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# **COVID-19 Vaccine Hesitancy among Vermont Parents**

by

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Undergraduate Honors Thesis

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## **Introduction**

COVID-19 vaccines are powerful tools to help minimize the harm from the COVID-19 pandemic. However, there is a significant portion (30.7%, as of March 21, 2023) of the US population that has not been fully vaccinated against COVID-19<sup>1</sup>. The reasons why someone may not to be vaccinated against COVID-19 are complex. Some Americans have documented medical contraindications to receiving a COVID-19 vaccine or may not have access to the COVID-19 vaccine, but a US Census bureau survey indicated that only 1.7% of Americans reported lack of access to a COVID-19 vaccine, and genuine medical exemptions are rare<sup>2</sup>. Therefore, the majority of the unvaccinated population are eligible to receive a COVID-19 vaccine and the vaccine is accessible to them, yet they choose not to be vaccinated, which is a phenomenon called “vaccine hesitancy”<sup>3</sup>. The primary consequence of COVID-19 vaccine hesitancy is prolonged prevalence of the virus across the country as COVID-19 circulates in many populations, leading to continued illness and death from the disease<sup>3</sup>. Low levels of community vaccination also put those who are most vulnerable, such as people older than 65 and those with preexisting health conditions, as well as those who cannot be vaccinated for medical reasons, at high risk due to increased likelihood of serious illness and death if infected with the disease<sup>4</sup>. Given the pressing nature of the issue of COVID-19 vaccine hesitancy, there is a rapidly growing body of literature regarding the prevalence of COVID-19 vaccine hesitancy, the reasons that different population groups may be hesitant, and potential solutions for this problem.

Though children are not particularly vulnerable to severe complications from a COVID-19 infection as are other groups in the population, there are many other factors that need to be considered when discussing the importance of vaccinating children against COVID-19. Some

children are immunocompromised or may live with or are in close contact with high-risk members of the population, for example. Children also have an important role in the level of overall community spread of the virus<sup>4</sup>. In fact, there is some evidence that suggests children, though more likely to be asymptomatic when infected, may carry a high viral load, and subsequently could spread COVID-19 more easily than adults<sup>5</sup>.

As of March 21, 2023, 85.9% of the Vermont population is fully vaccinated against COVID-19 (defined as having completed the primary series)<sup>1</sup>. Comparing the proportion of the population who have been fully vaccinated against COVID-19 in Vermont to that of other states as well as to the national average of 69.4%<sup>1</sup>, it is clear that Vermont has a relatively high vaccination rate. However, COVID-19 vaccine hesitancy is still prevalent in Vermont, made apparent by the significant portion of the eligible population who have not been vaccinated.

Much of the research on COVID-19 vaccine hesitancy focuses on the demographics of the vaccine-hesitant nationwide with many correlations being consistently drawn and potential solutions being put forward<sup>6-10</sup>. There is also a growing body of research regarding parental COVID-19 vaccine hesitancy (parents who are hesitant about vaccinating their children who may or may not be hesitant about vaccinating themselves)<sup>11-13</sup>. However, little research has been done on COVID-19 vaccine hesitancy at the state level in Vermont, and no studies to date investigate parent COVID-19 vaccine hesitancy in Vermont.

## **Literature Review**

### **Income, employment, and health insurance**

A strong correlate of COVID-19 vaccine hesitancy nationwide is low household income. One study found that households with a higher annual income (above \$50,000) was correlated with lower COVID-19 vaccine hesitancy<sup>15</sup>. Another study found that areas with median household incomes of \$0K-40K and \$40-70K had higher rates (38% and 23% higher, respectively) of some form of COVID-19 vaccine hesitancy (either undecided, unlikely, or very unlikely to get the vaccine) than areas with median household incomes of \$100K or more<sup>8</sup>. Individuals who had lower income specifically because of income loss associated with the COVID-19 pandemic (which was more common for younger Americans than for the older population) was significantly associated with likelihood of delaying or refusing the vaccine process<sup>16</sup>. Employment status has also been linked to COVID-19 vaccine uptake; individuals who were unemployed and/or job-seeking at the time they were surveyed had higher rates of hesitancy than those working at least part-time<sup>7</sup>. Additionally, a lack of health insurance, which in many cases is related to low household income, has been found to be a barrier to vaccination<sup>17</sup>. Even though COVID-19 vaccines are free of charge to the public (as the COVID-19 pandemic is declared a federal public health emergency) and did not require any indication of health insurance, uninsured individuals may be hesitant because of fear of getting a bill for the vaccination<sup>6,17</sup>. Overall, there is higher COVID-19 vaccine hesitancy in those who are economically disadvantaged, and this trend intersects with similar tendencies seen in those with lower education levels, rural residence, and those who are members of racial and ethnic minorities.

## **Education**

Higher education levels are strongly associated with lower rates of COVID-19 vaccine hesitancy<sup>7,12,18</sup>. In one study, a belief that the COVID-19 vaccine was unsafe was strongly correlated with having a high school education or less and were unlikely have a bachelor's degree or a postgraduate degree<sup>18</sup>. Another study found a link between low education level and a belief that the COVID-19 vaccine is ineffective<sup>7</sup>.

## **Race and ethnicity**

Another factor that many nationwide studies found was associated with COVID-19 vaccine hesitancy was race. Several studies found that Black Americans<sup>6-8,20</sup> and those who identify as Hispanic or Latinx<sup>15</sup> were significantly more likely to be hesitant about the COVID-19 vaccine than people of other races. One study pointed out that the legacy of racial injustices in the health system along with the cultural insensitivity that many racial and ethnic minority populations face when accessing healthcare may be key sources of hesitancy among these groups<sup>21</sup>. Another study found that higher levels of COVID-19 vaccine hesitancy were found in members of racial minorities living in areas with high social and racial health disparities, suggesting that differences in hesitancy along racial and ethnic lines could be due to the overall health inequities faced by these groups<sup>20</sup>.

## **Rural-urban divide**

A strong rural-urban divide is seen when investigating patterns of vaccine hesitancy. Several studies directly linked rural areas to lower levels of COVID-19 vaccination<sup>20,22</sup>, and another found a strong correlation between living in a manufactured home (over half of

manufactured homes in the United States are in rural areas) and lower COVID-19 vaccination rates<sup>23</sup>. The low COVID-19 vaccine uptake in rural areas can be partially attributed to lower income and education levels<sup>20,22</sup>; one study suggests the existence of a “rural health determinant” incorporating rural residence, low income, and low education level that may help explain the lower vaccine uptake in these areas<sup>24</sup>. Though there is not enough research to make conclusions about how the link between rural residence and low COVID-19 vaccination status specifically affects Vermont; much of the state is rural, suggesting that studies that investigate rural health and COVID-19 vaccination patterns may have implications for Vermont.

