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Parent/guardian intentions to vaccinate children against COVID-19 in the United States

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ABSTRACT

Vaccination is critical for protecting adults and children from COVID-19 infection, hospitalization, and death. Analyzing subsamples of parent/guardians of children age 0–11 ($n = 343$) and 12–17 ($n = 322$) from a larger national survey of US adults ($n = 2,022$), we aimed to assess intentions to vaccinate children and how intentions might vary across parent/guardian sociodemographic characteristics, healthcare coverage, vaccination status, political affiliation, prior COVID-19 infection, exposure to COVID-19 death(s) of family or friends, perceived norms of vaccination, and COVID-19 vaccine hesitancy. We also report the prevalence of vaccinated children for parents whose oldest child was eligible for vaccination at the time of the survey. More than one third of parents whose oldest child was not yet eligible for vaccination (11 or younger) planned to get them vaccinated right away when a vaccine became available to them. Among parents whose child was eligible to be vaccinated (age 12–17 years), approximately a third reported their child had already been vaccinated and approximately a third planned to do so right away. Intentions to vaccinate children age 0 to 11 were significantly associated with age, gender, race/ethnicity, education, COVID-19 vaccination, political affiliation, social norms, and COVID-19 vaccine hesitancy. Intentions to vaccinate children age 12 to 17 were significantly associated with age, education, healthcare coverage, COVID-19 vaccination, political affiliation, social norms, and COVID-19 vaccine hesitancy. We discuss implications for public health officials and for future research.

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Introduction

COVID-19 has become a leading cause of death in the United States (US).^{1,2} In January 2022, 17% of all US COVID-19 cases were among children.³ Vaccination is critical for protecting adults and children from COVID-19 infection, hospitalization, and death. The COVID-19 vaccine Emergency Use Authorization (EUA) was expanded by the Food and Drug Administration (FDA) to include children as young as 12 on 10 May 2021 and again on 29 October 2021 to include children as young as 5.^{4,5} Although the vaccine is now available to these age groups, questions remain regarding parents' intentions to vaccinate their children and uptake of pediatric vaccines. The majority of states in the US require parental consent for child vaccination,⁶ so parent intentions to vaccinate their children is an important indicator for tracking and understanding patterns of pediatric vaccination.

We aimed to assess parent/guardian intentions to vaccinate their children in September and early October of 2021—after the EUA was approved for children ages 12–17 but before the EUA was expanded to children ages 5–11. We also aimed to understand how intentions to vaccinate children varied across parent/guardian sociodemographic characteristics (age, gender, race/ethnicity, education), healthcare coverage, vaccination status, political affiliation, prior COVID-19 infection, exposure to COVID-19 death(s) of family or friends, perceived

norms of vaccination, and COVID-19 vaccine hesitancy. Finally, we report the prevalence of vaccinated children for parents whose oldest child was eligible for vaccination at the time of the survey. Assessing patterns in intentions to vaccinate and vaccination of children is critical because they contribute to the overall vaccination coverage of the population and because children have not been spared from the disparities in infection, hospitalization, and death from COVID-19 that have been well-documented among adults.⁷

Our aims and variable selection were informed by the extant research. A growing but limited body of literature suggests parent/guardian intentions to vaccinate children against COVID-19 varies across a variety of sociodemographic factors such as age, gender, race/ethnicity, and education.^{8–10} This body of work has also found associations between intentions to vaccinate children against COVID-19 and parent/guardian vaccination status, social norms, and COVID-19 vaccine hesitancy.^{8–10} One study found that parents who experienced prior COVID-19 infections or a death of someone close to them reported greater willingness to vaccinate their children.⁸ No research to our knowledge has examined the association between healthcare coverage and parent/guardian intention to vaccinate children. Although the vaccine is free, healthcare coverage promotes regular provider visits, which is associated with preventive health behaviors.^{11,12} For this reason, we

believed healthcare coverage to be an important variable to consider. Finally, political affiliation has been shown to be of growing importance in analyses of COVID-19 vaccine hesitancy,¹³ including parent intentions to vaccinate children against COVID-19,⁹ with democratic affiliation being associated with greater willingness to vaccinate. Given these findings and growing evidence that political affiliation has become an important source of social identity,¹⁴ we included political affiliation in our analysis.

