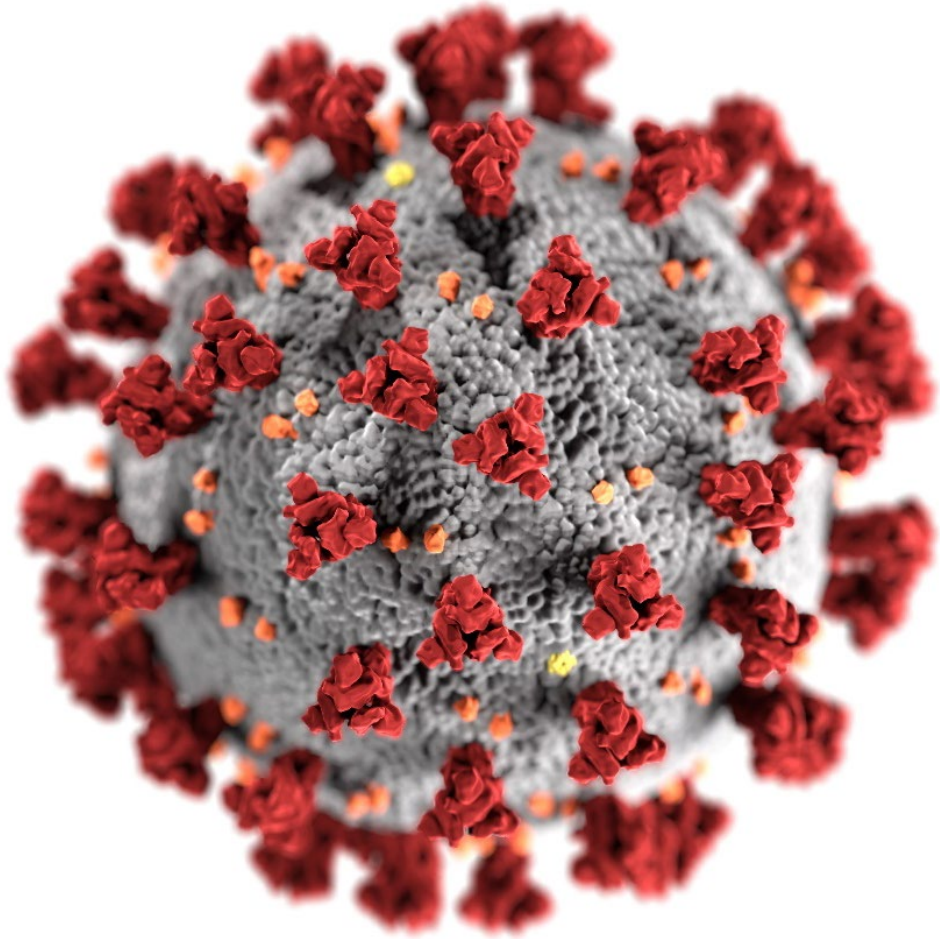
Update on COVID-19 Vaccines



Sarah Meyer, MD, MPH
Chief Medical Officer *(acting)*
National Center for Immunization and Respiratory Diseases

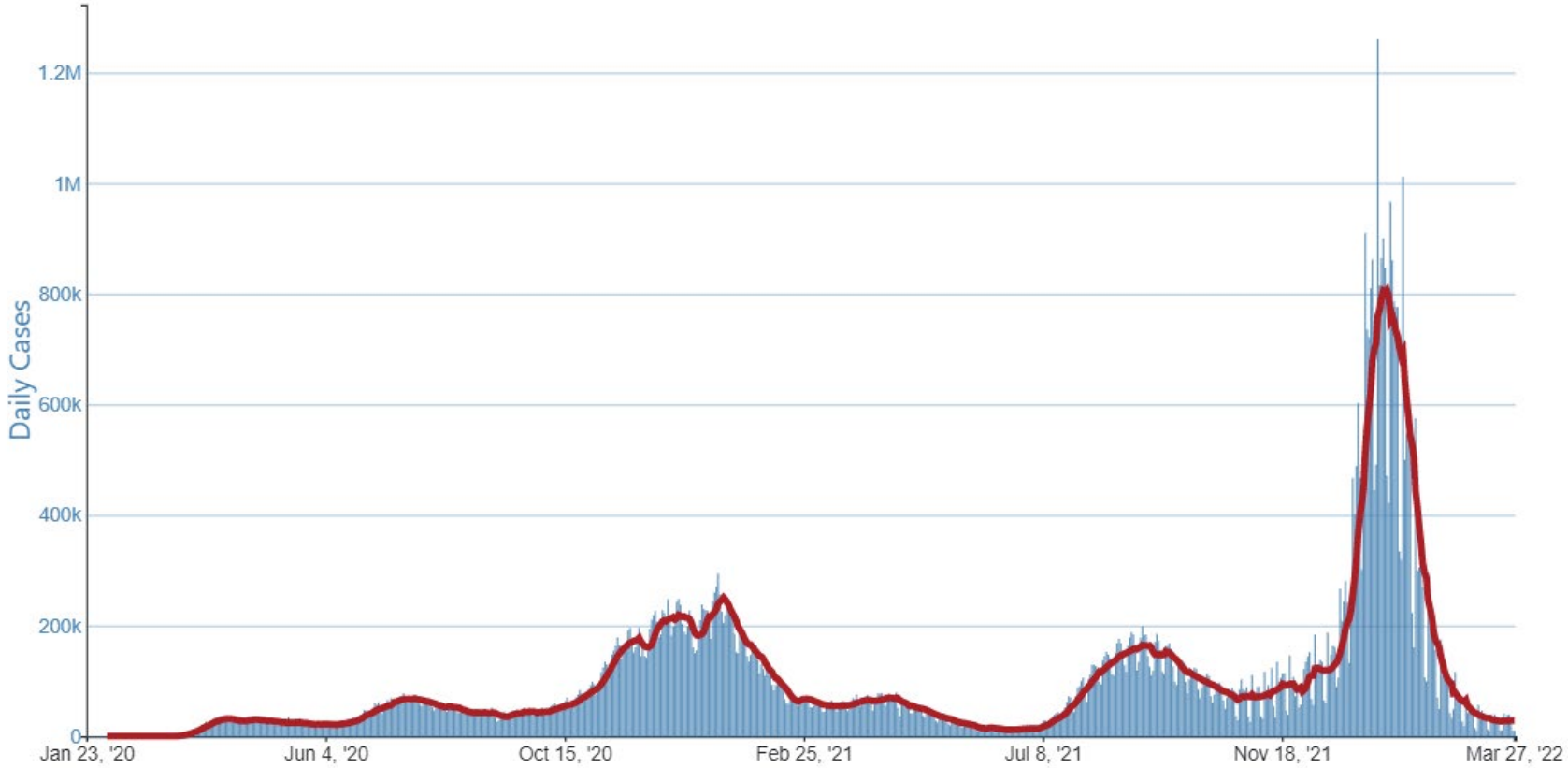
April 5, 2022

cdc.gov/coronavirus

Agenda

- Update on COVID-19 disease and vaccination
- Updates to CDC's Interim Clinical Considerations for COVID-19 Vaccines

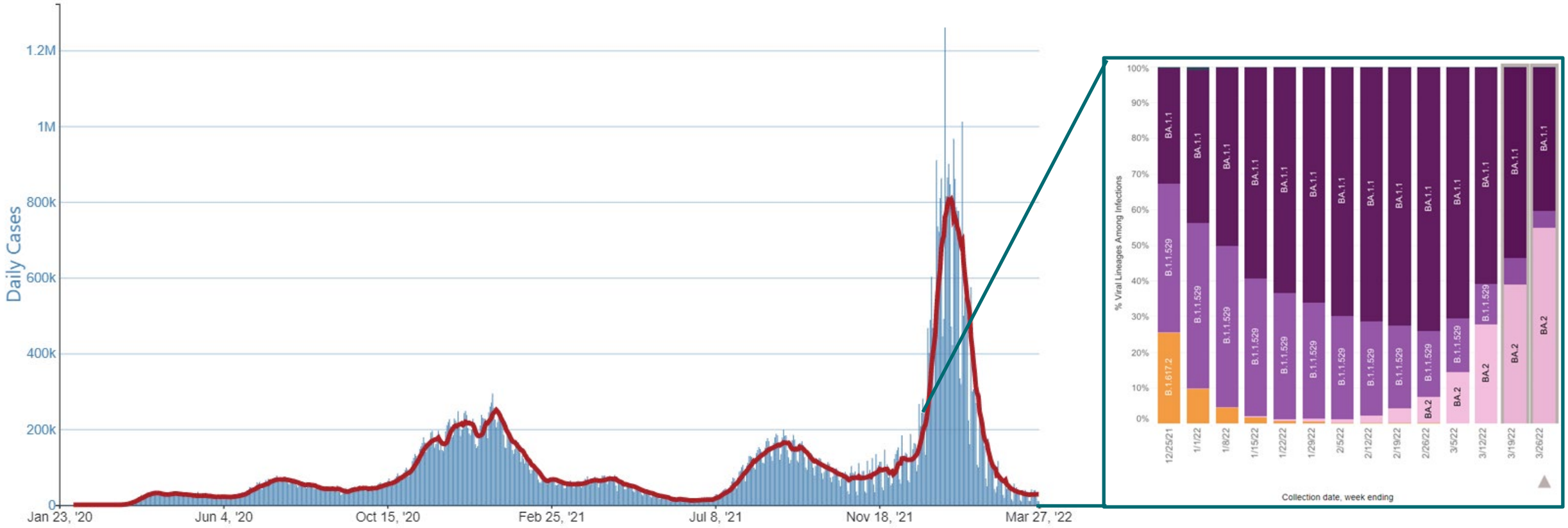
Trends in daily number of COVID-19 cases – United States



- Over 79 million cases and 975K deaths reported
- Lowest number of daily cases since July 2021

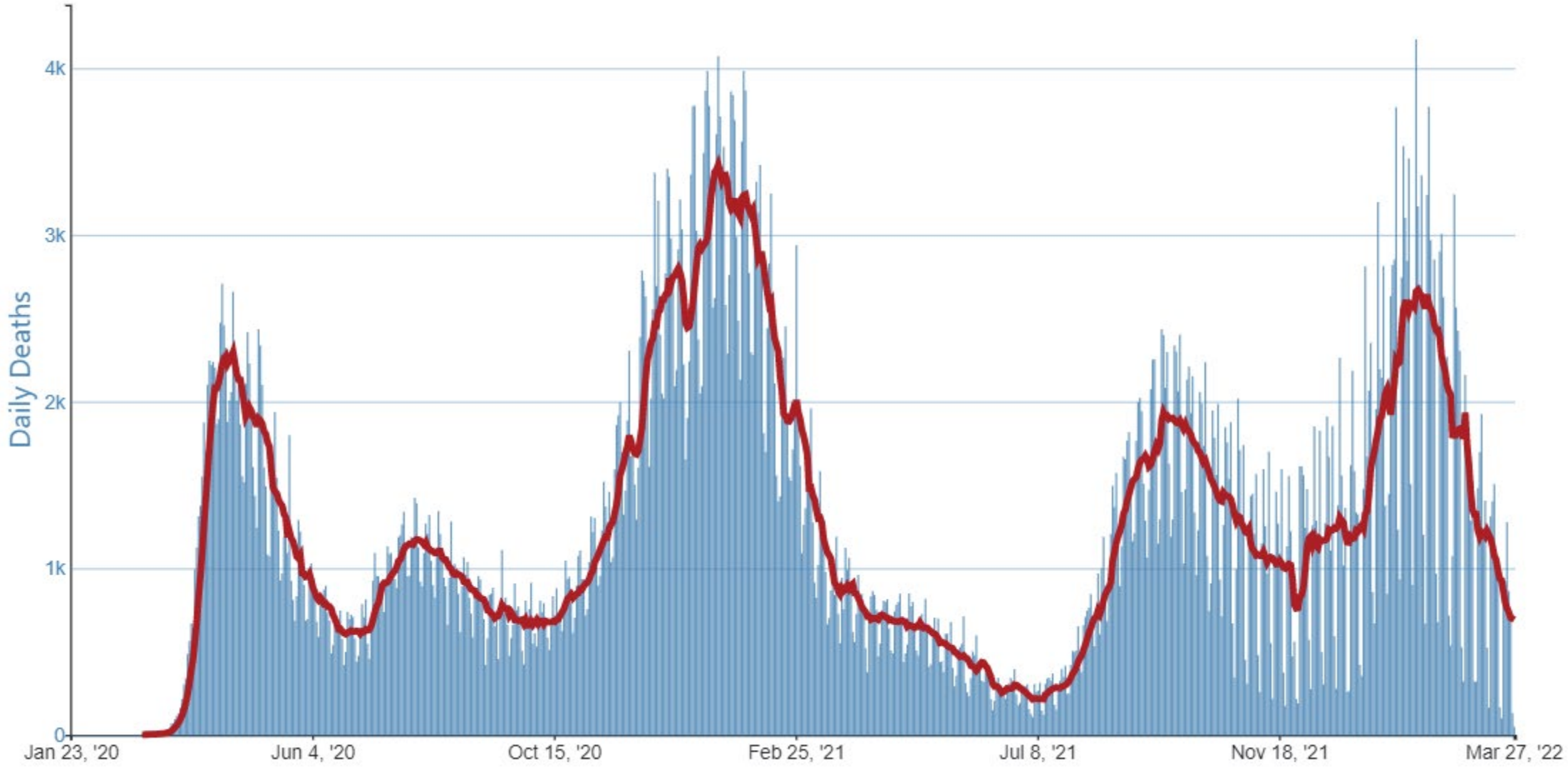
CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#trends_dailycases Accessed March 29, 2022

Omicron (BA.2 lineage) is the dominant circulating SARS-CoV-2 variant



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#trends_dailycases Accessed March 29, 2022

Trends in daily number of COVID-19 deaths – United States



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#trends_dailydeaths Accessed February 29, 2022

COVID-19 vaccines administered (as of March 30, 2022)

% of People Fully Vaccinated:

- **≥5** years of age: **70%**
- **≥18** years of age: **75%**
- **≥65** years of age: **89%**

% of Fully Vaccinated People with a Booster Dose:

- **≥12** years of age: **47%**
- **≥18** years of age: **48%**
- **≥65** years of age: **67%**