## **Gender**

Studies show that there are gender differences in COVID-19 vaccine hesitancy. The likelihood of refusal is higher for women than it is for men, and this is based mostly on concerns about safety and efficacy of the vaccine<sup>7</sup>. Women also make 80% of healthcare decisions for families, so the higher rate of hesitancy for women has the potential to impact the vaccine statuses of the rest of a family, though this has not yet been studied in-depth<sup>6</sup>.

## **Sense of vulnerability to COVID-19**

Several studies found that a heightened sense of vulnerability to COVID-19 was correlated with higher levels of COVID-19 vaccination. One study found that feeling a high personal risk of contracting COVID-19 was strongly associated with COVID-19 vaccine uptake<sup>7</sup> while another found that greater perceived risk of COVID-19 to others, not necessarily the participants themselves, was a key predictor<sup>25</sup>. Concerns about the severity of the symptoms if a person was to contract the virus and concerns about widespread COVID-19 in the country were also strongly correlated with high levels of vaccine uptake<sup>26</sup>.

## **Trust in government and scientific experts**

Trust in the government as well as in medical and scientific experts was one of the strongest predictors of vaccine uptake, according to results from a series of cross-sectional studies performed by Kerr *et.al*<sup>27</sup>. When people feel that their concerns and objections are not heard by their leaders, they are more likely to disregard their leader's words<sup>28</sup>. Lack of trust in public officials and scientists can make people more inclined to trust other sources instead, which has led to the spread and popularization of misinformation and conspiracy theories about COVID-19<sup>29</sup>.

## **Partisan divide**

How governments and public officials handle the COVID-19 pandemic impacts vaccine hesitancy. In the US, Republican and Democratic leaders generally have had different views on how to respond to the pandemic. These differences in responses and rhetoric have been highly divisive and are one of the key reasons for the partisan divide in COVID-19 vaccine hesitancy in the United States. Generally, conservatives are less likely to get the COVID-19 vaccine than are liberals<sup>6</sup>. A survey conducted in March 2021 found that 43.8% of parents who identify as a Republican were hesitant to have their child vaccinated, compared to 18.1% of parents who identify as a Democrat were hesitant<sup>30</sup>. Similarly, another study found that 56.1% of conservative-leaning Americans said they were afraid of the vaccine while only 36.7% of liberal-leaning Americans were afraid of the vaccine<sup>10</sup>. However, more research is needed to determine the nuances of the partisan differences in vaccine uptake, as it is more complicated than a simple red-blue divide.



## **COVID-19 vaccine hesitancy in parents**

While there are many similarities between COVID-19 vaccine hesitancy in the general population and COVID-19 vaccine hesitancy in parents, there are unique considerations for parent COVID-19 vaccine hesitancy. While COVID-19 vaccines were authorized by the FDA for emergency use in the adult population in late 2020, no COVID-19 vaccine was approved for children under 12 until October 2021, and COVID-19 vaccines for children under 5 weren't approved until June 2022<sup>31</sup>. This later approval date, the fact that children (except those with preexisting health conditions) are not a demographic that is generally at high risk for COVID-19 complications, as well as other factors have made for a complicated decision for many parents about whether to have their child vaccinated against COVID-19. The unique situation created by these factors has caused uncertainty in many parents: parents have more negative overall views about the COVID-19 vaccine than adults who are not parents<sup>8,20</sup>, and a national survey of parents of children aged 12 to 15 found that nearly a third of parents expressed hesitancy about vaccinating their child against COVID-19<sup>32</sup>.

## **Trends in COVID-19 vaccine hesitancy among parents**

Much of the research indicates that parental COVID-19 vaccine hesitancy follows similar trends to general COVID-19 vaccine hesitancy. Many of the strongest indicators for parents having favorable views on vaccinating their child against COVID-19 are the same as the strongest indicators for COVID-19 vaccine hesitancy in the general population, such as higher levels of education, Democratic political affiliation, and male gender of the parent<sup>5</sup>. As in the general population, lower sense of vulnerability to COVID-19 was also strongly associated with COVID-19 vaccine hesitancy. One study found that parents who reported that neither themselves

nor their family members had tested positive for COVID-19, those who had not lost a family member to COVID-19, and parents who did not believe it likely for their child to contract a COVID-19 infection in the following year showed higher hesitancy towards the COVID-19 vaccine<sup>32</sup>. Additionally, in trends similar to those seen in the general population, vaccine hesitancy is higher among Black parents compared to White parents, those who had public health insurance as opposed to private health insurance, and those with a lower income. These factors combine to make “urban hot spots” of underprivileged, low-income minorities particularly vaccine-hesitant groups<sup>33</sup>.

Vaccine hesitancy is not a new phenomenon; there have been parents hesitant about getting routine vaccinations for their children since long before the COVID-19 pandemic<sup>12</sup>. Though there may be some commonalities, it’s unclear how much general vaccine hesitancy is related to hesitancy about the COVID-19 vaccine. One study found that parents who were supportive of other child and adolescent vaccines were also supportive of the COVID-19 vaccine for this age group<sup>34</sup>. Another study, however, found that 69.53% of parents report more hesitancy about the COVID-19 vaccine for their child compared to other vaccines, and that approximately half of the parents who responded were less hesitant about the flu vaccine than the COVID-19 vaccine<sup>12</sup>. Though the relationship is unclear, it is possible that parents may be hesitant about the COVID-19 vaccine for different reasons that they may be hesitant about other vaccines, yet more research is needed.

### **Reasons for concern among parents**

According to nationwide surveys, concern about COVID-19 vaccine side effects was the most prominent reason parents were hesitant; one study found that this was a concern for 72% of

parents<sup>35</sup>. 67% of parents were concerned about the safety of the COVID-19 vaccine, often because they felt that it was developed and tested too quickly<sup>35</sup>. Effectiveness of the COVID-19 vaccine was also a common concern; 61% of parents cited a desire to know more about how well the COVID-19 vaccines work in children before vaccination<sup>35</sup>. Many parents were also concerned about lasting negative health effects of a COVID-19 vaccine for their child<sup>36</sup>. Less common reasons for hesitancy included not believing that a COVID-19 infection would be dangerous to their child's health (7.3% of parents) and believing it's best to let COVID-19 run its natural course (6.4% of parents)<sup>14</sup>.

### **Literature Review Conclusion**

Generally, the trend in vaccine uptake is that more privileged groups (those who are White, wealthier, more educated, and live in suburban or urban settings as opposed to rural areas) have lower rates of hesitancy than underprivileged groups (racial and ethnic minorities and those who are low-income, are less educated, or who live in a rural setting). Since the beginning of the COVID-19 pandemic, underprivileged groups have seen higher rates of COVID-19 infection as well as higher rates of serious illness and death from the virus. The higher rates of COVID-19 vaccine hesitancy in these groups only makes the disparity in case numbers and death rates more severe.