Methods

Procedures

We analyze online survey data from two subsamples ($n = 343$, $n = 322$) generated from a larger study of 2,022 US adults. This data was collected between 17 September 2021 and 3 October 2021. Participants were recruited through e-mail from an online registry of research volunteers across the US. The survey was available in English and Spanish. Inclusion criteria included age 18 or older and living in the US. A brief description of the study was provided, including: (1) the estimated study duration (10 minutes); (2) potential risks and benefits; (3) the voluntary nature of participation; and (4) confidentiality of responses. Consent was indicated by agreeing to participate in the survey. Study procedures were approved by an institutional review board for the protection of human subjects at the University of Arkansas for Medical Sciences (IRB #263020).

Oversampling of Asian American, Black, Hispanic/Latino, Native American or Alaska Native, and Native Hawaiian or Pacific Islander individuals was done to avoid aggregation of racial and ethnic groups which could conceal diverse experiences and attitudes.^{15,16} Data were weighted to represent the US population using the random iterative method¹⁷ across the demographic variables of gender (men, women, non-binary), race/ethnicity (Asian American, Black, Hispanic/Latino, Native American or Alaska Native, Native Hawaiian or Pacific Islander, and White), and age (18–24, 25–34, 35–44, 45–54, 55–64, 65+). The weighted data converged after six iterations and the efficiency score was acceptable at 74%.

Analytical samples

We used two analytical samples for this study. The first sample consists of all respondents who indicated they were the parent or guardian whose oldest child was age 11 or younger ($n = 343$). The second consisted of all respondents who indicated they were the parent or guardian whose oldest child was between the ages of 12 and 17 ($n = 322$). Parents/guardians were presented with variations of the question regarding child vaccination depending on the eligibility of their oldest child for COVID-19 vaccination at the time of the survey—age 11 and younger or between 12 and 17. Parents/guardians whose oldest children were age 11 or younger were asked a different question because their children were not yet eligible for the vaccine at the time of the survey. For this reason, we analyze these subsamples separately. We present descriptive and bivariate analyses to

understand parent/guardian intentions to vaccinate their children and variables which may be associated with those intentions.

Measures

Child vaccination intentions

The dependent variable in this study was parent/guardian intentions to vaccinate their oldest child against COVID-19. Parent/guardians whose oldest child was not yet eligible for a vaccine were asked, “Once there is a COVID-19 vaccine authorized for your child’s age group, do you think you will . . .”, while parent/guardians whose oldest child was age 12 or older were asked, “Regarding a COVID-19 vaccine for your child, do you think you will . . .”. Response options included “get them vaccinated right away,” “wait a while to see how it is working,” “only get your child vaccinated if their school requires it,” and “definitely not get them vaccinated” for both questions, but parents whose oldest child was eligible could also select “child is already vaccinated.” Parent/guardians whose oldest child was age 11 or younger did not have a child eligible for vaccination at the time of the survey, so “child is already vaccinated” was not a response option for them. The primary outcome of interest for both subsamples is parent/guardian intention to vaccinate their child; however, for those with a child old enough to be vaccinated at the time of the survey, this includes a response option to indicate the child was already vaccinated.

Sociodemographic characteristics

We collected parents’/guardians’ sociodemographic information, including age, gender, race/ethnicity, and education. Age in years was estimated according to respondents’ birth year. Respondents could report their gender as man, woman, or non-binary, or they could self-describe. No parent/guardian respondents selected non-binary or self-described their gender, so our analytical samples include only self-identified men and women. Race/ethnicity was measured using the standard two-item questions. Responses from the two items were combined to categorize parents/guardians into the following mutually exclusive groups: Asian American, Black, Hispanic/Latino, Native American or Alaska Native, Native Hawaiian or Pacific Islander, and White. Hispanic/Latino includes persons of all races, including individuals who selected multiple races. All persons who selected multiple racial identities were Hispanic/Latino, so no multiracial category is included. Respondents were asked their highest degree or level of school completed. Individuals with less than high school and only some high school were combined with high school graduates, as were those with a bachelor’s degree or higher, due to low frequency.

Healthcare coverage

To measure healthcare coverage, respondents were asked, “Do you have any kind of healthcare coverage, including health insurance, prepaid plans such as HMOs, government plans such as Medicare, or Indian Health Service?” Response options were “yes” and “no.”

