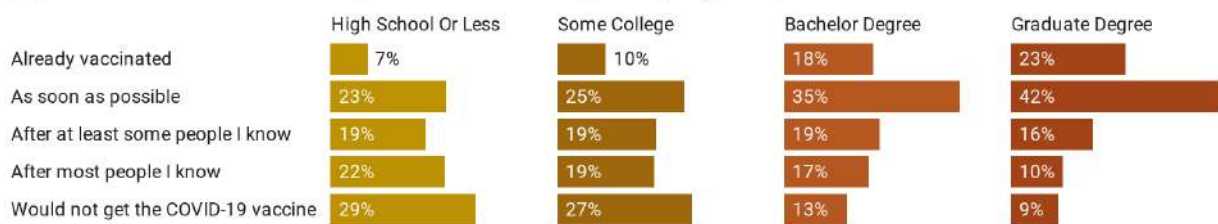
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Figure 2.

As per Figure 3, more educated respondents are far more likely to be vaccinated, with far lower levels of vaccine hesitancy and resistance. Individuals who report having a high school education or less also report a vaccination rate of 7%; those with a BA 18%; and those with a graduate degree 23%. Respondents with high school or less report the highest level of resistance (29%) and hesitancy (41%); in contrast, those with graduate degrees report the lowest levels (9% and 26%).

Healthcare worker vaccine preferences by education level

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



Healthcare workers, N = 1,797, Time period: 12/16/2020-01/10/2021

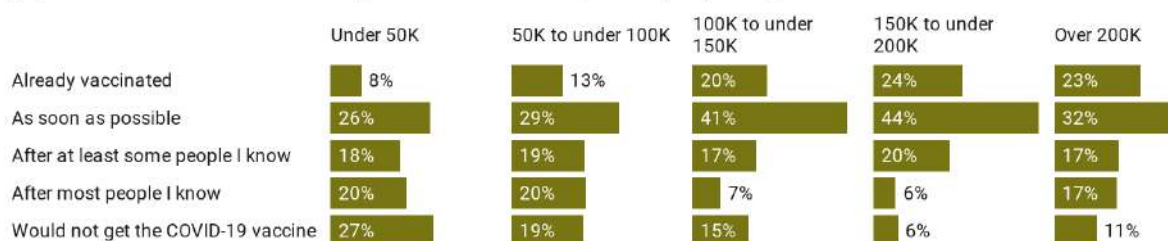
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Figure 3.

Income shows a similar pattern to education level. As can be seen in Figure 4, those earning under 50k have a vaccination rate of 8%; those earning between 50k and 100k have a rate of 13%; and those earning more than 100k, 22%. Vaccine resistance and hesitancy declines with income: vaccine resistance among those earning less than 50k is 27%, and for those earning more than 100k, 12%.

Healthcare worker vaccine preferences by income

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



Healthcare workers, N = 1,797, Time period: 12/16/2020-01/10/2021

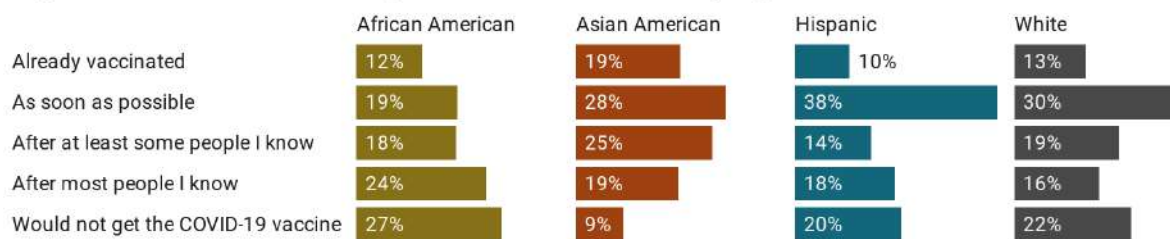
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Figure 4.

Racial and ethnic differences in vaccination rates are modest relative to gender, education, and income, but African Americans have higher levels of vaccine hesitancy and resistance (see Figure 5). White healthcare workers report somewhat higher vaccination rates (13%) than African American (12%) and Hispanic (10%) healthcare workers, but these differences are not statistically significant.¹ Asian American respondents report the highest vaccination rates (19%), but the number of Asian American healthcare workers in our data is small (N = 102), so we would interpret that percentage with caution. African Americans report the highest levels of vaccine resistance (27%), followed by White (22%), Hispanic (20%), and Asian American (9%) respondents. The respective numbers for vaccine hesitancy are 42% for African American, 35% for White, 33% for Hispanic, and 34% for Asian American respondents.