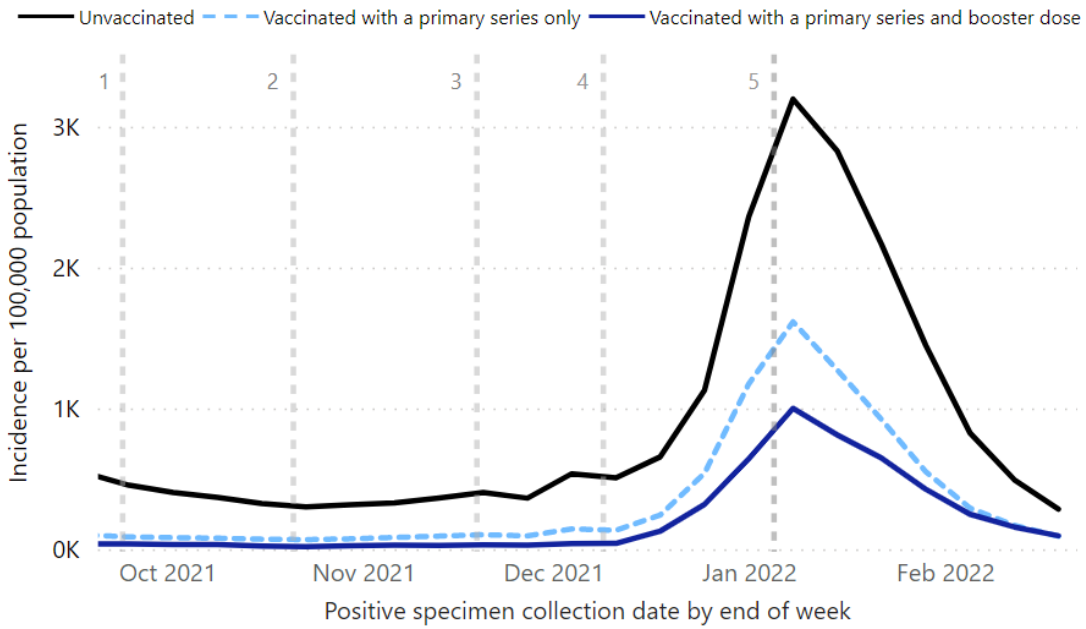
CDC. https://covid.cdc.gov/covid-data-tracker. Accessed March 30, 2022

COVID-19 vaccines are safe and effective

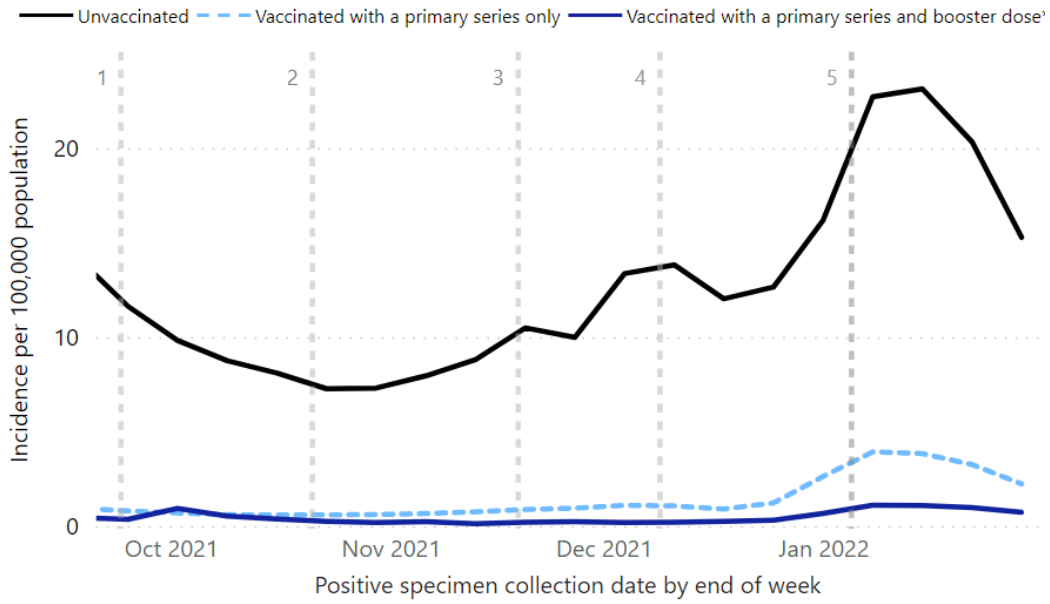
- COVID-19 vaccines have been a critical tool in this pandemic, preventing **millions** of COVID-19 associated **hospitalizations** and **deaths**
- To date, **hundreds of millions** of doses of mRNA COVID-19 vaccines have been given with over a year of closely monitored real-world safety and effectiveness data
- Vaccinating the unvaccinated with a **primary series** continues to be important
  - Additional protection from all recommended COVID-19 vaccine doses important in evolving pandemic

Rates of COVID-19 cases and deaths by vaccination status, September 19, 2021 – February 19, 2022 (25 U.S. Jurisdictions)

Cases



Deaths



In January, unvaccinated people ages 12 years and older had:

3.5X
Risk of Testing Positive for COVID-19

AND

21X
Risk of Dying from COVID-19

compared to people vaccinated with a primary series and booster dose

CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#rates-by-vaccine-status Accessed March 29, 2022

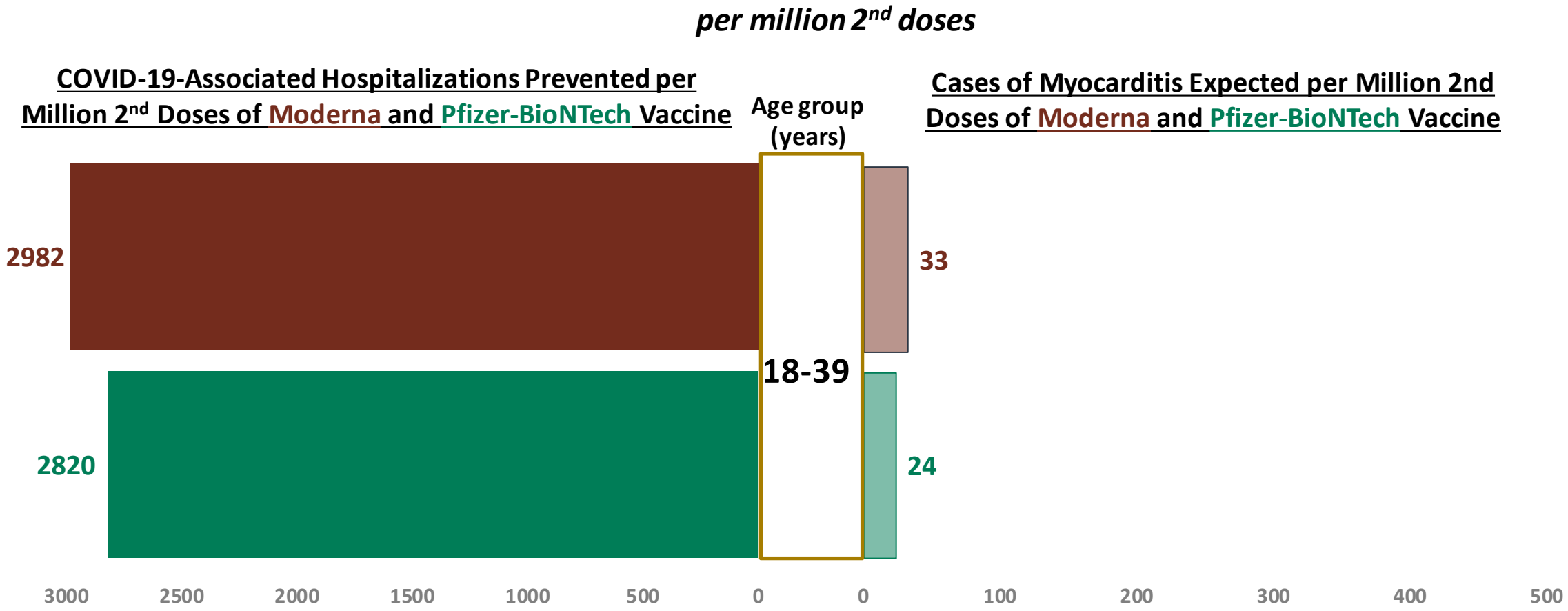
COVID-19-associated hospitalizations and deaths prevented by COVID-19 vaccination in the United States

- COVID-19 associated hospitalizations prevented[1-2]:
  - Estimated up to 10.3 million hospitalizations averted through November 2021

- COVID-19 associated deaths prevented[1-3]:
  - Estimated up to 1.1 million deaths averted through November 2021

1. Moghadas SM, Sah P, Fitzpatrick MC, et al. COVID-19 deaths and hospitalizations averted by rapid vaccination rollout in the United States. medRxiv. Published online July 8, 2021:2021.07.07.21260156. doi:10.1101/2021.07.07.21260156
2. Eric C. Schneider, Arnav Shah, Pratha Sah, Seyed M. Moghadas, Thomas Vilches, Alison Galvani. The U.S. COVID-19 Vaccination Program at One Year: How Many Deaths and Hospitalizations Were Averted.
3. Gupta S, Cantor J, Simon KI, Bento AI, Wing C, Whaley CM. Vaccinations Against COVID-19 May Have Averted Up To 140,000 Deaths In The United States. Health Aff (Millwood). 2021;40(9):1465-1472.

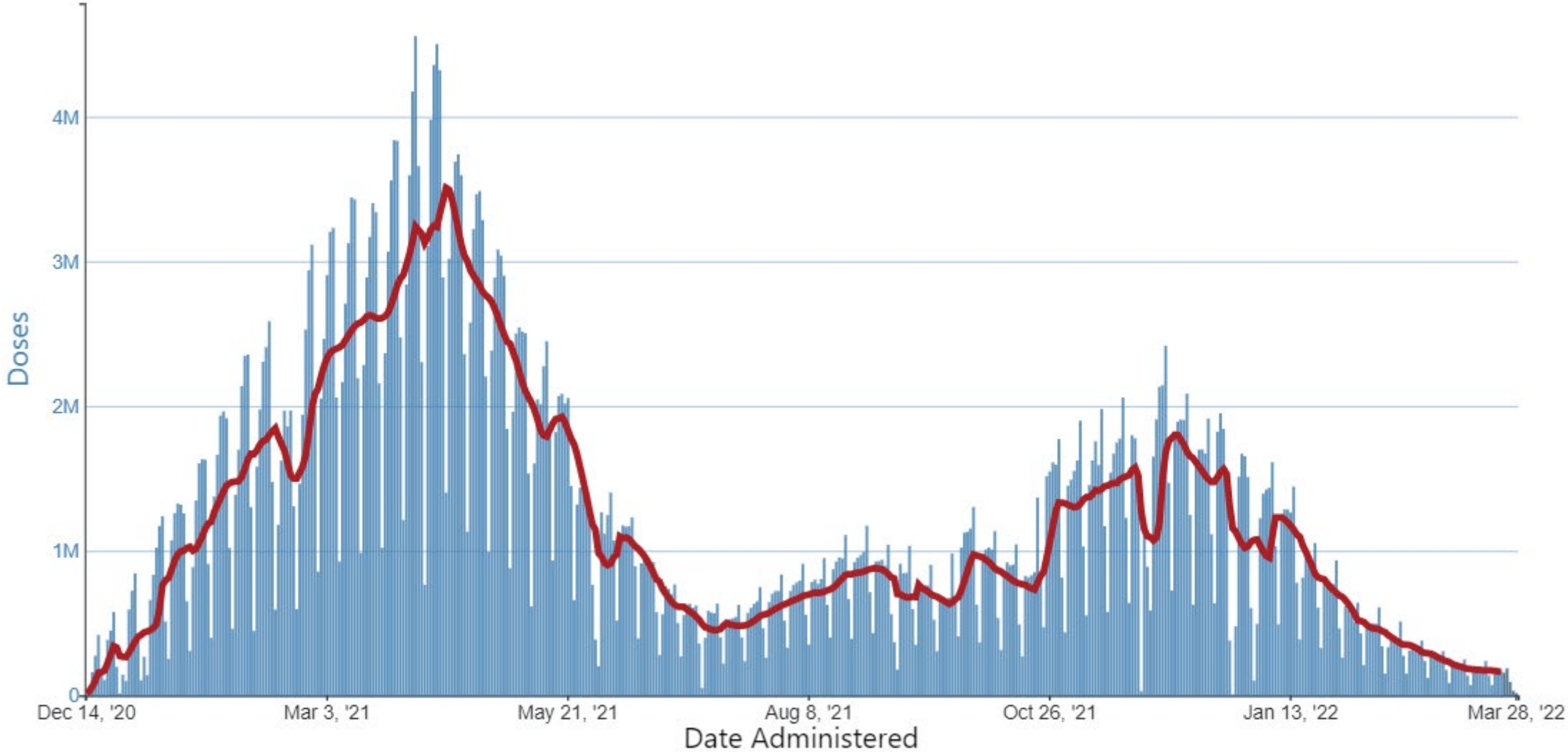
Benefits and risks after mRNA COVID-19 vaccines among persons ages 18–39 years



- COVID-19-associated hospitalizations prevented by mRNA COVID-19 vaccines compared with myocarditis cases expected
- Presented by vaccine product

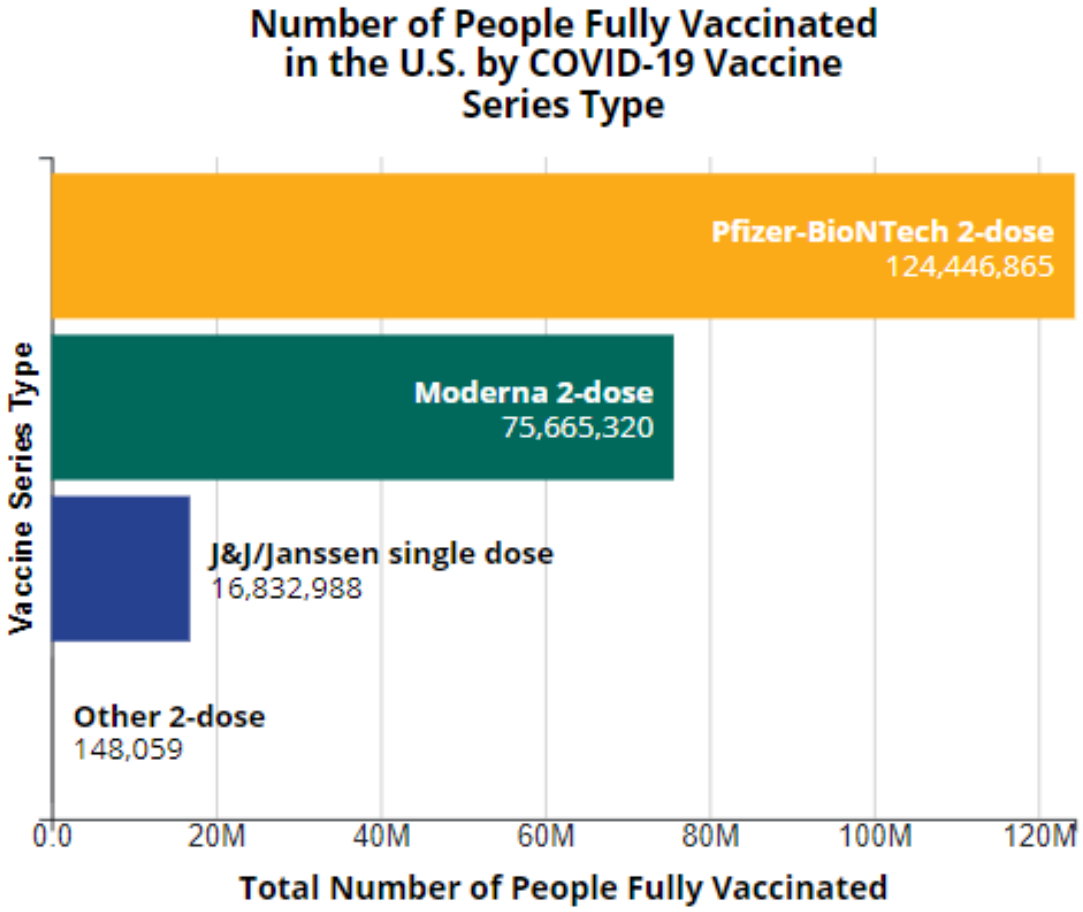
https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2022-02-04/07-COVID-Oliver-508.pdf