COVID-19 vaccination

To measure COVID-19 vaccination status, respondents were asked, “Have you received a COVID-19 vaccine?” Response options were “yes” and “no.”

Political affiliation

To assess political affiliation, respondents were asked, “Generally speaking, do you think of yourself as a . . . ?” Response options included Democrat, Republican, Independent, and Other.

COVID-19 infection

Prior infection with COVID-19 was measured by asking, “Have you tested positive, or suspect that you have had, COVID-19?” Response options included “Yes—I tested positive for COVID-19,” “Yes—I suspect that I had COVID-19,” and “No, I do not believe I had COVID-19.” We dichotomized this measure by combining the affirmative responses.

COVID-19 death exposure

To measure COVID-19 death exposure, we asked, “Has a close friend or relative died of COVID-19?” Response options were “yes” and “no.”

Social norms

To measure the perceived social norms of vaccination, respondents were asked, “Of the people close to you, what proportion do you think have received the COVID-19 vaccine?” Response options included “very few,” “some but not many,” “many,” and “nearly all.”

COVID-19 vaccine hesitancy

To measure COVID-19 vaccine hesitancy, respondents were asked, “Thinking specifically about the COVID-19 vaccines, how hesitant were/are you about getting vaccinated?” Response options included “not at all hesitant,” “a little hesitant,” “somewhat hesitant,” and “very hesitant.”

Analyses

We analyzed the data using STATA 15.1 SE. The data were weighted using the random iterative method to approximate US census estimates for age, race/ethnicity, and gender. We present results for parent/guardians whose oldest child was age 11 or younger ($n = 343$) or between ages 12 and 17 ($n = 322$) including weighted descriptive statistics and bivariate analyses including Pearson χ^2 statistics with Rao and Scott second-order correction^{18,19} and adjusted Wald tests for testing associations with age. We present only descriptive statistics (mean) for age across the five possible responses of the dependent variable. Missing data were handled through pairwise deletion.

Results

A total of 8,067 individuals entered the online survey, and 25.1% ($n = 2,022$) were eligible and completed the survey. We present the weighted descriptive statistics for the sample in Table 1. Among parents/guardians whose oldest child was age 11 or younger, the two most prevalent responses were

Table 1. Weighted descriptives of parents of children age 0–11 and 12–17 years.

	Children 0-11 Column % (unweighted freq.)	Children 12-17 Column % (unweighted freq.)
Mean Age (SD)	($n = 343$)	($n = 322$)
Gender	35 (10)	45 (11)
Men	($n = 342$)	($n = 321$)
Women	53 (156)	57 (157)
Race/Ethnicity	47 (186)	43 (164)
Asian American	($n = 343$)	($n = 322$)
Black	10 (52)	8 (34)
Hispanic/Latino	20 (54)	23 (66)
Native American or Alaska Native	27 (78)	28 (80)
Native Hawaiian or Pacific Islander	8 (53)	5 (52)
White	9 (67)	5 (50)
Education	27 (39)	31 (40)
High school or less	($n = 343$)	($n = 322$)
Some college	30 (106)	22 (77)
Associate degree	20 (73)	15 (60)
Bachelor's degree or higher	13 (43)	15 (45)
Healthcare Coverage	38 (121)	47 (140)
Not insured	($n = 331$)	($n = 319$)
Insured	16 (54)	10 (36)
Vaccinated	84 (277)	90 (283)
At least one dose	($n = 343$)	($n = 322$)
No doses	63 (217)	71 (217)
Political Affiliation	37 (126)	29 (105)
Democrat	($n = 302$)	($n = 294$)
Independent/Other	39 (125)	48 (139)
Republican	38 (67)	29 (54)
COVID-19 Infection	23 (110)	23 (101)
Yes	($n = 331$)	($n = 316$)
No	28 (91)	24 (70)
COVID-19 Death Exposure	72 (240)	76 (246)
Yes	($n = 328$)	($n = 314$)
No	32 (217)	26 (84)
Social Norms	68 (111)	74 (230)
Very few	($n = 343$)	($n = 322$)
Some but not many	17 (52)	12 (39)
Many	31 (107)	25 (85)
Nearly all	37 (127)	35 (113)
COVID-19 Vaccine Hesitancy	16 (57)	28 (85)
Not hesitant	($n = 343$)	($n = 322$)
Hesitant	26 (85)	32 (93)
Child Vaccination Intentions	74 (258)	68 (229)
Already vaccinated	($n = 343$)	($n = 322$)
Right away	–	31 (105)
Wait and see	36 (136)	31 (91)
Only if required	36 (121)	17 (46)
Definitely not	10 (33)	10 (32)
	17 (53)	11 (38)

SD = Standard Deviation.

