From the fair booth to the bedside:

Community-engaged research on COVID-19 vaccine perceptions to inform clinical conversations

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MEDICAL SCHOOL | UNIVERSITY OF MINNESOTA

Learning objectives

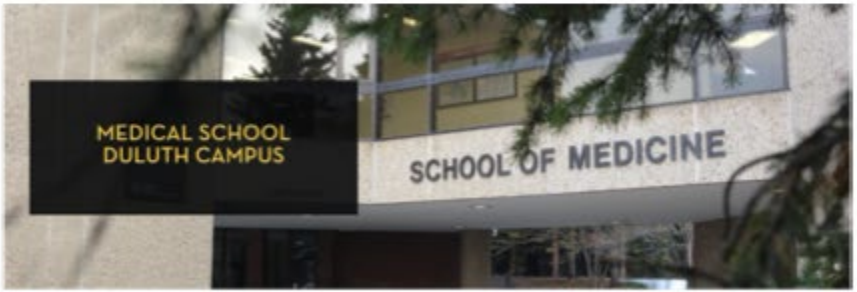
- Participants will learn about perceptions surrounding COVID-19 vaccines in Minnesota, exploring how factors such as information sources and trust influence attitudes toward vaccination and vaccine uptake.

- Participants will explore community-engaged research methods and opportunities, recognizing its importance in understanding factors that influence health decisions such as vaccination.

Background and Positionality

PhD, Medical University of South Carolina
Marine Biomedicine and Environmental Sciences

Master of Public Health, University of Minnesota



Postdoc position, University of Minnesota Medical School, Duluth

Listening sessions with rural healthcare providers

- Visited 11 rural primary care clinics, Nov. 2019 - Feb. 2020
- Conducted open-ended listening sessions with 112 total participants

Takeaways from listening sessions

3 sites mentioned that vaccination rates were a concern in their communities, and they thought it was due to mistrust and misinformation

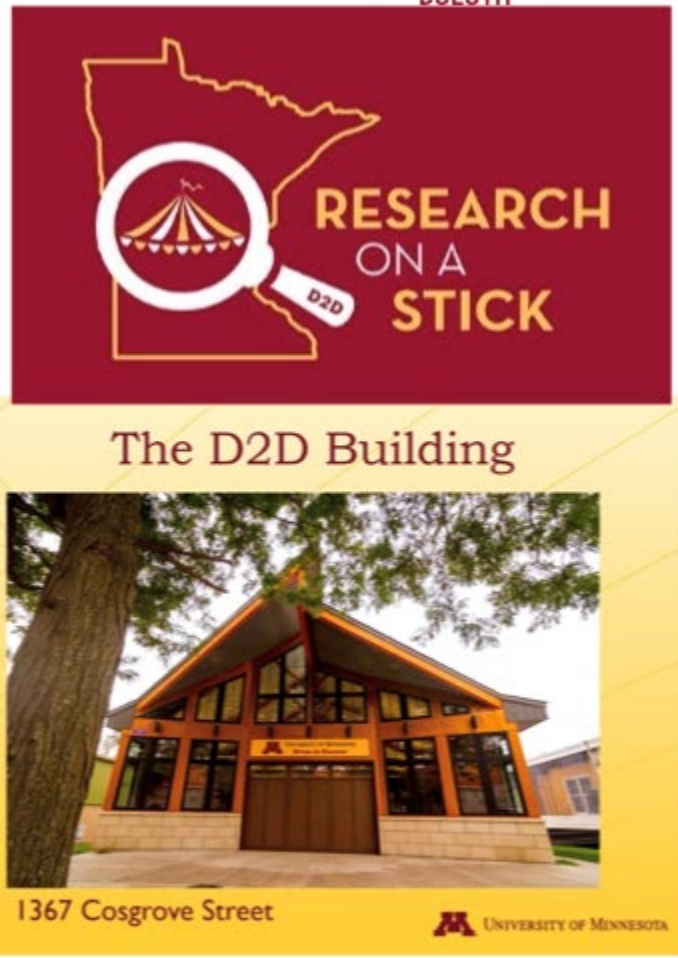
1 site suggested investigating why vaccine rates are decreasing in rural areas as a potential research question

