THE COVID STATES PROJECT:
A 50-STATE COVID-19 SURVEY
REPORT #62: COVID-19 VACCINE ATTITUDES
AMONG HEALTHCARE WORKERS

USA, August 2021

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

Report of August 16, 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); Hong Qu (Northeastern University); Katherine Ognyanova (Rutgers University); Roy H. Perlis (Harvard Medical School); Matthew A. Baum (Harvard University); James Druckman (Northwestern University); Ata Uslu (Northeastern University); Jennifer Lin (Northwestern University); Mauricio Santillana (Harvard Medical School); Jon Green (Northeastern University); Matthew Simonson (Northeastern University); Evan Myers (Northwestern University), and Uday Tandon (Northwestern University)

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COVER MEMO

Summary Memo — August 16, 2021

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From April 2020 through July 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 June 9 and July 7, 2021, we surveyed 20,669 individuals across all 50 states plus the District of Columbia. 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. This was the latest in a series of surveys we have been conducting since April 2020, examining attitudes and behaviors regarding COVID-19 in the United States.

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Or visit us at www.covidstates.org.
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COVID-19 vaccine attitudes among healthcare workers

The vaccination status of healthcare workers is of particular importance, for two key reasons:

First, healthcare workers have been a harbinger of trends among the broader population through the entire vaccination campaign, as they were among the first to gain access to vaccines. The early inequalities in terms of access among healthcare workers were predictive of inequalities within the broader population. The divides in terms of vaccine skepticism presaged those of the broader population; and, as we will see below, the plateauing of vaccination rates anticipated the slowdown in vaccinations within the broader population.

Second, the vaccine decisions of healthcare workers have particular ramifications with respect to the spread of COVID-19, and, especially, with respect to morbidity and mortality resulting from COVID-19. In particular, unvaccinated healthcare workers are potentially a vector of infection of the elderly and the vulnerable, who have been vastly more likely to die of the disease.

A recent outbreak in a nursing home in Kentucky is illustrative. Despite the fact that over 90% of the residents had been fully vaccinated, only 53% of the healthcare workers had been. In a subsequent outbreak, 31% of residents were infected (more than two third of whom had been vaccinated); and 33% of healthcare workers (20% of whom had been vaccinated). Two residents died as a result. In short, the low vaccination rate of the healthcare workers supplied the kindling for the outbreak. The question going forward is to what extent might this occur in other healthcare settings around the country.

Healthcare institutions thus face critical decisions regarding the vaccination of their employees. In late July, the Department of Veterans Affairs issued a vaccine mandate for all its frontline health care workers. A joint statement by nearly 60 major medical organizations called for mandatory vaccination of healthcare workers. Brown University’s School of Public Health built a Hospital Vaccine Mandate Tracker to gather and list hospital systems that require their staff to be vaccinated. Many more institutions have announced that they will issue mandates once vaccines are formally approved by the U.S. FDA.
Key Takeaways

- Healthcare workers are currently more vaccine enthusiastic than the general population, although prior to vaccines being available vaccine attitudes of the two groups were nearly identical.

- From March to July, there has been sharp decreases in vaccine resistance across all demographic subgroups.

- As of July, 27% of healthcare workers are unvaccinated and 15% are vaccine resistant, suggesting that, absent mandates, most of the currently unvaccinated health care workers will remain unvaccinated, potentially fueling outbreaks in health care facilities.

- The current surge of cases due to the Delta variant will continue to exert pressure on health care providers to mandate vaccinations for their employees.

This report is a sequel to our February and March reports on attitudes and vaccination rates of healthcare workers, including vaccine resistance, vaccine hesitancy, vaccine access, and vaccine refusal. These are measured as follows:

**Vaccination** status is based on self-reports that someone has already been vaccinated. Note that below we do not distinguish whether someone has received one or two doses of a vaccine, or which vaccine they have received.

**Vaccine resistance** is the proportion of individuals in a given category who indicate that they “would not get the COVID-19 vaccine” if/when it is available to them.

**Vaccine hesitancy** is defined as preferring to get the vaccine “after at least some people I know” or “after most people I know.”
1. Vaccination rates of healthcare workers and non-healthcare workers over time

From January to July, healthcare workers' vaccination rates have been higher than non-healthcare workers because they were offered the first batches of vaccines. As vaccine supply increased and became more widely available to the public, this gap narrowed over time. As shown in figure 1, although non-healthcare workers lagged behind healthcare workers, they are slowly catching up. For both groups, vaccine uptake is decelerating at around the 60-70% range.

