



## Vaccine Confidence and Demand – Progress and Barriers among US Healthcare Workers

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Medical Officer, Immunization Services Division

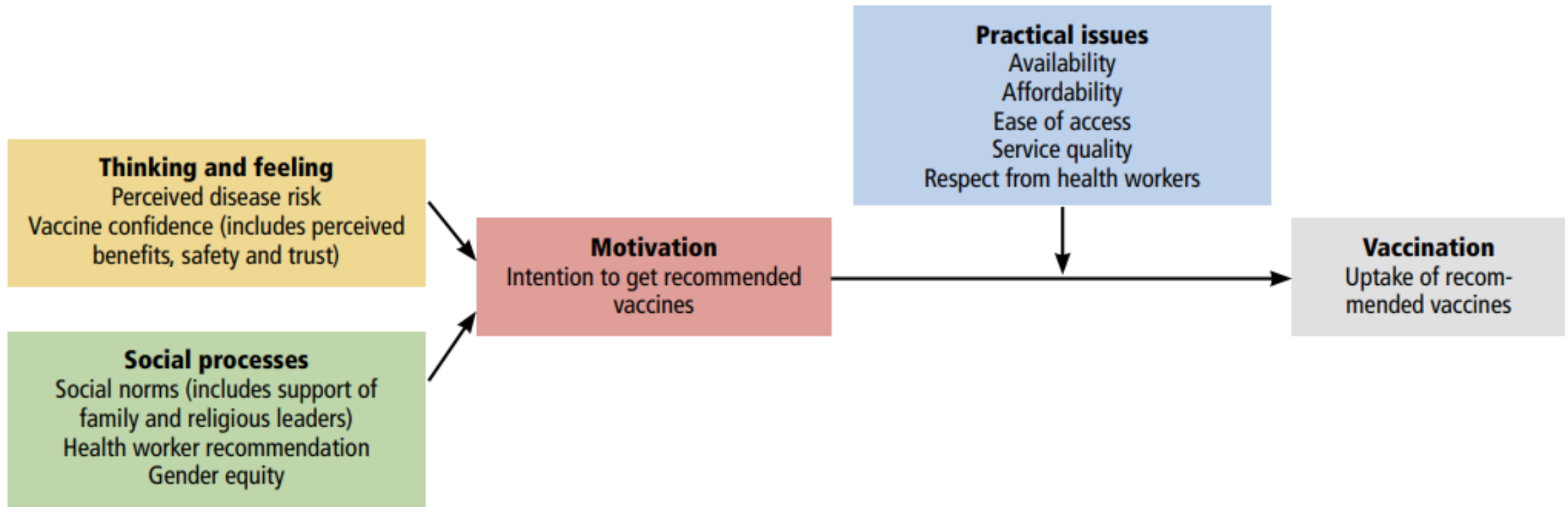
*previously*

lead for Vaccine Confidence & Demand, CDC COVID-19 response

lead for Vaccine Confidence & Demand, CDC Immunization Services Division

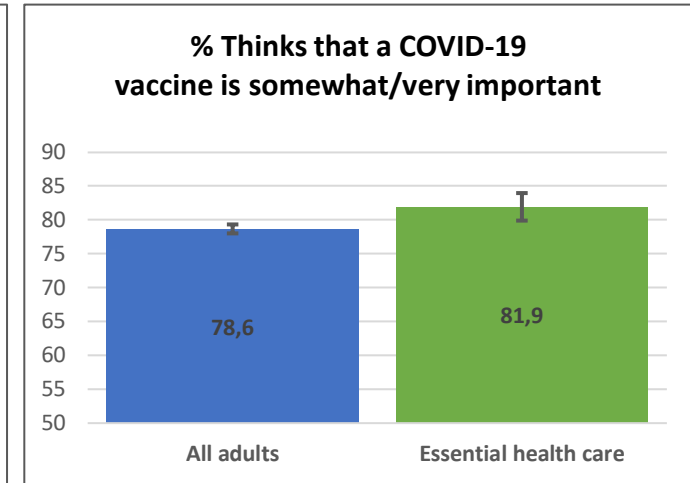
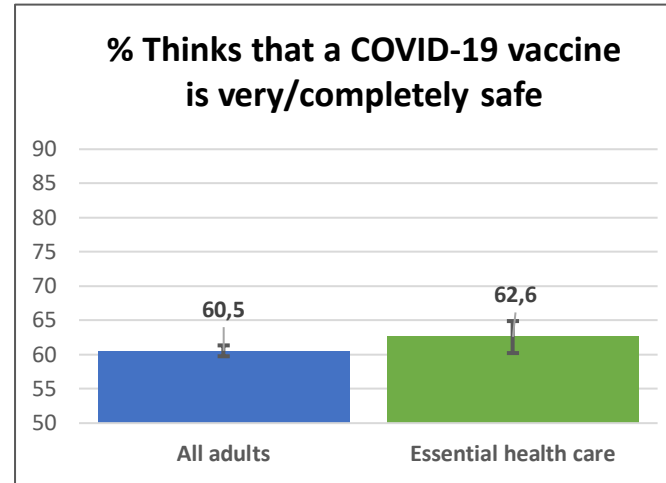
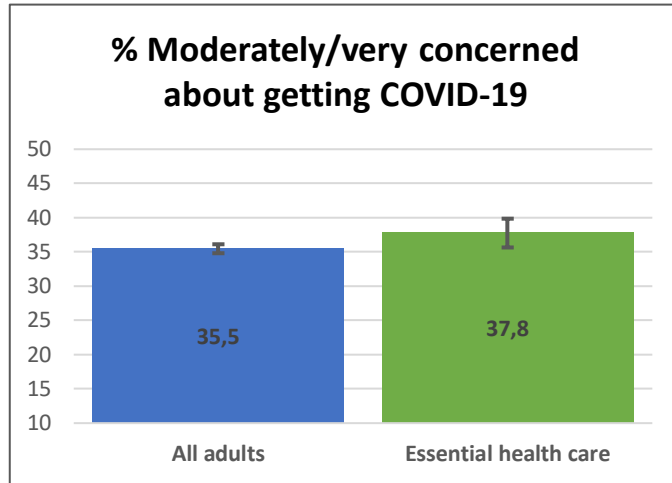
# Conceptualizing Vaccine Uptake among Healthcare Workers

# Behavioral and Social Drivers of Vaccine Uptake (BeSD)



# BeSD for US Healthcare Workers – June 27 – July 31, 2021

## Thinking and feeling

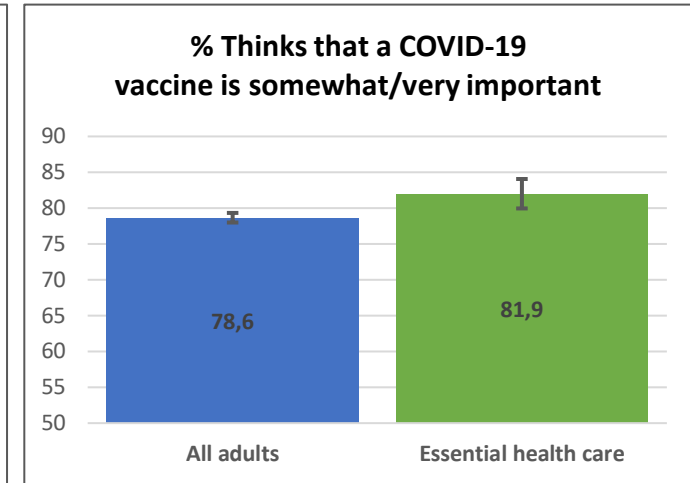
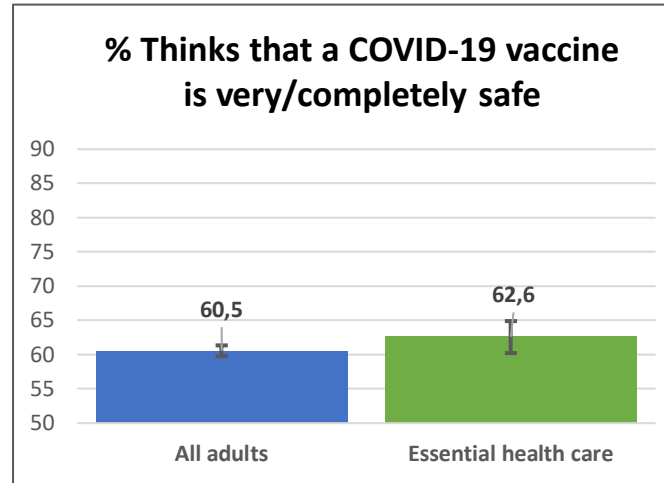
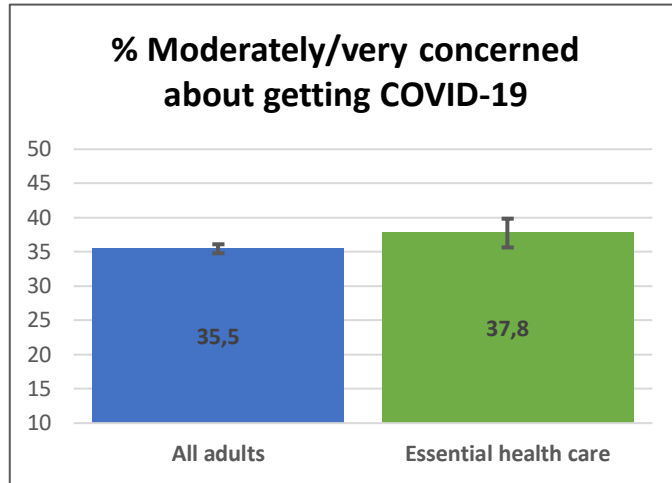