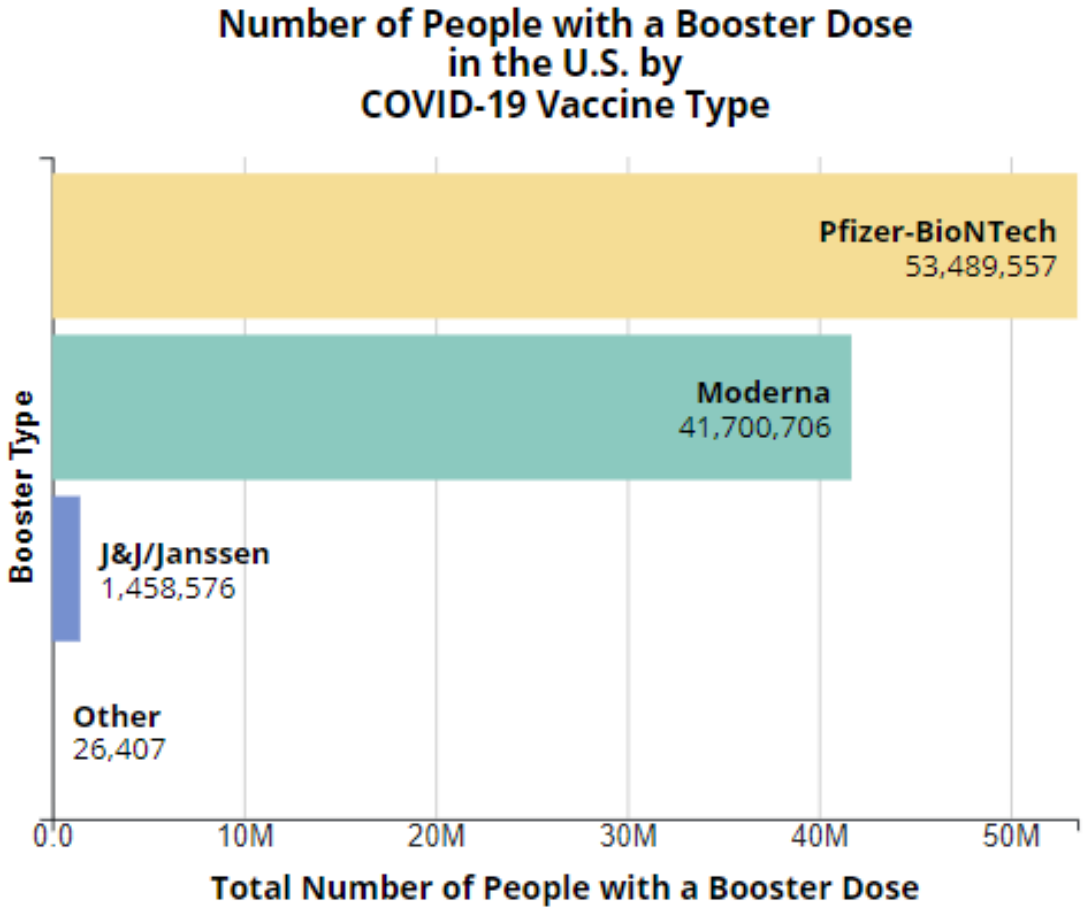
Daily trends in doses of COVID-19 vaccine administered



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#vaccination-trends Accessed March 21, 2022

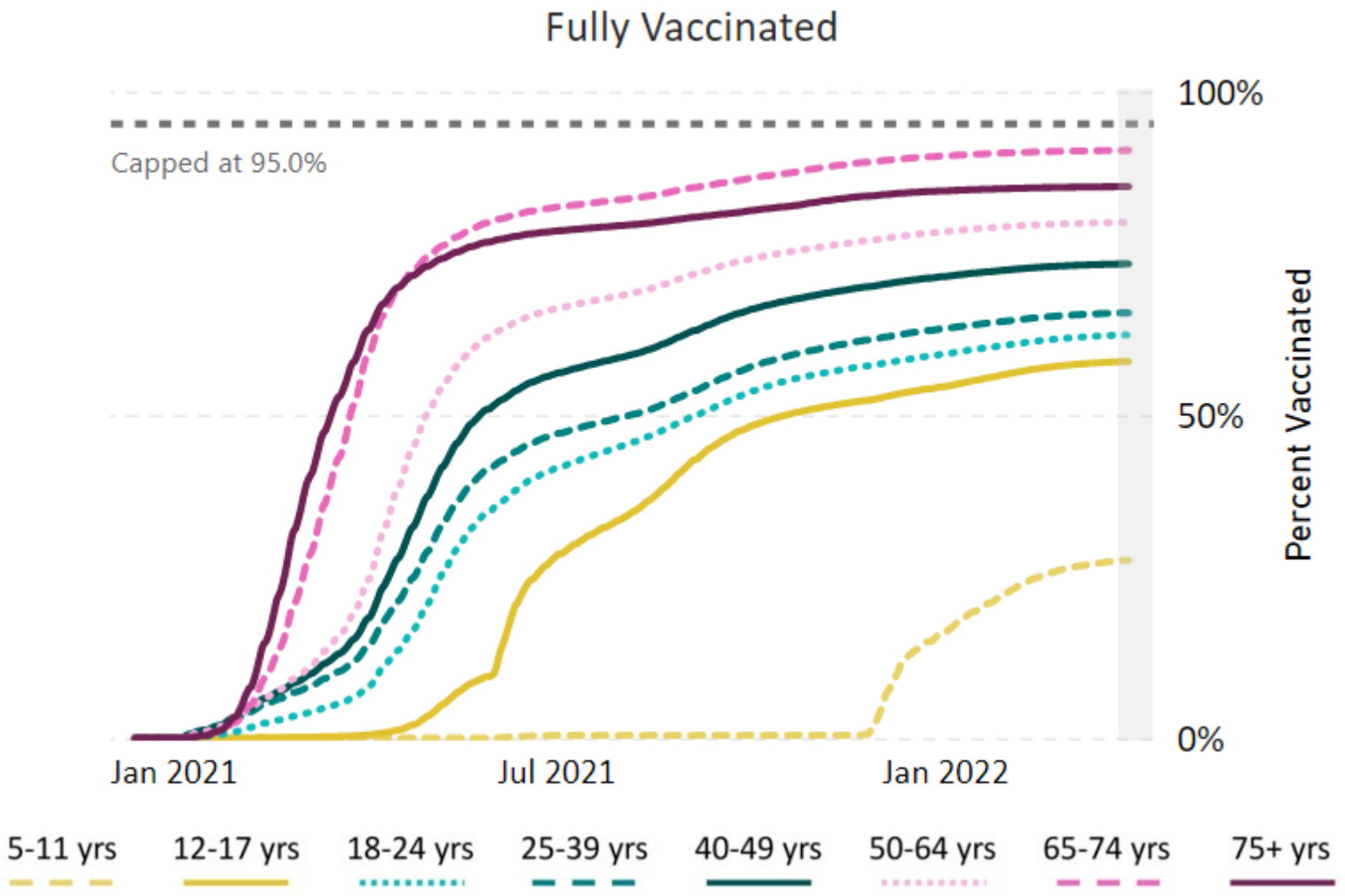
U.S. COVID-19 vaccine administration by vaccine type (as of March 21, 2022)





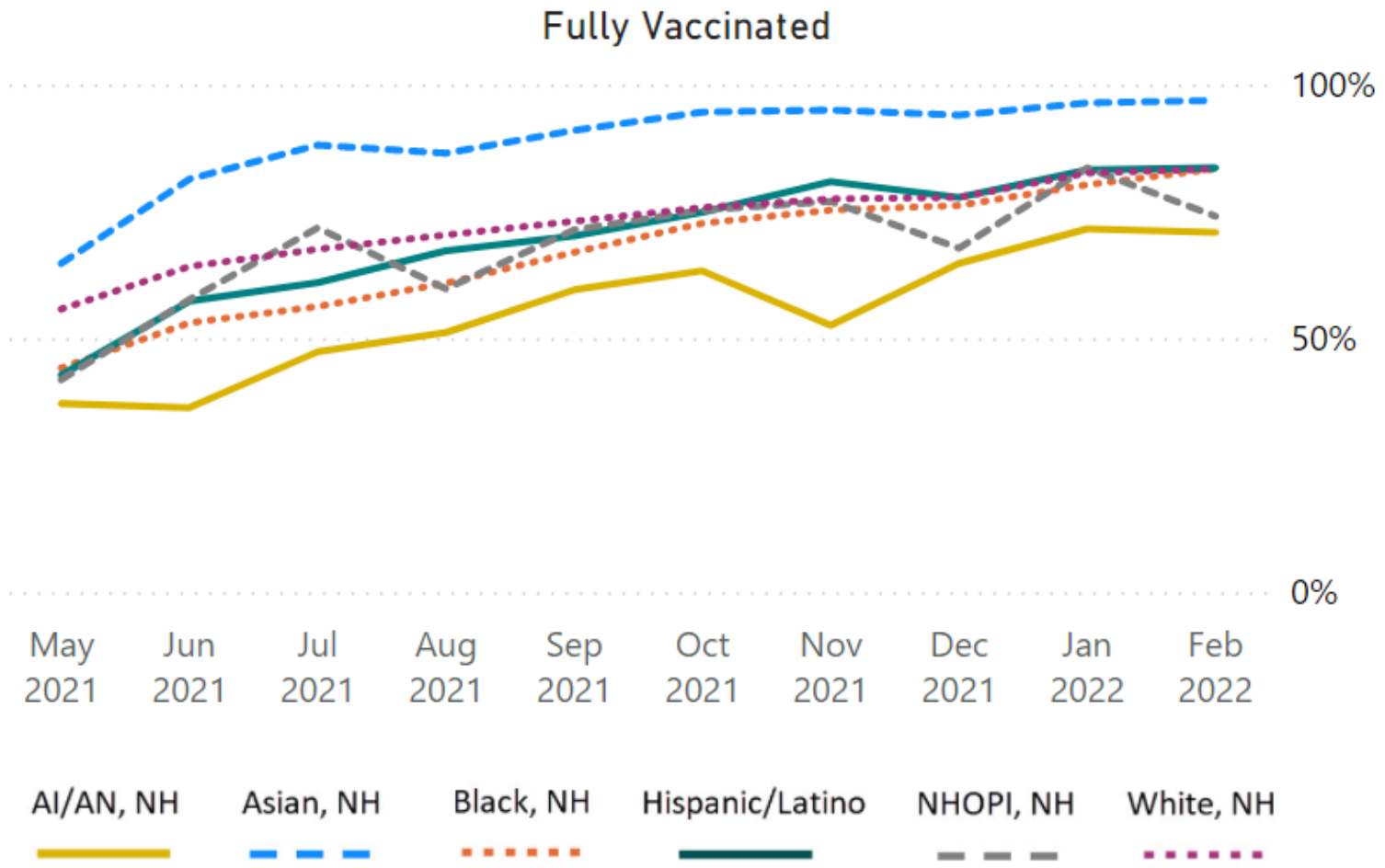
https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-total-admin-rate-total

COVID-19 vaccination coverage by age and date administered



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#vaccination-demographics-trends Accessed March 30, 2022

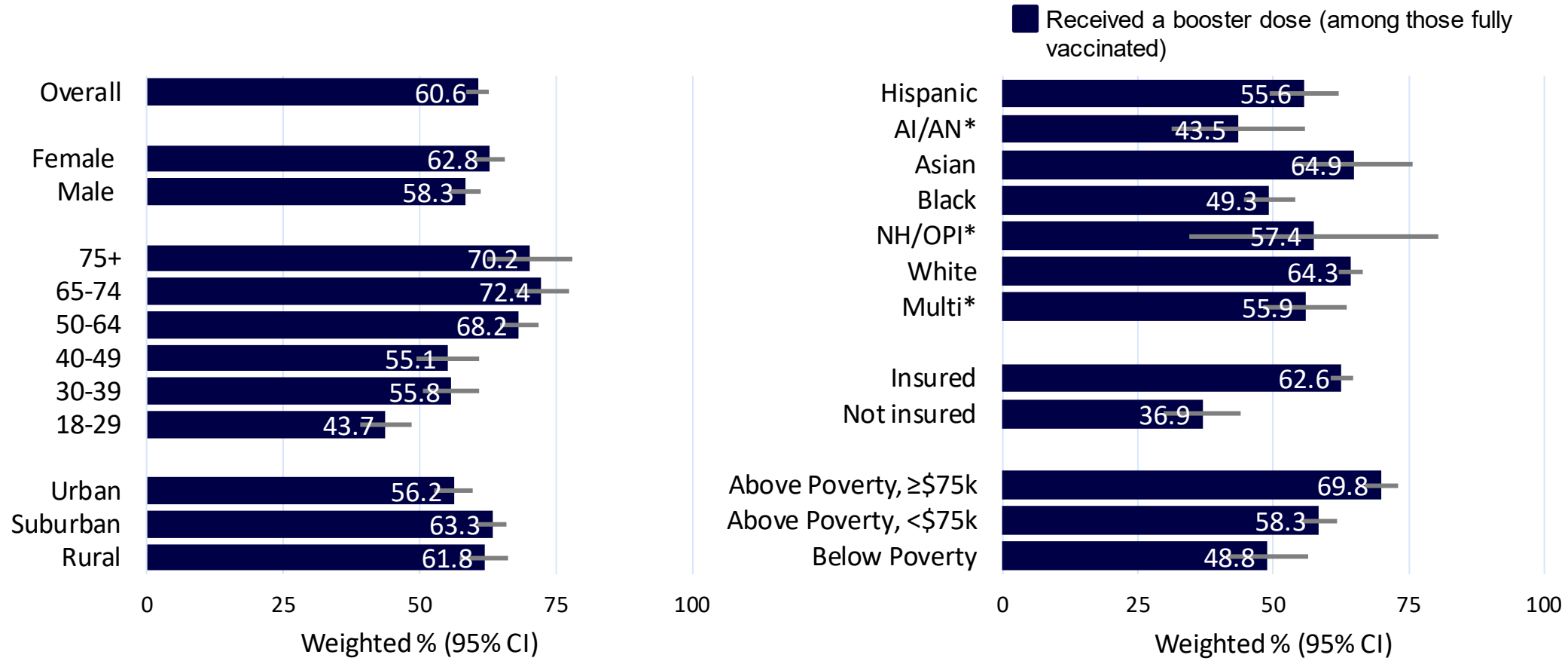
COVID-19 vaccination coverage by race and ethnicity