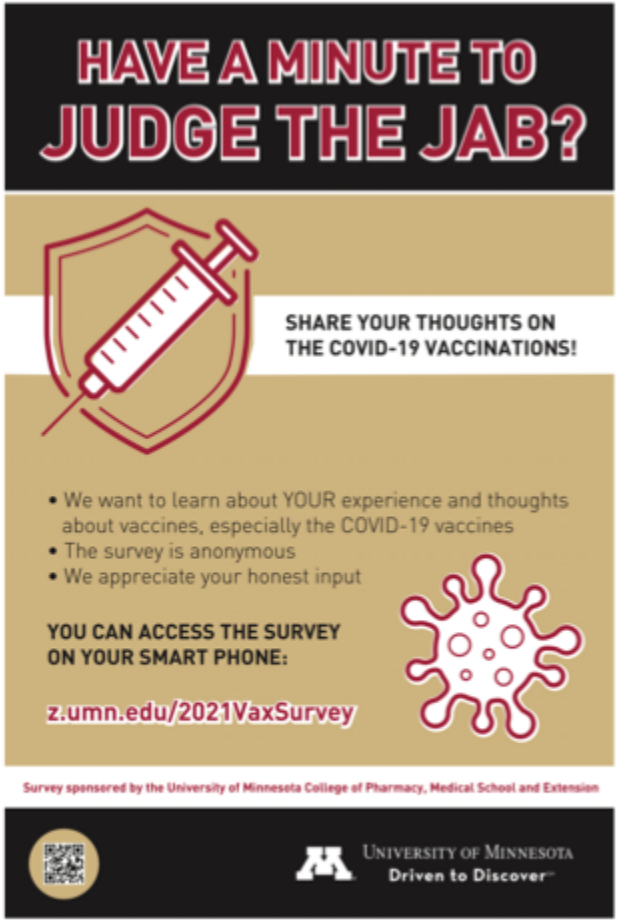
Then along came COVID…

- March 6, 2020 – 1st case in MN
- March 13 – Gov. Walz declared a state of emergency
- 3/27 – 5/18 stay at home order
- July 22 – mask mandate instituted
- December 11 – FDA issues emergency use authorization for Pfizer COVID-19 vaccine

Driven to Discover Research Facility

- Opportunity to conduct research at the MN State Fair
- Started in 2014
- As of 2022:
  - 330 studies conducted
  - 129,218 participants enrolled





Survey methods

- Administered via Qualtrics, primarily on iPads and personal mobile devices
- 10-15 minutes duration
  - Demographics
  - Vaccination history
  - Vaccine perceptions
  - Barriers to COVID-19 vaccination (2021)
  - COVID-19 experience
  - Utilization and trust of information sources

2021 Data Collection

- St. Louis County Fair, July 29 -31 (south) and Aug. 5 – 7 (north)
- Pine County Fair, Aug. 6-7
- Embarrass Regional Fair, Aug. 28
- MN State Fair, Aug. 26 – Sept. 6

2022 Data Collection

- Rock County Fair, July 27 – 30
- Stevens County Fair, Aug. 10 – 11
- Beltrami County Fair, Aug. 10 – 11
- MN State Fair, Aug. 29 – Sept. 5

COVID-19 vaccination timeline in MN

- 12/14/20 - First COVID-19 vaccines in MN
- 3/9/21 - 70% vaccination rate in 65+; expanded eligibility
- 3/30/21 – 16+ eligible
- 5/10/21 – FDA authorizes Pfizer vaccine for ages 12-15
- 8/12/21 - 70% of 16+ had at least one dose; 64.4% of all eligible had completed series

COVID-19 vaccination timeline in MN

- 9/24/21 – MN begins administering Pfizer boosters to ages 65+ and those at high risk
  - 10/22/21 Moderna and J&J
- 10/29/21 – FDA authorizes Pfizer vaccine for ages 5-11
  - 11/3/21 – MN begins vaccinating 5-11-year-olds
- 11/19/21 - Booster eligibility extended to all 18+
  - 12/9/21 - Pfizer boosters for 16+
- 6/18/22 - CDC approves COVID vaccines for ages 6 months and up

Vaccination status of survey respondents

2021			2022			
n	Unvaccinated	Received at least one dose	n	Unvaccinated	Received 1-2 doses	Received 3+ doses
878	9.5%	90.5%	1978	10.9%	27.7%	61.4%

State Fair Attendance 2021:

1,301,584

State Fair Attendance 2022:

1,842,222

RECORD State Fair Attendance, 2019:

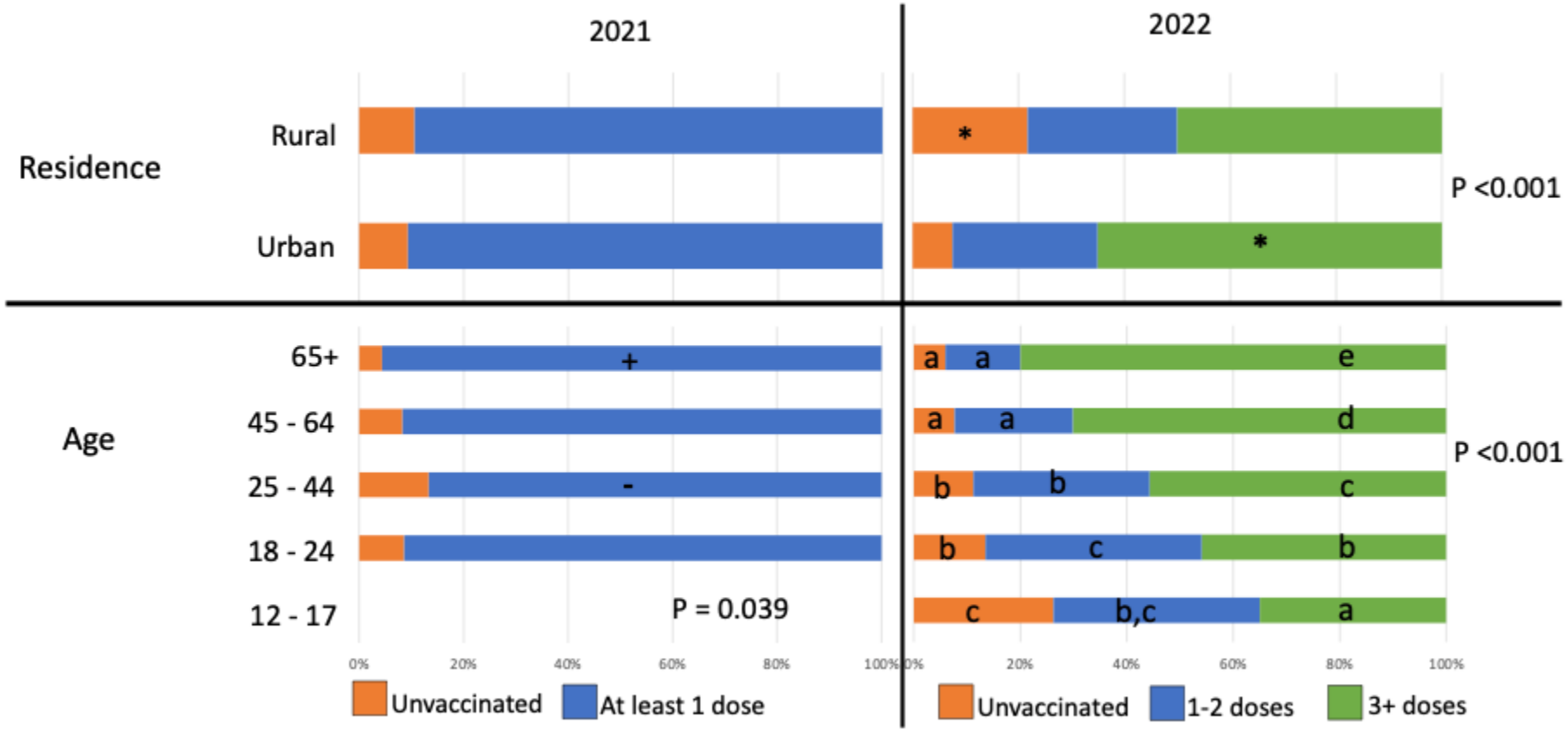
2,126,551

Overall Demographics

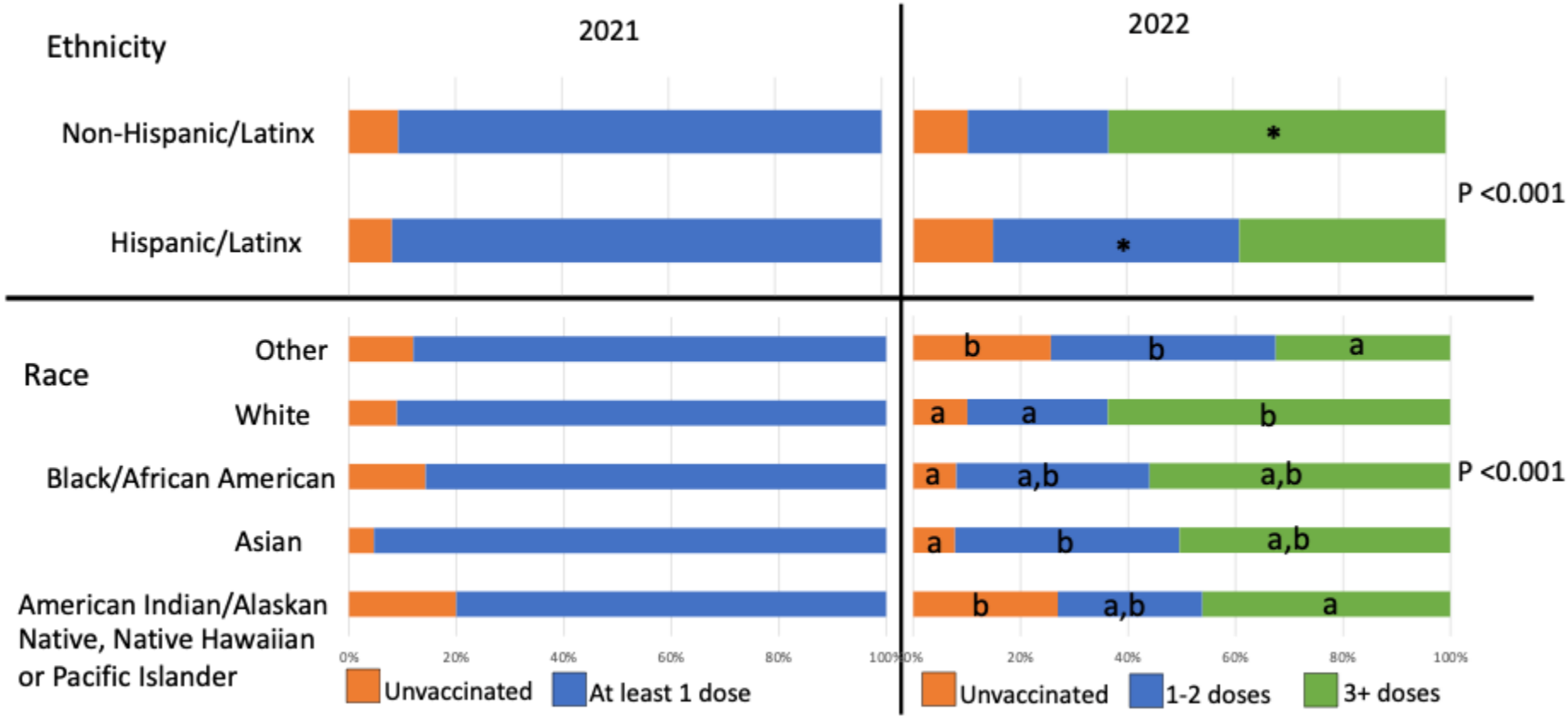
Characteristic	2021 n (%)	2022 n (%)	MN* (%)	Characteristic	2021 n (%)	2022 n (%)	MN* (%)
Residence	878	1978		**Ethnicity**	856	1898	
Urban	784 (89.3)	1504 (76.0)	74.3	Hispanic/Latinx	37 (4.3)	67 (3.5)	6
Rural	94 (10.7)	474 (24.0)	25.7	Not Hispanic/Latinx	819 (95.7)	1831 (96.5)	94
Gender	871	1944		**Race**	851	1911	
Women	514 (59.0)	1204 (61.9)	49.9	Asian	64 (7.5)	103 (5.4)	5.5
Man	349 (40.1)	687 (35.3)	50.1	Black/ African American	35 (4.1)	50 (2.6)	7.6