Centers for Disease Control and Prevention. About the National Immunization Surveys. [cdc.gov/vaccines/imz-managers/nis/about.html](https://www.cdc.gov/vaccines/imz-managers/nis/about.html). Accessed October 20, 2023

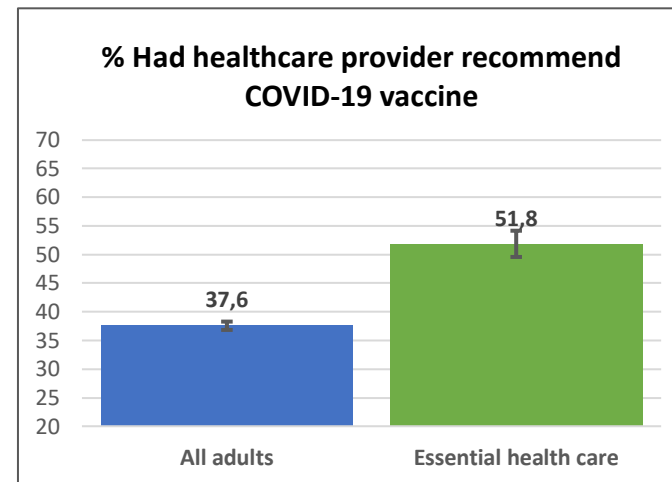
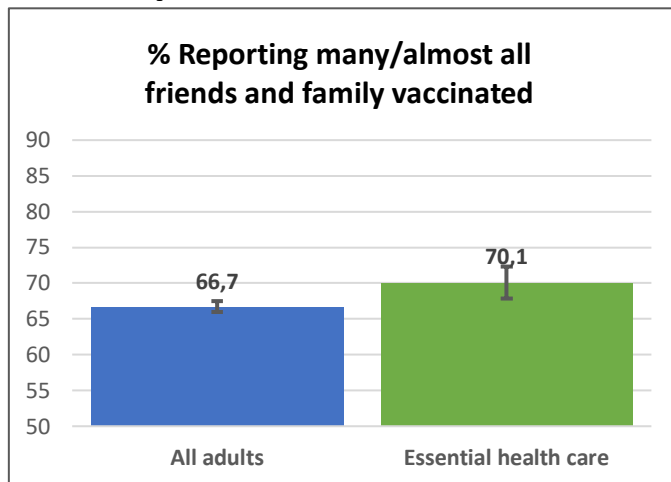
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# BeSD for US Healthcare Workers – June 27 – July 31, 2021

## Thinking and feeling



## Social processes

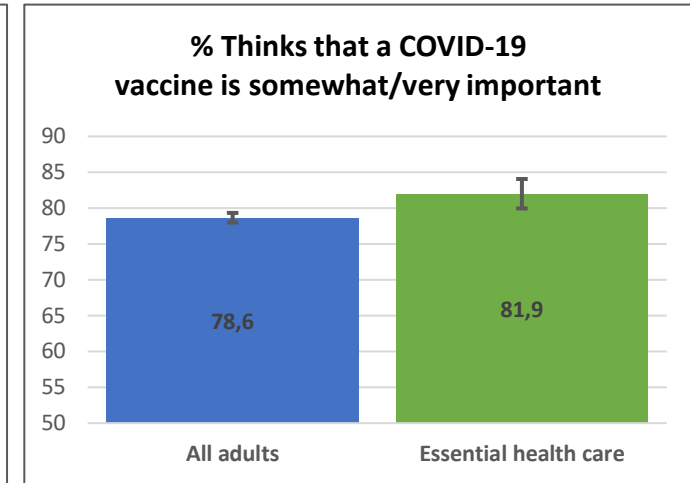
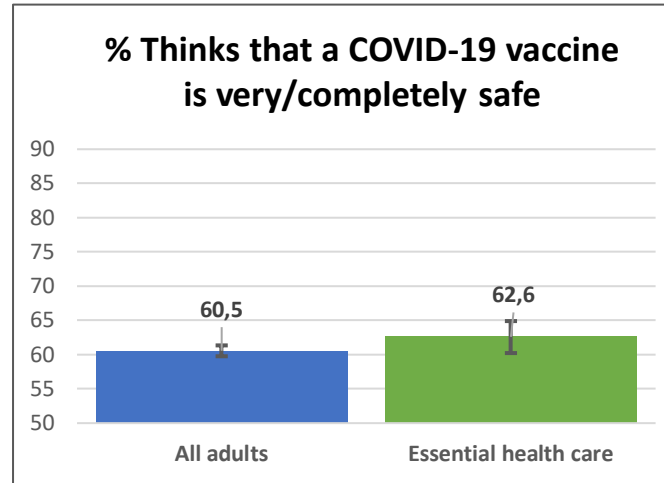
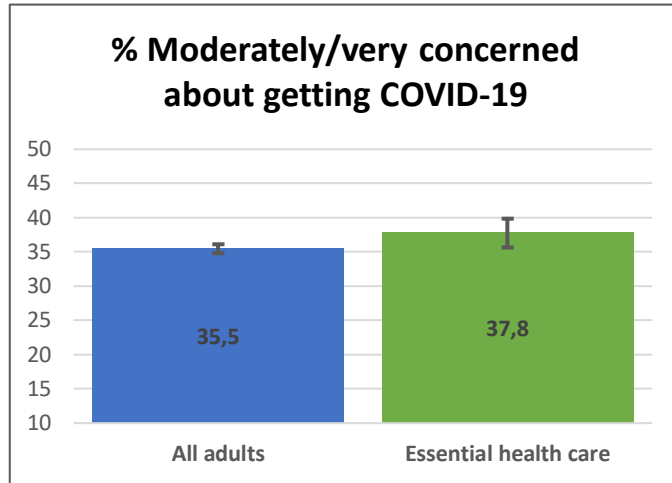


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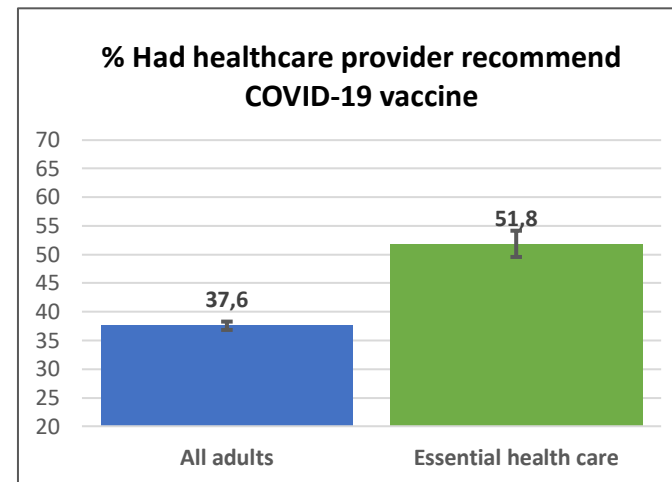
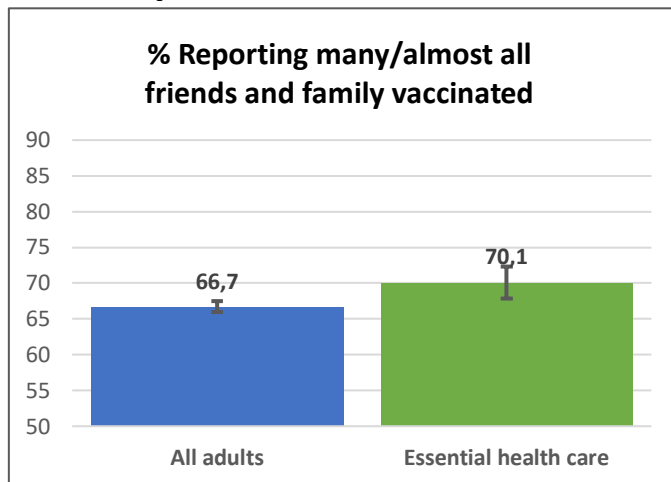
Centers for Disease Control and Prevention. COVID VaxView [cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html](https://cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html). Accessed October 20, 2023