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#vaccination-demographics-trends Accessed March 21, 2022

Booster Dose Receipt by Demographics, National Immunization Survey-Adult COVID Module, February 20–26, 2022, Ages 18+

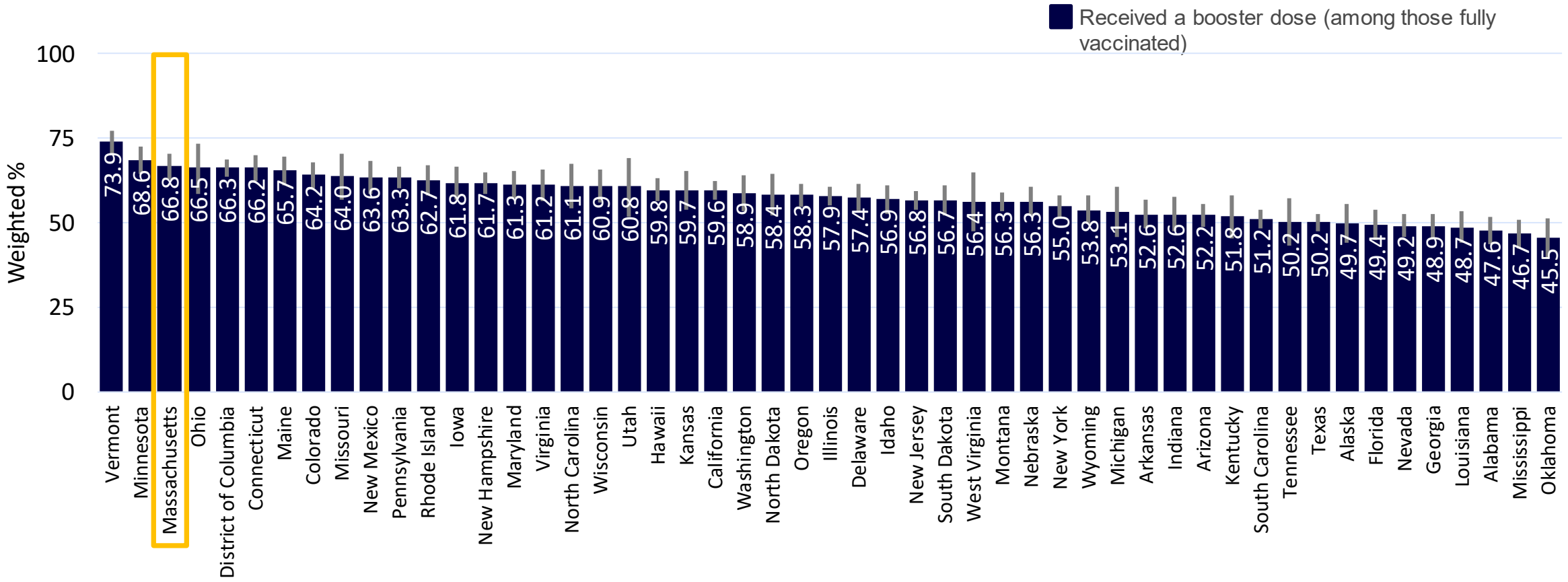
(N=13,430)



National Immunization Survey Adult COVID Module: Data from adults aged ≥18 years are collected by telephone interview using a random-digit-dialed sample of cell telephone numbers stratified by state, the District of Columbia, five local jurisdictions (Bexar County TX, Chicago IL, Houston TX, New York City NY, and Philadelphia County PA), and Guam (April-July 2021 only), Puerto Rico, and the U.S. Virgin Islands (April-December 2021 only). Data are weighted to represent the non-institutionalized U.S. population and mitigate possible bias that can result from an incomplete sample frame (exclusion of households with no phone service or only landline telephones) or non-response. Survey weights were also calibrated to state-level vaccine administration data reported to CDC. All responses are self-reported. Estimates of vaccination coverage may differ from vaccine administration data reported at https://covid.cdc.gov/covid-data-tracker/#vaccinations. For more information about the survey, see https://www.cdc.gov/vaccines/imz-managers/nis/about.html#current-surveys.
*Due to small sample size results should be interpreted with caution. AI/AN: American Indian/Alaska Native; NH/OPI: Native Hawaiian/Other Pacific Islander.
**Estimates with a denominator sample size of <30 are not shown.

Booster dose receipt by jurisdiction, National Immunization Survey-Adult COVID Module, January 2–29, 2022, ages 18+

(N=62,515)



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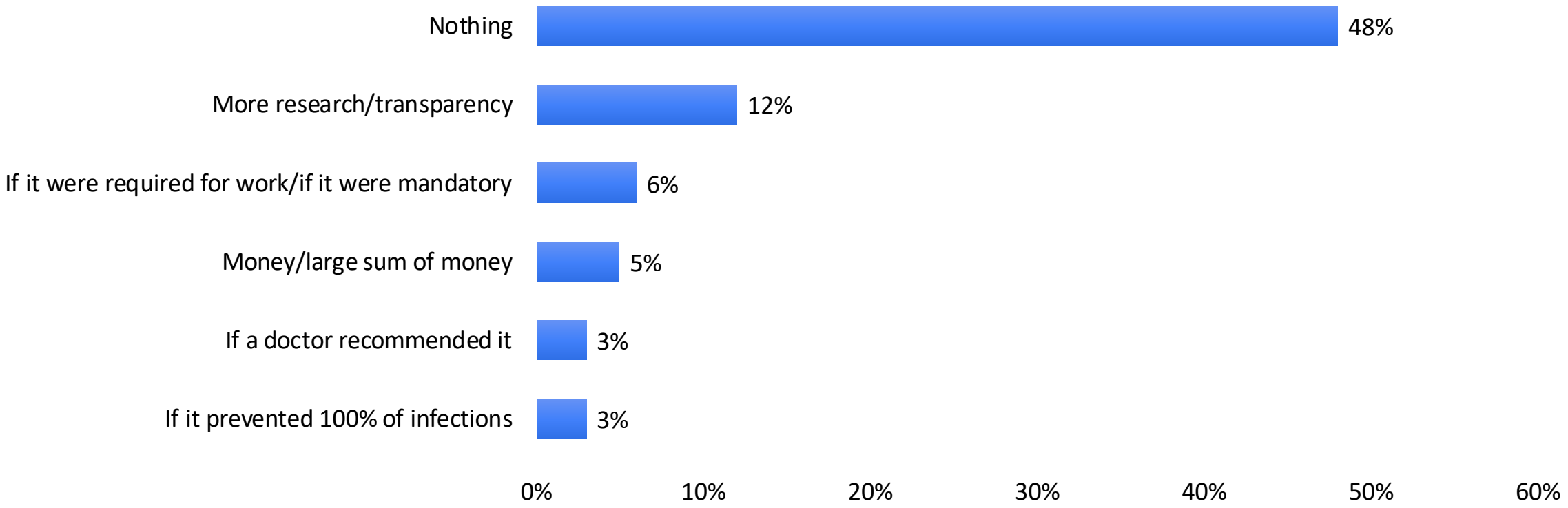
About half of unvaccinated adults say nothing will convince them to get a COVID-19 vaccine

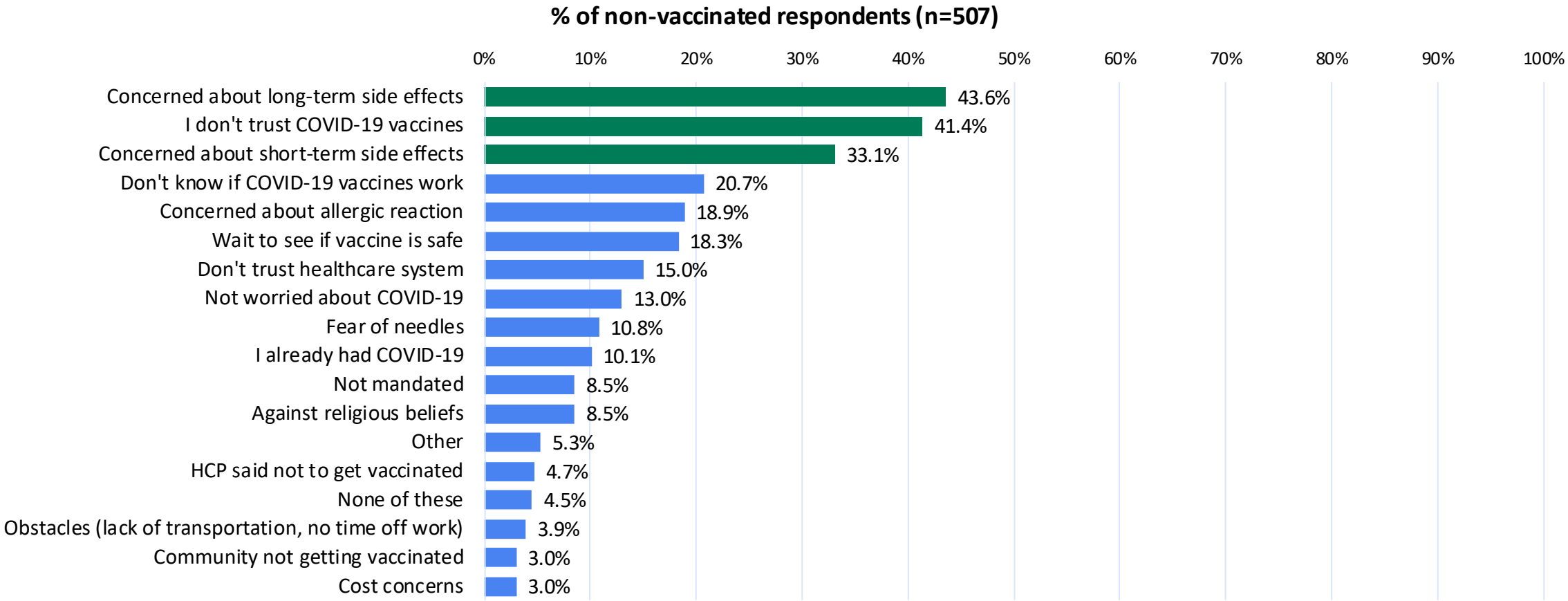
- Among unvaccinated adults: *"What, if anything, will convince you to get vaccinated for COVID-19?"*



KFF COVID-19 Vaccine Monitor: Early Omicron Update (Dec 15 – 20, 2021). https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-early-omicron-update/. Accessed January 19, 2022

Reasons for remaining unvaccinated

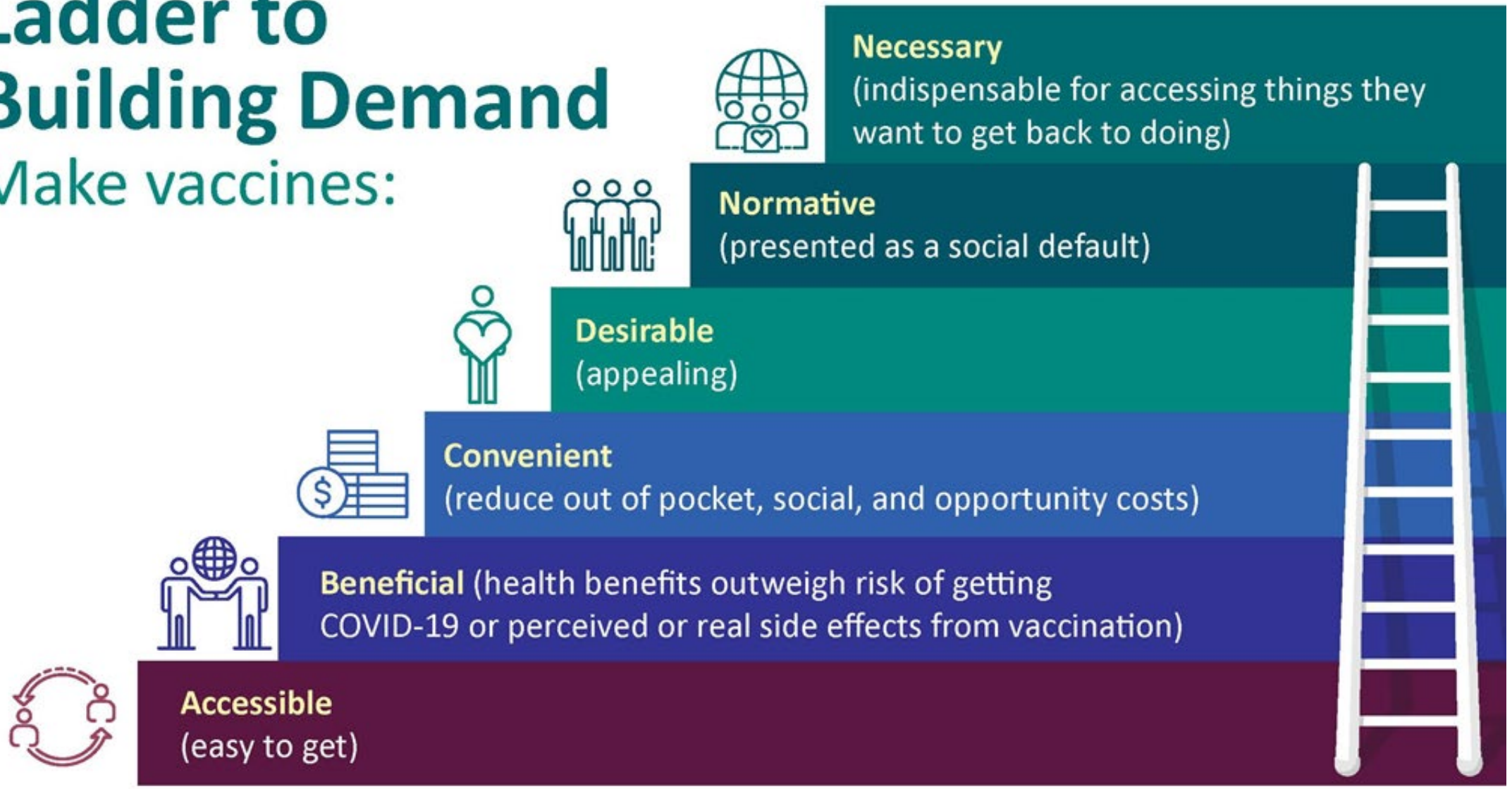
Concerns about **vaccine side effects** or **general mistrust** of COVID-19 vaccines were the top reasons given for continuing to be unvaccinated



CDC and University of Iowa/RAND survey, unpublished

Ladder to Building Demand

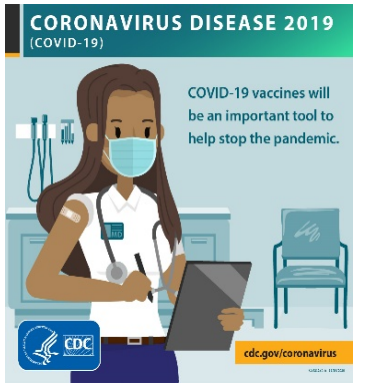
Make vaccines:



Evidence-Based Strategies to Strengthen Vaccine Confidence and Uptake

https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vax-field-guide-12-strategies.pdf.

