

**Motivations for MMR vaccination**  
***What is the role of influencers in the shared decision-making process?***

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## **About the Author**

Matt DePoint is currently the Public Relations Coordinator at the Academic Health Center (AHC) at the University of Minnesota. He specializes in media relations, social media, and communications strategy for the University of Minnesota health sciences and the various schools, departments and centers within the AHC. His primary focus areas include School of Public Health, health policy, diabetes, infectious disease and immunology, magnetic resonance imaging (MRI) and brain sciences (neurology, neurosurgery, neuroscience and neuromodulation).

DePoint is married with a young daughter. DePoint became interested in this capstone research topic through his work at the AHC and in his personal experience with his daughter. In his free time he enjoys being active outside including skiing, running and playing and watching sports. Despite attending and working at the University of Minnesota, DePoint is an avid University of Michigan football fan.

## **Executive Summary**

The recent measles outbreak in California renewed attention (and at times scrutiny) on a parent's decision to vaccinate or not to vaccinate for measles, mumps and rubella (MMR). This study utilized the theory of reasoned action (TRA) to see how a parent's attitudes and subjective norms ultimately affect a parent's behavior intention. Furthermore, the study sought to better understand a parent's motivations to vaccinate or not to vaccinate for MMR along with how influencers within a parent's social network play a role in the shared decision-making process.

Through a series of in-depth interviews with parents and medical professionals and a survey, findings suggest that parents are motivated to protect their child but may do so for different reasons. Findings suggest pro-vaccine (PV) parents are motivated to protect their child and other children from MMR and anti-vaccine/vaccine hesitant (AVVH) parents are motivated to protect their children from the vaccine (ingredients, side effects, etc.) itself.

Additional research is needed to better understand AVVH parents' attitudes, subjective norms and behavioral intentions in regards to the MMR vaccine to reduce the likelihood of a future measles outbreak like that of California in 2015.

## Introduction

According to the Centers for Disease Control and Prevention (CDC), from January 1 to May 1, 2015, 169 cases of measles were reported in 20 states and the District of Columbia, the majority of which were concentrated in California (131), however, no deaths were reported. The CDC has linked these cases back to the Disneyland amusement park in southern California (CDC, 2015). Media speculated what many physicians and public health officials already knew: the measles outbreak was caused by low vaccination rates in certain pockets of the country and in particular, California. A group of five researchers at Massachusetts Institute of Technology, Boston's Children's Hospital and Harvard Medical School concluded that "substandard vaccination compliance is likely to blame for the 2015 measles outbreak. Our study estimates that the MMR vaccination rates among the exposed population in which secondary cases have occurred might be as low as 50 percent and likely no higher than 86 percent" (JAMA Pediatrics, E1).

In order for the measles, mumps, and rubella (MMR) vaccination to be effective to achieve herd immunity, the CDC recommends 96-99 percent of the population to be vaccinated. Vaccines.gov defines herd immunity as, "when a critical portion of a community is immunized against a contagious disease, most members of the community are protected against that disease because there is little opportunity for an outbreak. Even those who are not eligible for certain vaccines—such as infants, pregnant women, or immunocompromised individuals—get some protection because the spread of contagious disease is contained" (Vaccines.gov, 2015). The reason why this research is important is that measles were considered eliminated by the CDC in 2000 (CDC, 2015). It was only until vaccination rates in certain areas of the country dropped that public health officials began to see a resurgence of measles cases. The steady decline in vaccination rates, and in particular MMR vaccine, and the rise of the anti-vaccine movement has caused tension between parents, public health officials and physicians. Paul Offit, M.D., considered one of the leading experts in pediatrics and vaccinology at the University of Pennsylvania,

works to dispel parents' fears with science to help them make the best decision for their child (Reddy, 2015). Offit believes that doctors and pediatricians need to frame science with emotion but recognizes they are in a "tough spot" (Reddy, 2015).

According to a 2014 CDC study, vaccines given to infants and young children over the past two decades will save 322 million children from illnesses, 21 million hospitalizations, and 732,000 deaths (Szabo, 2014). According to Szabo's article, "Before the measles vaccine became available in 1963, the virus infected about 500,000 Americans a year, causing 500 deaths and 48,000 hospitalizations. In recent years, the number of diagnoses fell to around 60 to 65, mostly in isolated travelers arriving in the USA" (Szabo, 2014). The MMR vaccine is 93 percent effective after one dose in preventing measles and 97 percent effective after the second dose (CDC, 2015).