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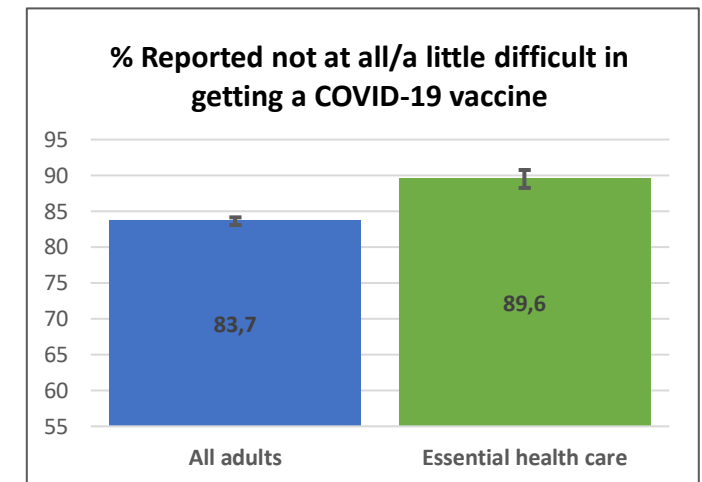
## Thinking and feeling



## Social processes

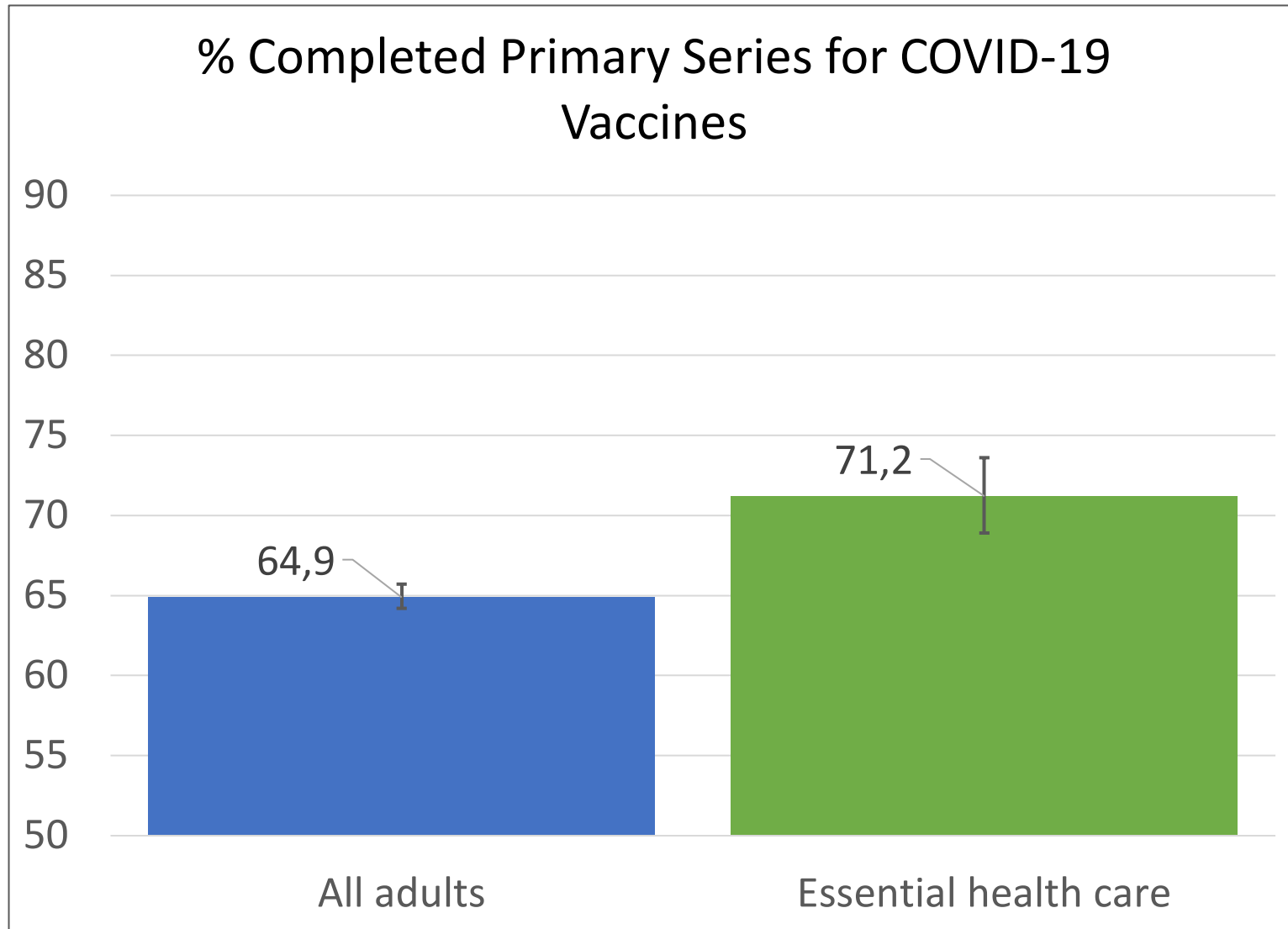


## Practical issues



# COVID-19 Vaccine Uptake – US Adults & Healthcare Workers

## June 27 – July 31, 2021

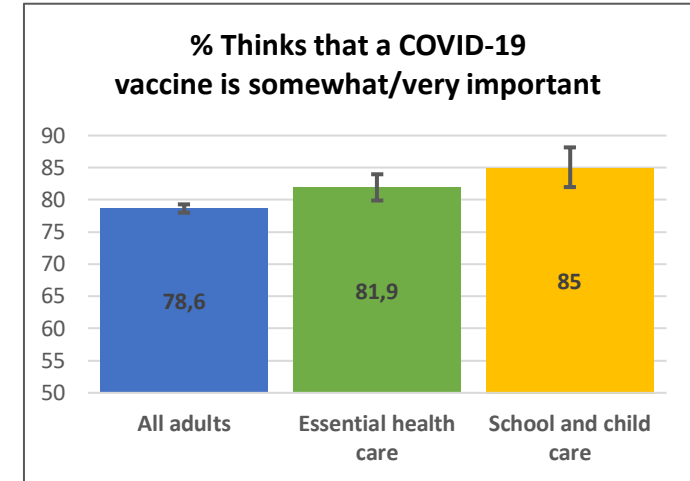
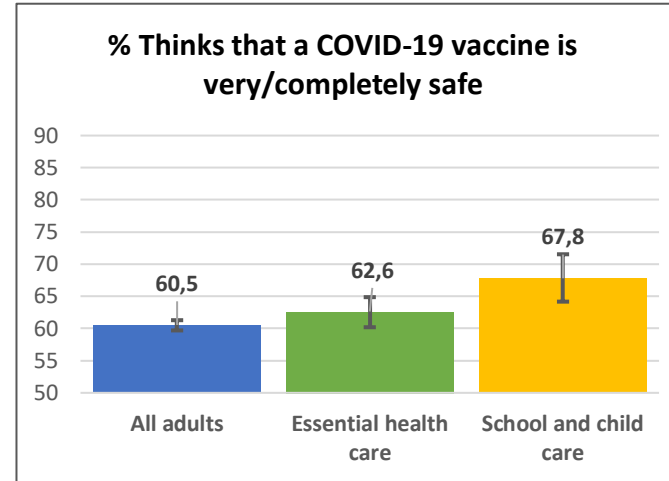
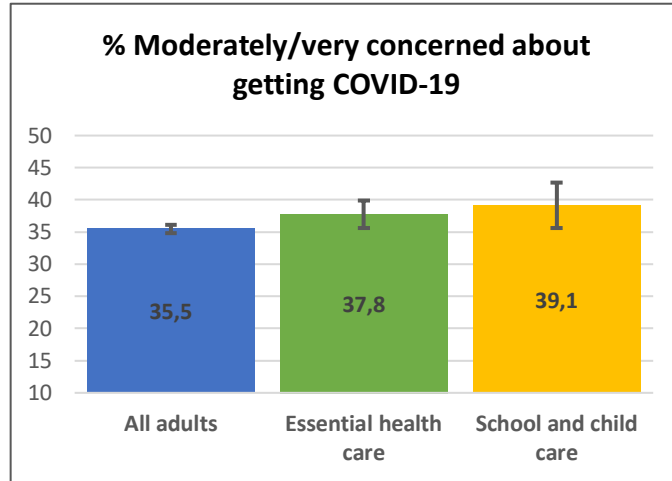