Preparing for COVID-19 Vaccine Conversations



Choose to get vaccinated yourself

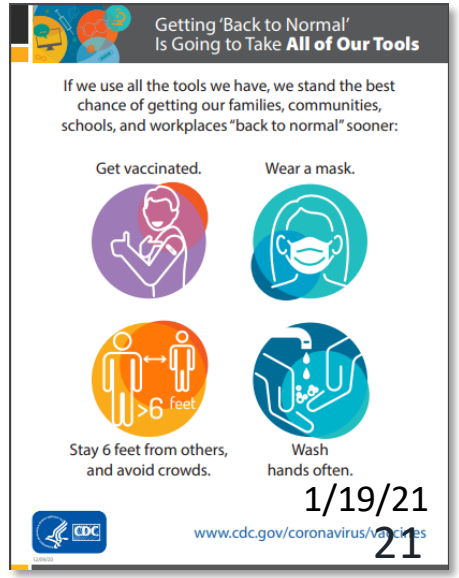
"…I believe in this vaccine and got it as soon as it became available."

Engage in effective conversations

- Start from a place of empathy and understanding
- Address misinformation by sharing key facts

Be prepared for questions

- Share CDC resources/toolkits



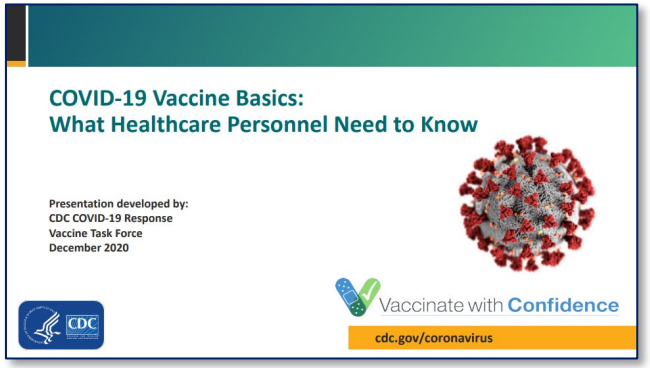
COVID-19 Vaccine Communication Resources

Engaging in effective COVID-19 vaccine conversations
https://www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html

COVID-19 vaccination toolkits are available for

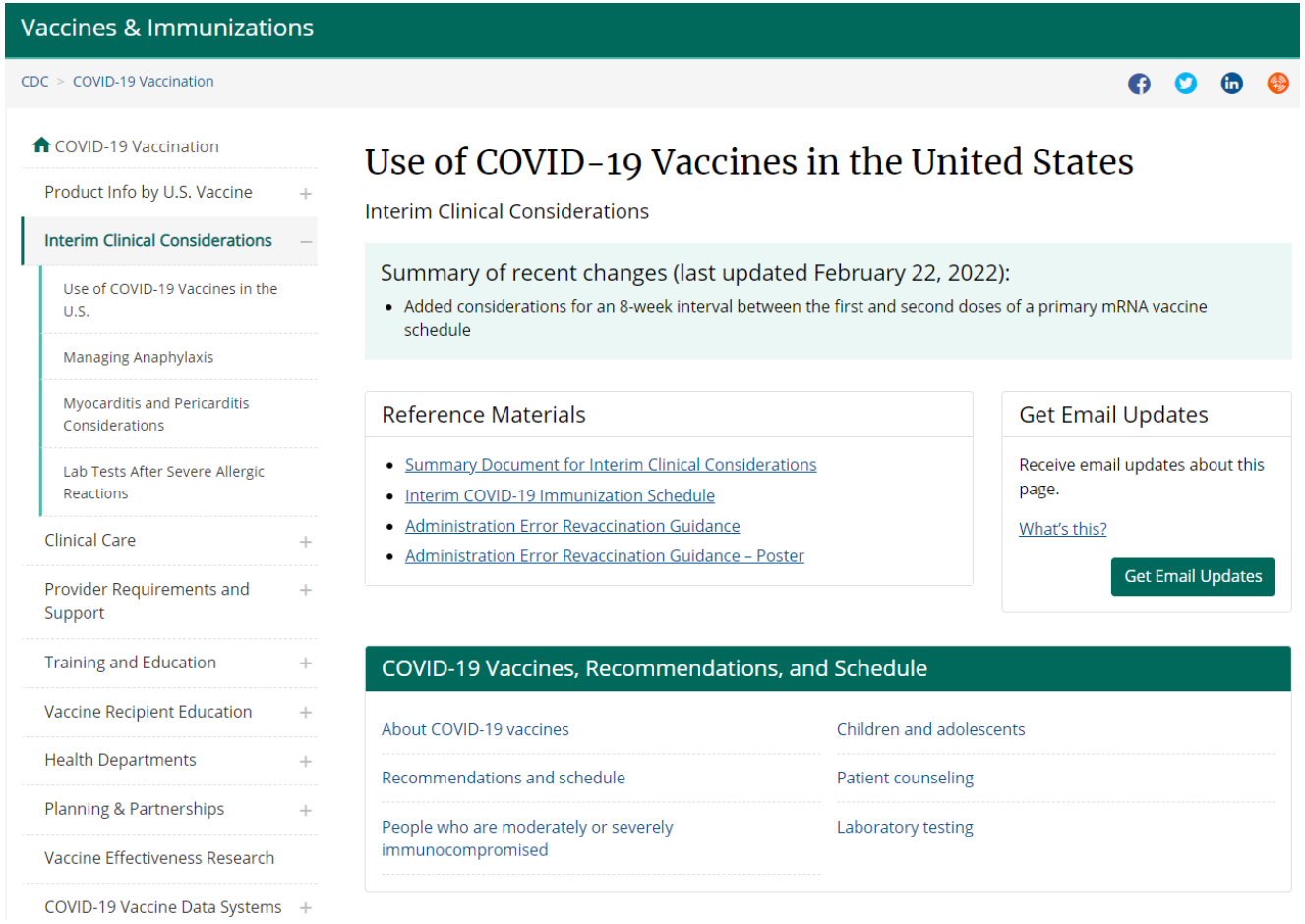
- Medical centers, clinics, and clinicians
- Pediatric healthcare professionals
- Long-term care facilities
- Health departments
- Community-based organizations
- Essential workers
- Staff in school settings and childcare programs

- www.cdc.gov/vaccines/covid-19/health-systems-communication-toolkit.html
- www.cdc.gov/coronavirus/2019-ncov/vaccines/toolkits.html



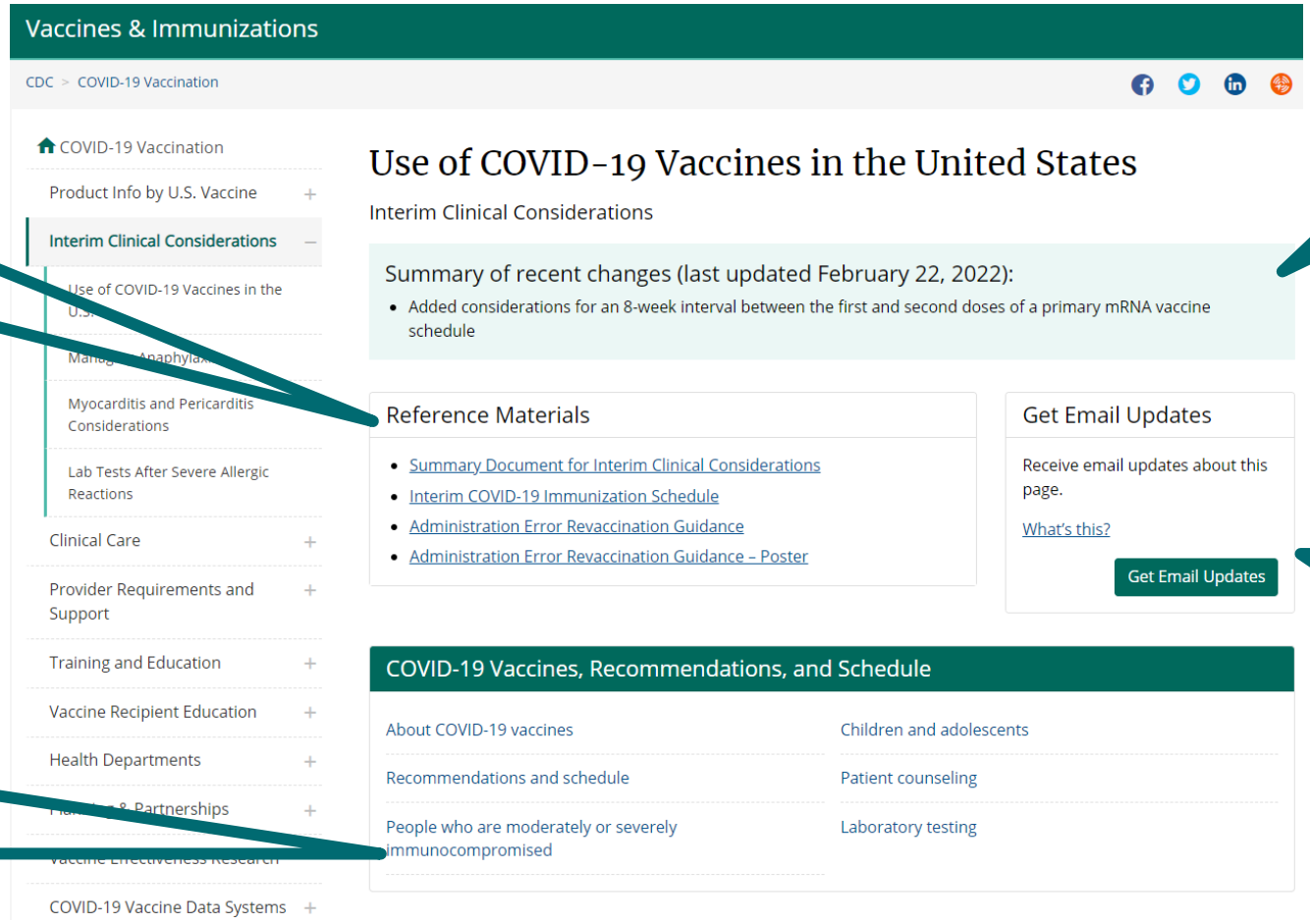
Recent updates to CDC's Interim Clinical Considerations for COVID-19 Vaccines

Interim Clinical Considerations



https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Interim Clinical Considerations



Print out reference materials

See what has been most recently updated.

Enter your email address here to get an email each time an update occurs.

Navigate to the topics in which you are most interested.

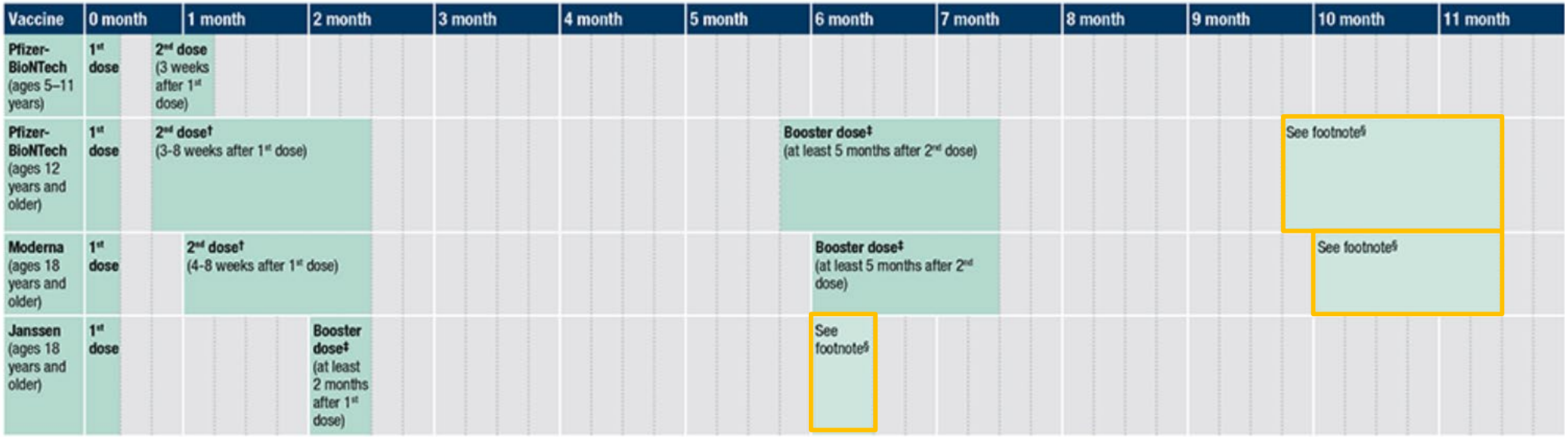
https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

COVID-19 vaccination schedule for people who are **not** moderately or severely immunocompromised*

Vaccine	0 month	1 month	2 month	3 month	4 month	5 month	6 month	7 month	8 month	9 month	10 month	11 month
Pfizer-BioNTech (ages 5–11 years)	1st dose	2nd dose (3 weeks after 1st dose)										
Pfizer-BioNTech (ages 12 years and older)	1st dose	2nd dose† (3-8 weeks after 1st dose)					Booster dose‡ (at least 5 months after 2nd dose)				See footnote§	
Moderna (ages 18 years and older)	1st dose	2nd dose† (4-8 weeks after 1st dose)					Booster dose‡ (at least 5 months after 2nd dose)				See footnote§	
Janssen (ages 18 years and older)	1st dose		Booster dose‡ (at least 2 months after 1st dose)				See footnote§					

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

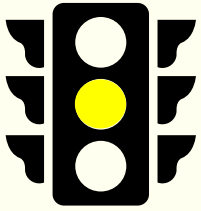
COVID-19 vaccination schedule for people who are **not** moderately or severely immunocompromised*



§ People ages 18–49 years who received Janssen COVID-19 Vaccine as both their primary series dose and booster dose may receive an mRNA COVID-19 booster dose at least 4 months after the Janssen booster dose. People ages 50 years and older may choose to receive a second booster dose if it has been at least 4 months after the first booster dose.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Staying Up to Date

Vaccination Status	Pfizer-BioNTech **Ages Recommended** 5+ years old	Moderna **Ages Recommended** 18+ years old	Janssen **Ages Recommended** 18+ years old
Fully vaccinated 	**Primary Series** • **3 doses** for people with moderate or severe immune compromise	**Primary Series** • **3 doses** for people with moderate or severe immune compromise	**Primary Series** **2 doses** (1st dose Janssen, 2nd additional dose mRNA)
Up to date 	**1 Booster Dose** Everyone ages 12+ should get a booster dose • Teens 12–17 should only get a Pfizer-BioNTech COVID-19 Vaccine booster • Everyone 18+ should get a booster dose of either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines)	**1 Booster Dose** Everyone ages 18+ should get a booster dose of either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines)	**1 Booster Dose** Everyone ages 18+ should get a booster dose of either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines)

Getting a second booster dose is not necessary to be considered up to date at this time.

