COVID-19 for Pediatric Populations

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Disclosures

- No financial disclosures
- What gets said here today may change based on new data and recommendations
  - Knowledge is moving rapidly, the fastest it has for any pandemic

Agenda

- Epidemiology
- COVID vaccines
- Vaccine Hesitancy
- Discussion

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Epidemiology

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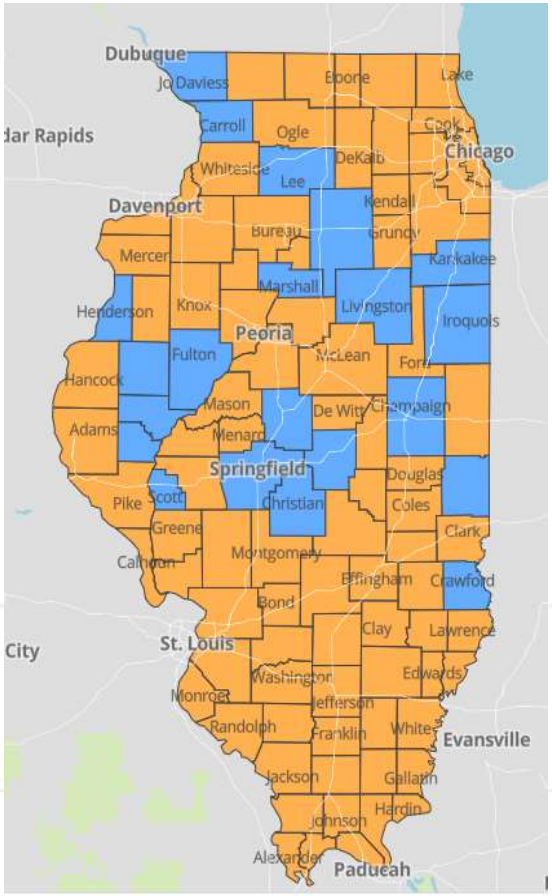
Illinois Cases

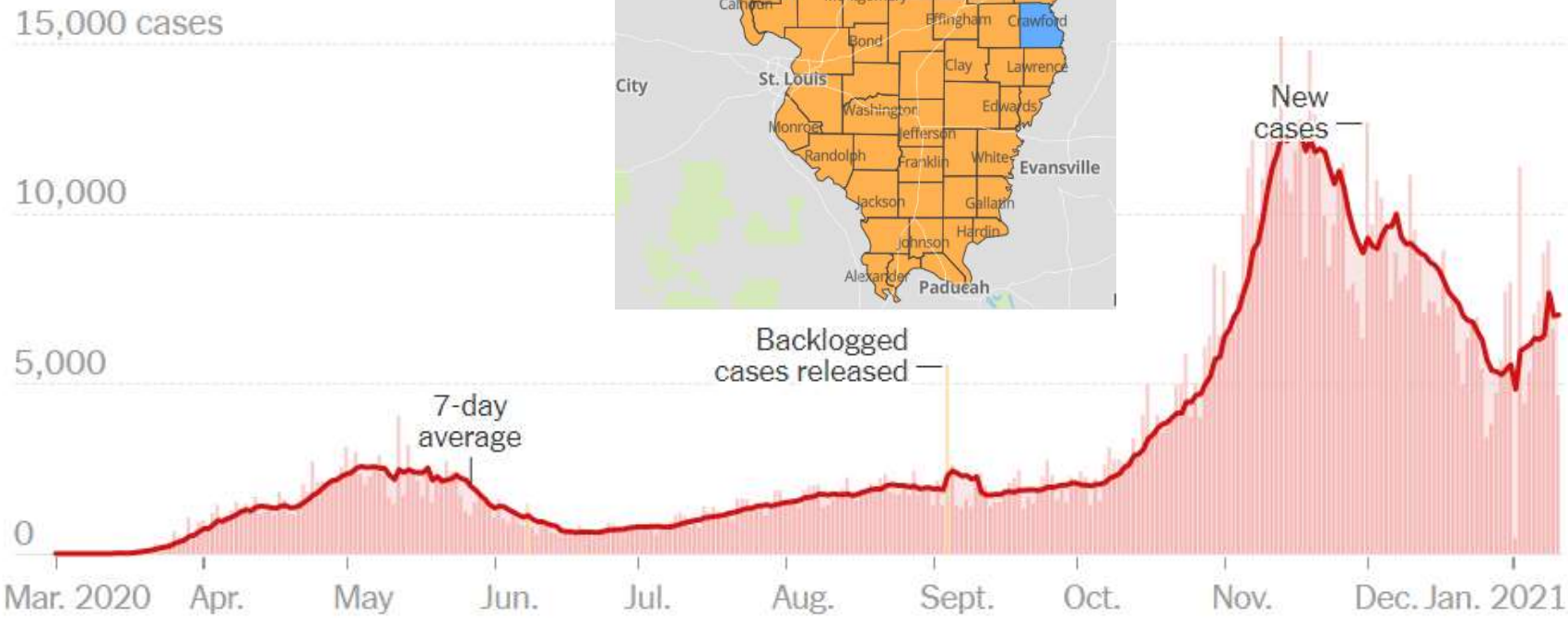
(1/11/2021)

Positivity rate 10.3%

(1/11/2021)