Centers for Disease Control and Prevention. About the National Immunization Surveys. [cdc.gov/vaccines/imz-managers/nis/about.html](https://cdc.gov/vaccines/imz-managers/nis/about.html). Accessed October 20, 2023

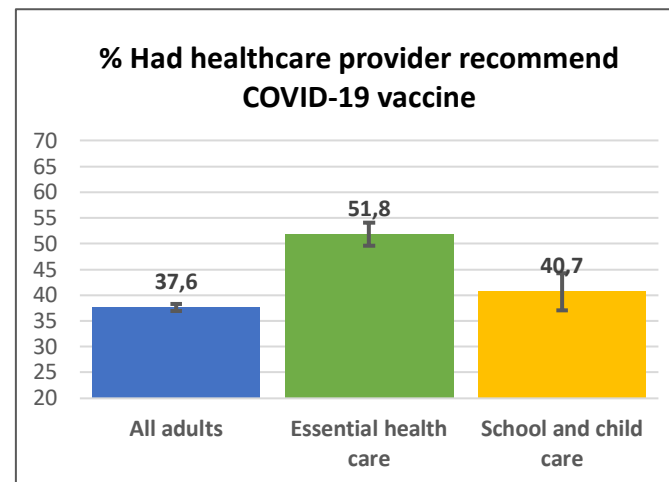
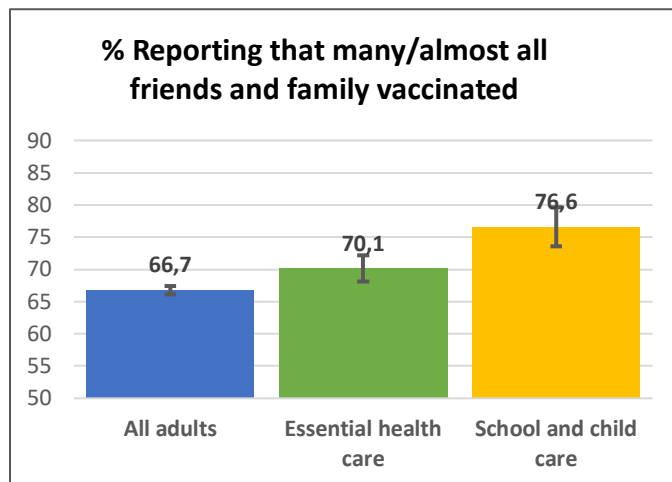
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# BeSD for US adults in Selected Occupations – June 27 – July 31, 2021