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html

COVID-19 vaccination schedule for people who are **not** moderately or severely immunocompromised*

†An 8-week interval may be optimal for some people ages 12 years and older, especially for males ages 12 to 39 years. A shorter interval (3 weeks for Pfizer-BioNTech; 4 weeks for Moderna) between the first and second doses remains the recommended interval for people who are moderately or severely immunocompromised; adults ages 65 years and older; and in situations in which there is increased concern about COVID-19 community levels or an individual's higher risk for severe disease.

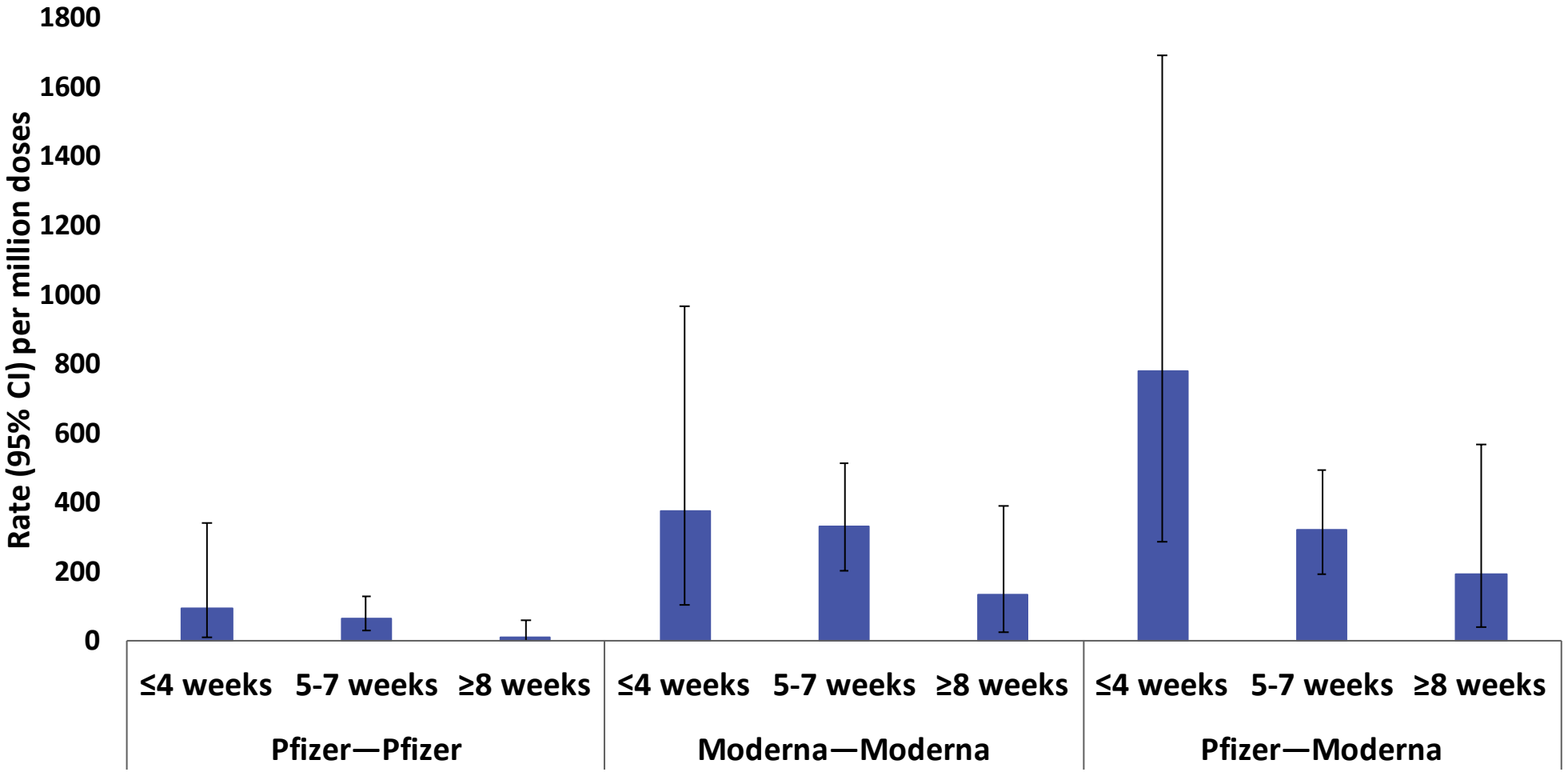
https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Extended interval between 1st and 2nd mRNA COVID-19 vaccine dose: review of evidence

- ACIP reviewed evidence related to an extended interval between the 1st and 2nd dose of mRNA vaccines

- Some studies in adolescents and adults have shown the small risk of myocarditis associated with mRNA COVID-19 vaccines might be reduced and peak antibody responses and vaccine effectiveness may be increased with an interval longer than 4 weeks

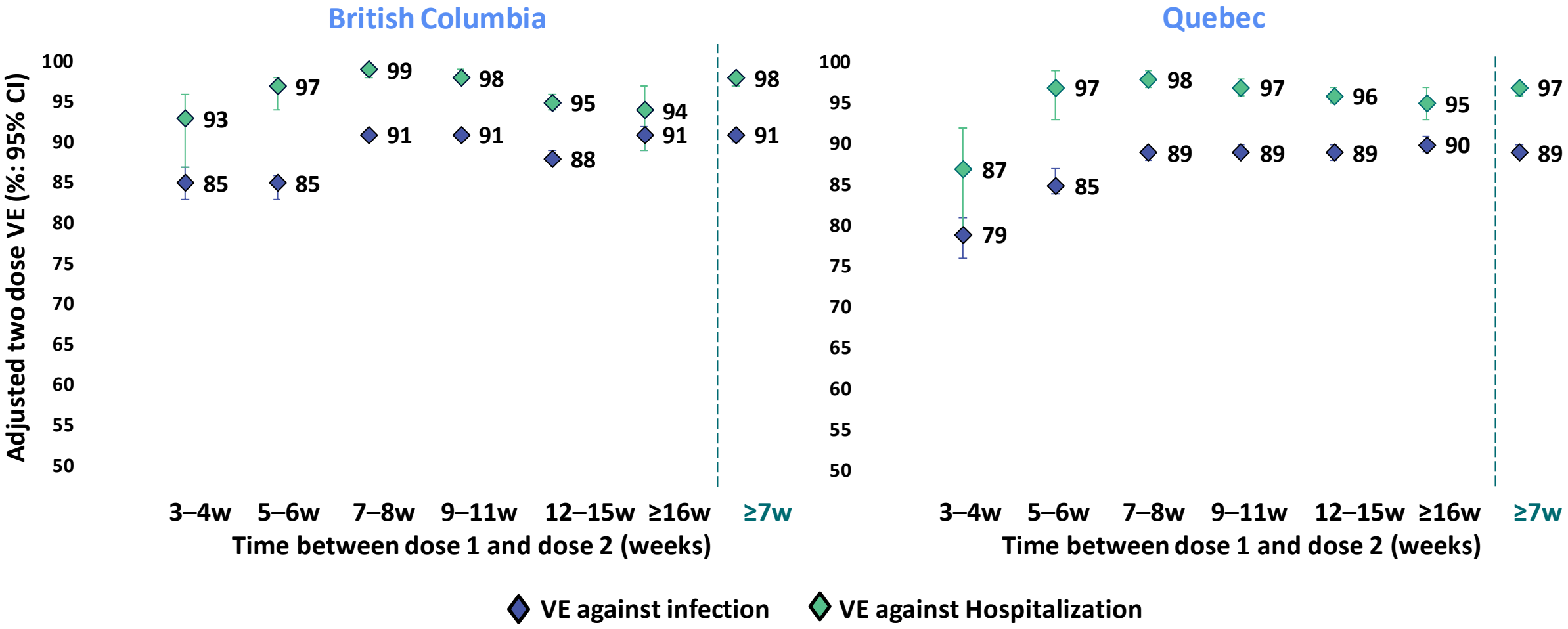
Ontario, Canada: Reporting rate of myocarditis/pericarditis per million doses among males ages 18–24 years by vaccine product* and interval



Source: Buchan S et al. Dec 2021, MedRxiv preprint.

*Moderna-Pfizer not shown here because there were no reported events in males ages 18–24 years; a smaller number of males in this age group received this schedule (n=8,853).

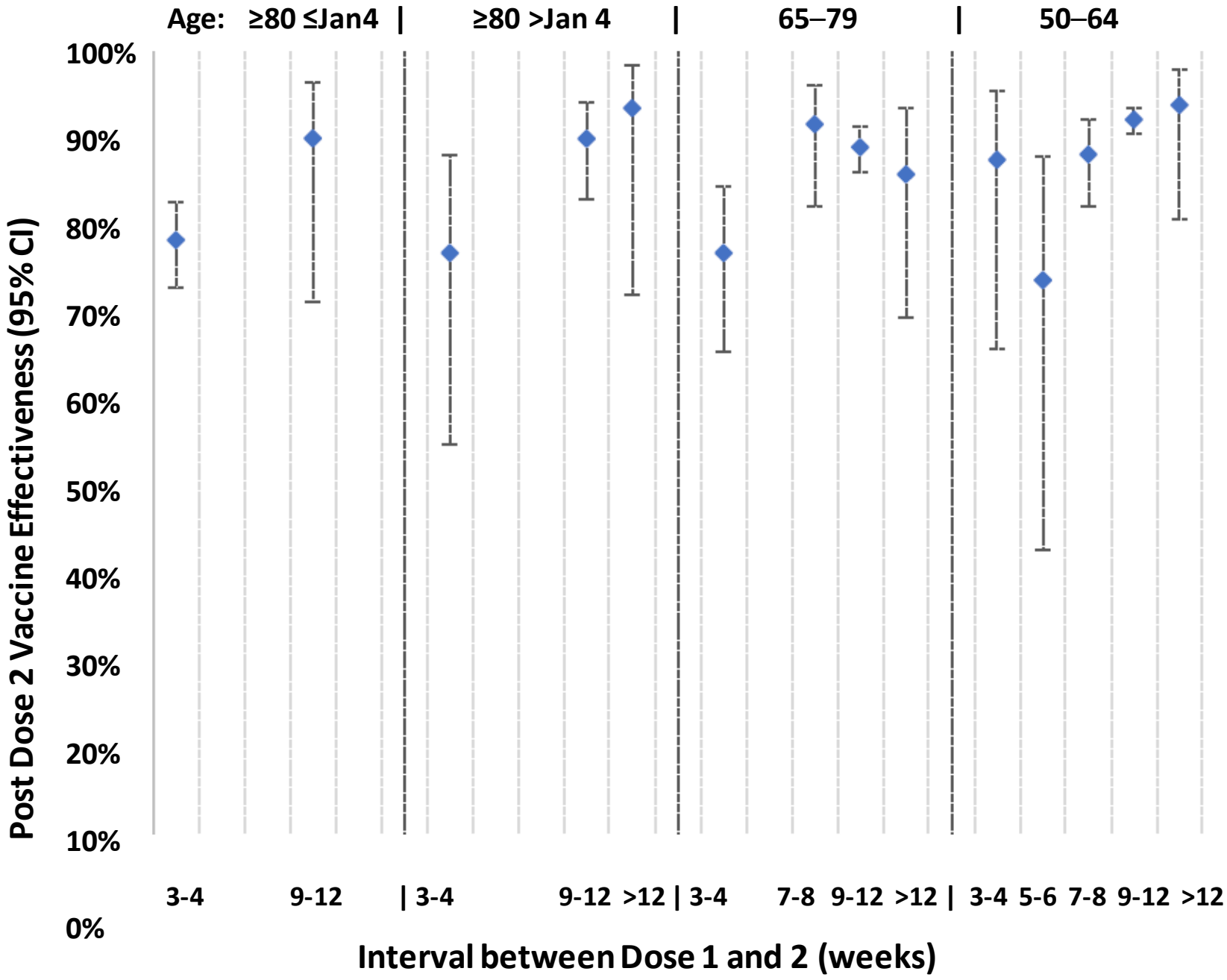
British Columbia and Quebec, Canada: Vaccine effectiveness of any two doses of mRNA vaccines by primary series interval



Source: Skowronski DM. 2021, MedRxiv preprint.

England: Pfizer vaccine effectiveness by primary series interval

- Pfizer vaccine effectiveness against symptomatic SARS-CoV-2 infection was higher with an extended interval (>6 weeks) compared to a standard interval (3–4 weeks) for all age groups.



Source: Amirthalingam G. 2021, Nat Commun.

Immunogenicity with extended primary series interval

- **Payne et al.** (UK): Among SARS-CoV-2 infection naïve persons in an observational cohort, serological responses were higher after an extended dosing interval (6–14 week) compared to a standard interval (3–4 week).
  - Among persons with an extended interval, there were higher antibody and B cell responses, as well as sustained B and T cell responses, compared to a standard interval.
  - An extended interval may promote efficient T cell expansion and long-term memory cell persistence.

- **Amirthalingam et al.** (England), **Parry et al.** (England), & **Grunau et al** (Canada): Neutralizing antibody titers were higher following an extended dosing interval with mRNA vaccine, compared to a standard interval.