At Risk Counties Maps



https://www.nytimes.com/interactive/2020/us/illinois-coronavirus-cases.html

https://www.dph.illinois.gov/covid19/covid19-statistics

https://covidactnow.org/us/illinois-il?s=1330330

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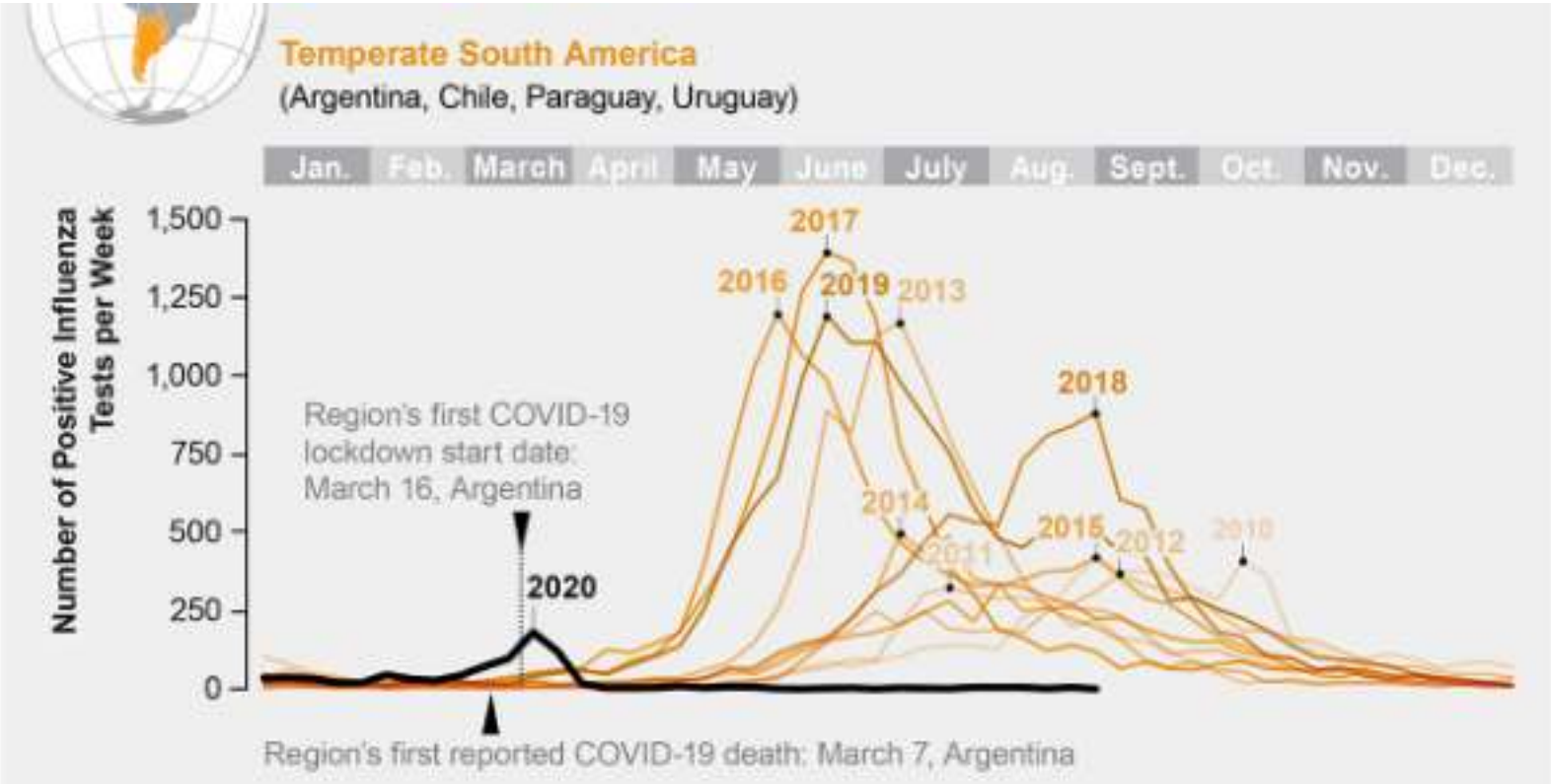
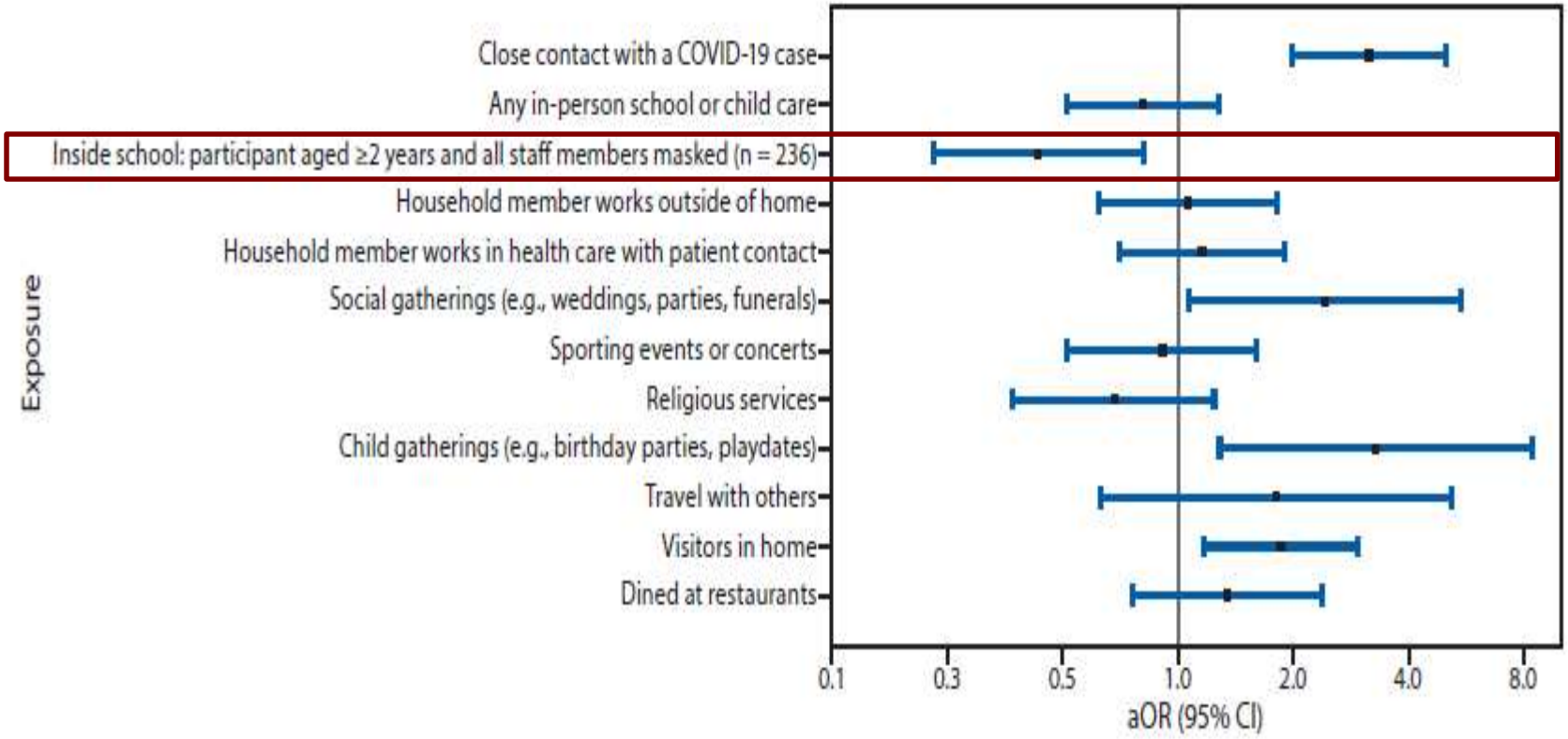
Influenza in the Southern Hemisphere: January-September 2020



https://www.scientificamerican.com/article/flu-season-never-came-to-the-southern-hemisphere1/ Published 9/30/2020

Adjusted Odds Ratios for Exposures Associated with Confirmed COVID-19

Children and adolescents aged <18 years (N = 397)
Mississippi, September–November 2020



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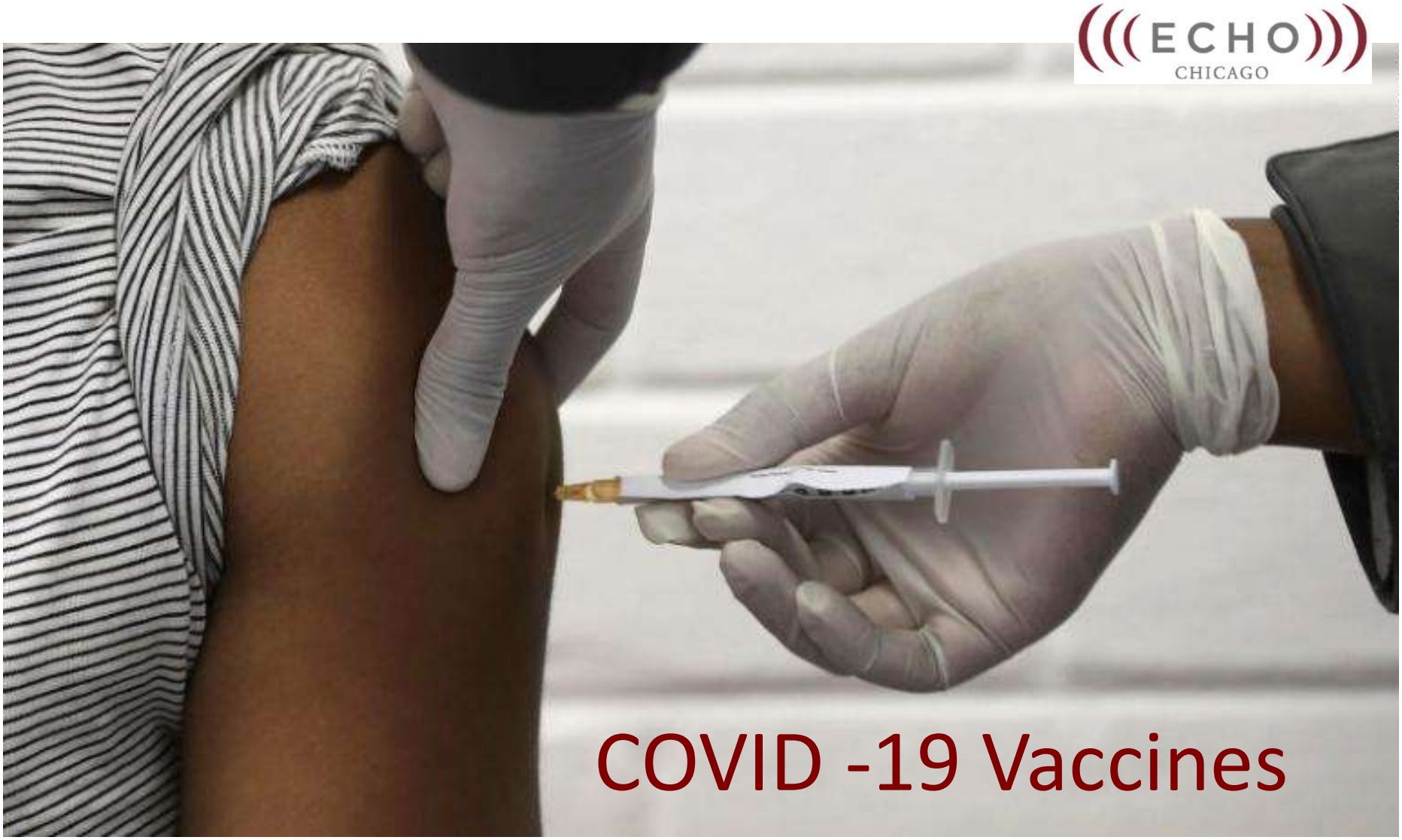
UK variant B.1.1.7