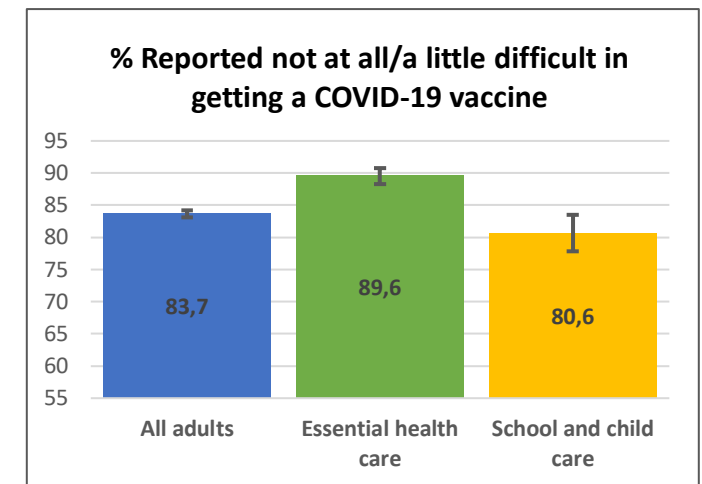
## Thinking and feeling



## Social processes



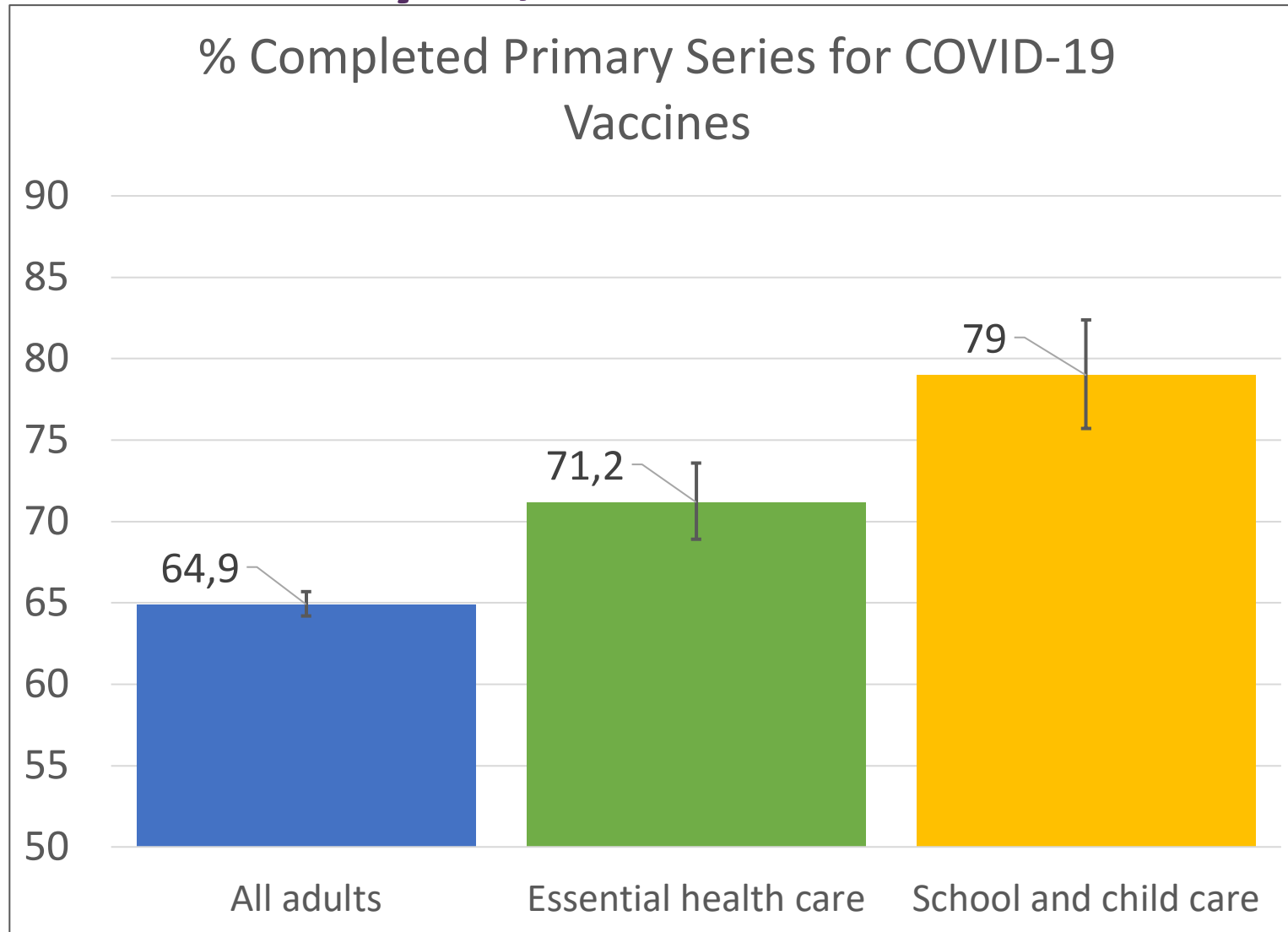
## Practical issues





# COVID-19 Vaccine Uptake – US Adults in Selected Occupations

## June 27 – July 31, 2021

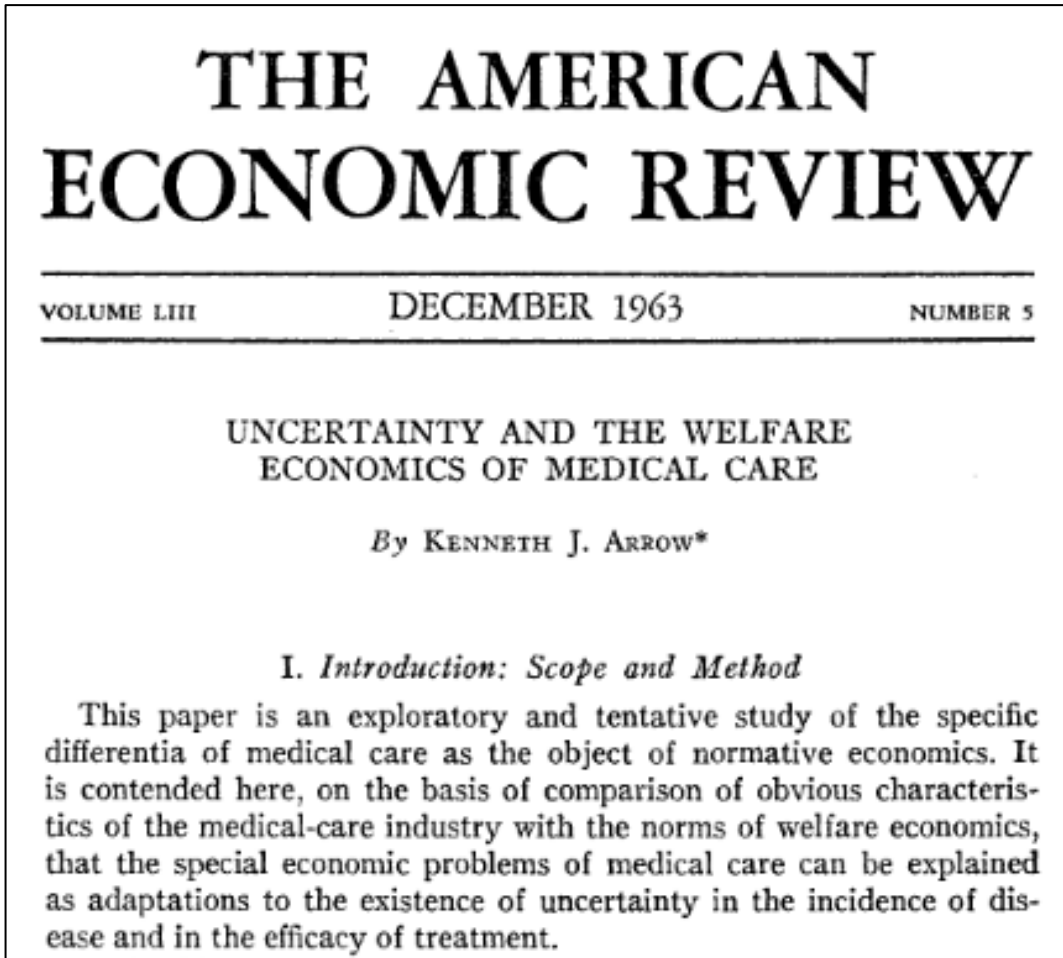


Centers for Disease Control and Prevention.  
About the National Immunization Surveys. [cdc.gov/vaccines/imz-managers/nis/about.html](https://cdc.gov/vaccines/imz-managers/nis/about.html). Accessed October 20, 2023

Centers for Disease Control and Prevention. COVID VaxVlew [cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html](https://cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html). Accessed October 20, 2023

**Why did US healthcare workers (HCW) have lower vaccine uptake as compared to US childcare and educational workers?**

# It wasn't supposed to be this way



Individuals with

1. Greater exposure to disease
2. Greater access to free vaccines
3. More information

Should be have higher vaccine coverage!

# HCWs is a label that contains substantial variability

**TABLE 1. COVID-19 vaccination coverage of health care professionals, by job category, in 300 long-term care facilities reporting to the National Healthcare Safety Network — United States, March 1–April 4, 2021**

HCP job category	No. of HCP	No. (%)		Recent SARS-CoV-2 infection
		Fully vaccinated	Declined vaccination	
Aides*	12,670	5,778 (45.6)	4,204 (33.2)	382 (3.0)
Ancillary services employees†	9,116	5,337 (58.5)	2,374 (26.0)	172 (1.9)
Nurses§	8,622	4,887 (56.7)	2,359 (27.4)	196 (2.3)
Therapists¶	3,028	2,095 (69.2)	527 (17.4)	51 (1.7)
Physicians and advanced practice providers**	1,284	964 (75.1)	142 (11.1)	9 (0.7)
Other HCP††	5,492	3,764 (68.5)	794 (14.5)	78 (1.4)
<b>All staff members</b>	<b>40,212</b>	<b>22,825 (56.8)</b>	<b>10,400 (25.9)</b>	<b>888 (2.2)</b>

**Abbreviation:** HCP = health care personnel.

\* Certified nursing assistants, nurse aides, medication aides, and medication assistants.

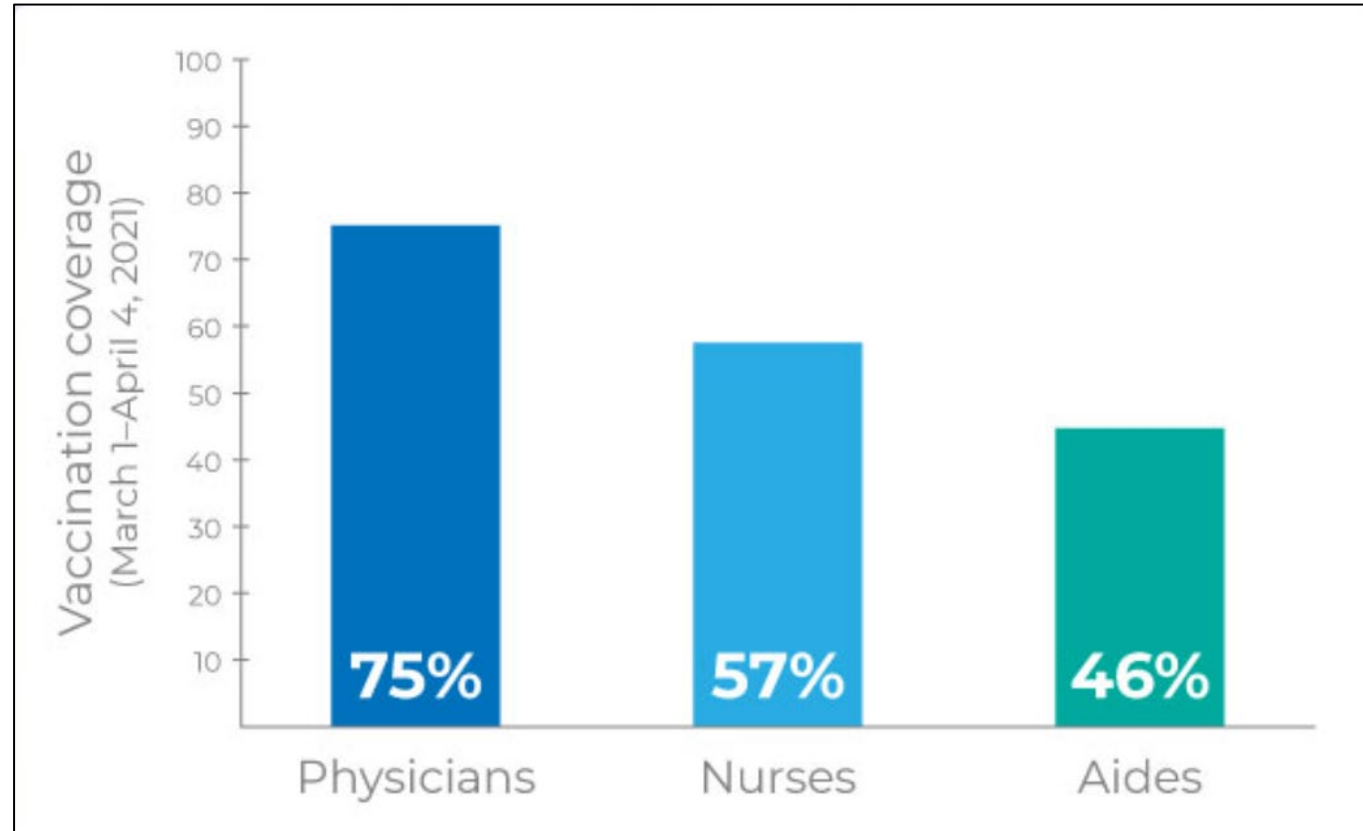
† Environmental, laundry, maintenance, and dietary services.

§ Registered nurses and licensed practical/vocational nurses.

¶ Respiratory, occupational, physical, speech, and music therapists, and therapy assistants.