Of course, many other factors beyond indicators of privilege are correlated with vaccine hesitancy. Vaccine hesitancy is far more nuanced than the conclusions that the existing research has been able to determine, and this is especially so when it comes to parental vaccine hesitancy because the approval of the COVID-19 vaccine for children was relatively recent.

The majority of the research done on COVID-19 parental vaccine hesitancy in the United States has so far focused on the issue at a national level. Fewer studies have focused on COVID-19 parental vaccine hesitancy at the state or local level, but there are many aspects of how parents are thinking about this issue that differ depending on place or sub-population.

Understanding which factors are most correlated with parental vaccine hesitancy in Vermont as well as the reasons Vermont parents are hesitant can inform decisions about where to prioritize public health efforts to address parents' concerns and ultimately increase vaccine uptake in children.

### **Purpose statement**

This research aims to investigate COVID-19 vaccine hesitancy among parents of children aged 5-11 in Vermont. Developing a more thorough understanding of this issue pertaining specifically to Vermont will inform efforts to improve COVID-19 vaccine hesitancy so that they can be specific to the barriers to COVID-19 vaccine uptake for children in the state. My primary hypothesis is that parents will most commonly cite concerns about their child infecting others if they were to contract COVID-19 and beliefs that widespread COVID-19 vaccination is essential to minimizing the harm of the COVID-19 pandemic as their reasons for vaccinating and that parents who are hesitant will cite the safety and the potential side effects of the COVID-19 vaccine as their primary reasons for concern. My secondary hypothesis is that more than 60% of Vermont parents will report that they chose to vaccinate their child against COVID-19. My tertiary hypothesis is that COVID-19 vaccine hesitancy among parents will vary with differences in demographic variables.

## **Methods**

### **Recruitment**

The study design and materials were approved by the Committee on Human Research in the Behavioral Sciences at the University of Vermont. The study was categorized as exempt from IRB review under Exemption Category 2: Test, surveys, interviews, or observation (low risk). Participants were recruited through advertisements on a local online social media platform called Front Porch Forum (FPF) using a 1000-ad “state sampler” advertising package.

Advertisements with a short explanation of the project and a link to the survey were equally shown in forums in all towns and counties of Vermont. Additional recruitment occurred through contacting principals and school administrators of Vermont elementary schools to request distribution of a flyer at the school that advertised the study, though this method of recruitment had limited success (see Discussion). Eligible participants included all respondents who self-identified as a parent or guardian of a child between the ages of 5 and 11 and a Vermont resident. Recruitment took place in October and November of 2022.

### **Quantitative Survey**

Recruited participants took a short online survey which asked questions about the parent’s demographics and child’s vaccination status (see Appendix). For the questions about the reasoning behind a parent’s COVID-19 vaccination decision, parents could select as many reasons as were applicable to them. The survey was administered through Qualtrics online platform, and it used a logic function to shift to a certain set of questions depending on what the participant selected as their vaccination decision for their child.

## **Qualitative Interview**

After completion of the online survey, participants had the option to participate in a qualitative phone interview in which they were invited to further discuss the reasoning behind their COVID-19 vaccination decision for their child. Participants were asked questions that expanded on their answers to the quantitative survey to provide a more in-depth understanding of the factors that impacted decisions surrounding child vaccination (see Appendix).

## **Analysis**

All data were downloaded into a comma separated value format, with different survey answers being distinguished by different numerical values. Due to the low number of responses (N=19), some demographic variables were grouped into larger categories before analysis, as described in the Appendix. Survey data was analyzed through both descriptive and statistical analysis. The vaccination questions were analyzed through descriptive analysis, which was done by determining how common a certain response to a survey question was using the count function in Excel. The demographic questions were analyzed using statistical software R Studio (Version 2022.07.2) to perform Pearson's Chi-Square tests in order to identify the statistical significance for the association between a demographic variable and the respondent's COVID-19 vaccination decision for their child. R Studio was also used to create tables comparing each demographic variable to child COVID-19 vaccination decision (see tables 3-9).

## **Results**

### **Quantitative Results**

19 parents responded to all questions in the survey. 16 respondents had had their child vaccinated against COVID-19 (84.2%). None of the surveyed parents reported partial vaccination of their child. Due to the small number of respondents to the survey, no data collected had statistical significance. However, interesting patterns were observed in both the comparative and statistical analyses.

Table 1: Reported reasons for child vaccination against COVID-19

Reason for child vaccination against COVID-19	Percentage of parents with children vaccinated against COVID-19 reporting
I am concerned about the effects that a COVID-19 infection would have on my child's health	75%
I am concerned that my child would infect others if they were to contract COVID-19	81.3%
COVID-19 vaccination is a requirement at my child's school or extracurricular activities	12.5%
My friends or family persuaded me to vaccinate my child against COVID-19	6.3%
My child's pediatrician or other medical professional has recommended the COVID-19 vaccine	43.8%
I believe COVID-19 vaccination is essential to ending the impact of COVID-19	81.3%

Table 2: Reported reasons for not having child vaccinated against COVID-19

Reason for choosing not to vaccinate child against COVID-19	Percentage of parents with children not vaccinated against COVID-19 reporting
I am concerned about safety because of the speed at which the COVID-19 vaccine was developed	33.3%
I am concerned about safety because the COVID-19 vaccine was approved for my child's age group relatively recently	33.3%
I am concerned about the safety of the COVID-19 vaccine for a different reason	33.3%
I am concerned about possible side effects of the COVID-19 vaccine for my child	33.3%
I am concerned about the effectiveness of the COVID-19 vaccine for my child	66.7%
I don't believe a COVID-19 infection poses a threat to my child	100%
A COVID-19 vaccination site is not easily accessible for my child and I	0%
I chose to not vaccinate my child against COVID-19 because of my religious beliefs or the religious beliefs of another caregiver of the child	0%
My child cannot be vaccinated against COVID-19 for medical reasons	0%
I am against vaccinations in general (not limited to the COVID-19 vaccine)	0%

The most common reasons indicated for a parent's decision to vaccinate their child against COVID-19 were "I am concerned my child would infect others if they were to contract COVID-19" (81.3% of parents of vaccinated children), "I believe COVID-19 vaccination is essential to ending the impact of COVID-19" (81.3% of parents of vaccinated children), and "I



am concerned about the effects that a COVID-19 infection would have on my child's health” (75% of parents with vaccinated children). The least common reasons cited by parents who had vaccinated their child were “My friends or family persuaded me to vaccinate my child against COVID-19” (6.3%) and “COVID-19 vaccination is a requirement at my child's school or extracurricular activities” (12.5%).

3 of the 19 respondents (15.8%) reported that they did not have their child vaccinated against COVID-19. The most common reasons given for their choice were “I don’t believe a COVID-19 infection poses a threat to my child” (100%) and “I am concerned about the effectiveness of the COVID-19 vaccine for my child” (66.7%). The logic function of the survey asked only parents who selected that their children were unvaccinated or partially vaccinated whether they would change their mind, and if so, what would change their mind. 66.7% (two parents) said they were not considering getting their child vaccinated against COVID-19, but one parent said they may be willing to change their mind if vaccination against COVID-19 were to be required by their child’s school.