Covid-19: What have we learnt about the new variant in the UK?

BMJ 2020 ; 371 doi: https://doi.org/10.1136/bmj.m4944 (Published 23 December 2020)
Cite this as: *BMJ* 2020;371:m4944

- Viruses constantly change through mutation, this is expected. Multiple new variants have already been documented
  - The B1.1.7 variant is defined by 17 mutations
  - One of most significant mutations is an N501Y mutation in the spike protein
- What do we know about this variant
  - May be more easily transmissible (early estimates rate of transmission ~50-71% higher than other variants)
  - Currently there is no evidence that this will change the effectiveness of COVID-19 vaccines
  - Currently there is no evidence that it causes more severe disease
  - Current testing and PPE remain effective

https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant.html



COVID -19 Vaccines

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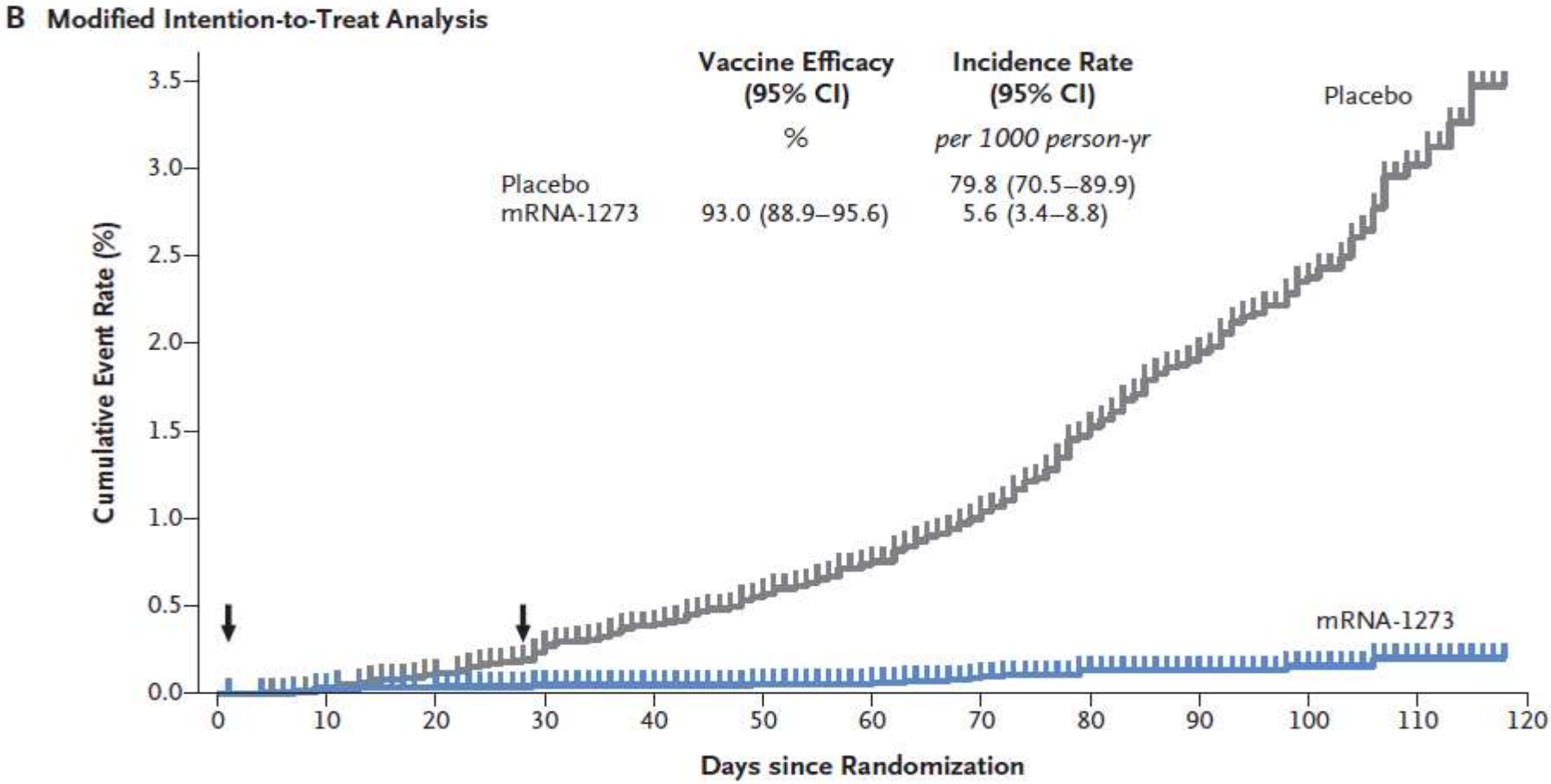
Vaccine Comparison

Product Comparison

Feature	Moderna	Pfizer-BioNTech
Multi-dose Vial	10 doses	5 – 6 doses
Packaging	10 vials per pack	195 vials per pizza box
Reconstitution Required	NO	YES
Stability	6 months freezer	6 months ultra-cold freezer
	30 day refrigerator	5 days refrigerator
	12 hours room temp 6 hours after puncture	6 hours room temp after reconstitution
Dose/Schedule	0.5 ml Day 1 and 28	0.3 ml Day 1 and 21
Age Restriction	18 years and older	16 years and older
Cost Per Dose US	$15	$19.50
Cost Per Dose Europe	$18	$14.70

UChicago Medicine

Moderna Vaccine Efficacy to Prevent Covid-19



No. at Risk

Placebo	14,598	14,590	14,567	14,515	13,806	12,352	12,694	11,450	9736	6729	4067	1200	0
mRNA-1273	14,550	14,543	14,532	14,504	13,825	13,398	12,791	11,573	9911	6871	4179	1238	0