Healthcare worker vaccine preferences by race and ethnicity

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



Healthcare workers, N = 1,797, Time period: 12/16/2020-01/10/2021

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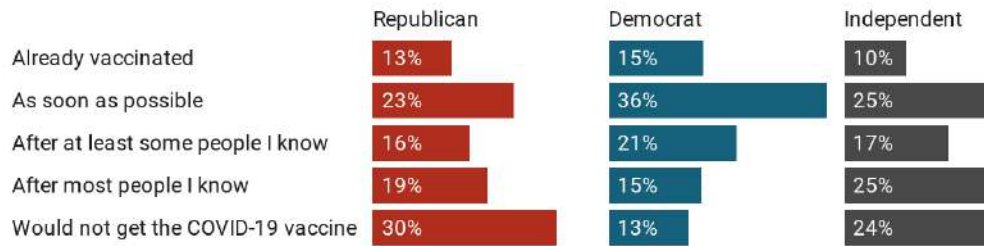
Figure 5.

There are modest partisan differences with respect to getting vaccinated, and very large differences with respect to vaccine resistance, where Democratic healthcare workers have much lower vaccine resistance than Republicans or Independents (see Figure 6). Democrats (15%) have slightly and statistically insignificant higher likelihood of having already been vaccinated than Republicans (13%), and both parties have a higher likelihood than Independents (10%). Similarly, rates of hesitancy are fairly similar across the three partisanship groupings, albeit with somewhat higher levels among Independents (36% for Democrats, 34% for Republicans, and 42% for Independents). However, the differences with respect to vaccine resistance are quite large, with Democrats having far lower resistance (13%) than Republicans (30%) or Independents (24%).

¹ P > .05, two-tailed test.

Healthcare worker vaccine preferences by party

[If you were able to choose when to get a COVID-19 vaccine, would you get it...]



Healthcare workers, N = 1,797, Time period: 12/16/2020-01/10/2021

Source: The COVID-19 Consortium for Understanding the Public's Policy Preferences Across States (A joint project of: Northeastern University, Harvard University, Rutgers University, and Northwestern University) www.covidstates.org
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Figure 6.

Finally, we observe that while there are strong and complex relationships among all of the factors we examine above -- gender, race, education, and income are all strongly correlated to each other, as are race, education and gender with partisanship -- they retain their predictive value in a multivariable analysis.² In other words, no single demographic characteristic explains all the differences we observe in vaccination rates, vaccine resistance and hesitancy.

Summary

The above analyses suggest large inequalities among healthcare workers in terms of who are the first to get vaccinated. For instance, a 50 year old, White male doctor in the Northeast, earning more than \$200,000 had a 45% chance of being vaccinated; whereas a 45 year old, black female nursing assistant in the South, earning less than \$50,000 only 6%.³ The data do not allow a full parsing of the *causes* of these inequalities, since there are likely significant variations of vaccine availability that are correlated with the factors referenced above (e.g., do hospitals generally get vaccines before nursing homes? Are certain healthcare workers prioritized over others?). However, it is likely that vaccine resistance and hesitancy are important factors, because many of the same variables that predict low vaccination rates predict high levels of vaccine resistance. That hypothetical doctor, for example, has a 1% chance of being vaccine resistant, as compared to the nursing assistant at 31%.

² These are multivariate logistic regressions, with regressions of vaccination rates, hesitancy, and resistance on race, education, income, gender, partisanship, region, and urbanity.

³ This is based on the multivariable logistic regressions mentioned in footnote 2, where, for the sake of comparison, we assume that both individuals are Democrats and that both live in urban areas.

We do note that other [recent research](#) suggests declining rates of vaccine resistance among healthcare workers over the last few months, which provides some hope for the future vaccination rates among all healthcare workers. Further, our [prior research](#) highlights that the most convincing messengers to reduce vaccine hesitancy and resistance are doctors and scientists. Healthcare providers are thus much better positioned than most institutions to develop science and health communication strategies to address vaccine hesitancy and resistance.

These data also portend a worrisome possibility that as vaccines are distributed, we will see substantial inequalities in who gets vaccinated this winter. The current focus on vaccinating as many people as possible may amplify these inequalities, in part because reaching the difficult to reach may be slow, and thus efforts will be focused on those easiest to reach. These data suggest, further, that vaccine hesitancy and resistance will contribute to those inequalities, and that without thoughtful strategies for outreach and communication now, we will see major slices of the US population systematically left unprotected from COVID-19 come the spring.