Percentages may not sum to 100 due to rounding.

All frequencies are unweighted.

plans to vaccinate their children right away (36%) or wait and see (36%). Ten percent reported they would do so only if the child's school required it, and 17% reported they would definitely not vaccinate their child. Among parents/guardians whose oldest child was between 12 and 17 years old, 31%

reported their child was already vaccinated, and another 31% planned to vaccinate their child right away. The next most prevalent response was to wait and see (17%). Ten percent planned to vaccinate their child only if required, and 11% reported they would definitely not vaccinate their child.

We present bivariate analyses for parents'/guardians' intentions to vaccinate their oldest child (0–11) in Table 2. Intentions to vaccinate children age 0 to 11 were significantly associated with age ($F_{3,2019} = 7.60$; $p < .001$), gender ($F_{2,5971} = 4.30$; $p < .01$), race/ethnicity ($F_{11, 23781} = 1.87$; $p < .05$), education ($F_{8, 17893} = 2.19$; $p < .05$), COVID-19 vaccination ($F_{2,5909} = 28.04$; $p < .001$), political affiliation ($F_{5, 11708} = 3.69$; $p < .01$), social norms ($F_{8, 17563} = 5.63$; $p < .001$), and COVID-19 vaccine hesitancy ($F_{2,5123} = 22.40$; $p < .001$). The highest prevalence of intentions to vaccinate their child “right away” were among parents/guardians who reported no hesitancy (66%), Asian Americans (68%), parents/guardians who reported nearly all people close to them were vaccinated (68%), parents/guardians who had at least one dose of the vaccine themselves (53%), and Democrats (50%). The highest prevalence of intentions to “definitely not” vaccinate their child were among parents/

guardians who had not received the vaccine themselves (40%), parents/guardians who perceived very few people close to them to be vaccinated (35%), Republicans (27%), and Native American or Alaska Natives (27%).

We present bivariate analyses for parents'/guardians' intentions to vaccinate their oldest child (12–17) in Table 3. Intentions to vaccinate children age 12 to 17 were significantly associated with age ($F_{4,2018} = 3.36$; $p < .01$), education ($F_{11, 23397} = 2.17$; $p < .05$), healthcare coverage ($F_{3,7395} = 4.12$; $p < .01$), COVID-19 vaccination ($F_{3,8006} = 20.35$; $p < .001$), political affiliation ($F_{7, 15305} = 2.36$; $p < .05$), social norms ($F_{11, 22867} = 7.08$; $p < .001$), and COVID-19 vaccine hesitancy ($F_{3,7681} = 7.77$; $p < .001$). The highest prevalence of vaccination among children age 12 to 17 was reported among parents/guardians who were Asian American (55%), who were not hesitant (45%), who were vaccinated (40%), who were Democrats (39%), who perceived nearly all people close to them to be vaccinated (39%), and who had some college but no degree (39%). The highest prevalence of intentions to “definitely not” vaccinate their child were among parents/guardians who perceived very few people close to them to be vaccinated (40%), parent/

Table 2. Weighted bivariate relationships – parents' intentions (oldest child age 0–11).

