



COVID-19 Vaccinations and Boosters: Current Situation in the U.S. and Strategies to Increase Uptake

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EVALUATION CENTER

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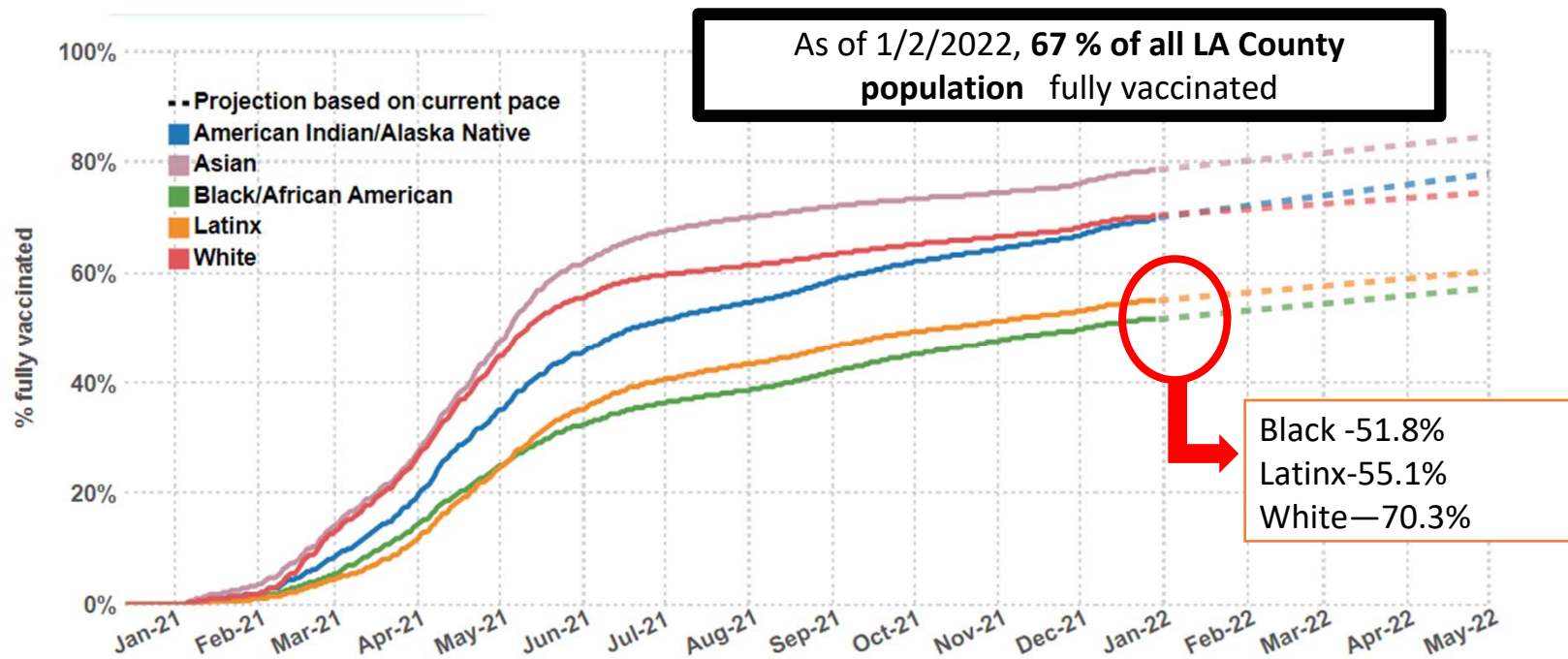
- Dr. Hyle is a co-author at UpToDate.com

Outline

- COVID-19 vaccination
- COVID-19 boosters
- Maintaining a diverse response

Vaccine uptake

% Fully vaccinated by demographics in LA county



Vaccine hesitancy & medical mistrust

- Delay in acceptance or refusal of vaccines despite availability of vaccine services
- Influenced by Vaccine Hesitancy Matrix
 - Contextual influences
 - Individual and group influences
 - Vaccine specific Issues
- Medical Mistrust



Vaccine decision-making factors in minority communities in LA

- 13 focus groups conducted with 70 participants
 - 21% Latinx, 24% Black
- Identified several themes using the Vaccine Hesitancy Matrix