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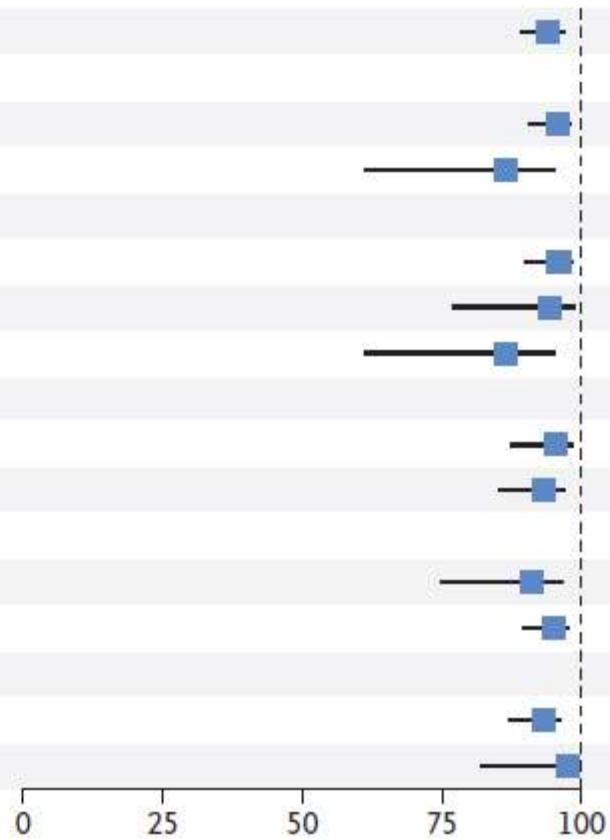
Baden LR, et al. NEJM DOI: 10.1056/NEJMoa2035389

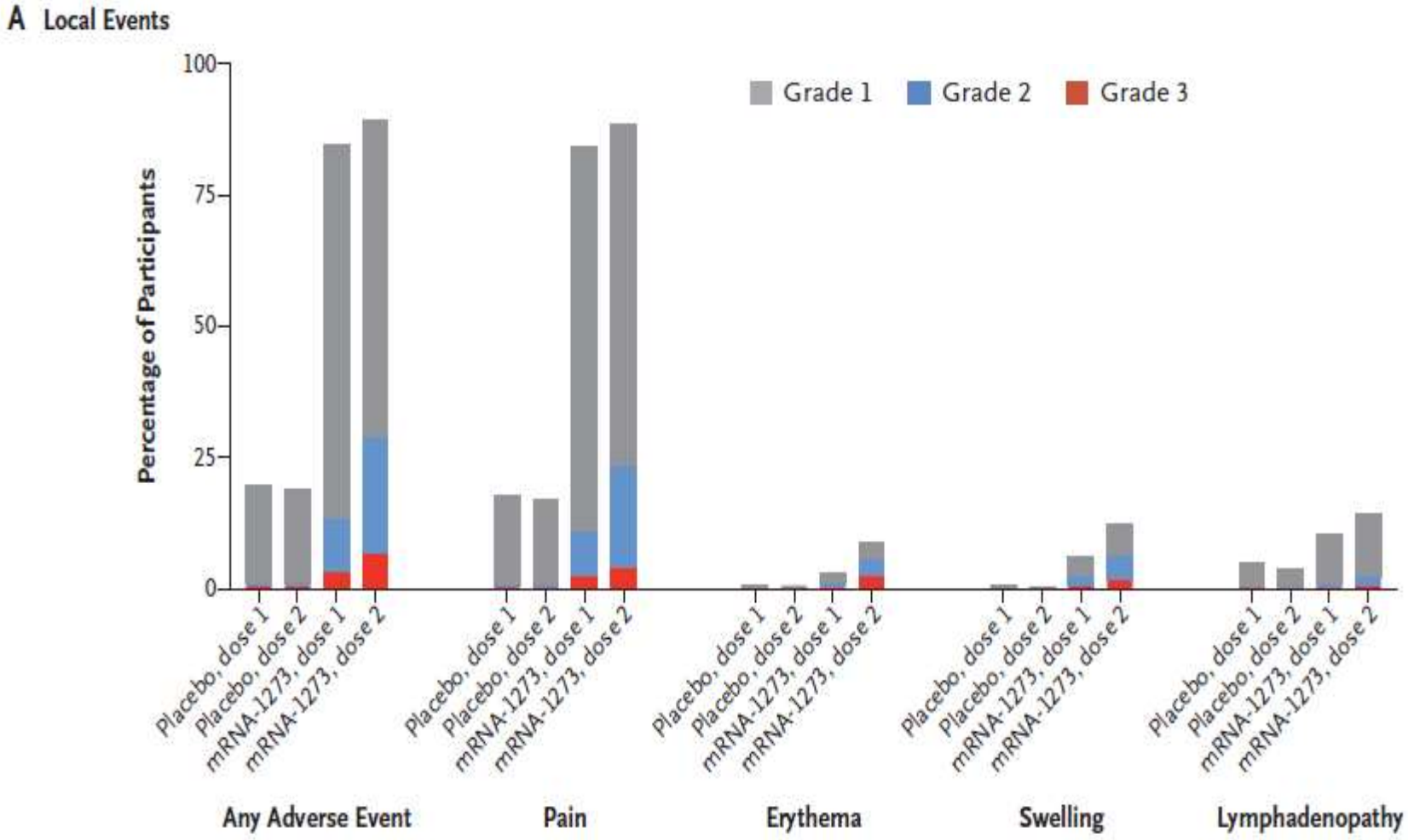
Moderna Vaccine Efficacy to Prevent Covid-19

Subgroup	Placebo (N=14,073)	mRNA-1273 (N=14,134)	Vaccine Efficacy (95% CI)
	no. of events/total no.		
All patients	185/14,073	11/14,134	94.1 (89.3–96.8)
Age			
≥18 to <65 yr	156/10,521	7/10,551	95.6 (90.6–97.9)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Age, risk for severe Covid-19			
18 to <65 yr, not at risk	121/8403	5/8396	95.9 (90.0–98.3)
18 to <65 yr, at risk	35/2118	2/2155	94.4 (76.9–98.7)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Sex			
Male	87/7462	4/7366	95.4 (87.4–98.3)
Female	98/6611	7/6768	93.1 (85.2–96.8)
At risk for severe Covid-19			
Yes	43/3167	4/3206	90.9 (74.7–96.7)
No	142/10,906	7/10,928	95.1 (89.6–97.7)
Race and ethnic group			
White	144/8916	10/9023	93.2 (87.1–96.4)
Communities of color	41/5132	1/5088	97.5 (82.2–99.7)