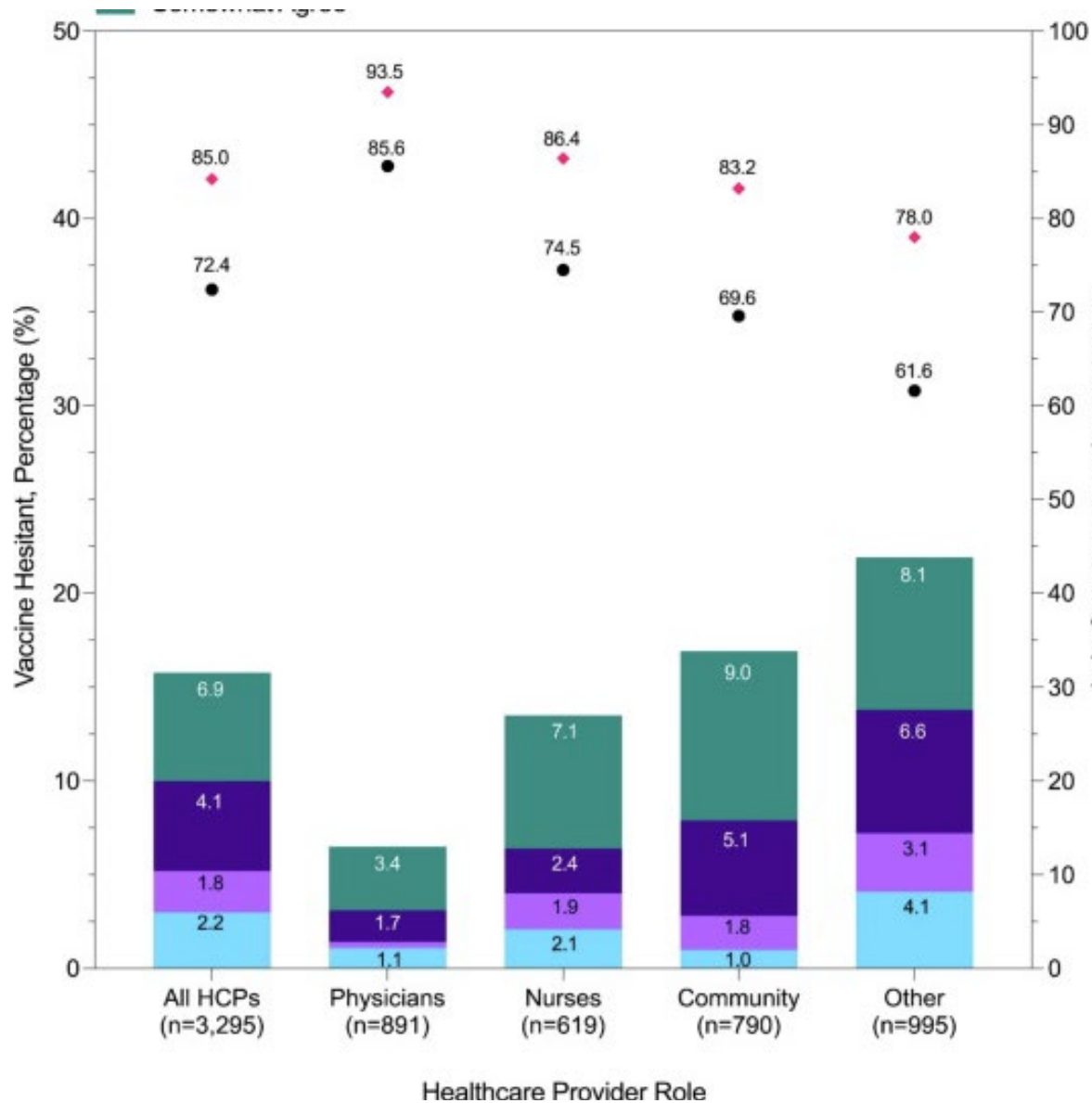
\*\* Physicians, residents, fellows, advanced practice nurses, and physician assistants.

†† Personnel not included in the preceding categories, including contract staff members, students, and other nonemployees.



Lee JT, Althomsons SP, Wu H, et al. Disparities in COVID-19 Vaccination Coverage Among Health Care Personnel Working in Long-Term Care Facilities, by Job Category, National Healthcare Safety Network — United States, March 2021. *MMWR Morb Mortal Wkly Rep* 2021;70:1036–1039. DOI: [http://dx.doi.org/10.15585/mmwr.mm7030a2external\\_icon](http://dx.doi.org/10.15585/mmwr.mm7030a2external_icon).

# HCWs is a label that contains substantial variability



23 country survey

Vaccine hesitancy was defined as

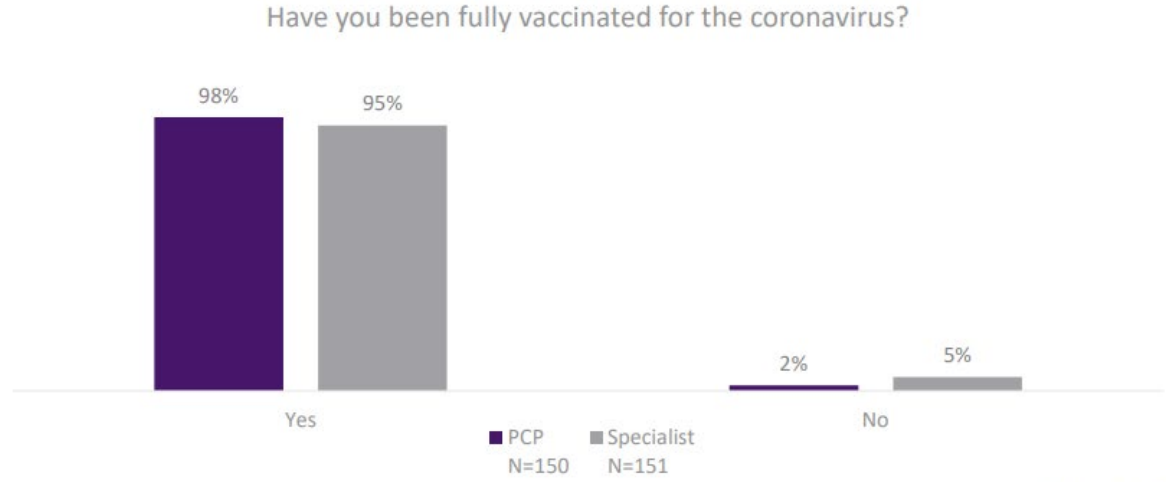
- Unvaccinated for COVID-19 AND
- In response to “I will take the COVID-19 vaccine when it is available to me.”
  - no opinion,
  - somewhat disagree, or
  - strongly disagree

eigh JP, Moss SJ, White TM, Picchio CA, Rabin KH, Ratzan SC, Wyka K, El-Mohandes A, azarus JV. Factors affecting COVID-19 vaccine hesitancy among healthcare providers in 13 countries. Vaccine. 2022 Jul 29;40(31):4081-9.

# Social media allow for alternate intra-profession norms

AMA-commissioned MedScape survey – June 2021

## There is no significant difference in vaccination rates between PCPs and Specialists

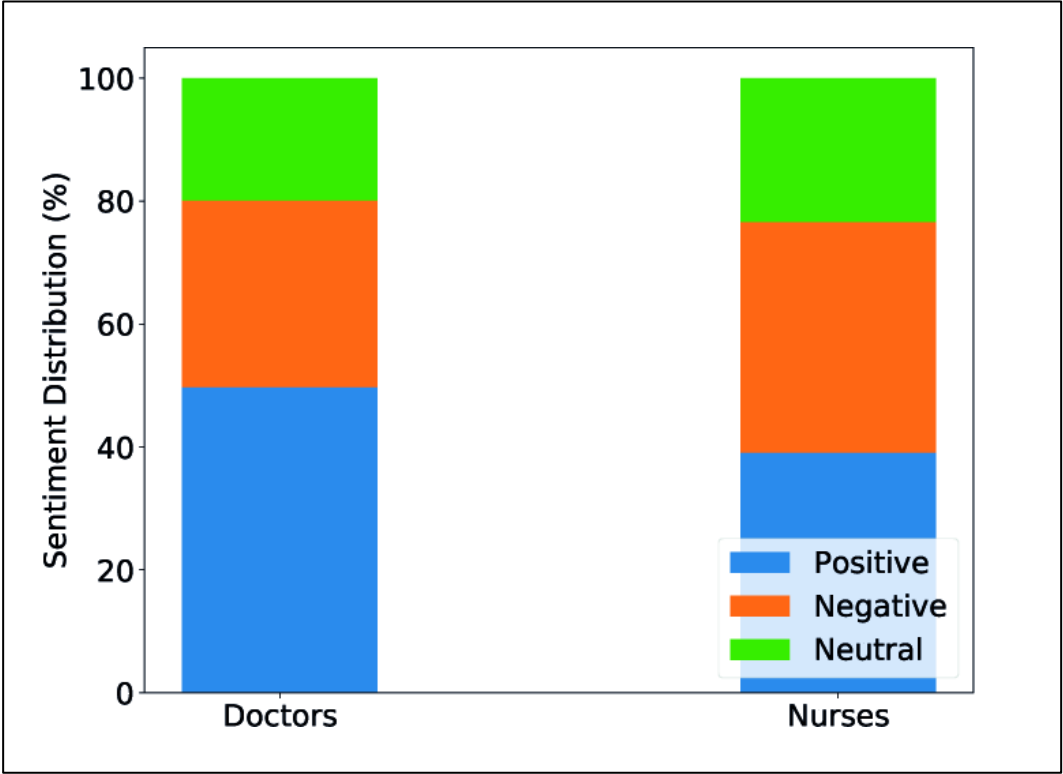


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© 2021 American Medical Association. All rights reserved. Q1. Have you been fully vaccinated for the coronavirus? S2. What is your current medical specialty?