Figure 1.

2. Vaccine attitude and work in the healthcare system from January to July

From June 2020 to July 2021, vaccination attitudes among healthcare workers and non-healthcare workers moved in lockstep until around February when healthcare workers' attitudes began to rise.

---

1 Vaccine attitudes are based on survey participants' response to the question: "If a vaccine against COVID-19 was available to you, how likely would you be to get vaccinated?".

2 Healthcare workers include respondents who answered "yes" to the question: "Do you currently have one of the following occupations? - Health or medical professional (e.g. nurse, medical doctor, paramedic)". We exclude other hospital staff, e.g. administrative, custodial, etc., that were included in the prior 50-state COVID-19 project reports.
resistance\(^3\) declined by 10 points compared to only 6 points for non-healthcare workers. This drop might be a hopeful sign that vaccine resistance attitudes among non-healthcare workers will drop in the coming months as well. Nonetheless, the fact that 27% of staff in healthcare facilities are currently unvaccinated poses a significant risk to vulnerable patients, which will likely exacerbate outbreaks in healthcare settings.

**Vaccination likelihood among healthcare workers and non-healthcare workers**

[If a vaccine against COVID-19 was available to you, how likely would you be to get vaccinated?]

![Vaccination likelihood chart](image)

\(^3\) For figure 2, vaccine resistance tracks survey participants' likelihood to get vaccinated; to the question: "If a vaccine against COVID-19 was available to you, how likely would you be to get vaccinated?" they responded "extremely unlikely".

\(4\) Vaccine attitudes are based on respondents' answer to the question: "If you were able to choose when to get a COVID-19 vaccine, would you get it...".

\(^5\) For figure 3, vaccine resistant tracks survey participants' timing for getting vaccinated; to the question: "If you were able to choose when to get a COVID-19 vaccine, would you get it..."; they responded "I would not get the COVID-19 vaccine".

**3. Vaccine preference and work in the healthcare system**

As of July 2021, the vaccine preferences\(^4\) of healthcare workers are settling into two extremes, either already vaccinated or explicit refusal to get the vaccine. As more people get vaccinated, many individuals who were in the “wait and see” category have been getting vaccinated, leaving a hard core of unvaccinated resistant individuals. Likewise, non-healthcare workers are also gradually gravitating toward getting the vaccine, leaving a sizable fraction (20%) who are vaccine resistant\(^5\).
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...

<table>
<thead>
<tr>
<th></th>
<th>Healthcare worker</th>
<th>Not a healthcare worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already vaccinated</td>
<td>73%</td>
<td>64%</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>After at least some people I know</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>After most people I know</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Would not get the COVID-19 vaccine</td>
<td>15%</td>
<td>20%</td>
</tr>
</tbody>
</table>

National sample, N = 20,669, Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021
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 • Created with Datawrapper

Figure 3.

4. Healthcare worker vaccination rate by education level

As we’ve seen in every wave of surveys in the Covid States project, the respondent’s educational attainment level is strongly correlated with vaccine preference: people with higher educational attainment are more likely to get vaccinated. This pattern is apparent in figure 3, which indicates that those without a college degree are least likely to be vaccinated.

Healthcare worker vaccination rate by education level

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

<table>
<thead>
<tr>
<th></th>
<th>Healthcare worker</th>
<th>Not a healthcare worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School or Less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Masters Degree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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) https://covidstates.org • Created with Datawrapper

Figure 4.
5. Healthcare worker vaccine preferences by education level

The percentage of people who refuse to get the vaccine is highest among High School or less (21%) and Some College (18%). Compared with vaccine preference responses in our March report, we see that the magnitude of vaccine resistance among High School or Less has decreased by 12 points from 33% to 21% from March to July.

![Figure 5](image)

6. Healthcare worker vaccination rate by income

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

![Figure 6](image)
As household income increases, the likelihood of being vaccinated also goes up. Healthcare workers are more likely to be vaccinated than non-healthcare workers, with one exception: those earning $75k to $100k per year. While this could represent normal variation (i.e., noise), the departure from the overall trend is notable, and might reflect the orientation of the particular strata of healthcare workers in this salary range.