Non-binary/Transgender	8 (0.9)	53 (2.7)		White	738 (86.7)	1738 (90.9)	82.6
Age	796	1962		American Indian/Alaskan Native, Native Hawaiian, or Pacific Islander	20 (2.4)	52 (2.7)	1.5
12-17 years	-	183 (9.3)					
18-24 years	128 (16.1)	231 (11.8)	8.8				
25-44 years	240 (30.2)	555 (28.3)	26.3				
45-64 years	314 (39.4)	639 (32.6)	25.5				
65 years and older	114 (14.3)	354 (18.0)	15.8	Other	25 (2.9)	43 (2.3)	

*MN data from MN Compass, US Census, and MDH Office of Rural Health

Demographic factors influencing COVID-19 vaccination status



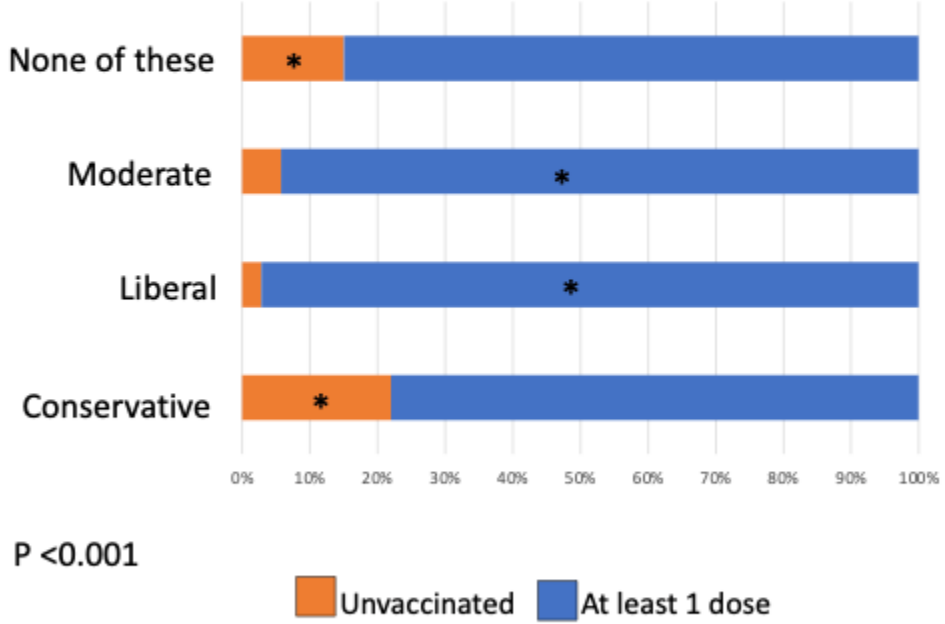
Demographic factors influencing COVID-19 vaccination status