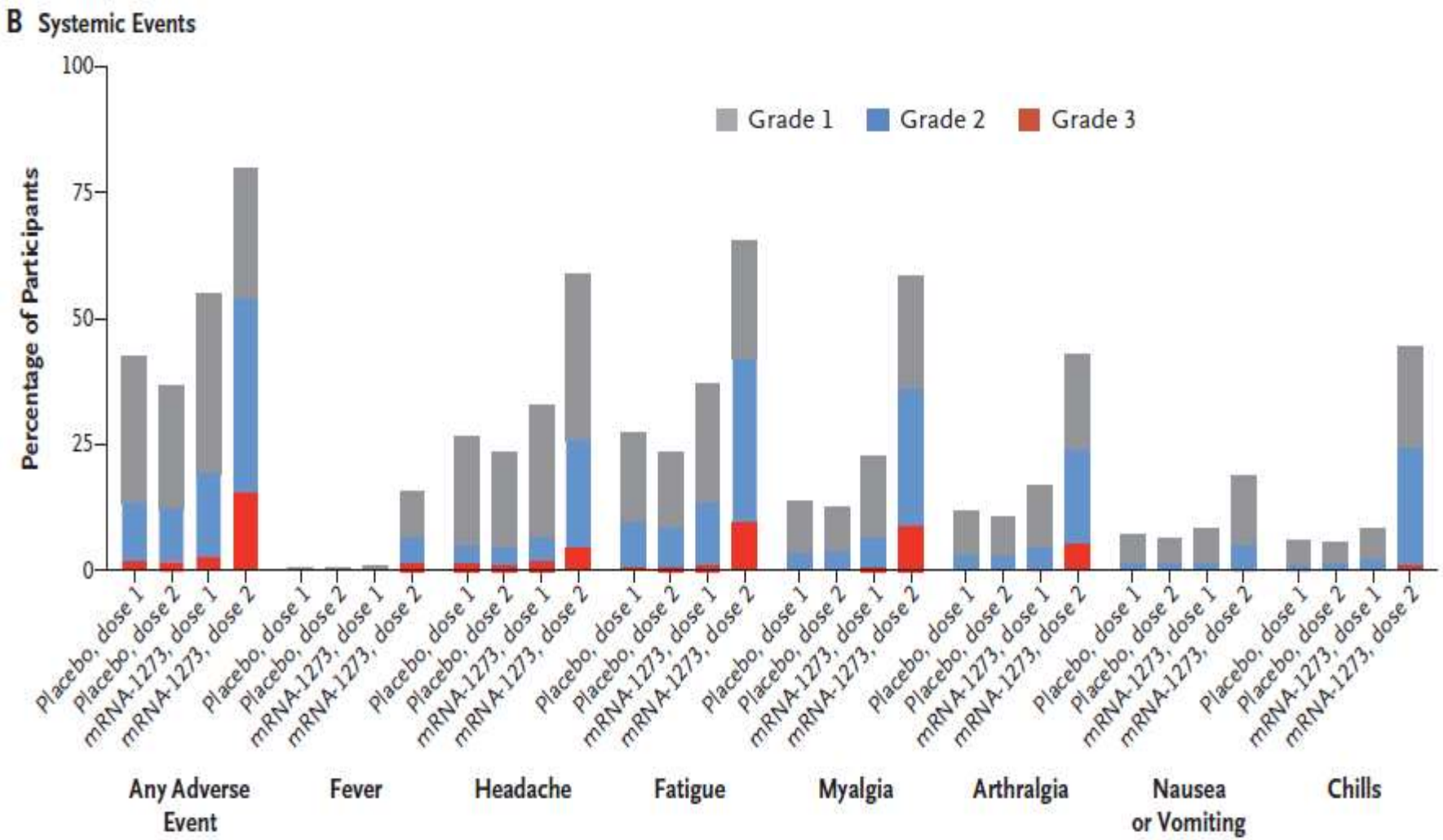
Baden LR, et al. NEJM DOI: 10.1056/NEJMoa2035389

Moderna Trial: Solicited Local Adverse Events



Baden LR, et al. NEJM DOI: 10.1056/NEJMoa2035389

Moderna Trial: Solicited Systemic Adverse Events



Baden LR, et al. NEJM DOI: 10.1056/NEJMoa2035389

	MAY PROCEED WITH VACCINATION	PRECAUTION TO VACCINATION	CONTRAINDICATION TO VACCINATION
CONDITIONS	CONDITIONS • Immunocompromising conditions • Pregnancy • Lactation ACTIONS • Additional information provided* • 15 minute observation period	CONDITIONS • Moderate/severe acute illness ACTIONS • Risk assessment • Potential deferral of vaccination • 15 minute observation period if vaccinated	CONDITIONS • None ACTIONS • N/A
ALLERGIES	ALLERGIES • History of food, pet, insect, venom, environmental, latex, or other allergies not related to vaccines or injectable therapies • History of allergy to oral medications (including the oral equivalent of an injectable medication) • Non-serious allergy to vaccines or other injectables (e.g., no anaphylaxis) • Family history of anaphylaxis • Any other history of anaphylaxis that is not related to a vaccine or injectable therapy ACTIONS • 30 minute observation period: Persons with a history of severe allergic reaction (e.g., anaphylaxis) due to any cause • 15 minute observation period: Persons with allergic reaction, but not anaphylaxis	ALLERGIES • History of severe allergic reaction (e.g., anaphylaxis) to another vaccine (not including mRNA COVID-19 vaccines†) • History of severe allergic reaction (e.g., anaphylaxis) to an injectable therapy ACTIONS: • Risk assessment • Potential deferral of vaccination • 30 minute observation period if vaccinated	ALLERGIES • History of severe allergic reaction (e.g., anaphylaxis) to any component of an mRNA COVID-19 vaccine† ACTIONS • Do not vaccinate

https://www.chicagohan.org/covidvax

Emergency Equipment for Sites Immunizing for COVID-19

- Anaphylaxis as been reported, although remains rare
  - 21 cases reported to VAERS Dec 14-23; 11.1 cases/million doses
    - 71% occurred within 15 minutes of vaccination
    - 81% had history of allergic reactions or anaphylaxis

Should be available at all sites	If feasible, include at sites (not required)
Epinephrine prefilled syringe or autoinjector*	Pulse oximeter
H1 antihistamine (e.g., diphenhydramine)†	Oxygen
Blood pressure cuff	Bronchodilator (e.g., albuterol)
Stethoscope	H2 antihistamine (e.g., famotidine, cimetidine)
Timing device to assess pulse	Intravenous fluids
	Intubation kit
	Adult-sized pocket mask with one-way valve (also known as cardiopulmonary resuscitation (CPR) mask)

https://www.chicagohan.org/covidvax

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Reminders/review:

- **None** of the COVID-19 vaccines in use or under development use the live virus that causes COVID-19
- People can experience normal side effects after vaccination
  - These side effects are signs that the body is building immunity
- It takes about 2 weeks for the body to build immunity after vaccination
  - A person could be infected with the virus that causes COVID-19 just before or just after vaccination and get sick
- COVID-19 mRNA vaccines will not cause you to test positive on COVID-19 nasal viral tests
- Antibody tests can differentiate virus induced antibodies from vaccine induced antibodies
- People who have gotten sick with SARS-CoV-2 may still benefit from vaccination but wait at least 90 days and maybe 180 days to vaccinate
  - No apparent harm to them by vaccinating but not clear if any benefit so delaying their vaccine helps vaccinate others without risk of harm

Changes in Dosing? Combinations?

- UK recently publicized plans for increasing the time between doses to increase the number of people getting at least one dose.
  - This was not intently studied, but some evidence of a 52.4% efficacy after 1 dose in Pfizer trial
  - Some modeling evidence that it could avert 23-29% more cases if fewer second doses went to more first doses for first 6 weeks of rollout
- Can you get one type vaccine followed by another?
  - Not studied – do not recommend at present. Though per the UK guidance this may be acceptable
- Reducing the Moderna vaccine dose is being considered
  - 50mcg nearly as effective as 100mcg, but not well studied
  - FDA considering studying this, but not recommending currently