Vaccine decision-making factors in minority communities in LA

Contextual	Individual	Vaccine Specific
<ul style="list-style-type: none">• Unclear and unreliable information• References to mistrust from historical and modern unethical research studies	<ul style="list-style-type: none">• Inadequate exposure to trusted messengers or information• Medical mistrust	<ul style="list-style-type: none">• Need for vaccine evidence by subpopulation• Under-representation in vaccine trials• Vaccine development misconception

Vulnerable populations

- Reproductive aged women, particularly pregnant women
- People of Color (Black, Latinx, and Indigenous communities)
- Immigrant populations
- People ages 65+

Garcia, E et al. *Annals of* <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-09-22/11-COVID-Meaney-Delman-508.pdf>

Epidemiology. 2021 <https://www.nytimes.com/2021/12/13/us/covid-deaths-elderly-americans.html>

Allotey, J et al. *BMJ*. 2020 <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>

Wei, L et al. *WIMR*. 2021 <http://publichealth.lacounty.gov/docs/RacialEthnicSocioeconomicDataCOVID19.pdf>



Apart from the 65+ community,
these vulnerable subgroups
have low vaccine and low
booster uptake

Vaccine uptake in reproductive-aged women

In the UK:

- Survey of 55,000 Britons by **Find Out Now**
 - 18-34 yo women was the subgroup most likely to decline COVID-19 vaccination

In the US:

- Google searches for COVID-19 vaccines and infertility increased by 34,900 % in December 2020
- Vaccine uptake among pregnant women low

Sajjadi, N et al. *Journal of Osteopathic Medicine* 2021

<https://inews.co.uk/news/health/coronavirus-latest-experts-debunk-vaccine-fertility-myths-women-819783>

Murewanhema, G. *The Pan African Medical Journal* 2021

Vaccine uptake in reproductive-aged women

How did these concerns start?