Demographic factors influencing COVID-19 vaccination status

Political Alignment

2021



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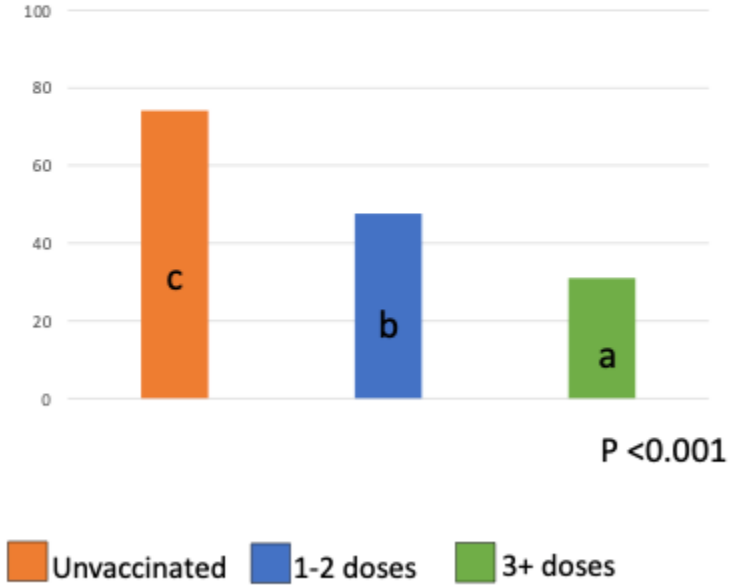
2022

Scale:
0 = Completely Liberal
100 = Completely Conservative



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Summary of demographic data

Going to rural county fairs worked to recruit more rural residents to study!

Lower vaccination rates in rural than urban populations

Vaccination status by age follows expectations based on timeline of eligibility

Lower proportion of Hispanic/Latinx had received boosters

Lower vaccination rates in American Indian/Alaskan Native, Native Hawaiian or Pacific Islander populations (?)

Lower vaccination rates in those who identify as politically conservative

COVID-19 Vaccine Perceptions

Presented 33 statements about COVID-19 and vaccines drawn from concepts circulating in media/social media and shared by public health partners

"It's important for as many people as possible to get vaccinated to produce herd immunity."

"The symptoms of COVID-19 are connected to 5G mobile network radiation."

Asked to rate level of agreement: Agree, Unsure, Disagree

Agreement with misinformation/disagreement with correct information and "unsure" responses were considered to indicate vaccine hesitancy

Results: COVID-19 Vaccine Perceptions

Proportion of vaccine hesitant responses differed significantly among vaccination status categories for all perception statements, both years

	Doses of COVID-19 vaccine				
	2021		2022		
	0	1+	0	1-2	3+
It's important for as many people as possible to get vaccinated to produce herd immunity.	77.1	6	77.8	26	4.4
I am concerned about severe side effects of vaccination.	86.7	16.6	88.4	47.5	14.3
I am worried about the safety of the ingredients in the vaccines.	84.3	17.4	86.6	47	13.4
Vaccines cause autism.	67.1	10.3	62.1	29.1	8.2

Orange = disagree/unsure
Blue = agree /unsure

Perceptions with the highest overall proportions indicating vaccine hesitancy

	2021			2022			
	Total	0	1+	Total	0	1-2	3+
The long-term effects of the COVID-19 vaccine are not yet known.	47.4	91.6	42.8	81.2	94	88.8	75.5
It's dangerous to be vaccinated during pregnancy.	45.2	91.5	40.4	52.9	94.9	71.4	37.1
Forcing people to be vaccinated violates their Constitutional rights.	45.2	96.4	39.8	54.0	92.6	71.4	39.3
The vaccine was not tested for safety enough in different races and ethnic groups.	41.7	83.1	37.3	46.1	88.8	60.3	32.2
The vaccines currently available aren't effective against new variants.	40.9	88	36	58.6	90.2	69.2	48.1

Perceptions with the lower proportions indicating vaccine hesitancy than expected

	2021			2022			
	Total	0	1+	Total	0	1-2	3+
The vaccine interferes with the ability to get pregnant.	27.2	77.1	21.9	39.8	87.5	55.7	24.1
I am worried about the safety of the ingredients in the vaccine.	23.7	84.3	17.4	30.7	86.6	47	13.4
The COVID-19 vaccine changes your DNA.	12.4	51.8	8.3	25.1	72.2	36.9	11.3
I already had COVID, so I don't need the vaccine.	12.2	57.8	7.4	20.1	75.8	31.9	5
The COVID-19 pandemic is under control now, so I don't need to get vaccinated.	8.2	44.6	4.4	24.4	79.1	38.7	8.3
The vaccines are made with fetal tissues, and it is against my moral values to use them.	17.6	65.1	12.6	31.6	79.5	43	18.1

Differences between 2021 and 2022

Statements updated to reflect changes in overall public discourse

In general, overall proportion indicating hesitancy increased from 2021 to 2022

Notable perceptions with increased hesitancy proportions from 2021 to 2022

	2021	2022
The long-term effects of the COVID-19 vaccine are not yet known.	47.4	81.2
The COVID-19 pandemic is under control now, so I don't need to get vaccinated.	45.2	52.9
The vaccines currently available aren't effective against new variants.	40.9	58.6
The common side effects of the vaccine are worse than having COVID-19.	15.1	27.4
COVID-19 is no worse than the common flu.	16.2	27.3