7. Healthcare worker vaccine preferences by income

Healthcare worker vaccine preferences by income

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

<table>
<thead>
<tr>
<th></th>
<th>Under 25K</th>
<th>25K to under 50K</th>
<th>50K to under 75K</th>
<th>75K to under 100K</th>
<th>Over 100K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already vaccinated</td>
<td>61%</td>
<td>67%</td>
<td>75%</td>
<td>74%</td>
<td>85%</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>5%</td>
<td>3%</td>
<td>4%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>After at least some people I know</td>
<td>4%</td>
<td>4%</td>
<td>2%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>After most people I know</td>
<td>9%</td>
<td>9%</td>
<td>4%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Would not get the COVID-19 vaccine</td>
<td>21%</td>
<td>17%</td>
<td>16%</td>
<td>12%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021
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

Figure 7.

Notice the high vaccine resistance rates among the lowest income segments: under 25k (21%) and 25k to 50k (17%). A sizable portion (16%) of healthcare professionals making 50k to 75k are also vaccine resistant.

8. Healthcare worker vaccination rate by race and ethnicity

Healthcare worker vaccination rate by race and ethnicity

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021
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) https://covidstates.org

Figure 8.
Among different races and ethnicities, the most vaccine resistant are African Americans, followed by Whites. Asian American healthcare workers and non-healthcare workers have the highest vaccination rate at 94% and 82% respectively.

9. Healthcare worker vaccine preferences by race and ethnicity

The highest levels of vaccine resistance exist among Africans Americans (17%) and Whites (18%). Compared to March, vaccine resistance has gone down among African Americans by 12% compared to only 5% among Whites. Therefore, we should monitor the magnitude of shifts in vaccine skepticism among all races, especially among Whites.

### 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...

<table>
<thead>
<tr>
<th></th>
<th>African American</th>
<th>White</th>
<th>Hispanic</th>
<th>Asian American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already vaccinated</td>
<td>65%</td>
<td>71%</td>
<td>73%</td>
<td>94%</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>4%</td>
<td>4%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>After at least some people I know</td>
<td>5%</td>
<td>2%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>After most people I know</td>
<td>8%</td>
<td>5%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Would not get the COVID-19 vaccine</td>
<td>17%</td>
<td>18%</td>
<td>11%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021

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 • Created with Datawrapper

Figure 9.

10. Healthcare worker vaccination rate by age

Vaccination rates decrease with age in both healthcare workers and the general population. In the 25-44 age segment, healthcare workers outpace non-healthcare workers by 17 points. At the high end 89% of healthcare workers 65 years old and older are vaccinated; at the low end, 67% of the youngest group of healthcare workers ages 18-24 are vaccinated.
In terms of vaccine preferences, 79% of older healthcare workers, aged 45 to 65, have opted to get vaccinated, with 14% who are still vaccine resistant. Vaccine resistance remains steady among those under 65 years old, at about 15%, with slightly higher levels of vaccine hesitancy among the younger cohorts.
12. Healthcare worker vaccination rate by party

Democrats (82%) are vaccinated at much higher rates than Republicans (66%) and Independents (66%). Comparing healthcare workers against non-healthcare workers of different parties, Democrats (5 points) exhibit a smaller gap than Republicans (10 points) or Independents (9 points).

Healthcare worker vaccination rate by party

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

![Bar graph showing healthcare worker vaccination rates by party.](image)

Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021

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) https://covidstates.org - Created with Datawraper

Figure 12.

13. Healthcare worker vaccine preferences by party

There is a wide gap in vaccine resistance between the parties, with 23% of Republican versus 6% of Democrat healthcare workers refusing to get the vaccine.

Healthcare worker vaccine preferences by party

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

<table>
<thead>
<tr>
<th></th>
<th>Democrat</th>
<th>Republican</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already vaccinated</td>
<td>82%</td>
<td>66%</td>
<td>66%</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>5%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>After at least some people I know</td>
<td>3%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>After most people I know</td>
<td>5%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Would not get the COVID-19 vaccine</td>
<td>6%</td>
<td>23%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021

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 - Created with Datawraper

Figure 13.
14. Healthcare worker vaccination rate by residential area

Whereas many urban (75%) and suburban (74%) healthcare workers are already vaccinated, only 63% of rural workers have been vaccinated. As rural communities with persistently low vaccination rates suffer the brunt of the COVID Delta variant outbreaks this summer, this will amplify the impacts of the disease within these communities.

Figure 14.

15. Healthcare worker vaccine preferences by residential area

Vaccine resistance among rural healthcare workers is 25%. This has gone down from 32% since March. Unvaccinated healthcare workers are propagating and contributing to the severity, speed, and spread of outbreaks in rural communities that also are struggling with low vaccination rates among the general population (53%).