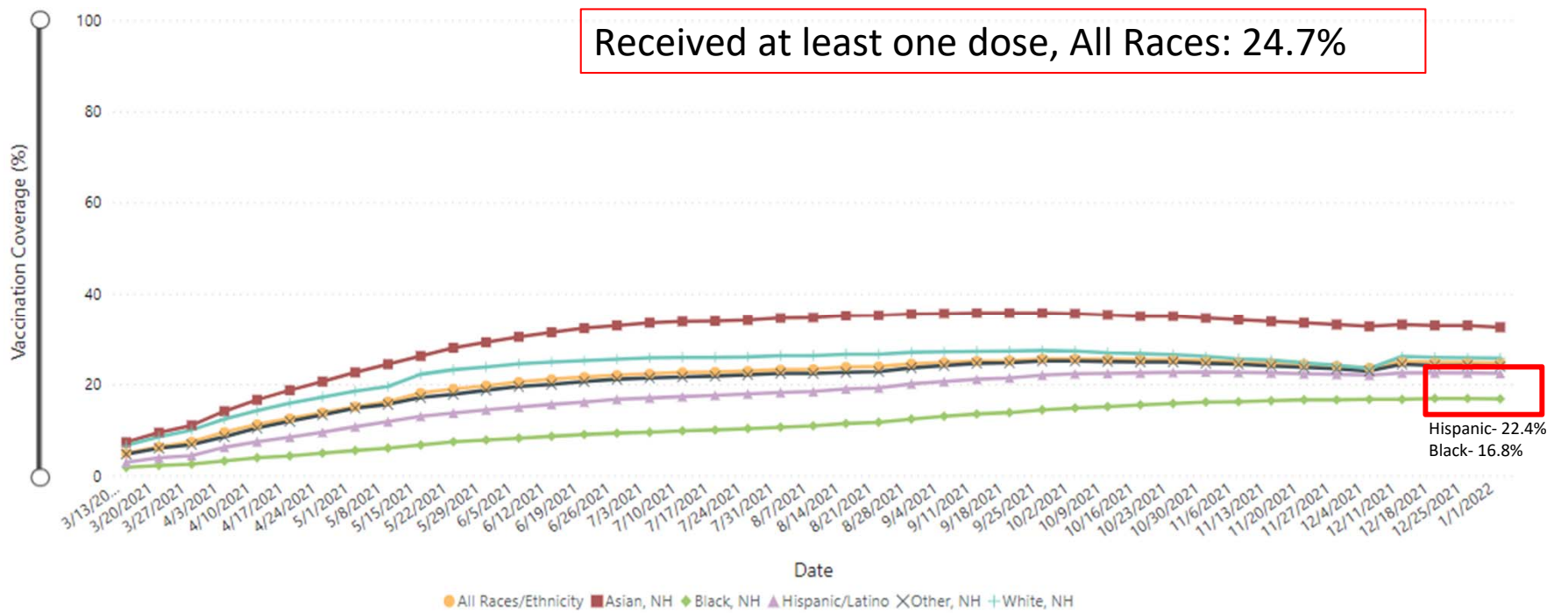
1. Before authorization

- Concern for cross-reactivity with placental protein

2. After authorization

- Menstrual irregularities

Vaccine uptake in pregnant people aged 18-49



Vaccine uptake in immigrant populations

- Zip code data from New York and Miami-Dade highlight low COVID-19 vaccine uptake in Black immigrant communities, with only 32% to 46% of the vaccine-eligible adults
- Compared with the national vaccine uptake of 62% (Goal 75-80+%)

Comparison of effect of various strategies on % vaccine uptake

Strategy	% increase in vaccine uptake	LA County
Primary care physician sessions <ul style="list-style-type: none"> information and motivational interviewing 	42.2% [1]	
Reminder Recall Interventions/ Behavioral Nudges	5-28% [2,3,4]	
Mobile Clinics <ul style="list-style-type: none"> After work hours/weekends 	131% [5,6]	✓ LA County has 1,270 fixed sites, along with 560-570 mobile site visits , with approximately 70% of these mobile visits in the county's highest-need communities [9]
Community engagement [4,7,8] <ul style="list-style-type: none"> Community investment Vaccine ambassadors Community representation in clinical trials 		✓ The Community Health Workers Initiative (CHW) aims to narrow gaps by reaching out to residents and business in high-need communities to provide them with critical information ✓ The Heal Together Coalition provides opportunities for businesses and labor organizations to host their own vaccine drive at any location in LA County through the LA County Department of Public Health's Mobile Vaccine Clinic ✓ VaxUp LA COVID-19 public outreach and education awareness campaign includes multilingual messaging and outreach by trusted messengers.
Mass Media Campaigns	30-500% [3]	✓ The California DPH enlists the help of celebrities , eg Jaleel White. California also had a \$116.5 million vax for cash lottery

1. Talmy, T et al. Journal of Community Health.2021
 2. Szilagyi, PG et al. The Journal of Pediatrics. 2020
 3. Jarrett C, et al Vaccine. 2015
 4. <https://www.cdc.gov/vaccines/covid-19/downloads/vaccination-strategies.pdf>
 5. Petrova, E et al. Vaccines. 2021
 6. Ojikutu, B et al. American Journal of Public Health.2021
 7. Carson, S et al. JAMA network open. 2021

Booster uptake

Attitudes towards boosters

- In Summer 2021, a survey was sent to adult Americans to gauge attitudes towards a potential COVID-19 booster vaccine
- 2,138 participants returned surveys that were stratified into booster-hesitant and booster non-hesitant

Characteristics of booster-hesitant adults

- Compared with booster non-hesitant adults, booster-hesitant adults had:
 - Significantly less “trust” in COVID-19 information
 - Lower scores in vaccine literacy and vaccine confidence
- Even among those with “a lot” of trust in COVID-19 information, booster-hesitant adults had:
 - Lower educational attainment
 - Lower vaccine literacy scores

Boosters are endorsed

September 24, 2021- Pfizer

- People 65+ and residents in long term care settings
- People 50-64 with underlying medical conditions
 - +/- People 18-49 with underlying medical conditions
 - +/- People 18-49 at increased risk of exposure based on occupation or institution

Updates to booster guidance

September 24, 2021- Pfizer

- People 65+ and residents in long term care settings
- People 50-64 with underlying medical conditions
 - +/- People 18-49 with underlying medical conditions
 - +/- People 18-49 at increased risk of exposure based on occupation or institution