https://doi.org/10.7326/M20-8137 DOI: 10.1056/NEJMoa2022483

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Vaccine Hesitancy

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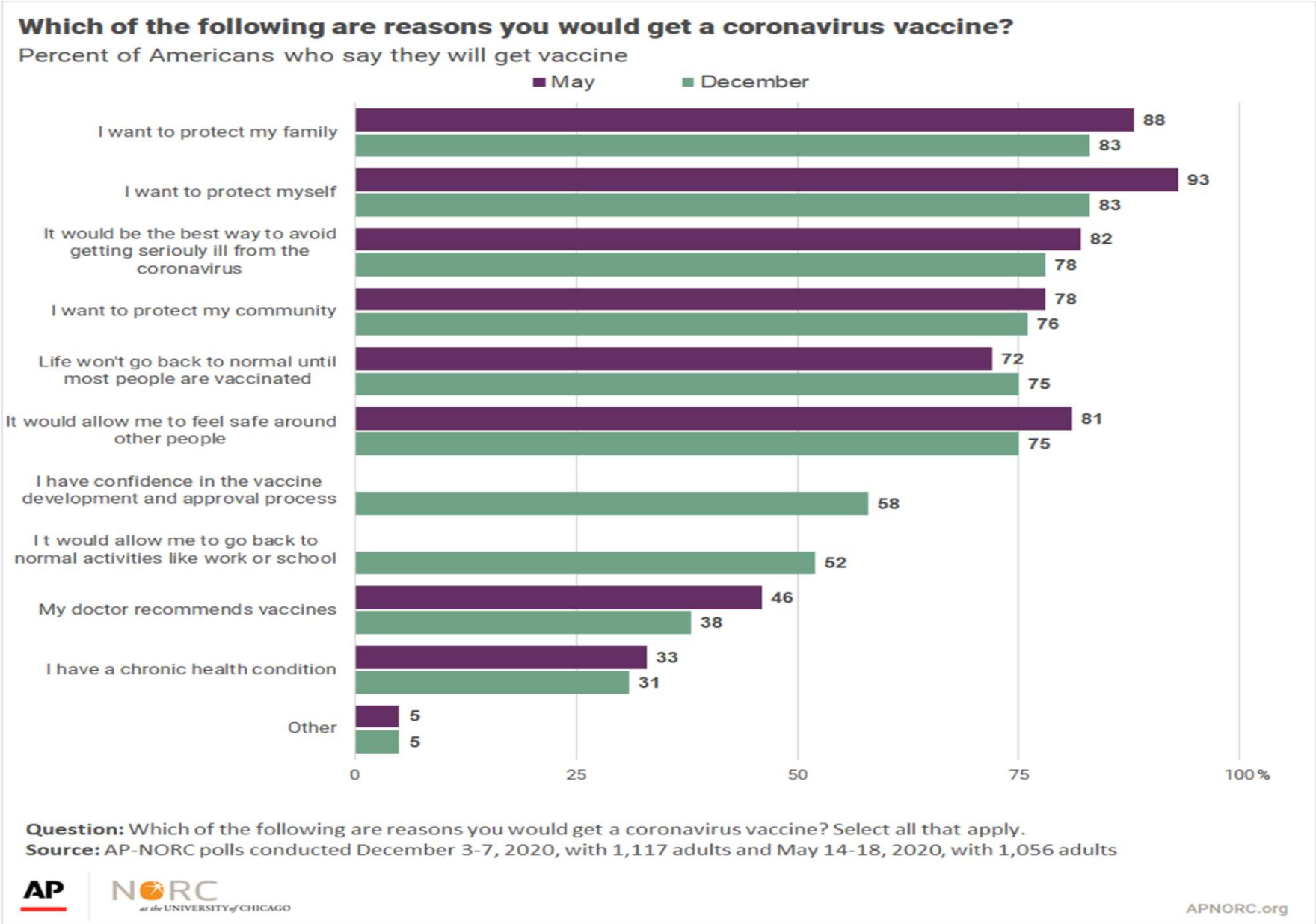
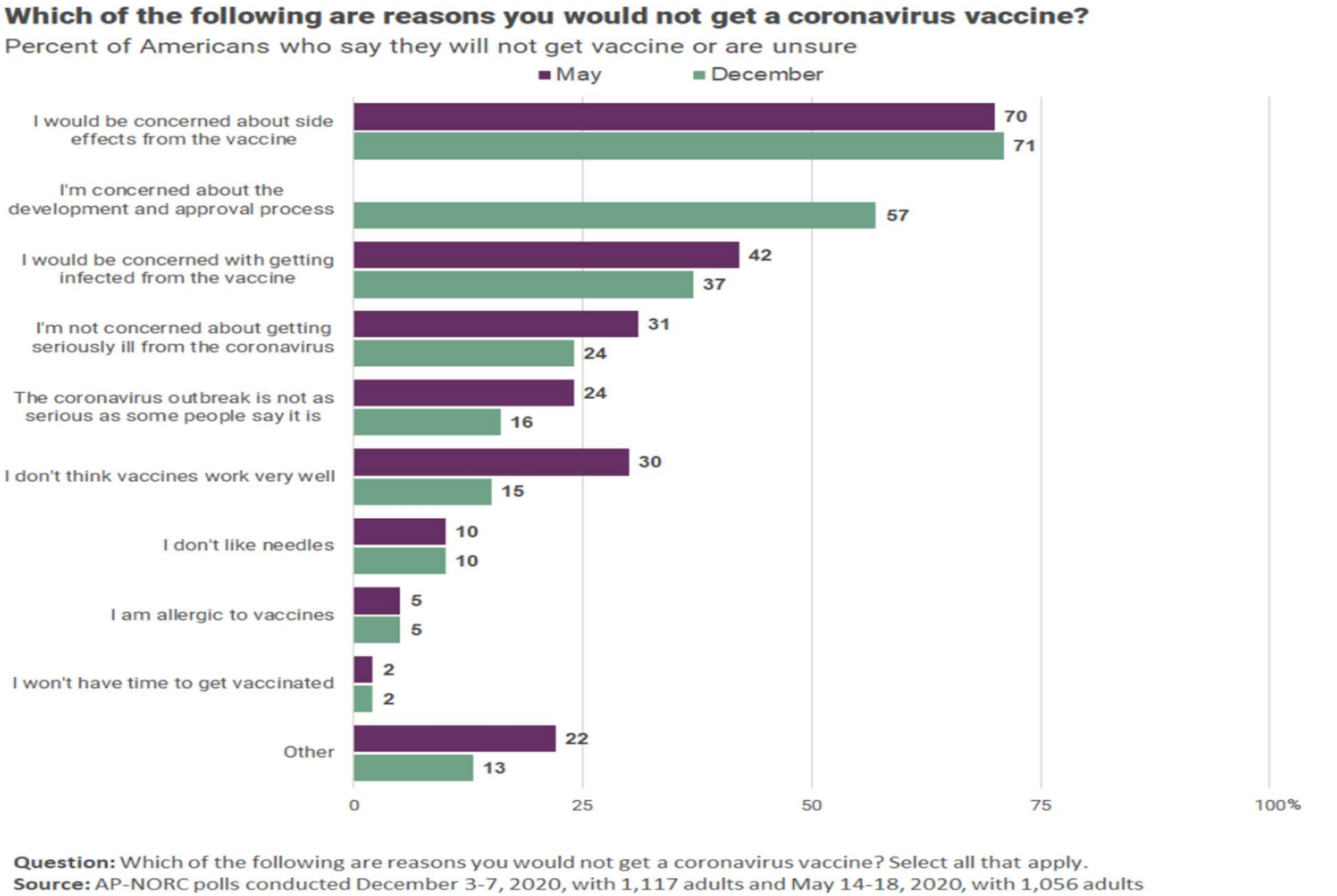


AP-NORC Center for Public Affairs Research. (December, 2020).“Many remain doubtful about getting COVID-19 vaccine.” [https://apnorc.org/projects/many-remain-doubtful-about-getting-covid-19-vaccine/]