The demographic data, when compared to the parent’s vaccination decision, did not reveal any statistically significant associations, mainly due to a lack of statistical power from the small sample size. However, the stronger correlations include parent age ( $p$  value= 0.14) and county group ( $p$  value= 0.20), indicating that there may be a trend among the surveyed parents that younger age of the parent and residence in the counties in group 1 or group 3 are associated with higher levels of vaccine hesitancy. However, due to the small sample size, these trends could be due to chance. The variables with weaker correlations to parental COVID-19

vaccination decision include age of the child, the respondent being a mother, father, or another caregiver, parent education level, and annual household income.

Table 3: Age of child vs. COVID-19 vaccination decision for child

Child age	Number of parents who chose to fully vaccinate child against COVID-19 n(%)	Number of parents who chose not to vaccinate child against COVID-19 n(%)
5-6	5	2
7-8	6	1
9-11	5	0

P-value: 0.40

Table 4: Mother, father, or another caregiver vs. COVID-19 vaccination decision for child

Mother, father, or another caregiver	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
Mother	15	2
Father	1	1
Another caregiver	0	0

P-value: 0.71

Table 5: Parent age vs. COVID-19 vaccination decision for child

Parent age	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
30-40	6	3
40-50	9	0
50-60	1	0

P value: 0.14

Table 6: Parent education level vs. COVID-19 vaccination decision for child

Parent education level	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
Completed high school	1	0
Associate degree	0	0
Some college	0	0
Bachelor's degree	4	1
Master's degree	8	2
Doctoral degree	3	0

P-value: 0.81

Table 7: Annual household income vs. COVID-19 vaccination decision for child

Annual household income	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
Less than \$100,000	7	1
\$100,000 or more	9	2

P-value: 1

Table 8: County of residence vs. COVID-19 vaccination decision for child

County of residence	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
Addison	1	0
Chittenden	4	0
Franklin	2	0
Orange	0	1
Washington	4	0
Windham	5	2

P-value: 0.14

Table 9: County group vs. COVID-19 vaccination decision for child

County group	Number of parents who chose to fully vaccinate child against COVID-19	Number of parents who chose not to vaccinate child against COVID-19
Group 1: Rutland, Windham, Windsor, Bennington	5	2
Group 2: Franklin, Grand Isle, Chittenden, Addison	9	0
Group 3: Orange, Washington, Lamoille, Essex, Orleans, Caledonia	2	1

P-value: 0.20

### **Qualitative Results**

Out of the 19 parents surveyed, 4 indicated that they would like to do an interview. The interviews were between 8 and 25 minutes long and were conducted in November 2022. Qualitative findings are presented in detail in the following Discussion section.

### **Discussion**

#### *Primary hypothesis: reasoning behind COVID-19 vaccination decision*

The primary hypothesis was that the most common reasons parents would cite for choosing to vaccinate their child was a concern that their child would infect others if they contracted COVID-19 as well as a belief that widespread COVID-19 vaccination is key to minimizing the harm of the COVID-19 pandemic. These two reasons for vaccinating were in

fact the most reported answers, with 81.3% of parents reporting concerns about infecting others and 81.3% of parents reporting that they believe COVID-19 vaccination is important in ending the impact of the pandemic.

During the interviews, these responses were put into context. Parent 1, a parent of two vaccinated children, discussed her concern about her children infecting others: specifically, their younger sibling. Since Parent 1 also had an infant who could not be vaccinated against COVID-19 at the time, she said that she and her spouse wanted to create “herd immunity within our 5-person family”. Parent 2, a parent of two vaccinated children, also expressed concern about her children infecting others. Like Parent 1, she was concerned about inter-family spread of COVID-19. She herself has a preexisting health condition and so do both of her children, so vaccination against COVID-19 was a “no-brainer” for her as she expressed how serious it would be if any of them were to contract COVID-19. Several interviewed parents also expanded on their beliefs that COVID-19 vaccination is key to ending, or at least minimizing the harm, from the COVID-19 pandemic. Parent 1 expressed that “the risk of hospitalizations and how many people were dying from COVID made it clear that we needed to do our part in preventing that, even if our own kids weren’t personally at risk”. Parent 3, who has one vaccinated child, explained that she and her spouse decided to have their child vaccinated against COVID-19 because of their concern about the potential for other children at their local school not being vaccinated, and she saw vaccinating her child as an important way to lower the community spread of the virus.

Another commonly reported reason for vaccinating children against COVID-19 was concerns about the child’s health: multiple parents cited concerns about their child becoming very sick if they were to contract COVID-19. Parent 2 said that her children would likely need to

be hospitalized if they were to contract COVID-19 due to their preexisting health conditions.

The other two parents, Parent 1 and Parent 3, were less concerned about severe complications for their child if they were to be infected, but still did not want their child to have to “be miserable for a week” if it is avoidable.

The recommendation of a vaccine from a pediatrician can also be a powerful influence on a parent’s decision. 43.8% of parents who had had their children vaccinated cited a pediatrician’s recommendation as one of the reasons for their vaccination decision, and Parent 3 discussed the role of physician recommendation in her COVID-19 vaccination decision for her child. She stated, “our pediatrician’s office makes it clear that they strongly recommend the vaccine for your children, and if you don’t intend to vaccinate, not only is this not the practice for you, but we can’t recommend a practice that would go along with that because we disagree so wholeheartedly.” She added that this very strong positive view on COVID-19 vaccination by medical professionals made it particularly clear to her that vaccinating her children was the right choice.

Parents who had favorable views on the COVID-19 vaccine emphasized that they didn’t have any concerns about the safety, efficacy, or side effects of the COVID-19 vaccine. One parent reported, “my kids did both get fevers as a side effect from the vaccine, but it was quick, they got through it, and it’s so much better than actually getting COVID”. Another parent expressed, “I’m no more concerned about vaccine safety than I am about the safety of the things they are routinely exposed to. It’s strange that many children are routinely exposed to chemicals that are actually quite dangerous, yet we choose the COVID vaccine as a scapegoat for our worries about the presence of chemicals in our kids’ lives.” For another parent, “the knowledge

that the technology of the mRNA vaccines has actually been developed for decades and that the COVID-19 vaccine was not ‘rushed’ was one of many things that helped me come to the conclusion that this vaccine is absolutely safe”.

Another part of the primary hypothesis was that parents who chose not to have their child vaccinated against COVID-19 would most often cite the safety and the potential side effects of the COVID-19 vaccine as their primary reasons for concern. This hypothesis was not found to be true. Though 66.7% of vaccine hesitant parents reported concerns about effectiveness of the COVID-19 vaccine, and 33.3% of parents cited safety concerns, the most reported reason (100% of vaccine hesitant parents) was that the parent didn’t believe a COVID-19 infection would pose a threat to their child. Therefore, this study is not in agreement with other studies that indicate that vaccine-hesitant parents most often cite concerns about safety and efficacy of the COVID-19 vaccine<sup>14, 35, 36</sup>, and one study specifically found that not believing that a COVID-19 infection would be dangerous to their child’s health was one of the least commonly cited reasons for hesitancy<sup>14</sup>.