Notably unchanged

Most of my family and friends have been vaccinated against COVID-19.	16.4	14.3

Orange = disagree/unsure
Blue = agree /unsure

Expanded topics

	2021			2022			
	Total	0	1+	Total	0	1-2	3+
I don't want to be forced to get the vaccine.	48.7	97.6	43.6	-	-	-	-
People shouldn't be forced to be vaccinated if it goes against their religion.	-	-	-	68.6	97.2	80.2	58.3
People shouldn't be forced by their employer to be vaccinated.	-	-	-	52.0	95.4	69.3	36.5
Students shouldn't be forced to be vaccinated to attend school.	-	-	-	45.6	94.9	64.9	28.2
The vaccines are safe and effective in preventing severe cases of COVID-19.	14.5	79.5	7.7	-	-	-	-
The vaccines are safe and effective in preventing severe cases of COVID-19 in adults over 18.	-	-	-	21.0	84.7	30.6	5.4
The vaccines are safe and effective in preventing severe cases of COVID-19 in youth ages 12 – 17.	-	-	-	17.9	73	29.1	1.9
The vaccines are safe and effective in preventing severe cases of COVID-19 in children under age 12.	-	-	-	35.3	88.9	49.7	19.2

New in 2022

	2022			
	Total	0	1-2	3+
In indoor public spaces, I feel more comfortable when people are wearing masks to reduce the spread of COVID-19 and other diseases.	46.8	82.9	61.4	33.9
People who are vaccinated against COVID-19 do not need to wear face masks.	46.3	68.5	59.2	36.4
It is important to get vaccine boosters to maintain protection against COVID-19.	28.1	86.5	45.3	10.0

Summary of perceptions

Significantly greater vaccine hesitancy in unvaccinated (and unboosted in 2022)

Main issues associated with hesitancy:

- Concerns about safety (esp. long-term effects and pregnancy)
- Uncertainty about efficacy (esp. against new variants)
- Personal liberty

Hesitancy/uncertainty increased from 2021 - 2022

Utilization and reliability of media sources

Top 10 most utilized sources

	2021	2022
Minnesota Department of Health	65.7	62.4
The Centers for Disease Control and Prevention (CDC)	62.7	55.6
Local TV news station	49.8	38.3
National newspapers	47.1	41.3
Your local health professional	36.6	37.8
University of Minnesota	36.1	37.0
Minnesota Public Radio	35.3	30.3
The Minneapolis Star Tribune	34.1	28.6
Friends, family, or personal networks	34.1	26.5
The Mayo Clinic	33.5	40.7

Top 10 most reliable sources

	2021	2022
Minnesota Department of Health	72.3	65.2
The Centers for Disease Control and Prevention (CDC)	66.9	58.8
Mayo Clinic	53.3	51.5
University of Minnesota	53.1	46.1
National newspapers	43.5	34.2
Your county health department	41.8	38.0
Minneapolis Star Tribune	37.7	29.8
Your local health professional	36.6	36.4
Minnesota Public Radio	35.9	32.0
Local TV news station	38.3	25.1

Media sources utilized more by vaccinated than unvaccinated respondents

	2021	2022
MDH	✓	✓
CDC	✓	✓
Local TV news station	✓	✓
National newspapers	✓	✓
UMN	✓	✓
MPR	✓	✓
Star Tribune	✓	✓
CNN	✓	✓
County health department	✓	✓
Local newspaper	✓	✓
Your local health professional		✓
Mayo Clinic		✓
MSNBC		✓

Media sources utilized more by unvaccinated than vaccinated respondents

	2021	2022
Friends, family, and personal networks	✓	✓
Facebook	✓	✓
Other radio stations or programs (besides MPR)	✓	✓
Fox News	✓	✓
Instagram and/or TikTok		✓
All other social media	✓	✓
Clergy		✓
Podcasts		✓

Sources with greater reliability than utilization, among vaccinated respondents

	2021	2022
Minnesota Department of Health	✓	
University of Minnesota	✓	✓
The Mayo Clinic	✓	✓
Your county health department	✓	✓

Sources with greater utilization than reliability, among vaccinated respondents

Twitter	✓	✓
All other social media	✓	✓
Podcasts		✓

Sources with greater utilization than reliability, among both vaccinated and unvaccinated respondents

	2021	2022
Local TV news station	✓	✓
National newspapers		✓
Friends, family, and personal networks	✓	✓
Online news sites	✓	✓
Facebook	✓	✓
Instagram and/or TikTok	✓	✓

Sources with greater utilization than reliability, among unvaccinated respondents