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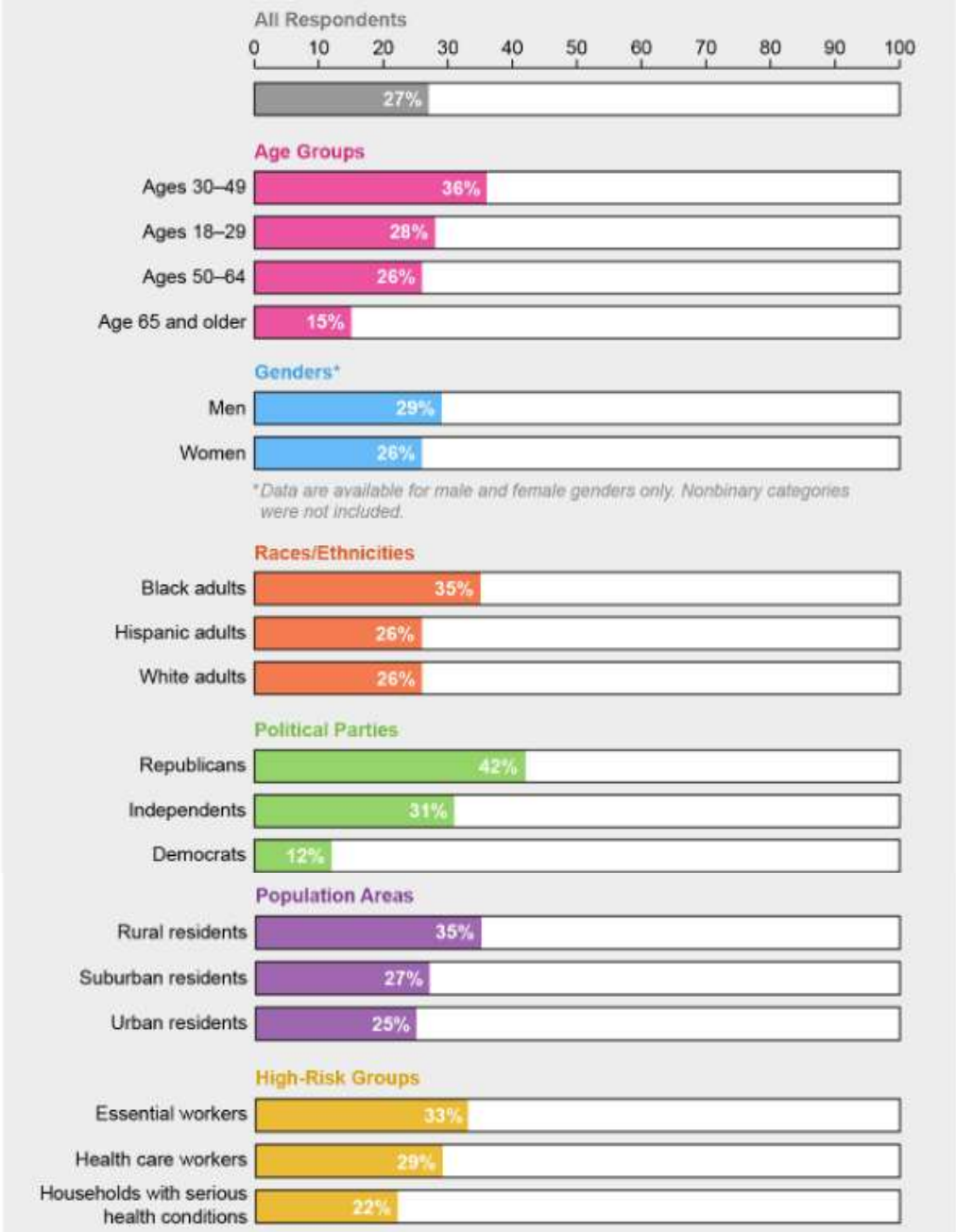
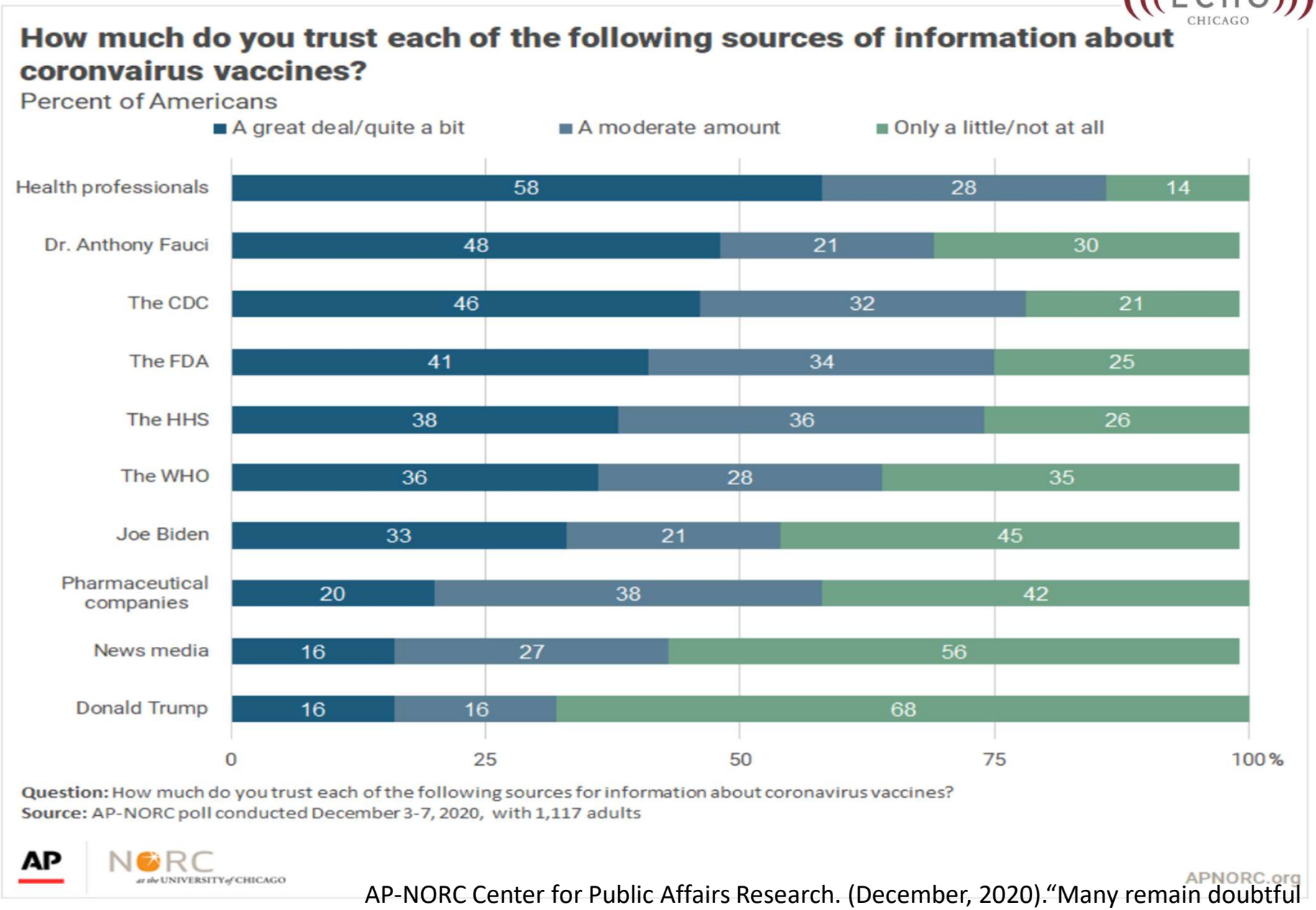
Percent Vaccine Hesitancy by Demographic Group



Data from Kaiser Family Foundation
https://www.scientificamerican.com/article/the-best-evidence-for-how-to-overcome-covid-vaccine-fears1/



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Vaccine Hesitancy Response

- "We need to meet each community where they are and understand the reasons for their mistrust"
- "Public health moves at the speed of trust"
- Do not directly contradict people's mistaken ideas about vaccine dangers, instead approach them with empathy
  - Informing parents that there were no credible data linking autism with the MMR and providing facts about the very real dangers of these diseases had no impact on their intention to vaccinate a child and hardened negative views among the most vaccine-averse
  - Better to state something like 'There's a lot of information out there, and some of it is true, and some of it is not true. Let me tell you what I know.'
- Opt out works better than opt in, make it the default approach whenever possible
- Relentless reminders
- Build rapport by framing the decision in a personal way: 'Let me tell you why I got vaccinated'
  - Use stickers that say, 'I got vaccinated'
- Seek out "sources of authority" within communities to be spokespeople
- Transparency with balanced reporting
  - Acknowledge side effects but balance off of their transient nature, rarity of serious problems and consequences of getting COVID

https://www.scientificamerican.com/article/the-best-evidence-for-how-to-overcome-covid-vaccine-fears1/