Parent 4 was the only interviewed parent who had not had her children vaccinated against COVID-19, and she cited concerns about safety and side effects as well as a belief that a COVID-19 infection wasn’t a threat to her children as her reasoning behind the decision. “My kids are 5 and 7, and are both healthy,” she explained. “We figured that with their active immune systems, why vaccinate them with a vaccine that was obviously pretty rushed through? It’s a part of growth and development to build an immune system, so I’m really not concerned about [a COVID-19 infection] being a serious health risk to them.” She added that, “by the time the FDA approved the vaccine for kids [aged 5-11], we didn’t feel like COVID was a big risk to our family, whereas we did feel like there was a risk associated with vaccination”. She was also



concerned about her children having side effects from the COVID-19 vaccine, stating, “I just don’t like the idea of the unknown. The idea of my children having significant side effects from the vaccine is very scary to me, compared with a natural infection, where, because they’re a very low-risk age group and have strong immune systems, I’m not concerned about that being a big risk to them”. Her concerns about side effects were amplified by her own experience with the COVID-19 vaccine, which she shared: “I received the Moderna vaccine and soon after, I had an issue with my menstrual cycle, which I thought was just...creepy. So, I wasn’t comfortable giving a vaccine that can have strange effects on the body to my kids.”

During the interviews, parents discussed reasons behind their vaccination decision that had not been asked in the survey. One factor that played into several parents’ decisions was their children’s social development. Parent 1 talked about child COVID-19 vaccinations bringing a relief from stress around socializing: “once our kids had been vaccinated, we started socializing unmasked with other families again, and because of both the lowered risk of serious infection and because of the general trajectory of the pandemic, we were finally able to relax,” though she added that her children still wear masks at school. Parent 3 also shared that, “at first, my family was making sure all the people who were around us were vaccinated, but we have relaxed on that more now that our whole family has been vaccinated.”

Another factor that parents discussed as influencing their COVID-19 vaccination decision was the parent’s professional and personal experience with vaccines more broadly. Parent 2 noted, “I worked in a hospital for a long time, where I saw the effects of delayed vaccination”. Parent 3 shared that she worked for UNICEF for many years, so she has “heard many stories about how, globally, child mortality rates have gone down thanks to vaccinations and pretty

hefty vaccination campaigns. I feel like I had the opportunity to learn about why vaccines are not only really important but are also very trustworthy. I clearly see how the positives vastly outweigh the negatives.” Parent 3 also shared an experience from her personal life that shaped her view on vaccines: “we have a lot of friends who are Amish, which is a group that tends to not vaccinate their kids. We have known about some serious illness outbreaks that sometimes have fatal results, and it just seems so unnecessary because that’s why vaccines are there”. These experiences impressed upon these parents the importance of vaccinations, which contributes to the way they think about COVID-19 vaccination.

*Secondary hypothesis: percentage of parents reporting COVID-19 vaccine hesitancy*

The secondary hypothesis was that at least 60% of Vermont parents would report having had their child vaccinated against COVID-19, and it was found that 83.3% of surveyed parents had done so. As of March 1, 2023, 32% of children aged 5-11 have completed the 2-dose primary vaccination series nationwide<sup>40</sup>, so this study’s figure suggests that Vermont has a much higher than average COVID-19 vaccination rate for this age group. The finding that Vermont children aged 5-11 are vaccinated against COVID-19 at a higher rate than are children in this age group nationwide concurs with other data; according to the Vermont Department of Health, 54% of Vermont children aged 5-11 have completed the primary COVID-19 vaccination series as of April 5, 2023<sup>41</sup>.

Given the findings from other studies on the demographic factors that influence COVID-19 vaccine hesitancy, certain demographic characteristics of Vermont, including but not limited to the following, may influence the rates of child COVID-19 vaccination:

1. Higher education levels are generally correlated with a more favorable view of the COVID-19 vaccine<sup>7,12,18</sup> and compared to the national average, the Vermont population is highly educated; 92.7% of residents have a high school diploma<sup>19</sup> and 44.4% of residents have at least a bachelor's degree<sup>18</sup>.
2. Certain racial identities, including Black Americans<sup>6-8,20</sup> and those who identify as Hispanic or Latinx<sup>15</sup> have been associated with higher rates of hesitancy than White Americans. However, 94% of Vermont's population identifies as White, which is a higher percentage than the national average<sup>19</sup>. While it's extremely important to address the historic injustices and racial inequities in healthcare that impact vaccine uptake in non-White populations in Vermont, the lower uptake often seen in non-White populations may have a smaller effect on the overall COVID-19 vaccination rate in Vermont compared with states that have larger non-White populations.
3. Other studies have demonstrated that political beliefs may impact a person's view of the COVID-19 vaccine. Specifically, liberal political views are associated with a more positive view of the COVID-19 vaccine. According to the Pew Research Center, 88% of Vermont's adult population identifies as a Democrat or Democrat-leaning, while only 4% of the population identifies as Republican or Republican-leaning<sup>42</sup>. The liberal political beliefs of the Vermont may relate to the high uptake of the COVID-19 vaccine.
4. Finally, though there is not enough research to make conclusions about how the link between rural residence and low COVID-19 vaccination status specifically affects Vermont, much of the state is rural, suggesting that studies that have linked rural residence to low COVID-19 vaccination uptake could have implications for Vermont.

The statistic found in this study that 83.3% of Vermont parents report having vaccinated their child against COVID-19 is significantly higher than the data from the Vermont Dept. of Health suggests, which is that 54% of children aged 5-11 have been vaccinated<sup>41</sup>. The difference between these two findings can be attributed partially to low sample size of this study. Additionally, the characteristics of the demographic makeup of the study population differed from the demographic makeup of the state of Vermont in the following ways:

1. The median annual household income of the study population was \$100,000-\$125,000, which is significantly higher than the Vermont median household income of \$67,674 (as of 2021)<sup>19</sup>. Wealthier-than-average Vermonters were therefore overrepresented in the study sample, and higher income is associated with lower COVID-19 vaccine hesitancy<sup>8,15</sup>.
2. Table 10 shows how the education level of the study population differed significantly from that of the Vermont population.

Table 10: Educational attainment of the study population vs. Vermont population

Educational attainment	Study population	Vermont population
Graduated high school	100%	93.9%
Bachelor's degree or higher	94.7%	40.9%

Reliable data on the percentage of the VT population with degrees higher than a Bachelor's degree was not available to compare to that of the study population, but it should be noted that the majority of the study population (68.4%) had at least a Master's degree. Since higher educational attainment has been linked to more favorable views on the COVID-19 vaccine,<sup>7,12,18</sup> it's possible that the over-representation of highly educated

Vermont parents contributed to the high percentage of participants in the study who had vaccinated their children against COVID-19.