October 21, 2021- Moderna, J&J

Simplification to booster guidance

September 24, 2021- Pfizer

- People 65+ and residents in long term care settings
- People 50-64 with underlying medical conditions
 - +/- People 18-49 with underlying medical conditions
 - +/- People 18-49 at increased risk of exposure based on occupation or institution

October 21, 2021- Moderna, J&J

November 19, 2021

- All adults ages 18 +

Ongoing expansion of booster eligibility

September 24, 2021- Pfizer

- People 65+ and residents in long term care settings
- People 50-64 with underlying medical conditions
 - +/- People 18-49 with underlying medical conditions
 - +/- People 18-49 at increased risk of exposure based on occupation or institution

October 21, 2021- Moderna, J&J

November 19, 2021

- All adults ages 18 +

December 9, 2021

- Everyone 16+

Most current booster guidance

September 24, 2021- Pfizer

- People 65+ and residents in long term care settings
- People 50-64 with underlying medical conditions
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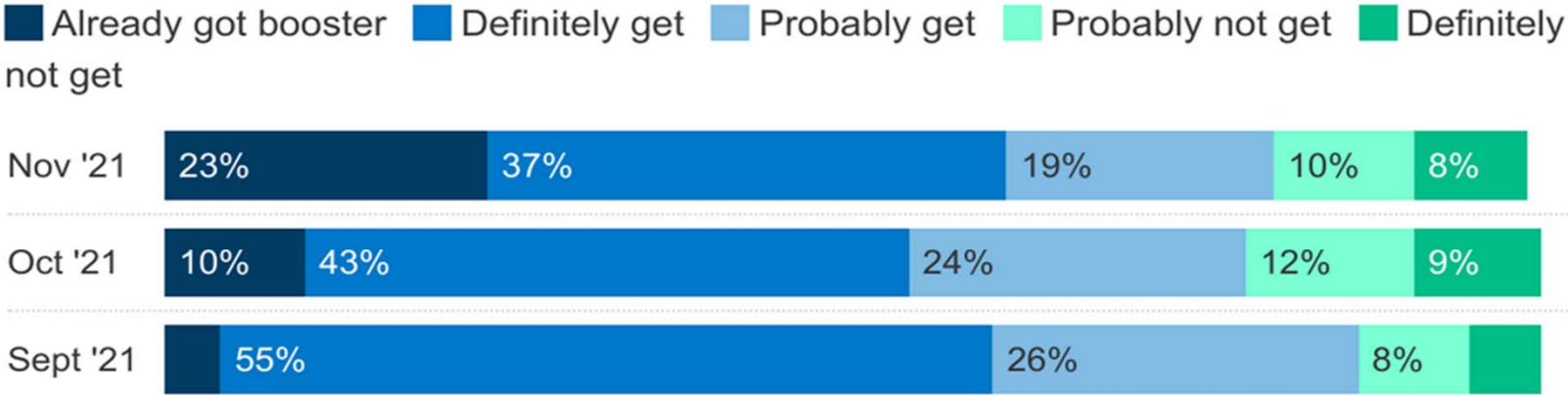
December 9, 2021