CNN	✓	
MSNBC	✓	

Trusted health professionals

	2021			2022			
	Total	0	1+	Total	0	1-2	3+
Physicians	92.5	77.2	**94.0**	85.4	59.3	**80.2**	**92.2***
APPs	60.6	41.8	**62.4**	59.8	23.9	**51.7**	**69.6***
Pharmacists	49.3	19.0	**52.3**	50.2	22.0	**38.9**	**60.1***
Nurses	48.1	32.9	**49.6**	53.5	34.9	**45.2**	**60.5***
Community Health Workers	23.0	6.3	**24.6**	23.1	6.7	**17.4**	**28.5***
Dentists	9.9	6.3	10.3	13.4	8.1	11.3	**15.3***
Mental Health Therapists	8.9	3.8	9.4	9.2	4.3	7.4	**10.9***
Chiropractors	6.3	**21.5**	4.8	6.5	**10.5**	**8.1**	5.0
Naturopaths	4.6	**15.2**	3.6	4.2	**17.7**	**3.0**	2.5

Bold font = significantly larger than non-bolded categories
Bold + * = significantly larger than other 2 categories
$P < 0.0001$

Summary of information sources

Significant differences in both information sources used and trusted among vaccine dose categories

Generally, evidence-based resources are both most utilized and perceived as most reliable

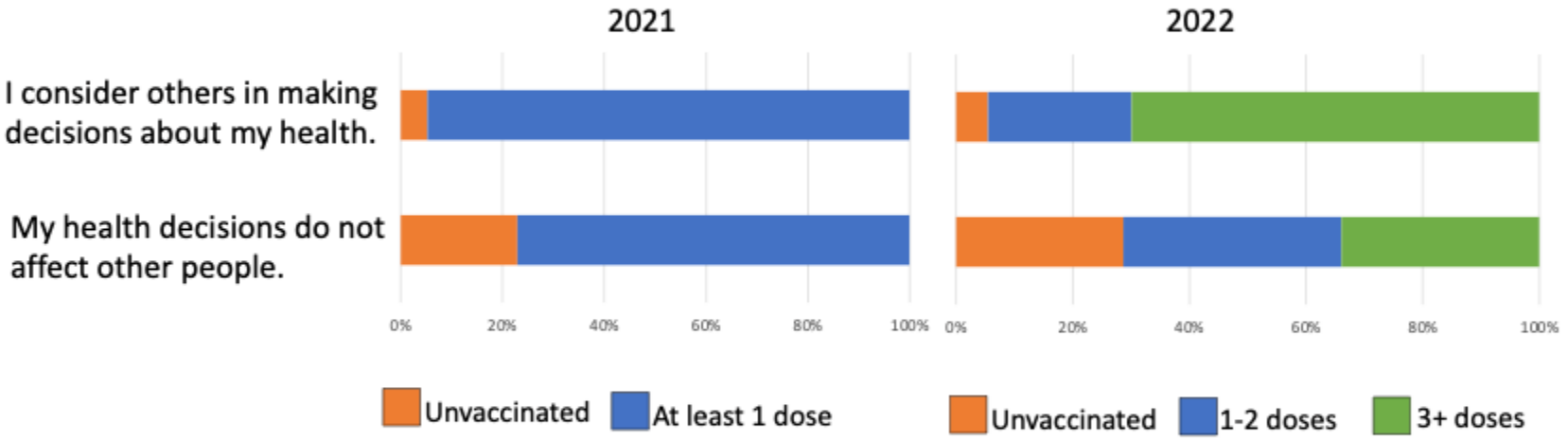
- Vaccinated respondents use and trust evidence-based sources more than unvaccinated
- Unvaccinated respondents use and trust family and friends and social media more than vaccinated respondents

Health professionals make the list of top 10 most utilized and most reliable

Physicians are most trusted of all health professionals!

Some final pieces of the puzzle

Attitudes about health decisions are highly associated with vaccination status.



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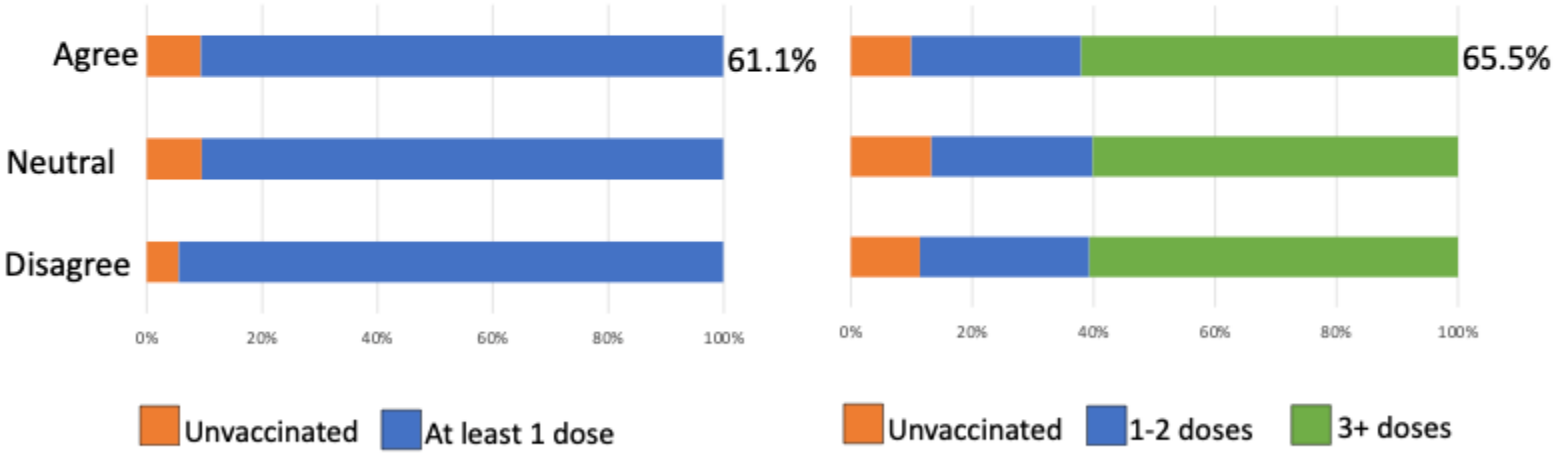
People are open to talking about vaccines.