Sentiment analysis of Twitter data from medical professionals on COVID-19 Vaccines, September – November 2021



Ahamed SH, Shakil S, Lyu H, Zhang X, Luo J. Doctors vs. Nurses: Understanding the Great Divide in Vaccine Hesitancy among Healthcare Workers. In 2022 IEEE International Conference on Big Data (Big Data) 2022 Dec 17 (pp. 5865-5870). IEEE.

# HCWs are not immune to wider-community trends

**Table 4**

Multivariate logistic regression results of booster uptake

	Odds ratio	<i>P</i> -value	[95% conf. interval]
Partisan self-identification	0.396	.000	0.306 0.514
Age	1.040	.000	1.024 1.055
Percent of time with patients	0.934	.316	0.818 1.067
COVID in last 12 mo	0.487	.000	0.336 0.706
Flu shot last season	5.843	.000	2.707 12.611
Evangelical	0.821	.304	0.564 1.195
Constant	1.297	.699	0.347 4.855
Pseudo r-square	0.164		
Number of cases	713		

**What can we do?**

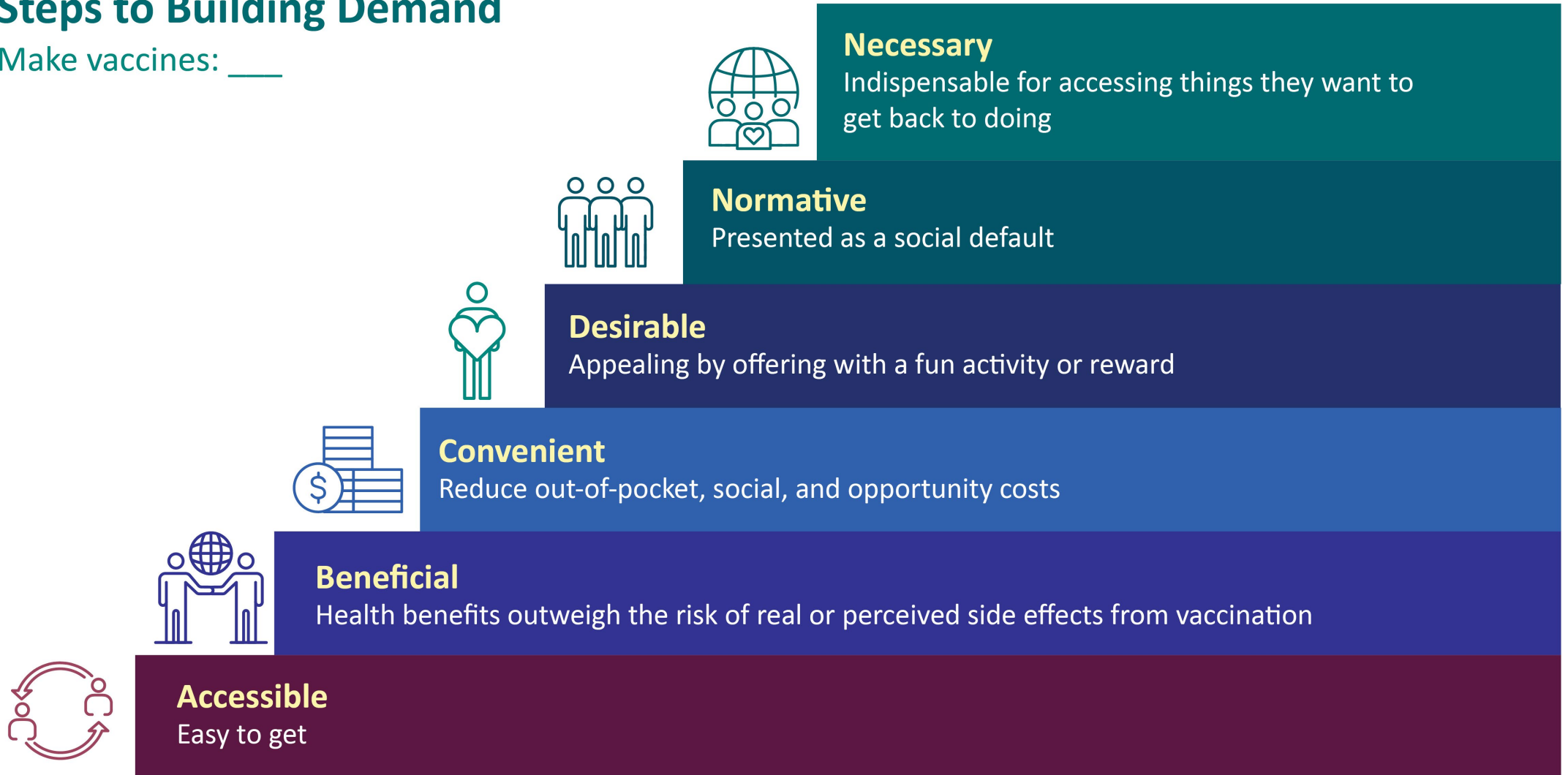




# “Ladder of demand”

## Steps to Building Demand

Make vaccines: \_\_\_\_



# Requirements and incentives – summarized by National Academies

## BOX 4

### Considerations When Developing Vaccine Requirements

- **Public health and ethical considerations have been applied:** Before implementing requirement programs, consideration needs to be given to certain public health and ethical criteria, including ensuring that the safety of vaccines has been communicated, other mitigation strategies have not worked, barriers to access have been addressed, and voluntary uptake among groups subject to the requirements has not reached sufficient levels.
- **Requirements are balanced:** Requirement programs need to balance excessive leniency, which allows people to exempt themselves easily, and excessive strictness, which does not allow any exemptions at all.
- **Requirements are targeted:** Compared with requirements applied to the general population, targeted requirements focused on subpopulations are more likely to succeed as they have a limited scope and are easier to implement and enforce. Examples of such targeted requirements include school and employer mandates.

National Academies of Sciences, Engineering, and Medicine. Increasing Uptake of COVID-19 Vaccination Through Requirement and Incentive Programs.

MARCH  
2022

INCREASING UPTAKE OF COVID-19  
VACCINATION THROUGH REQUIREMENT AND  
INCENTIVE PROGRAMS

Authors: Noel T. Brewer\*  
Alison Buttenheim\*\*  
Anica Law\*\*\*  
Saad B. Omer\*\*\*\*

This rapid expert consultation was produced by the Societal Experts Action Network (SEAN), an activity of the National Academies of Sciences, Engineering, and Medicine that is sponsored by the National Science Foundation and the Alfred P. Sloan Foundation. SEAN links researchers in the social, behavioral, and economic sciences with decision makers to respond to policy questions arising from the COVID-19 pandemic. This project is a collaboration with the National Academies' Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats, which is sponsored by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response.

SEAN is interested in your feedback. Was this rapid expert consultation useful? For further inquiries regarding this rapid expert consultation or to send comments, contact [sean@nas.edu](mailto:sean@nas.edu) or (202) 334-3440.

\*Gillings Distinguished Professor in Public Health, Gillings School of Global Public Health, University of North Carolina

\*\*Associate Professor of Nursing and Health Policy, University of Pennsylvania

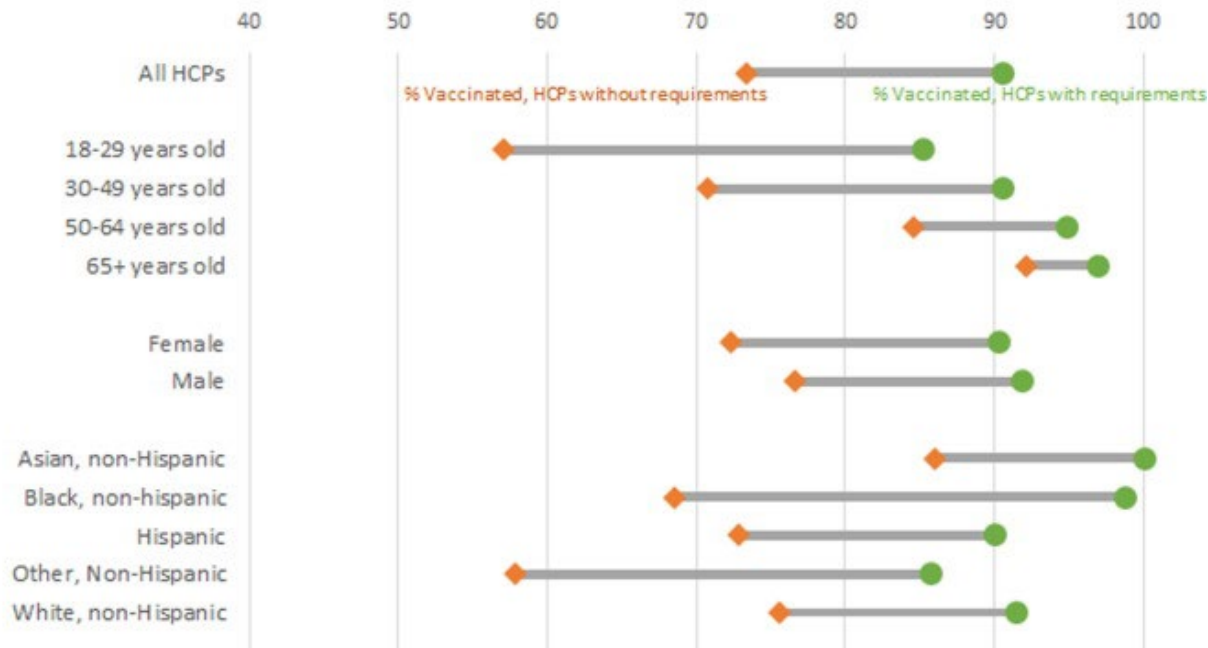
\*\*\*Assistant Professor, Boston University School of Medicine