Figure 15.
16. Healthcare worker vaccination rate by region of the country

Healthcare workers in the Northeast have the highest vaccination rate of any region, at 80% followed by the West (74%), Midwest (72%), and South (68%). The difference between healthcare workers and non-healthcare workers are similar for all the regions at around 6 points, except for the South, which is at around 10 points.

Healthcare worker vaccination rate by region

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

Figure 16.

17. Healthcare worker vaccine preferences by region of the country

In terms of vaccine attitudes, similar shares of healthcare workers in the South (17%), Midwest (16%), and West (15%) refuse to get the vaccine. The Northeast is the outlier with only 10% of healthcare workers who are vaccine resistant.

Healthcare worker vaccine preferences by region

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

Figure 17.
18. Healthcare worker vaccination rate by gender

Female healthcare workers (69%) are less likely to be vaccinated than male workers (79%).

**Healthcare worker vaccination rate by gender**

Have you received a COVID-19 vaccine? Yes, either 1 or 2 doses.

![Bar chart showing vaccination rates by gender.](image)

*Healthcare workers, N = 1591, Time period: 06/09/2021-07/07/2021*

*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) https://covidstates.org • Created with Datawrapper*

**Figure 18.**

19. Healthcare worker vaccine preferences by gender

Vaccine resistance is notably higher among female healthcare workers (18%) than male workers (9%).

**Healthcare worker vaccine preferences by gender**

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

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already vaccinated</td>
<td>73%</td>
<td>79%</td>
<td>69%</td>
</tr>
<tr>
<td>As soon as possible</td>
<td>3%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>After at least some people I know</td>
<td>6%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>After most people I know</td>
<td>6%</td>
<td>3%</td>
<td>18%</td>
</tr>
<tr>
<td>Would not get the COVID-19 vaccine</td>
<td>15%</td>
<td>9%</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Healthcare workers, N = 1,591, Time period: 06/09/2021-07/07/2021*

*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 • Created with Datawrapper*

**Figure 19.**
20. Demographic groups with the highest vaccine resistance

The most vaccine resistant groups are shown in descending order in figure 20. It is striking that all of the vaccine resistant groups have had sharp decreases in vaccine resistance. From March to July, groups with the greatest decrease in vaccine resistance are: High School or Less (12 points), African American (12 points), and Income Under 25k (11 points). The groups with the least decrease are: Some College (5 points), White (5 points), Income 25k-50k (6 points), Income 50k-75 (7 points), and Rural (7 points). Public health policy and communication efforts should place emphasis on reaching these demographic groups.

**Vaccine resistance among healthcare workers: change from March to June**

If you were able to choose when to get a COVID-19 vaccine, would you get it...? I would not get the COVID-19 vaccine.

![Figure 20. Vaccine resistance among healthcare workers: change from March to June](image-url)

Healthcare workers, June N = 1591, Time period: 06/09/2021-07/07/2021; March N = 2345, Time period: 02/09/2021-03/01/2021

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) https://covidstates.org - Created with Datavizr
In summary, reports published in February and March, along with this current study reveal how healthcare workers’ attitudes about getting themselves vaccinated correlate with their demographic characteristics. For each subgroup, we also compared the differences between vaccination rates among healthcare workers and non-healthcare workers, showing that healthcare workers are currently more vaccine enthusiastic than the general population--although prior to vaccines being available vaccine attitudes of the two groups were nearly identical. Furthermore, we analyze the subgroups with the highest rate of vaccine resistance (those who answered: "I would not get the COVID-19 vaccine") and how much their attitudes towards vaccines have changed since March; we found substantial declines in vaccine resistance during that period.

Over the summer, as the Delta variant devastates communities with low vaccination rates, especially rural areas in Republican states, our survey findings focus attention on vaccine resistance attitudes among rural healthcare workers (25%, down 7 points since March) and Republican healthcare workers (23%, down 9 points since March). Comparing survey responses in July and March, specific segments of healthcare workers – those with High School or Less education (12 points), African American (12 points), and Under 25k income (11 points) – have all become substantially more receptive to the vaccine.

Beyond that, these numbers showing that healthcare workers are 27% unvaccinated and 15% vaccine resistant suggest that, absent mandates, most of the currently unvaccinated healthcare workers will remain unvaccinated, potentially fueling outbreaks in healthcare facilities. Given the current surge of cases due to the Delta variant, this will continue to put pressure on health care providers to mandate vaccination for their staff.