3. The study sample was not representative of parents in all counties in Vermont. In the study, there were concentrations of respondents from certain counties while other counties were not represented at all. Table 11 shows the difference in makeup of the county of residence in the study population compared with the Vermont population.

Table 11: County of residence of the study population vs. Vermont population

County	Percent of study population residing in county	Percent of VT population residing in county
Chittenden	21.1	26.0
Rutland	0	9.4
Washington	21.1	9.2
Windsor	0	8.9
Franklin	10.5	7.7
Windham	36.8	7.1
Addison	5.3	5.8
Bennington	0	5.8
Caledonia	0	4.7
Orange	5.3	4.5
Orleans	0	4.2
Lamoille	0	4
Grand Isle	0	1.1
Essex	0	0.9

Some counties were overrepresented, such as Windham County, some counties were under-represented, and many counties were not represented at all. This could have been due to the recruitment strategy unintentionally favoring some counties over others (see Limitations). Parent COVID-19 vaccine hesitancy may be different in different areas of the state, potentially because of differences in rurality, income, or other demographic variables, so a lack of a representative geographic sample could have contributed to a less accurate result.

4. Of the 19 parents surveyed, 17 of them identified as mothers. Though statistics on the percentage of parents who are mothers, fathers, or other caregivers are difficult to find, it is clear that mothers were overrepresented in this study compared to fathers, non-binary parents, or guardians.

*Tertiary Hypothesis: demographic correlations with COVID-19 vaccine hesitancy*

The tertiary hypothesis was that parent's COVID-19 vaccination decisions would vary with demographic differences, and it was found that there was variation along demographic lines in some demographic variables, but not in others.

Though no correlations between variables were found to be statistically significant, mainly because the study sample did not have enough power to detect statistical significance, the demographic variables most strongly correlated with COVID-19 vaccine hesitancy were parent age (p-value 0.1438) and county of residence (p-value 0.1427).

Younger parents (age 30-40) were more likely to be hesitant than parents in the older age groups (40-50 or 50-60). This finding may align with other data; some studies suggests younger

parent age is correlated with COVID-19 vaccine hesitancy<sup>43,44</sup> while others find that older parents have higher rates of hesitancy<sup>30</sup>.

Participants in Orange or Windham counties were more likely to be vaccine-hesitant compared with participants from other counties. Orange and Windham counties are both rural counties with populations per square mile of 42.6<sup>45</sup> and 58.4<sup>46</sup>, respectively. In Orange County, 34.2% of the population has a Bachelor's degree or higher<sup>45</sup>, a rate that is slightly below the state average of 40.9%, while Windham county's rate of higher educational attainment (40.9%) that is the same as the state average<sup>46</sup>. Both have similar racial makeup to the state average. Windham County has a lower median income than the state average (\$67,674) at \$59,195, while Orange County has a similar median income at \$67,906<sup>45,46</sup>. Though these characteristics do represent some demographic differences between these counties and the state average that could contribute to COVID-19 vaccine hesitancy in parents, it is ultimately unclear why these counties showed higher rates of COVID-19 vaccine hesitancy.

Demographic variables for which little or no correlation to COVID-19 vaccine hesitancy was found include child age, whether the parent was a mother, father, or another caregiver, parent education level, and annual household income. These findings that these variables have little correlation with COVID-19 vaccine hesitancy are therefore not in agreement with other studies that have found consistent and strong correlations between younger child age<sup>30</sup>, female gender of the parent<sup>7</sup>, low income<sup>8,15</sup>, and low levels of parent education<sup>7,12,18</sup> and higher COVID-19 vaccine hesitancy.

*Qualitative understanding of COVID-19 vaccine hesitancy in parents*

All parents were asked whether the decision to vaccinate their child against COVID-19 was immediately clear to them, or whether it was a decision they took more time to consider. Of the three parents who had had their children vaccinated, all parents reported that it was immediately clear to them that COVID-19 vaccination was the right decision. One parent said she had been anticipating the approval of the vaccine for her children's age group and tried to get them vaccinated against COVID-19 as soon as she could. Another parent noted, "my spouse and I didn't even consider an alternative." Parent 4, the parent who chose to not vaccinate her children against COVID-19, noted that she wasn't entirely opposed to vaccination at first, and that she and her spouse are vaccinated. By the time the FDA approved the vaccine for children aged 5-11 in October 2021, however, she did not feel that COVID-19 was a significant risk to her family, so along with her concerns about safety and side effects as well as her personal negative experience with the COVID-19 vaccine, she decided against vaccination.

Since Parent 4 had not had her children vaccinated, she was asked whether there was anything that would change her mind, including a COVID-19 vaccine with fewer side effects or waiting until the COVID-19 vaccine has been around for longer, or whether she had made her final decision on the matter. She reported that she was not considering having her children vaccinated against COVID-19, both because of her previously mentioned concerns about side effects and safety of the vaccine as well as the fact that her children have already had a natural COVID-19 infection, so she feels that they have enough immunity to the virus.

All parents were then asked whether they believe COVID-19 vaccination for children is generally well-regarded in their community and about any messages they have heard from other



families. The three parents who had had their children vaccinated against COVID-19 shared that in their community, parents had overall positive views on vaccination for children aged 5-11. One parent said, “people in my community are so accepting of the COVID vaccine for their children that I’m surprised every time I see the statistics showing that vaccine uptake is so low.” Another parent expressed, “as far as I know, all the other families we know have all had their kids vaccinated. I think for a lot of us, we just think...why wouldn’t you?” Another parent shared that though COVID-19 vaccination is mostly considered favorable in her community, there is still a mix of vaccination decisions. She said, “the majority of families I know I have had their kids vaccinated, but I also know a couple families who haven’t. I think there’s definitely been some tension, particularly about unvaccinated kids at [our local elementary school] when we were transitioning away from mandatory masking...I have to say I very much disagree with [parents who have decided not to vaccinate their children], but I also think it’s important to judge the decision separately from the person.”

Parent 4, however, reported that her community felt quite differently about the COVID-19 vaccine and about the pandemic. She shared that, “I think many people in my community share our views: that we don’t need to be quite as scared as we were told to be.” When asked what made people in her community feel this way, she reported, “pretty much everyone that I know in my community has had COVID, and I really think that the more people had already had it, the less scared everyone was.” Parent 4 also discussed the concern shared by many in her community about the negative effects of social isolation, stating, “I live in a small, rural community. For everyone to be isolated really goes against the fiber of this community, so I think people were ready to reconnect and re-engage, and that’s the choice a lot of families made.” She also shared a concern that she heavily considered when deciding how restrictive her

family should be in terms of following social distancing measures: “socialization is a really important part of kids’ development, and you can only change their behavior so much before you start to worry about their psyche.” For Parent 4, the feeling that COVID-19 was not a significant health threat as well as the need for her children to engage with their social support network outside the home were key factors that she took into consideration when deciding her family’s level of restrictiveness around COVID-19.