- Everyone 16+

January 5, 2022

- Everyone 12+

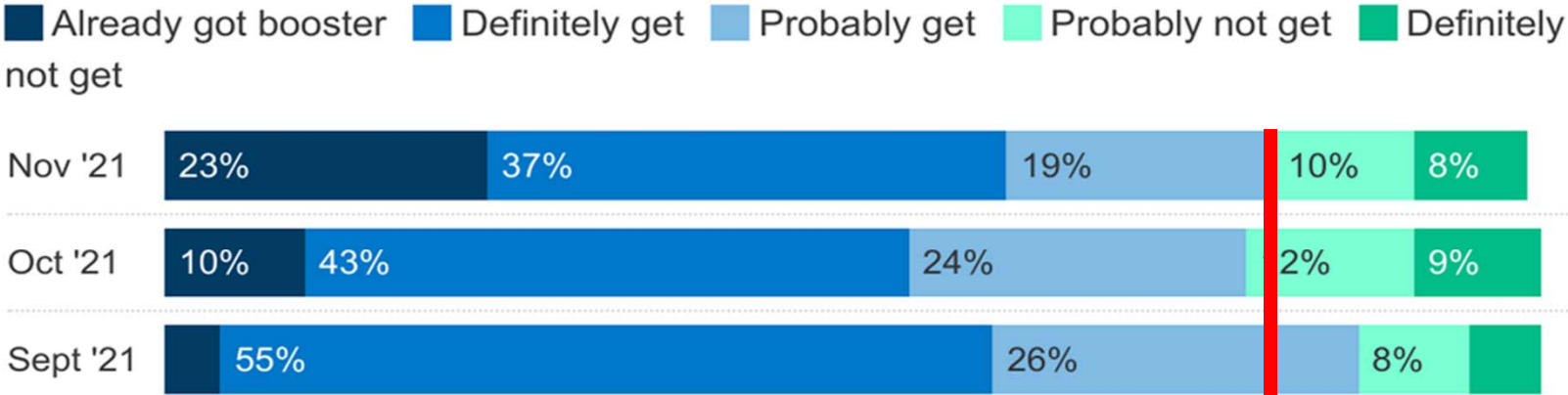
Percentage of fully vaccinated adults who have received or anticipate receiving a booster dose



NOTE: Among fully vaccinated adults. See topline for full question wording.
SOURCE: KFF COVID-19 Vaccine Monitor

**KFF COVID-19
Vaccine Monitor**

Percentage of fully vaccinated adults who have received or anticipate receiving a booster dose



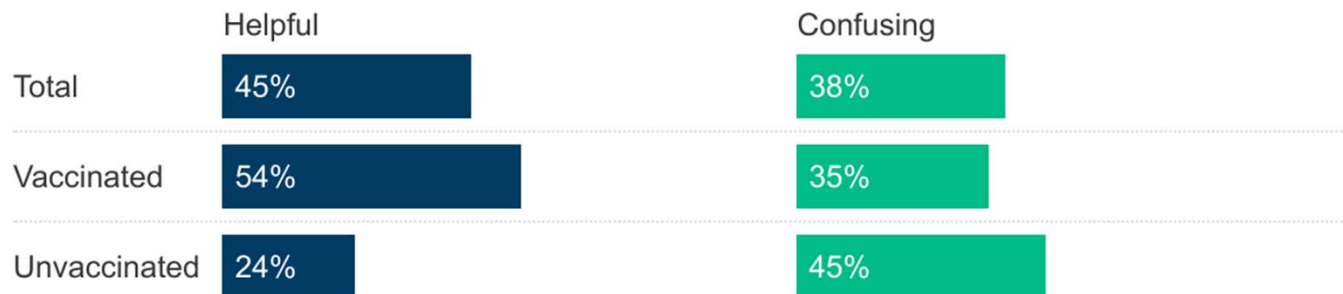
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 SOURCE: KFF COVID-19 Vaccine Monitor

**KFF COVID-19
 Vaccine Monitor**

Dissemination of booster information

Larger Share Of Vaccinated Adults Find Booster Information Helpful, While Larger Share Of Unvaccinated Find It Confusing

Percent who say the information they have seen about COVID-19 booster shots has been:



NOTE: Vaccinated adults are those who have received at least one dose of a COVID-19 vaccine. See topline for full question wording.

SOURCE: KFF COVID-19 Vaccine Monitor (September 13-22, 2021)