Source: Payne R. 2021, Cell.; Amirthalingam G. 2021, Nat Commun.; Parry H. 2022, Npj Vaccines.; Grunau B. 2022, Clin Inf Dis.

Summary

- Rates of myocarditis/pericarditis were **lower** with **extended interval** between first and second dose of mRNA vaccine primary series
- Extended primary series interval may **improve immunogenicity** and **vaccine effectiveness**

COVID-19 vaccination schedule for people who are moderately or severely immunocompromised

Vaccine	0 month	1 month	2 month	3 month	4 month	5 month	6 month	7 month	8 month	9 month
Pfizer-BioNTech (ages 5–11 years)	1st dose	2nd dose (3 weeks after 1st dose)	3rd dose (at least 4 weeks after 2nd dose)							
Pfizer-BioNTech (ages 12 years and older)	1st dose	2nd dose (3 weeks after 1st dose)	3rd dose (at least 4 weeks after 2nd dose)			Booster dose* (at least 3 months after 3rd dose)			See footnote§	
Moderna (ages 18 years and older)	1st dose	2nd dose (4 weeks after 1st dose)	3rd dose (at least 4 weeks after 2nd dose)			Booster dose* (at least 3 months after 3rd dose)				See footnote§
Janssen (ages 18 years and older)	1st dose	2nd (additional) dose† using an mRNA COVID-19 vaccine (at least 4 weeks after 1st dose)		Booster dose* (at least 2 months after additional dose)				See footnote§		

Note: Timeline is approximate. Intervals of 3 months or fewer are converted into weeks per the formula "1 month = 4 weeks". Intervals of 4 months or more are converted into calendar months.

*An mRNA COVID-19 vaccine is preferred over the Janssen COVID-19 Vaccine for booster vaccination of people ages 18 years and older. For people ages 12–17 years, only Pfizer-BioNTech can be used. A booster dose is not authorized for people ages 5–11 years.

†Only Pfizer-BioNTech or Moderna COVID-19 Vaccine should be used. See Appendix D for more information on vaccinating people who are moderately or severely immunocompromised and who received Janssen COVID-19 Vaccine for the primary series.

‡People ages 12 years and older may choose to receive a second booster dose using an mRNA COVID-19 vaccine if it has been at least 4 months after the first booster dose. For people ages 12–17 years, only Pfizer-BioNTech can be used.

People Who Are Moderately or Severely Immunocompromised

- People with immunocompromising conditions or people who take immunosuppressive medications or therapies:
  - Are at increased risk for **severe COVID-19**
  - May **not mount a protective immune response** after initial vaccination
  - Have **waning protection** over time

People Who Are Moderately or Severely Immunocompromised

- Active treatment for solid tumor and hematologic malignancies
- Receipt of solid-organ transplant and taking immunosuppressive therapy
- Receipt of CAR-T-cell or hematopoietic stem cell transplant (HCT) (within 2 years of transplantation or taking immunosuppression therapy)
- Moderate or severe primary immunodeficiency (e.g., DiGeorge, Wiskott-Aldrich syndromes)
- Advanced or untreated HIV infection
- Active treatment with high-dose corticosteroids (i.e., ≥20mg prednisone or equivalent per day), alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, TNF blockers, and other biologic agents that are immunosuppressive or immunomodulatory

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#vaccination-people-immunocompromised

COVID-19 vaccination schedule for people who are moderately or severely immunocompromised

Vaccine	0 month	1 month	2 month	3 month	4 month	5 month	6 month	7 month	8 month	9 month
Pfizer-BioNTech (ages 5–11 years)	**1st dose**	**2nd dose** (3 weeks after 1st dose)		**3rd dose** (at least 4 weeks after 2nd dose)						
Pfizer-BioNTech (ages 12 years and older)	1st dose	2nd dose (3 weeks after 1st dose)		3rd dose (at least 4 weeks after 2nd dose)		Booster dose* (at least 3 months after 3rd dose)				See footnote§
Moderna (ages 18 years and older)	1st dose	2nd dose (4 weeks after 1st dose)		3rd dose (at least 4 weeks after 2nd dose)		Booster dose* (at least 3 months after 3rd dose)				See footnote§
Janssen (ages 18 years and older)	1st dose	2nd (additional) dose† using an mRNA COVID-19 vaccine (at least 4 weeks after 1st dose)			Booster dose* (at least 2 months after additional dose)			See footnote§		

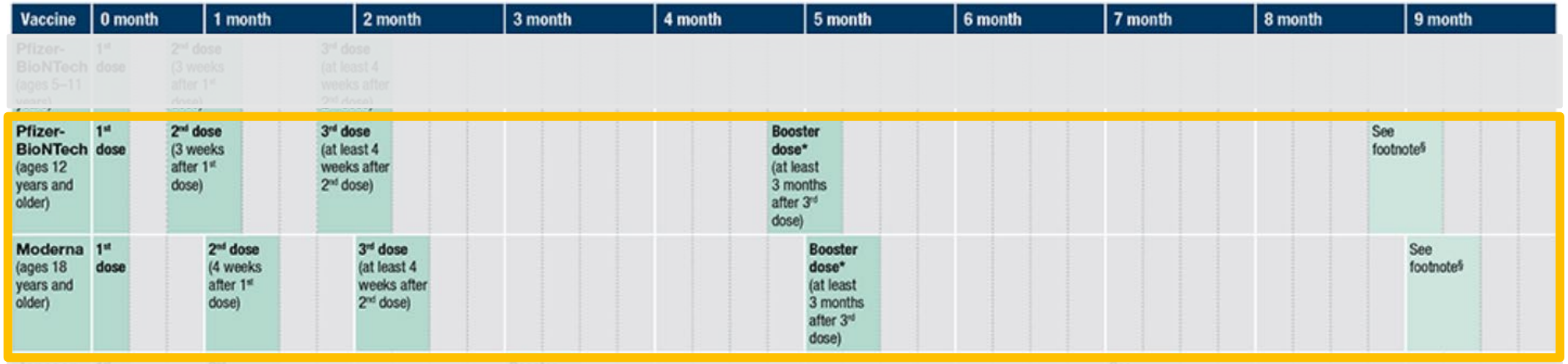
Note: Timeline is approximate. Intervals of 3 months or fewer are converted into weeks per the formula "1 month = 4 weeks". Intervals of 4 months or more are converted into calendar months.

*An mRNA COVID-19 vaccine is preferred over the Janssen COVID-19 Vaccine for booster vaccination of people ages 18 years and older. For people ages 12–17 years, only Pfizer-BioNTech can be used. A booster dose is not authorized for people ages 5–11 years.

†Only Pfizer-BioNTech or Moderna COVID-19 Vaccine should be used. See Appendix D for more information on vaccinating people who are moderately or severely immunocompromised and who received Janssen COVID-19 Vaccine for the primary series.

‡People ages 12 years and older may choose to receive a second booster dose using an mRNA COVID-19 vaccine if it has been at least 4 months after the first booster dose. For people ages 12–17 years, only Pfizer-BioNTech can be used.

COVID-19 vaccination schedule for people who are moderately or severely immunocompromised



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Pfizer-BioNTech (ages 12 years and older)	1st dose		2nd dose (3 weeks after 1st dose)		3rd dose (at least 4 weeks after 2nd dose)			Booster dose* (at least 3 months after 3rd dose)		See footnote§
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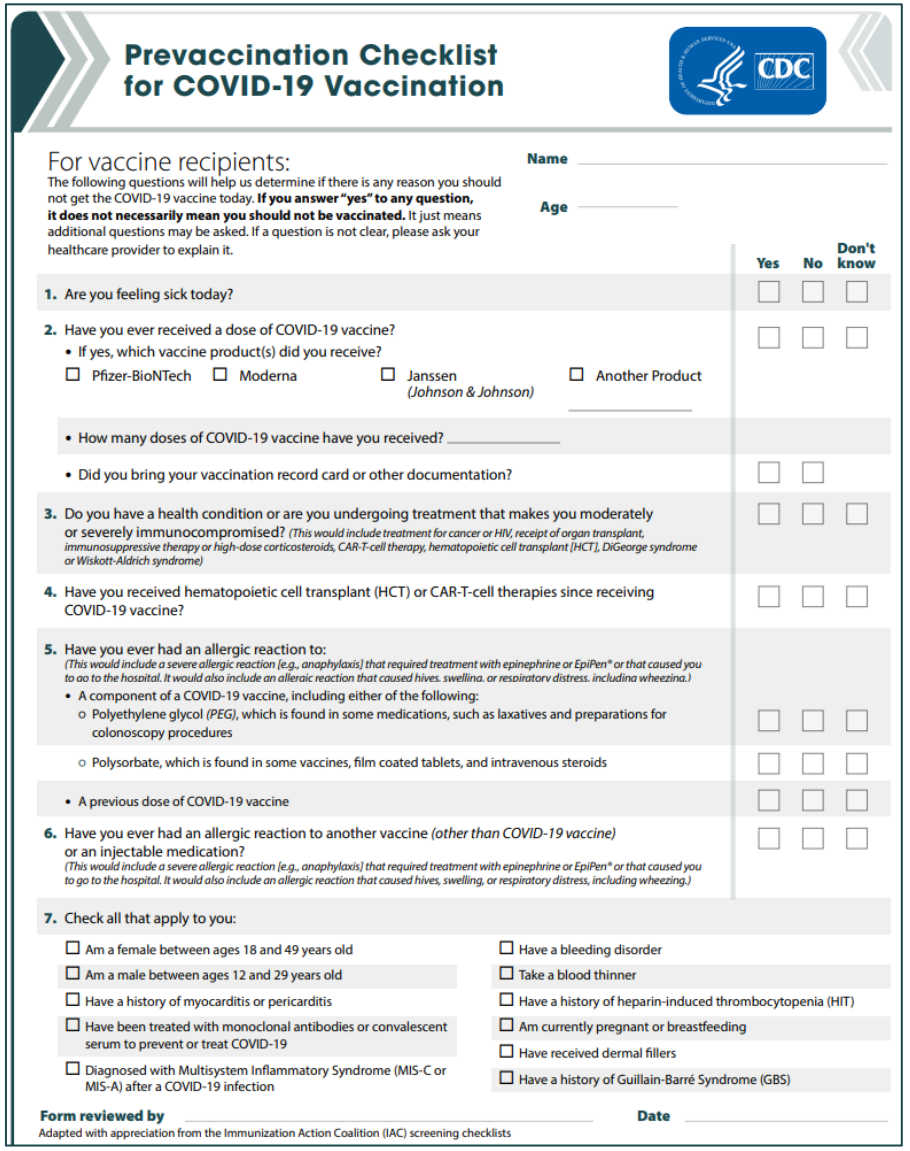
‡People ages 12 years and older may choose to receive a second booster dose using an mRNA COVID-19 vaccine if it has been at least 4 months after the first booster dose. For people ages 12–17 years, only Pfizer-BioNTech can be used.

People Who Are Moderately or Severely Immunocompromised

- Individuals can **self-attest**.
- Patients do **NOT** need to provide documentation.
- Vaccinators should **NOT deny** COVID-19 vaccination to a person due to lack of documentation.
- People who are moderately or severely immunocompromised can discuss questions with their healthcare provider about whether this schedule is appropriate for them.
- CDC offers a **prevaccination checklist**, where people can check if they are considered moderately or severely immunocompromised.



Prevaccination Checklist for COVID-19 Vaccination

CDC

For vaccine recipients:

The following questions will help us determine if there is any reason you should not get the COVID-19 vaccine today. **If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated.** It just means additional questions may be asked. If a question is not clear, please ask your healthcare provider to explain it.

Name _____

Age _____

	Yes	No	Don't know
1. Are you feeling sick today?	☐	☐	☐
2. Have you ever received a dose of COVID-19 vaccine?	☐	☐	☐
• If yes, which vaccine product(s) did you receive? ☐ Pfizer-BioNTech ☐ Moderna ☐ Janssen (Johnson & Johnson) ☐ Another Product _____			
• How many doses of COVID-19 vaccine have you received? _____			
• Did you bring your vaccination record card or other documentation?	☐	☐	
3. Do you have a health condition or are you undergoing treatment that makes you moderately or severely immunocompromised? *(This would include treatment for cancer or HIV, receipt of organ transplant, immunosuppressive therapy or high-dose corticosteroids, CAR-T-cell therapy, hematopoietic cell transplant [HCT], DiGeorge syndrome or Wiskott-Aldrich syndrome)*	☐	☐	☐
4. Have you received hematopoietic cell transplant (HCT) or CAR-T-cell therapies since receiving COVID-19 vaccine?	☐	☐	☐
5. Have you ever had an allergic reaction to: *(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)*			
• A component of a COVID-19 vaccine, including either of the following:			
○ Polyethylene glycol *(PEG)*, which is found in some medications, such as laxatives and preparations for colonoscopy procedures	☐	☐	☐
○ Polysorbate, which is found in some vaccines, film coated tablets, and intravenous steroids	☐	☐	☐
• A previous dose of COVID-19 vaccine	☐	☐	☐
6. Have you ever had an allergic reaction to another vaccine *(other than COVID-19 vaccine)* or an injectable medication? *(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)*	☐	☐	☐

7. Check all that apply to you:

- ☐ Am a female between ages 18 and 49 years old
- ☐ Am a male between ages 12 and 29 years old
- ☐ Have a history of myocarditis or pericarditis
- ☐ Have been treated with monoclonal antibodies or convalescent serum to prevent or treat COVID-19
- ☐ Diagnosed with Multisystem Inflammatory Syndrome (MIS-C or MIS-A) after a COVID-19 infection
- ☐ Have a bleeding disorder
- ☐ Take a blood thinner
- ☐ Have a history of heparin-induced thrombocytopenia (HIT)
- ☐ Am currently pregnant or breastfeeding
- ☐ Have received dermal fillers
- ☐ Have a history of Guillain-Barré Syndrome (GBS)

Form reviewed by _____ **Date** _____

Adapted with appreciation from the Immunization Action Coalition (IAC) screening checklists

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

Additional Guidance for People Who are Moderately or Severely Immunocompromised

Appendix B. Guidance for People who are Moderately or Severely Immunocompromised and Vaccinated with Janssen COVID-19 Vaccine

COVID-19 Vaccination History	And	Then	Next Dose Due
1 dose	The dose was Janssen COVID-19 Vaccine	Administer a second dose (an additional mRNA vaccine) at least 28 days after the 1st dose. • Pfizer: 0.3mL, or • Moderna 0.5mL	Administer a booster dose at least 2 months after the 2nd dose.* • Pfizer: 0.3mL, or • Moderna 0.25mL, or • Janssen: 0.5mL (mRNA is preferred over Janssen)
2 doses	Both doses are Janssen COVID-19 Vaccine	Administer a third dose (additional mRNA vaccine) at least 2 months after the 2nd dose. • Pfizer: 0.3mL, or • Moderna 0.5mL	Vaccination series complete; no additional vaccinations needed.
	1 dose of Janssen COVID-19 Vaccine and 1 dose of an mRNA COVID-19 Vaccine (given as booster dose, i.e., Pfizer 0.3mL or Moderna 0.25mL)†	Administer a third dose (additional mRNA vaccine) at least 2 months after the 2nd dose. • Pfizer: 0.3mL, or • Moderna 0.5mL	Vaccination series complete; no additional vaccinations needed.
	1 dose of Janssen COVID-19 Vaccine and 1 dose of an mRNA COVID-19 Vaccine (given as additional dose, i.e., Pfizer 0.3mL or Moderna 0.5mL)†	Administer a booster dose of any COVID-19 vaccine 2 months after the 2nd dose. • Pfizer: 0.3mL, or • Moderna 0.25mL, or • Janssen: 0.5mL (mRNA is preferred over Janssen)	Vaccination series complete; no additional vaccinations needed.