## **Limitations**

### *Recruitment*

While the recruitment strategy used in this study did yield useful data, it also had limitations. The advertisement package used to recruit participants from Front Porch Forum was for 1,000 “impressions” (FPF users to whom the advertisement was shown) and was a “state sampler” package, meaning it was shown to users on town platforms in all parts of the state. 19 parents participated in the study, and there are several factors that could have caused the low participation in the study. First, the target group for the study did not precisely align with the group to whom the study was advertised; of the users of FPF to whom the ad was shown, many were likely not parents of children aged 5-11, making them ineligible for the study. Second, though the ad was shown on 1,000 user’s pages, it’s possible that fewer than 1,000 users of FPF saw the advertisement, which could have played a role in the low participation number. Additionally, differences in who viewed the ad may have caused the concentration of respondents from certain areas of the state. Some town forums are likely more active than others, meaning people check them more often and were thus more likely to have the ad shown to them compared with users in other towns. Finally, there may have been selection bias during the

recruitment process: though FPF is free to use and available to anyone who lives in a certain town, people who use FPF may not be representative of the general VT population, though there is no reliable information on the makeup of the user base of this platform.

Originally, the recruitment plan included contacting a representative sample of elementary and middle schools around the state and asking them if they could hang up flyers advertising the study. The flyer included information on the topic of the study, who is eligible to participate, what is involved in participation, and a pull-off tab with the link to the survey (see the Appendix for the flyer). However, after 11 schools from 4 different counties had been contacted, only one response was received from a school saying they were willing to distribute the flyer in their weekly parent newsletter. It was then decided that attempts to distribute flyers at schools were unlikely to be a productive recruitment method, so no more schools were contacted. A limitation to this method of recruitment was that it was often difficult to find the best person at a certain school to whom an email should be sent with a request for flyer distribution. Some schools had a school administrator listed, so that person was contacted. On the websites of other schools, especially some smaller schools, only the principal's contact information was listed, so the principal was contacted. However, these administrators and principals may not have had the time or the power to move forward with distributing the flyers.

#### *Data collection*

Though the questionnaire proved to be useful overall in collecting quantitative data on COVID-19 vaccine hesitancy, the way that some of the demographic variables were asked may have caused inconsistency in the data. Reporting of the annual household income variable, which was the sole variable used to evaluate income, may not give an accurate picture of a family's

economic status as annual household income changes significantly for some families from year to year, among other considerations. Also, annual household income is generally defined as a yearly total income before taxes, but the survey question didn't clarify whether to report income before or after taxes, which could potentially have created inconsistencies. The way that the child age variable was asked may also have caused inconsistencies in the data, as parents could only select one option for their child's age when some parents may have more than one child within the 5-11 age group. It is unclear how this may have impacted the data, as we don't have data to compare the ages of the participant's children with what the participant entered in the survey. Finally, many of the parents who participated in the survey likely have co-parents with whom they made a joint decision about COVID-19 vaccination, so the other parent's demographics, including their education level, age, and gender are important to the decision, but were not asked in the survey.

During the interviews, some technical challenges occurred that made it difficult to hear what a parent had said in the recording, as the audio coming from the cell phone was difficult for the sound recording on the computer to capture. While some of the exact quotes from parents were not recorded, much of each interview was paraphrased shortly after it had been conducted.

### *Data analysis*

First, it should be noted that no participant reported that their child had only been partially vaccinated against COVID-19, so that option was excluded during the analysis.

Demographic variables were grouped into larger categories (as described in the Appendix) before the Chi-square tests were performed. The groupings were done in a way that guarded the meaning of the demographic differences as much as possible. The numerical

variables – the child age and household income variables – were grouped using numerical cutoffs; the child age variable was grouped into 2-year groups (which were even as there were no parents in the study who reported having an 11-year-old child) and the annual household income variable was grouped according to whether a household’s income was under or over the study’s median of \$100,000. However, grouping numerical variables in this way usually influences the p-value, so it’s likely that these groupings impacted the demonstrated relationship between the demographic variable and COVID-19 vaccine hesitancy. Specifically, it’s possible that nuance in the relationship was not shown, particularly considering the way that the annual household income variable was grouped. Though a median was difficult to calculate as annual household income was given in ranges, \$100,000 was chosen as the cutoff because approximately half the respondents reported incomes below \$100,000 and half reported incomes above this figure. However, considering that the median household income in Vermont was \$67,674 as of 2021<sup>19</sup>, the grouping used for this variable likely combined people who are low-income (which is correlated with higher levels of COVID-19 vaccine hesitancy) with people who are at or above the average income for the state, which may have caused some effect of income on vaccine hesitancy to be lost.

The categorical variable of county of residence was more difficult to group in a way that kept the integrity of the variable’s meaning. Counties were grouped by geographic location, combining counties in the southern part of the state (Group 1), the northwestern part of the state (Group 2) and the central and northeastern parts of the state (Group 3). Though Group 3 is larger (it has 6 counties while the other groups have 4), rurality was considered as many of the counties in Group 3 are very rural. Both grouped and ungrouped tables and p-values are shown in the results.

## *Findings*

Comparing the results found in this study to the results found in other studies has inherent limitations due to the low number of responses in this study. When the sample size is low, the data has lower statistical power, so the results are therefore less likely than those of studies with higher sample sizes (for example, Szilagyi, Shah, Delgado, *et al.* (2021) had a sample size of 1745 parents) to accurately represent trends in the population. All results found in this study are subject to this limitation, including the percentage of parents who were vaccine-hesitant, the percentage of parents reporting certain reasons for their decisions, and the demographic distribution of COVID-19 vaccine hesitancy.

## **Conclusion**

Vermont parents overall have more favorable views of the COVID-19 vaccine for children aged 5-11 than the national average, and most often cite concerns about their child infecting others and the role their family plays in slowing the spread of the virus. Some Vermont parents are hesitant to vaccinate their child against COVID-19, and the view that children are not at risk from a COVID-19 infection and therefore do not need to be vaccinated is one that should be incorporated into public health efforts that are helping to start shifting parent's views on the COVID-19 vaccine for their children.

## **Appendix: Survey and Interview Questions**

The questions asked to the participants are in a numbered list, and the offered are in a lettered list below the question. The survey's logic function is represented in this appendix by directing the

reader to a different next question depending on the answer to the preceding question. The interview prompts were used as a guide for discussion with interviewees.