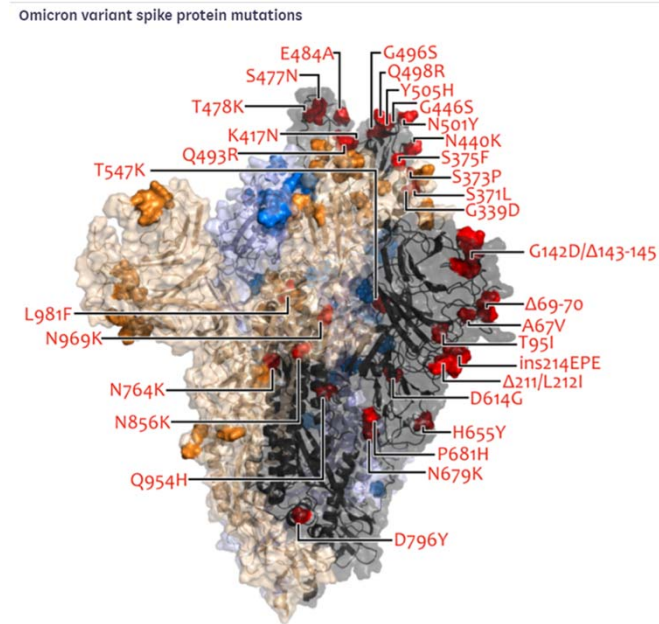
Omicron variant

- Includes 15 mutations in the receptor-binding domain (RBD) leading to antibody evasion
- Influences ability to get infected despite being vaccinated
- Increases infectivity and immune evasion compared with other variants

Dejnirattisai et al. *Medrxiv*. 2021

Leung and Wu. *Medrxiv*. 2021

Lu et al. *Medrxiv*. 2021



Spike protein structures of the SARS-CoV-2 virus showing mutations of the Omicron variant

Image credit: MRC-University of Glasgow Centre for Virus Research.

Boosters are more protective against Omicron

Booster	% Vaccine Effectiveness against hospitalizations (Omicron)
mRNA primary series + no Boost	0-55% [1,2,3]
mRNA + mRNA Boost	88% [1,2,3]
J&J + J&J Boost	84% [4]

1. Andrews, N et al. Medrxiv preprint. 2021

2. Hansen, C et al. Medrxiv preprint. 2021

3. <https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports> (week 51)

4. Gray, G et al. Medrxiv preprint. 2021

Booster decision-making factors

About Half Of Vaccinated Adults Who Aren't Boosted Say The Omicron Variant Makes Them More Likely To Do So, One In Eight Unvaccinated Adults Say Omicron Motivates Them To Get Vaccinated

Does news about the new omicron variant of the coronavirus make you more likely to..., or not?



NOTE: Vaccinated adults are those who have received at least one dose of a COVID-19 vaccine See topline for full question wording.
SOURCE: KFF COVID-19 Vaccine Monitor: Early Omicron Update (Dec. 15-20, 2021)

80% of fully vaccinated adults were amenable to a booster before Omicron

Legend:
 ■ Already got booster
 ■ Definitely get
 ■ Probably get
 ■ Probably not get
 ■ Definitely not get



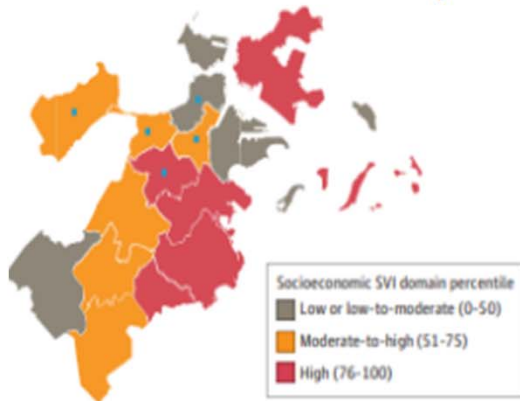
NOTE: Among fully vaccinated adults. See topline for full question wording.
SOURCE: KFF COVID-19 Vaccine Monitor