	Right Away	Wait and See	Only if Required	Definitely Not	<i>p</i>
	Row % (unweighted freq.)				
Age (mean) (n = 343)	37	34	35	30	<.001
Gender (n = 342)					.005
Men	42 (76)	31 (46)	15 (19)	12 (15)	
Women	30 (60)	42 (75)	6 (14)	22 (37)	
Race/Ethnicity (n = 343)					.035
Asian American	68 (34)	28 (16)	1 (1)	2 (1)	
Black	30 (17)	35 (19)	14 (7)	21 (11)	
Hispanic/Latino	38 (32)	31 (23)	9 (8)	22 (15)	
NAAN	33 (18)	28 (14)	13 (8)	27 (13)	
NHPI	31 (23)	50 (32)	6 (4)	14 (8)	
White	31 (12)	43 (17)	13 (5)	13 (5)	
Education (n = 343)					.021
High school or less	29 (30)	40 (45)	7 (8)	24 (23)	
Some college	28 (23)	34 (24)	22 (14)	16 (12)	
Associate degree	34 (17)	31 (12)	11 (4)	24 (10)	
Bachelor's degree or higher	48 (66)	36 (40)	7 (7)	9 (8)	
Healthcare Coverage (n = 331)					.329
Not insured	33 (19)	29 (15)	17 (8)	21 (12)	
Insured	39 (116)	37 (100)	9 (24)	15 (37)	
COVID-19 Vaccination (n = 343)					<.001
At least one dose	53 (124)	38 (79)	5 (7)	4 (7)	
No doses	9 (12)	32 (42)	20 (26)	40 (46)	
Political Affiliation (n = 302)					.001
Democrat	50 (70)	38 (40)	5 (6)	7 (9)	
Independent/Other	36 (43)	41 (41)	11 (12)	13 (14)	
Republican	27 (17)	27 (23)	19 (12)	27 (15)	
COVID-19 Infection (n = 331)					.138
Yes	27 (30)	37 (36)	16 (12)	20 (13)	
No	40 (101)	37 (83)	8 (20)	15 (36)	
COVID-19 Death Exposure (n = 328)					.091
Yes	43 (50)	38 (40)	4 (5)	15 (16)	
No	34 (82)	36 (75)	14 (27)	16 (33)	
Social Norms (n = 343)					<.001
Very few	15 (7)	29 (14)	22 (14)	35 (17)	
Some but not many	24 (28)	39 (43)	9 (8)	28 (28)	
Many	43 (59)	41 (50)	10 (10)	7 (8)	
Nearly all	68 (42)	28 (14)	4 (1)	0 (0)	
COVID-19 Vaccine Hesitancy (n = 343)					<.001
Not hesitant	66 (62)	22 (14)	1 (2)	11 (7)	
Hesitant	26 (74)	41 (107)	14 (31)	19 (53)	

NAAN = Native American or Alaska Native; NHPI = Native Hawaiian or Pacific Islander. Percentages may not sum to 100 due to rounding.

Table 3. Weighted bivariate relationships – parents' intentions (oldest child age 12–17).

	Already Vaccinated	Right Away	Wait and See	Only if Required	Definitely Not	<i>p</i>
Age (mean) (n = 322)	48	44	43	43	45	.009
Gender (n = 321)			Row % (unweighted freq.)			.116
Men	28 (44)	38 (58)	15 (23)	10 (18)	8 (14)	
Women	35 (61)	23 (33)	19 (33)	8 (13)	15 (24)	
Race/Ethnicity (n = 322)						.142
Asian American	55 (18)	23 (8)	12 (5)	7 (2)	3 (1)	
Black	31 (20)	20 (13)	25 (17)	11 (7)	14 (9)	
Hispanic/Latino	37 (30)	29 (23)	15 (12)	11 (9)	8 (6)	
NAAN	25 (15)	28 (14)	15 (8)	9 (4)	23 (11)	
NHPI	21 (13)	39 (16)	16 (8)	15 (7)	9 (6)	
White	22 (9)	44 (17)	15 (6)	7 (3)	12 (5)	
Education (n = 322)						.012
High school or less	33 (24)	15 (14)	18 (12)	20 (14)	15 (13)	
Some college	39 (25)	17 (9)	21 (13)	7 (3)	16 (10)	
Associate degree	22 (9)	35 (13)	27 (12)	5 (5)	11 (6)	
Bachelor's degree or higher	30 (47)	43 (55)	12 (19)	7 (10)	8 (9)	
Healthcare Coverage (n = 319)						.003
Not insured	24 (10)	23 (7)	5 (3)	22 (8)	26 (8)	
Insured	32 (95)	33 (53)	18 (53)	8 (24)	8 (27)	
COVID-19 Vaccination (n = 322)						<.001
At least one dose	40 (94)	40 (78)	14 (30)	4 (10)	2 (5)	
No doses	10 (11)	11 (13)	23 (26)	22 (22)	33 (33)	
Political Affiliation (n = 294)						.017
Democrat	39 (54)	31 (38)	17 (26)	9 (14)	4 (7)	
Independent/Other	32 (26)	33 (35)	12 (14)	10 (12)	13 (14)	
Republican	14 (12)	35 (14)	14 (9)	13 (5)	24 (14)	
COVID-19 Infection (n = 316)						.068
Yes	16 (9)	46 (27)	16 (16)	10 (8)	12 (10)	
No	36 (94)	28 (63)	16 (38)	9 (23)	11 (28)	
COVID-19 Death Exposure (n = 314)						.136
Yes	27 (24)	40 (24)	17 (18)	12 (12)	4 (6)	
No	33 (78)	29 (67)	16 (37)	8 (18)	13 (30)	
Social Norms (n = 322)						<.001
Very few	5 (3)	30 (9)	20 (6)	6 (4)	40 (14)	
Some but not many	19 (16)	16 (18)	29 (23)	17 (14)	19 (14)	
Many	41 (46)	28 (31)	15 (19)	13 (13)	4 (4)	
Nearly all	39 (40)	51 (33)	7 (8)	1 (1)	2 (3)	
COVID-19 Vaccine Hesitancy (n = 322)						<.001
Not hesitant	45 (48)	41 (33)	10 (8)	1 (1)	2 (3)	
Hesitant	24 (57)	27 (58)	20 (48)	14 (31)	15 (35)	