## **Online Survey Questions**

### Vaccination Questions

- 1) Has your child been vaccinated against COVID-19?
  - a) Yes, my child has been given both doses of the COVID-19 vaccine. (Go to Q2)
  - b) My child has been partially vaccinated (1 dose) with the COVID-19 vaccine. (Go to Q3, then Q5)
  - c) No, my child has not been vaccinated against COVID-19. (Go to Q4, then Q5)
- 2) What are your reasons for choosing to vaccinate your child against COVID-19? Check all that apply.
  - a) I am concerned about the effects that a COVID-19 infection would have on my child's health.
  - b) I am concerned that my child would infect others if they were to contract COVID-19.
  - c) COVID-19 vaccination is a requirement at my child's school or extracurricular activities.
  - d) My friends or family persuaded me to vaccinate my child against COVID-19.
  - e) My child's pediatrician or other medical professional has recommended the COVID-19 vaccine.
  - f) I believe COVID-19 vaccination is essential to ending the impact of COVID-19.
  - g) Other (please elaborate):
- 3) What is your reason for choosing to partially vaccinate your child against COVID-19? Check all that apply.
  - a) My child had side effects from the first dose of the COVID-19 vaccine.
  - b) I changed my mind about the COVID-19 vaccine for my child after they had received the first dose.
  - c) A second dose of the COVID-19 vaccine was not accessible for my child.
  - d) My child had a reaction to the first dose of the COVID-19 vaccine that caused medical problems.
  - e) Other (please elaborate):
- 4) What are your reasons for choosing not to vaccinate your child against COVID-19? Check all that apply.
  - a) I am concerned about safety because of the speed at which the COVID-19 vaccine was developed.
  - b) I am concerned about safety because the COVID-19 vaccine was approved for my child's age group relatively recently.
  - c) I am concerned about the safety of the COVID-19 vaccine for a different reason.
  - d) I am concerned about possible side effects of the COVID-19 vaccine for my child.
  - e) I am concerned about the effectiveness of the COVID-19 vaccine for my child.
  - f) I don't believe a COVID-19 infection poses a threat to my child.
  - g) A COVID-19 vaccination site is not easily accessible for my child and I.
  - h) I chose to not vaccinate my child against COVID-19 because of my religious beliefs or the religious beliefs of another caregiver of the child.

- i) My child cannot be vaccinated against COVID-19 for medical reasons.
  - j) I am against vaccinations in general (not limited to the COVID-19 vaccine).
  - k) Other (please elaborate):
- 5) If your child has not been vaccinated against COVID-19 or has only been partially vaccinated against COVID-19, do you plan to begin or complete the COVID-19 vaccination process for your child in the future?
- a) I may consider COVID-19 vaccination if there is further research showing the COVID-19 vaccine is safe for children aged 5-11
  - b) I may consider COVID-19 vaccination if there is further research showing the COVID-19 vaccine is effective for children aged 5-11
  - c) I may consider COVID-19 vaccination if the COVID-19 vaccines were to be modified so that there were fewer side effects.
  - d) I may consider COVID-19 vaccination once my child is no longer in the 5–11-year-old age group.
  - e) I may consider COVID-19 vaccination in the future for another reason (please elaborate):
  - f) I am not considering beginning or completing the COVID-19 vaccination process for my child.

Demographic Questions

- 6) How old is your child between the ages of 5 and 11?
- a) 5
  - b) 6
  - c) 7
  - d) 8
  - e) 9
  - f) 10
  - g) 11
- 7) Are you a mother, father, or another caregiver?
- a) Mother
  - b) Father
  - c) Another caregiver
- 8) How old are you?
- a) 19 or younger
  - b) 20 to 30
  - c) 30 to 40
  - d) 40 to 50
  - e) 50 to 60
  - f) 60 or older
- 9) What is the highest level of education that you have completed?
- a) Some high school



- b) Graduated high school
- c) Some college
- d) Associate's degree
- e) Bachelor's degree
- f) Master's degree
- g) Doctoral degree

10) Under which annual income bracket does your household fall?

- a) \$25,000 or less
- b) \$25,000 to \$50,000
- c) \$50,000 to \$75,000
- d) \$75,000 to \$100,000
- e) \$100,000 to \$150,000
- f) \$150,000 to \$200,000
- g) \$200,000 to \$250,000
- h) \$250,000 or more

11) In which VT county do you live?

- |               |               |
|---------------|---------------|
| a) Addison    | h) Caledonia  |
| b) Chittenden | i) Essex      |
| c) Franklin   | j) Orange     |
| d) Grand Isle | k) Bennington |
| e) Lamoille   | l) Windsor    |
| f) Orleans    | m) Windham    |
| g) Washington | n) Rutland    |

Demographic Variables: Grouping for Analysis

Demographic	Group 1	Group 2	Group 3
Child age	5-6	7-8	9-10
Annual Household Income	Up to \$100,000	\$100,000 or more	
County of residence	Rutland, Windsor, Bennington, Windham	Chittenden, Addison, Franklin, Grand Isle	Orange, Washington, Lamoille, Essex, Orleans, Caledonia

## **Interview Prompts**

Did you choose to vaccinate your child against COVID-19? Could talk about what sort of factors played into that decision, what were the ones that you weighed most heavily?

Probing question: tell me more about (those reasons).

As I'm sure you know, the FDA didn't approve the Pfizer vaccine for emergency use in children 5 to 11 until much later than they approved it for people 12 and older. So, what were your initial feelings about vaccinating your child when the FDA first made that authorization for your child's age group? Did your feelings evolve over time at all, or have they remained relatively unchanged?

Thank you for telling me more about your vaccination decision for your child. The last thing I wanted to ask is a bit broader than your own family. I was wondering if you feel that vaccination against COVID-19 for kids in your child's age group is generally well regarded in your community? What messages have you heard from others in your social circles, among other parents at your child's school, or through community groups?

(Only for parents who did not have their child vaccinated against COVID-19): Is there any circumstance where you feel you would change your mind about getting your child vaccinated against COVID-19, or do you feel that you have made your final decision on the matter?

Flyer for distribution at schools

# Are you a parent or guardian of a child aged 5-11?



Volunteer to participate in a student-led research project on the COVID-19 vaccine for kids

You are eligible to participate if:

1. You are a parent or guardian of a child aged 5-11
2. You are a Vermont resident

The study involves a short (5-minute) online survey. All participation is anonymous.

Research performed by Neva Cote, a student at the University of Vermont in Burlington, VT

Study on the COVID-19 Vaccine for Kids  
[https://quattrics.uvm.edu/ferrom/SV\\_3KRKUJTOmPLDY](https://quattrics.uvm.edu/ferrom/SV_3KRKUJTOmPLDY)  
for questions please contact  
covid19vaccine@gmail.com

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for questions please contact  
covid19vaccine@gmail.com

Study on the COVID-19 Vaccine for Kids  
[https://quattrics.uvm.edu/ferrom/SV\\_3KRKUJTOmPLDY](https://quattrics.uvm.edu/ferrom/SV_3KRKUJTOmPLDY)  
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