KFF COVID-19
Vaccine Monitor

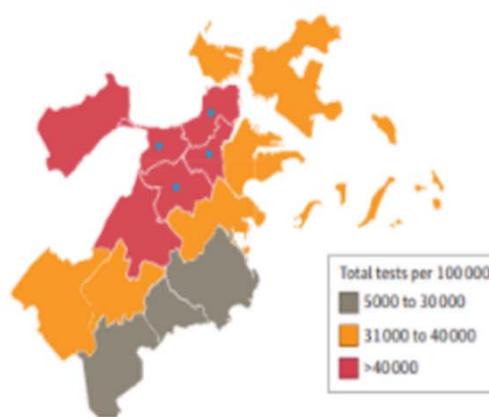
Access remains a major issue

Testing inequalities in Boston

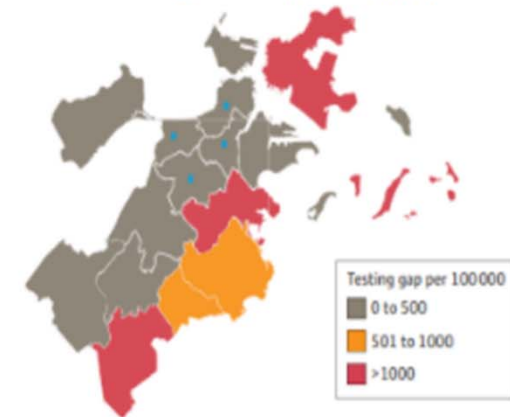
Boston socioeconomic vulnerability



Boston testing intensity

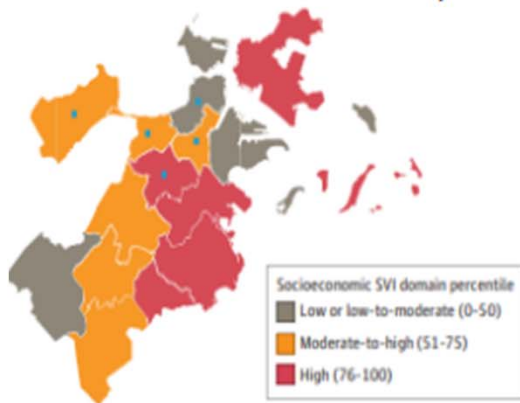


Boston average weekly testing gap

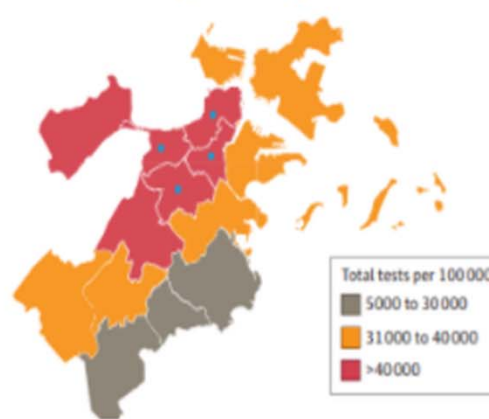


Ideas to improve booster uptake

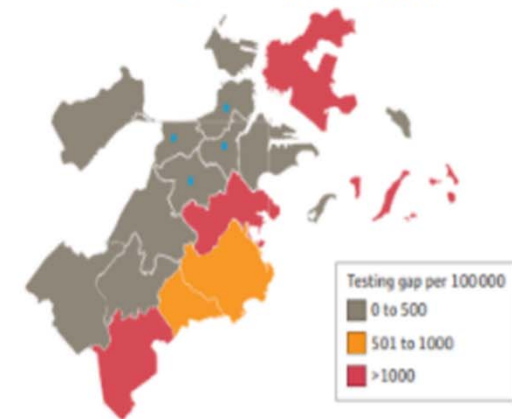
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Boston testing intensity