*mRNA vaccines are preferred.

†When reviewing vaccination history, doses of the Moderna COVID-19 Vaccine received prior to February 7, 2022 should be considered to have been the booster dosage (0.25 mL; 50 mcg).

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#appendix-d

HCT and CAR-T-cell Recipients

- HCT and CAR-T-cell recipients who received doses of COVID-19 vaccine **prior to or during treatment** with an HCT or CAR-T-cell therapy should be **revaccinated with a primary vaccine series**
  - Preferably with **an mRNA vaccine** regardless of vaccine issued for initial primary vaccination)
  - At least **3 months (12 weeks)** after transplant or CAR-T-cell therapy

Case-by-Case Decision Making Based on Clinical Judgement

- On **a case-by-case basis**, providers who care for moderately or severely immunocompromised patients may administer mRNA COVID-19 vaccines **outside of the FDA and CDC dosing intervals based on clinical judgement** when the benefits of a different vaccination schedule or dosage are deemed to outweigh the potential and unknown risks.

Updated Guidance on Passive Antibody Products

- Updated guidance
  - **No recommended deferral period**
  - However, **tixagevimab/cilgavimab (EVUSHELD™)** should be deferred for at least two weeks after vaccination
- Previous guidance was to defer COVID-19 vaccination for
  - 30 days if product used for post exposure prophylaxis
  - 90 days if product used for treatment

Updated information on contraindications and precautions to COVID-19 vaccination

Contraindications and precautions

CDC considers COVID-19 vaccination to be contraindicated, not recommended, or a precaution in the following situations:

Table 4. Contraindications and precautions to COVID-19 vaccination

Medical condition or history	Contraindication, not recommended, or precaution	Recommended action(s)
History of a severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a component of the COVID-19 vaccine	Contraindication	Do not vaccinate with the same type of COVID-19 vaccine (i.e., mRNA or Janssen COVID-19 Vaccine).
History of a known diagnosed allergy to a component of the COVID-19 vaccine	Contraindication	See Appendix E for actions and additional information.
For **the Janssen COVID-19 Vaccine**, TTS following receipt of a previous Janssen COVID-19 Vaccine (or other COVID-19 vaccines not currently authorized in the United States that are based on adenovirus vectors, e.g., AstraZeneca)	Contraindication	Do not vaccinate with Janssen COVID-19 Vaccine. See Safety considerations for Janssen COVID-19 Vaccine for additional information on vaccinating this group with an mRNA COVID-19 vaccine.
For **the Janssen COVID-19 Vaccine**, history of an episode of immune-mediated syndrome characterized by thrombosis and thrombocytopenia, such as spontaneous or classic heparin-induced thrombocytopenia (HIT)	Not recommended	Do not vaccinate with Janssen COVID-19 Vaccine. These people should receive an mRNA COVID-19 vaccine.
For the **Janssen COVID-19 Vaccine**, Guillain-Barré syndrome (GBS) within 6 weeks after receipt of Janssen COVID-19 Vaccine	Not recommended	Do not vaccinate with Janssen COVID-19 Vaccine. These people should receive an mRNA COVID-19 vaccine.
History of an immediate allergic reaction to any vaccine other than COVID-19 vaccine or to any injectable therapy (i.e., intramuscular, intravenous, or subcutaneous vaccines or therapies [excluding subcutaneous immunotherapy for allergies, i.e., "allergy shots"])	Precaution	The benefit of vaccination outweighs the risks for most people. See Appendix E for actions and additional information.
People with a history of a non-severe, immediate (onset less than 4 hours) allergic reaction after a dose of one type of COVID-19 vaccine (i.e., mRNA or Janssen) have a precaution to the **same type of COVID-19 vaccine**	Precaution	
People with an allergy-related contraindication to one type of COVID-19 vaccine have a precaution to the **other type of COVID-19 vaccine** (e.g., people with a contraindication to an mRNA COVID-19 vaccine have a precaution to Janssen COVID-19 vaccine and vice versa).	Precaution	
Moderate or severe acute illness, with or without fever	Precaution	Defer vaccination until the illness has improved.
History of MIS-C or MIS-A	Precaution	See COVID-19 vaccination and SARS-CoV-2 infection including MIS-C and MIS-A
For **mRNA COVID-19 vaccines**, history of myocarditis or pericarditis after a dose of an mRNA COVID-19 vaccine	Precaution	A subsequent dose of any COVID-19 vaccine should generally be avoided. See Safety considerations for mRNA COVID-19 vaccines: Pfizer-BioNTech and Moderna for additional considerations.
For **Janssen COVID-19 Vaccine**, a history of GBS	Precaution	See Safety considerations for Janssen COVID-19 vaccine and Special situations and populations for additional information.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#contraindications

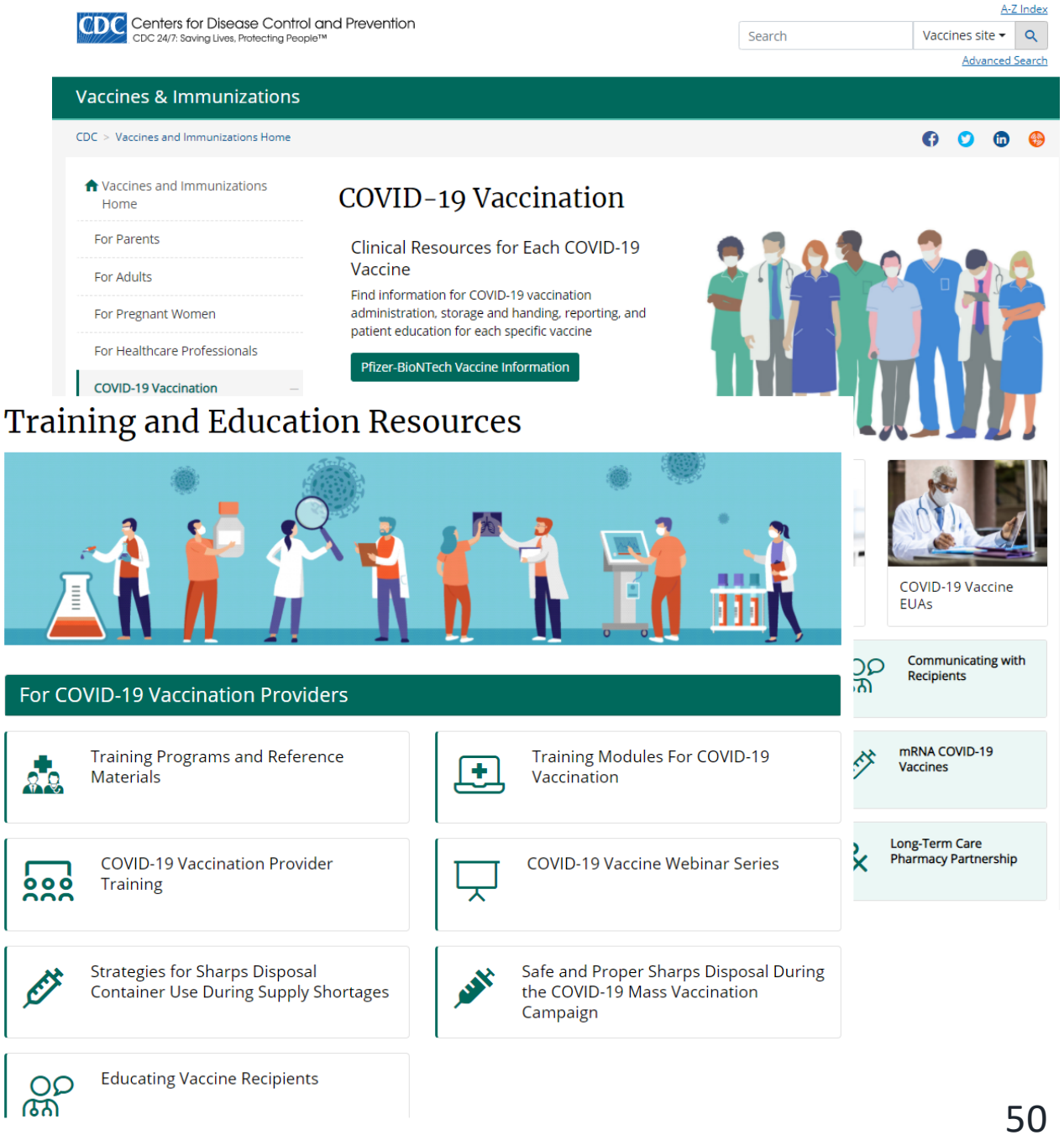
CDC Resources

Learn more with **CDC's COVID-19 vaccine tools and resources.** Find information for COVID-19 vaccination administration, storage, reporting, patient education, and more.

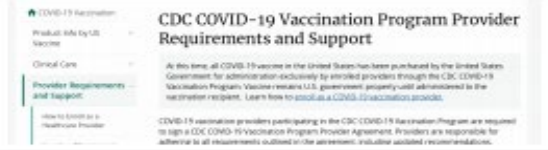
www.cdc.gov/vaccines/covid-19/index.html

www.cdc.gov/vaccines/covid-19/hcp/index.html

Healthcare infection prevention and control recommendations after COVID-19 vaccination: www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-after-vaccination.html



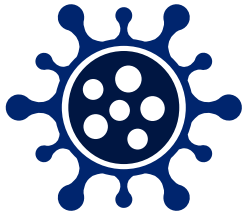
COVID-19 Vaccination Provider Trainings

Skill	Importance: Why is this necessary?	Resource
How to prepare vaccines	Vaccines need to be prepared correctly to ensure patient safety.	• Vaccine Training Modules 
Vaccine administration	All COVID-19 vaccines must be given appropriately by intramuscular injection.	• Vaccine Training Modules • You Call the Shots! Vaccine Administration module 
Vaccine storage and handling	Without proper storage and handling, vaccines may not be as effective.	• Vaccine Storage and Handling Toolkit: COVID-19 Addendum 
Vaccine documentation	Reliable medical records and immunization information are critical for patient treatment and required as part of the COVID-19 Vaccination Program.	• COVID-19 Vaccination Data Systems 
Vaccine safety and monitoring	Accurate reporting of adverse events means faster detection of safety problems.	• VAERS 
Preventing vaccine administration errors	Variation from vaccine storage, preparation, and administration guidance can result in inadequate protection and jeopardize patient safety.	• Preventing Vaccine Administration Errors: A Primer for Healthcare Workers webinar • Vaccine Administration: Preventing Vaccine Administration Errors 
Program requirements	The COVID-19 Vaccination Program has specific requirements that all vaccination providers must comply with.	• COVID-19 Vaccination Program Provider Requirements and Support 

Additional information about training and education for clinicians can be found at: https://www.cdc.gov/vaccines/covid-19/training.html
Specific COVID-19 vaccine product information is available on this webpage: https://www.cdc.gov/vaccines/covid-19/info-by-product/index.html
Clinical care considerations are posted here: https://www.cdc.gov/vaccines/covid-19/clinical-considerations/index.html

Looking Ahead

COVID-19 vaccine implementation efforts are focused on:



Continued surveillance of variant viruses

To prepare and adapt with a vaccine response

Continued vaccine effectiveness studies

To understand how the vaccines are working

Expanding vaccine-eligible populations

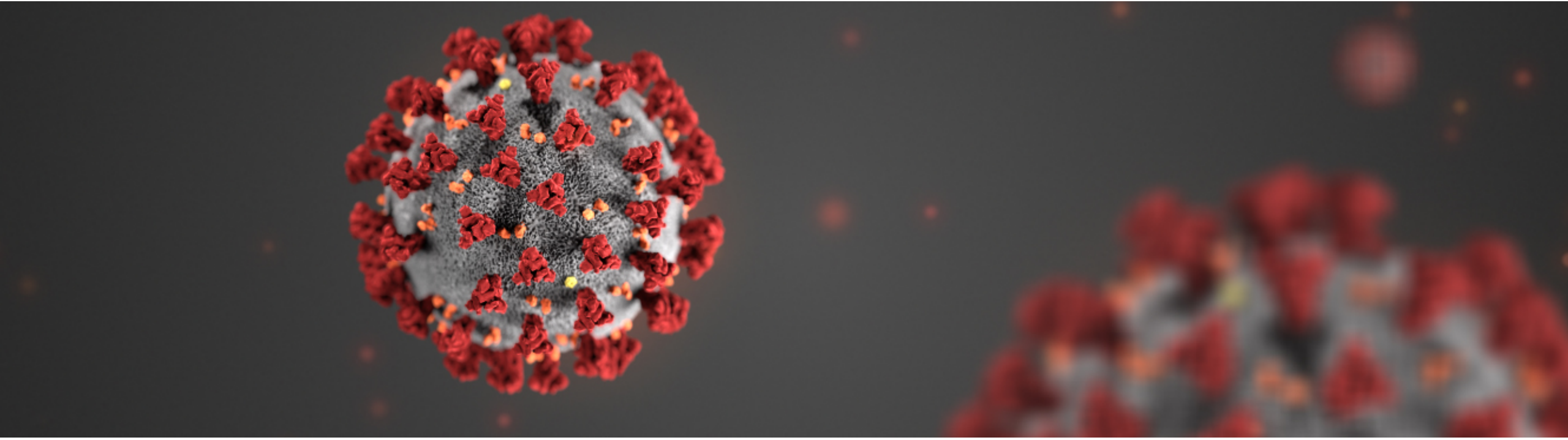
To vaccinate groups like young children

Combating vaccine hesitancy

And offering vaccines to groups that declined initially

Continuing focus on vaccine equity

To include disproportionately affected communities



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

Thank you

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.