\*\*\*\*Director, Yale Institute for Global Health

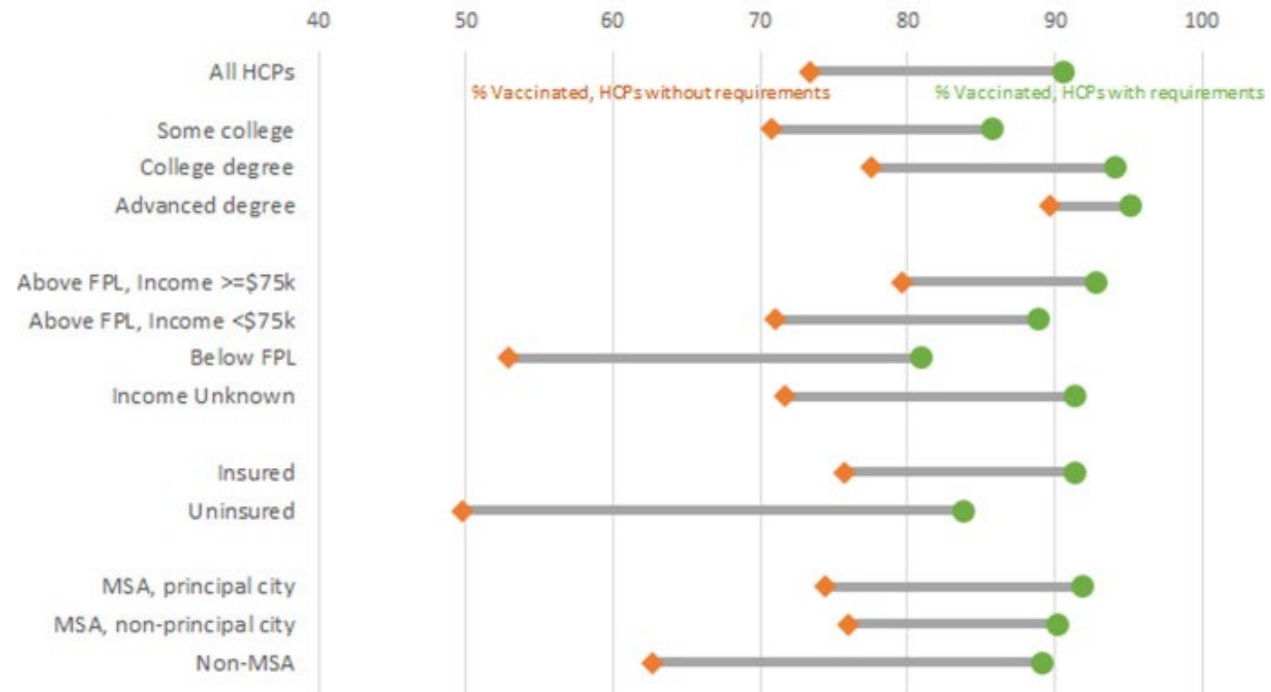
The National  
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SCIENCES  
ENGINEERING  
MEDICINE

# HCW Vaccine Requirements Associated with Greater Equity

COVID-19 vaccination coverage of healthcare personnel, by employer vaccination requirement status and sociodemographic characteristics, NIS-ACM, August 1 – September 25, 2021



COVID-19 vaccination coverage of healthcare personnel, by employer vaccination requirement status and sociodemographic characteristics, NIS-ACM, August 1 – September 25, 2021



Abbreviations: FPL = Federal Poverty Level; MSA = metropolitan statistical area; Ref = referent group; HCP = healthcare personnel.

Lee JT, Hu SS, Zhou T, Bonner KE, Kriss JL, Wilhelm E, Carter RJ, Holmes C, de Perio MA, Lu PJ, Nguyen KH. Employer requirements and COVID-19 vaccination and attitudes among healthcare personnel in the US: Findings from National Immunization Survey Adult COVID Module, August–September 2021. *Vaccine*. 2022 Dec 5;40(51):7476-82.

# HCW Requirements Associated with More Positive Vaccine Sentiments

**Table 2**

COVID-19 vaccination status and attitudes among healthcare personnel, by COVID-19 vaccine requirement, national immunization survey-adult COVID module, United States, August 1 – September 25 2021.

Variable	HCP with Employer Requirements % (95% CI)	HCP without Employer Requirements % (95 %CI)	Crude Prevalence Ratio (95 %CI)	Adjusted Prevalence Ratio <sup>§</sup> (95 %CI)
<b>≥1 dose Vaccinated</b>	90.5 (88.7–92.1)	73.3 (71.1–75.3)	1.24 (1.19–1.28)*	1.21 (1.17–1.25)*
<b>Unvaccinated, “Definitely get a vaccine”</b>	1.9 (1.4–2.7)	1.8 (1.3–2.4)	1.09 (0.68–1.75)	1.19 (0.73–1.96)
<b>Unvaccinated, more reachable</b>	3.3 (2.3–4.5)	8.7 (7.3–10.4)	0.37 (0.26–0.54)*	0.39 (0.26–0.58)*
<b>Unvaccinated, reluctant</b>	4.3 (3.2–5.7)	16.2 (14.5–18.1)	0.27 (0.20–0.36)*	0.27 (0.20–0.38)*
<b>Vaccine is “very” or “somewhat” important to protect yourself</b>	89.6 (87.9–91.1)	79.6 (77.6–81.5)	1.13 (1.09–1.16)*	1.10 (1.07–1.13)*
<b>Vaccine is “completely” or “very safe”</b>	68.3 (65.8–70.7)	60.1 (57.8–62.3)	1.14 (1.08–1.20)*	1.11 (1.05–1.16)*
<b>“Very” or “Strongly agree” with anticipated regret statement</b>	62.9 (60.5–65.2)	50.9 (48.7–53.1)	1.23 (1.17–1.31)*	1.18 (1.11–1.25)*

Abbreviations: CI = confidence interval.

\* p < 0.05 for prevalence ratio.

<sup>§</sup> Prevalence ratio comparing vaccination uptake and attitudes among health care personnel with COVID-19 vaccine requirement with rates among those without COVID-19 vaccine requirement, adjusted for age, sex, race/ethnicity, and education level.

# Infodemic Monitoring and Response

## Vaccine misinformation one of the biggest public health threats, CDC director says

As the largest measles outbreak in the U.S. since 2019 continues in Ohio, a growing number of parents are opposed to school vaccination requirements, a new survey finds.



<https://www.nbcnews.com/health/health-news/cdc-director-warns-vaccine-misinformation-public-health-threat-rcna61245>

## Social Listening and Monitoring Tools



[https://www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence/rca-guide/downloads/CDC\\_RCA\\_Guide\\_2021\\_Tools\\_AppendixE\\_SocialListening-Monitoring-Tools-508.pdf](https://www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence/rca-guide/downloads/CDC_RCA_Guide_2021_Tools_AppendixE_SocialListening-Monitoring-Tools-508.pdf)

# Establishing Trust

**EXCLUSIVE**

HEALTH NEWS

## The new CDC director has a plan to fix the agency's trust problem

"It's time for a new chapter" at the federal health agency, says Dr. Mandy Cohen.

NEW CDC director discusses handling distrust in agency

08:00

NEWSCASTER  
01:34 / 05:59

NEW CDC DIRECTOR DISCUSSES HANDLING DISTRUST IN AGENCY IN EXCLUSIVE ONE-ON-ONE INTERVIEW

NBC NEWS NOW CC



**Thank you!!**

For more information, contact CDC  
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TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