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The NEW ENGLAND JOURNAL of MEDICINE

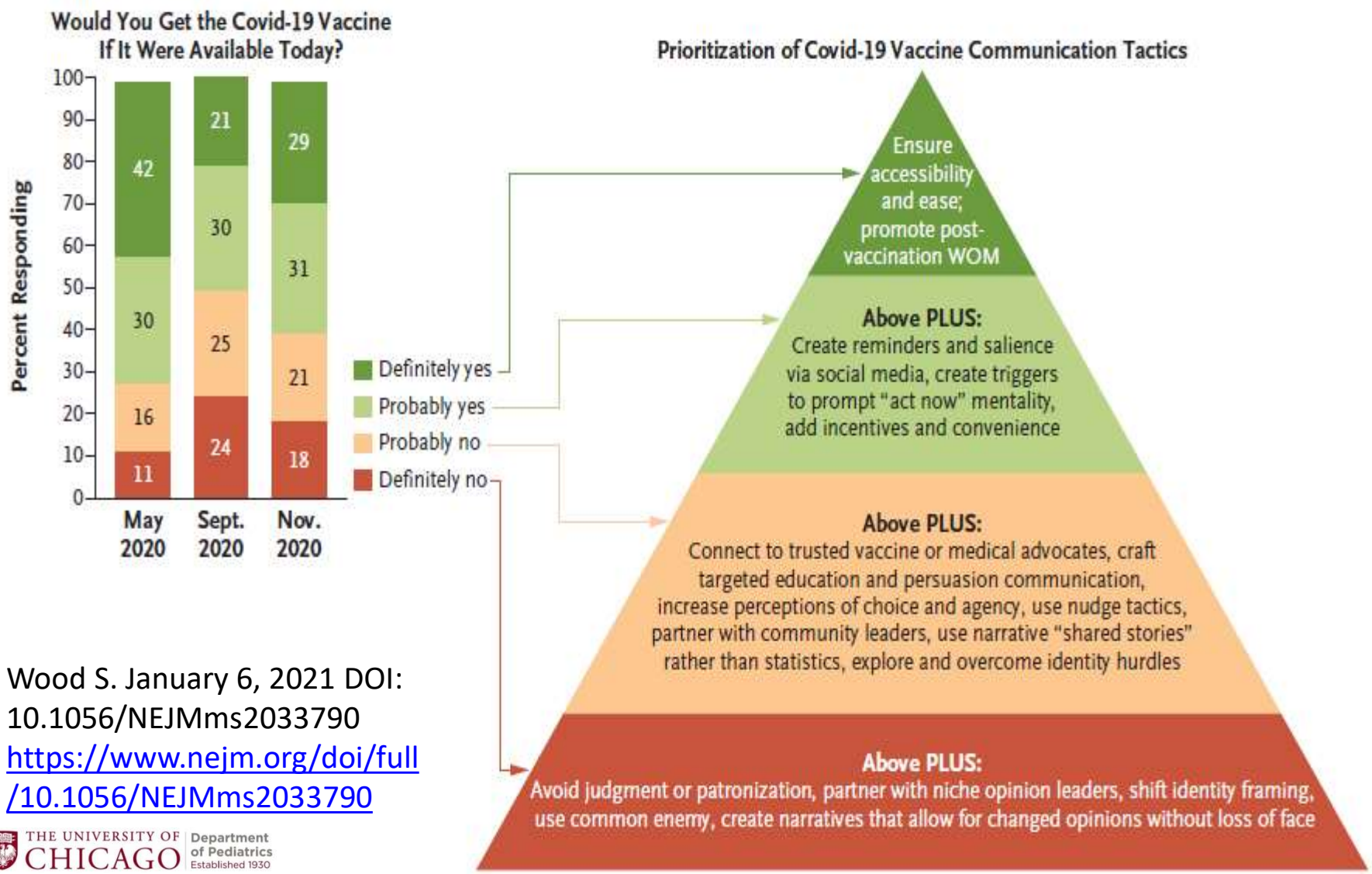
MEDICINE AND SOCIETY

Debra Malina, Ph.D., *Editor*

Beyond Politics — Promoting Covid-19 Vaccination in the United States

Stacy Wood, Ph.D., and Kevin Schulman, M.D.

Prioritization of Communication Tactics Based on Vaccine-Hesitancy Level



Wood S. January 6, 2021 DOI: 10.1056/NEJMms2033790
https://www.nejm.org/doi/full/10.1056/NEJMms2033790

Key Actions for Players in Various Health Care Roles

Health Care Player	Key Actions
Local clinicians and practices; care facilities (e.g., nursing homes)	1. Prepare list of common vaccine questions. 2. Investigate specific concerns of your various segments of patients. 3. Develop list of effective responses. 4. Practice and train staff for responses. 5. Add incentives (free sports exams, prizes). 6. Develop prompts to persuade vaccine-hesitant patients and offer compromises. 7. Make vaccination status observable in your community.
Hospital management	1. Determine campaign themes and messaging for local community. 2. Train medical personnel on responses to common questions and concerns. 3. Select statistical analogies for use by staff. 4. Add incentives for employees (even if vaccination is mandated). 5. Train PR office personnel for coordinated responses to new events. 6. Develop special vaccine protocols for unique cases.
Insurance and benefits management	1. Determine campaign themes and messaging for client base. 2. Select analogies for use in messaging. 3. Add incentives for clients. 4. Train PR office personnel for coordinated responses to new events. 5. Develop mailing for client segments.
State and county health agencies	1. Prepare list of common vaccine questions. 2. Investigate specific concerns from different segments of patients locally. 3. Develop list of effective responses. 4. Determine campaign themes and messaging for regional or local community. 5. Create materials for medical personnel for responding to common questions and concerns. 6. Find local analogies for use in public announcements and messaging. 7. Create a multifaceted social media network strategy. 8. Partner with companies and organizations to create incentives. 9. Train PR office personnel for coordinated responses to new events. 10. Determine and coordinate order of vaccine access and communicate rationales. 11. Partner with local celebrities and trusted community leaders to promote vaccination.
Federal agencies (e.g., DHHS, CDC)	1. Investigate specific concerns from nationally critical segments (e.g., health care workers) 2. Develop list of effective responses. 3. Determine campaign themes and messaging for national and targeted segments. 4. Create materials for large organizations, logistics, and health care systems. 5. Select analogies for use in public announcements and messaging. 6. Create a multifaceted social media network strategy. 7. Partner with companies and organizations to create vaccine incentives. 8. Explore federal incentives (tax). 9. Train PR office personnel on coordinated responses to new events. 10. Offer advice on order of vaccine access and communicate rationales. 11. Partner with national celebrities and trusted leaders to promote vaccination.
Advocacy groups (e.g., AARP, NAACP)	1. Determine campaign themes and messaging for client base. 2. Select analogies for use in messaging. 3. Train PR office personnel for coordinated responses to new events. 4. Develop mailing for client segments.

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What You Can Do?

Health Care Player	Key Actions
Local clinicians and practices; care facilities (e.g., nursing homes)	1. Prepare list of common vaccine questions. 2. Investigate specific concerns of your various segments of patients. 3. Develop list of effective responses. 4. Practice and train staff for responses. 5. Add incentives (free sports exams, prizes). 6. Develop prompts to persuade vaccine-hesitant patients and offer compromises. 7. Make vaccination status observable in your community.

Discussion

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