NAAN = Native American or Alaska Native; NHPI = Native Hawaiian or Pacific Islander.

Percentages may not sum to 100 due to rounding.

guardians who had not received the vaccine themselves (33%), the uninsured (26%), Republicans (24%), and Native American or Alaska Natives (23%).

Discussion

This study documents important patterns and associations with parent/guardian intentions to vaccinate their oldest child against COVID-19. This information is critical for public health campaigns aimed at increasing vaccine uptake. More than one third of parents whose oldest child was not yet eligible for vaccination (11 or younger) planned to get them vaccinated right away when a vaccine became available to them. Among parents whose child was eligible to be vaccinated (age 12–17 years), approximately a third reported their child had already been vaccinated, and approximately a third planned to do so right away. The survey was conducted through September and early October of 2021, and the expanded EUA for children age 12 to 17 was issued on 10 May 2021. Further research is needed to understand why those parents of children age 12–17 who indicated they would

vaccinate their children right away had not done so already. This finding suggests that barriers beyond intent may constrain vaccination.

Consistent with prior research, a substantial portion of parents/guardians remained in the “wait and see” category.²⁰ One in ten parents/guardians intended to vaccinate their child only if their school required it, which is slightly higher than reports from October 2021 but similar to some earlier reports from July and September 2021.²⁰ Although nearly one in five parents/guardians whose oldest child was 11 or younger reported they would definitely not vaccinate their child, this percentage is lower than some other national level reports from October 2021 which found a third of parents/guardians of children between the ages of 5 and 11 planned to refuse.²⁰ “Definitely not” responses were even less prevalent among parents whose oldest child was age 12 to 17.

Consistent with prior research, parents'/guardians' age, education, COVID-19 vaccination status, political affiliation, social norms, and COVID-19 vaccine hesitancy were significantly associated with intentions to vaccinate their child.^{8–10} These significant associations were found for parents/guardians of

children in both age groups. Given our finding that social norms of vaccination (i.e., the perceived vaccination status of others) influence intentions to vaccinate children, encouraging vaccinated individuals to make their vaccination status known to people close to them could increase uptake. The association we find between COVID-19 vaccine hesitancy and parent/guardian intentions to vaccinate children may be useful for identifying groups and areas to target for continued vaccination campaigns given that there is increasingly better data tracking vaccine hesitancy in the US. However, division over vaccination falls increasingly across political party lines,¹³ and scholars suggest this may be related to emerging evidence that political party affiliation has become a source of personal identity.¹⁴ To successfully promote vaccination, public health officials may need to consider messaging which is not perceived as threatening to Republican party affiliation or identity.