2021

2022

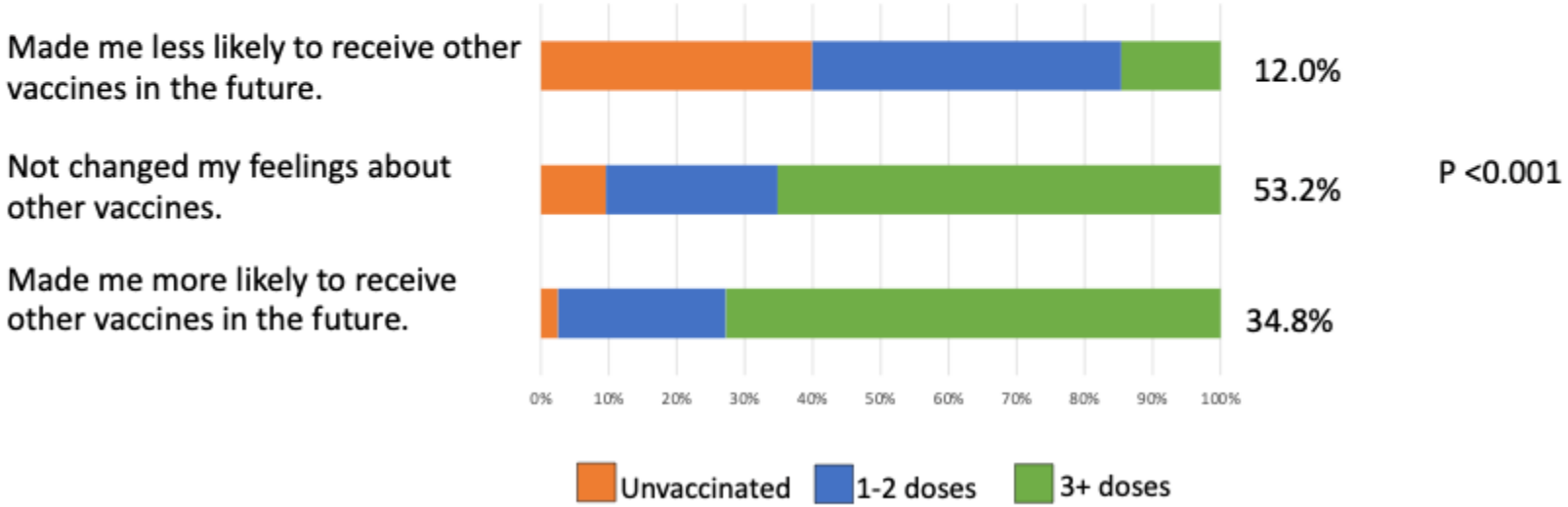
I feel comfortable talking to someone about vaccines who feels differently from me about them.



How has the COVID-19 vaccine experience affected overall vaccine hesitancy?

2022

The development and rollout of the COVID-19 vaccine has:



Overall takeaways

Uncertainty and mistrust lead to vaccine hesitancy

Trust is about relationships – which is why community engagement is critical, in research and healthcare

People trust healthcare providers about vaccines… especially physicians!

Connection to community

"I have this one family, they are really deep in all the anti-vaxx conspiracy theories, the mom has refused all the childhood vaccines for all of the kids…. But they make all their other checkups, come see me as their primary care doc. Every time the mom comes in, I have pulled countless studies for her on vaccine safety and walk her through the points.

She just keeps declining and spouting all the same… uh, *junk*, 'vaccines cause autism.' She even brought me in a book … and I READ the whole thing, to humor her. And I told her it was complete nonsense!

But she keeps coming back and bringing her kids in for all their other appointments. So finally, I was like, 'look, the safety and efficacy of these vaccines is one of the things in medicine that we have the *most* evidence and confidence in, of anything at all in the history of medicine! And if you aren't going to trust me on this, I just don't understand why you even want to come in and see me at all.

And she just looked at me and said, 'Well, I just really like how you explain things.'"

-- Rural family medicine physician at 2019 listening session

Acknowledgments

Judge the Jab Research Team

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Questions?

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