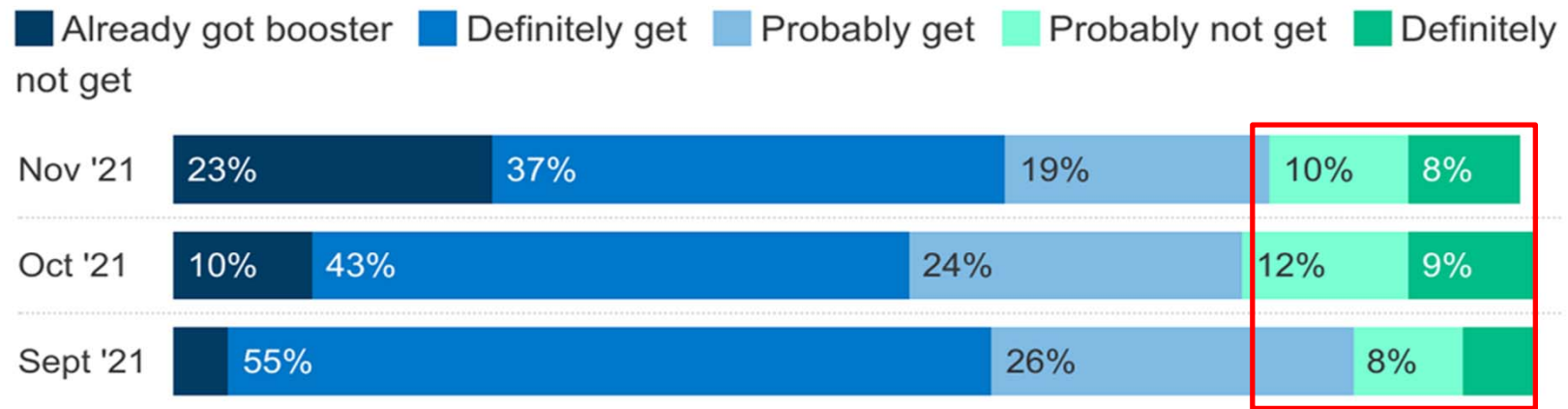


Boston average weekly testing gap



- Match areas of socioeconomic vulnerability with easy to access boosters

20% of fully vaccinated adults were not amenable to a booster before Omicron



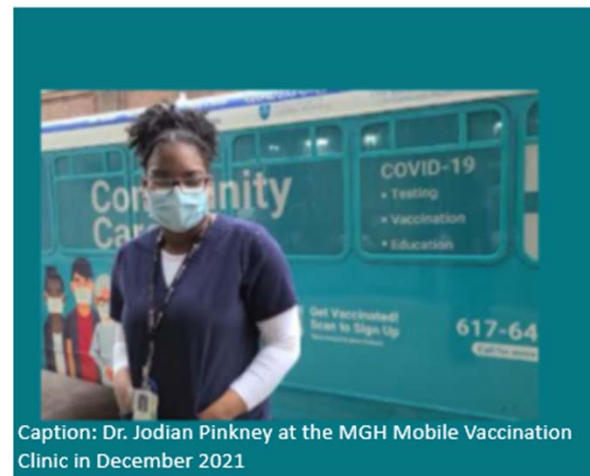
NOTE: Among fully vaccinated adults. See topline for full question wording.
SOURCE: KFF COVID-19 Vaccine Monitor

KFF COVID-19
Vaccine Monitor

Why not a booster, too?

Strategies to improve booster uptake

- Trusted voices
 - Community engagement
 - Vaccine ambassadors
 - Primary care information sessions
 - Reminder phone calls
- Bring the vaccine to people
 - Mobile vaccination clinics
 - Weekend and evening hours
- Additional qualitative surveys regarding why vaccinated people are not getting boosted



<https://www.cdc.gov/vaccines/covid-19/downloads/vaccination-strategies.pdf>
<http://publichealth.lacounty.gov/docs/RacialEthnicSocioeconomicDataCOVID19.pdf>

Slide 34

1

Emily: @Jodi - is this you?! Love it!!!! Can we caption it?

@Jodi, what do you think about giving some "broad categories" and then examples below each?

@Acadia, please fix references to be the same

Acadia T, 1/10/2022

Diversifying approaches to address the pandemic

COVID-19 Vaccine Boosters for All Adults: An Optimal U.S. Approach?

Ameet Sarpatwari, PhD, JD; Ankur Pandya, PhD; Emily P. Hyle, MD, MSc; and Govind Persad, JD, PhD

- Given rapid changes in pandemic, need to stay nimble regarding interventions and strategies to meeting highest priorities:
 - Continuing to encourage initiation of the COVID-19 vaccination among the never vaccinated
 - Expanding access to testing, especially at home tests
 - Global vaccine equity

Take-away points

- Unvaccinated remain hesitant but it is possible to improve uptake
- Most vaccinated adults endorse boosters, but uptake has been low
- Ongoing strategies to improve access and information are important for both initial vaccination and booster uptake

Slide 37

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Emily: @Jodi, let's talk about how to frame our final conclusions? I like these

Acadia T, 1/10/2022



Acknowledgments



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Slide 38

3

Emily:@Acadia, please add our affiliations, funding, and insignia here too

@Jodi, do you want to add our emails here?

Acadia T, 1/10/2022