Consistent with some prior studies, gender and race/ethnicity were significantly associated with child vaccination intentions for parents/guardians whose oldest child was age 11 or younger^{8,9} but not for those whose child was between age 12 and 17. Our finding that men had a higher prevalence of intentions to vaccinate their children “right away” is consistent with prior research.²¹ Although researchers are still unsure of what drives gendered attitudes toward the COVID-19 vaccine, some scholars have found evidence that the gendered pressures mothers face as managers of family health decisions often lead them to oppose risks they perceive as uncontrollable and that vaccines were viewed as an uncontrollable risk, while other measures such as masking were not.²² Importantly, due to our oversampling, we were able to disaggregate racial/ethnic groups such as Asian Americans and Native Hawaiian or Pacific Islanders who tend to be combined. What is known about vaccine hesitancy among Native Hawaiian or Pacific Islanders is often contradictory because studies which combine them with Asian Americans report their hesitancy as lower than other racial/ethnic groups,²³ while those that separate them find their hesitancy to be higher.²⁴ Our results demonstrate that the proportion of Asian Americans who had vaccinated their children (12–17) and who said they would get their children (0–11) vaccinated right away was more than twice the proportion of Native Hawaiian or Pacific Islanders reporting the same. This further supports the need for disaggregation of data between Asian Americans and Native Hawaiian or Pacific Islanders,¹⁶ as this gap between intentions to vaccinate children right away was among the widest of any racial/ethnic groups. This study also documents the proportion of Native American or Alaska Native respondents who reported they would definitely not get their children vaccinated is much higher than any other racial/ethnic group. Further research is needed to understand these racial/ethnic disparities, but a growing body of work points toward discrimination and structural racism as key factors.^{25,26}

Healthcare coverage was significantly associated with child vaccination intentions among parents/guardians whose oldest child was age 12 to 17 but not among those whose oldest child was 11 or younger. Healthcare coverage appears to have been omitted from most published articles on parent/guardian intentions to vaccinate their children against COVID-19 and should be considered an important factor in future research

given our findings. Although the vaccine is free, healthcare coverage promotes regular provider visits which is associated with preventive health behaviors.^{11,12}

COVID-19 infection and COVID-19 death exposure were not significantly associated with child vaccination intentions for either subsample of parents/guardians. This is in contrast to at least one other study which found parents/guardians who had experienced a COVID-19 infection or death of someone close to them to be more willing to accept a COVID-19 vaccine for their child.⁸ Although we do not know why associations with gender, race/ethnicity, and healthcare coverage exist for one child age group and not the other, one plausible explanation is the eligibility for vaccination among children in the older age group. As prior research has shown, differences in hesitancy and vaccination uptake change over time,²⁷ so differences observed in groups not yet eligible for vaccination may narrow over time.

These findings provide insight into parents'/guardians' intentions to vaccinate children against COVID-19 and how those intentions may or may not vary across sociodemographic characteristics (gender, race/ethnicity, education), healthcare coverage, vaccination status, political affiliation, COVID-19 infection, COVID-19 death exposure, perceived norms of vaccination, and COVID-19 vaccine hesitancy. The most consistently significant associations with parents'/guardians' intentions to vaccinate their children appear to be with COVID-19 vaccination status, political affiliation, social norms, and COVID-19 vaccine hesitancy. The differences we find across political affiliation are consistent with prior research demonstrating that Republicans are more likely to endorse anti-vaccine misinformation and less willing to be vaccinated—a partisan divide that has widened over time.^{13,28,29} Gender and race/ethnicity were not consistently associated with parent/guardian intentions for both child age groups in this study. These findings are partially consistent with prior research,³⁰ but further research is needed and should continue to disaggregate data between racial/ethnic groups.

Limitations

We have relied on cross-sectional data and do not make any causal claims. We have relied on reports from parents/guardians to understand child vaccination, which is reasonable given most states require parental consent to vaccinate someone under age 18.⁶ However, youth are not simply passive in the vaccination process and hold views of their own regarding vaccines.³¹ Furthermore, some states do not require parental consent, meaning vaccination coverage among children may not depend entirely on parent/guardian intentions, but may also depend on children's own experiences and plans. Although a small number of studies have surveyed children directly about their vaccine behaviors and attitudes, future research should continue to include youth and parent-child dyads when possible—to assess possible parent-child discordance—especially in states where parental consent is not required. We have analyzed smaller subsamples of a larger national study, limiting the types of statistical analyses possible. For example, we have only provided descriptive and bivariate analyses, which does not allow us to

assess associations while controlling for other independent variables. Future research should sample parents/guardians specifically to allow for further and more complex analysis of their vaccination intentions and consider collecting data from parent-child dyads to better understand how those relationships might shape vaccination attitudes and behaviors. Future research should consider use of measures that capture youth experiences with COVID-19 infection, or death exposure, when examining parent/guardian intentions to vaccinate their children.


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