On April 17, 2015, California health officials declared the measles outbreak in California to be over. Dr. Karen Smith, director of the California Department of Public Health, said, "We are pleased this outbreak is over, but caution that measles can be reintroduced in California at any time when an infected person brings it to the state. The best defense for protection against the highly infectious measles is vaccination" (Lin & McGreevy, 2015).

The questions now for public health officials, pediatricians, and parents are how can we prevent another outbreak like we saw with measles from happening again, and how can we effectively reach and encourage parents to continue to or start to vaccinate their child for MMR and other preventable childhood diseases?

## Literature Review

The topic of this research paper is what are the motivations for measles, mumps and rubella (MMR) vaccination among parents, and what is the role of influencers in the shared decision-making process. For this paper, influencers will be defined as the people in a parent's life who have some effect on the thinking and ultimate actions/inactions to make medical decisions for their child. This may include but is not limited to friends, family, acquaintances, physicians, social media, media, celebrities, online message boards, government websites, blogs, etc.

This research looks to better understand parents who make medical decisions for their child and their attitudes, behavioral intentions, and subjective norms using Azjen and Fishbein's (1980) theory of reasoned action (TRA). TRA will be the primary basis and focus for this research study. The "ultimate goal of TRA is to predict and understand an individual's behavior" (Azjen & Fishbein, 1980, p.5). TRA "proposes that attitudes and subjective norms are independently and positively related to behavior intention and that behavioral intention is positively related to behaviors" (Roberto, Raup Krieger, Katz, Goei, and Jain, 2009, p.13). Furthermore, TRA "explains behavior by identifying the primary determinants of behavior and the sources of these determinant variables, and by organizing the relations between these variables" (Yzer, 2013, p.120). TRA is a combination of theories that builds upon other models: the theory of planned behavior by Ajzen (1985), and the integrative model of behavioral prediction by Fishbein (2000) (Yzer, 2013, p.120).

To the author's knowledge, this is the first study that specifically examines TRA and MMR vaccination attitudes and behavior intentions. To gather comparable information, human papillomavirus (HPV) vaccination studies using TRA were reviewed, however, although MMR and HPV vaccination have similar attributes, there is a noteworthy difference in the decision-making process for MMR. Due to the age as to which children are scheduled to receive MMR vaccination (CDC recommends 12-15 months and then boosters at 4-6 years), parents/guardians are the primary decision makers, whereas with HPV

vaccination, children may share in the decision-making process with their parents/guardians because they are of an older age (11-12 years old) (CDC, 2015). And because little to no research has been done using TRA to better understand MMR vaccination attitudes and behavior, it makes this research noteworthy and needed.

### ***Peer and family role in decision-making process***

Poston and Riffe (2009) sought to understand the role family and peers played in the decision to vaccinate or not to vaccinate against the human papillomavirus (HPV). They chose to use TRA as a theoretical guide for their research because their paper focused on attitudes surrounding HPV vaccination along with peer and family influence. They found that the influence of family and peers had negligible consequences in regard to an individual's likelihood to vaccinate for HPV.

Their hypothesis centered on the role peer influence has on an adolescents'/students' decision making process. They hypothesized that if an individual has high peer influence to vaccinate against HPV and their friends also deem it to be important then the adolescent/student is more likely to vaccinate. Their second hypothesis stated that if an adolescent/student has a high family influence to vaccinate against HPV and their family believes vaccination is important then they are more likely to vaccinate. Poston and Riffe recruited undergraduate students from a mass communications class to participate in completing an online survey. Students ranged in age from 18 to 23 and 80 percent were white and nearly 14 percent were African American.

Using a simple linear regression, their first hypothesis was not supported because they found no significant relationship between the two variables (level of peer influence and perceived peer reviews of HPV vaccination). Using a simple linear regression, the second hypothesis found no relationship interaction was found. They stated "the more family influence a person has to vaccinate, the less likely he/she is to vaccinate against HPV."



They also found no correlation between family style (protective/involved) and intent to vaccinate. Also, more or less communication or conversation was not affiliated with intent to vaccinate and just because a family has a high number of conversations does not mean they are discussing HPV and HPV vaccination.

This study had several limitations including it did not have open-ended questions so participants could not fully explain their intent to vaccinate for HPV. The survey administered was also part of a required class assignment so it was not voluntary.

### ***TRA implications for message design***

Dillard and Seo (2010) sought to understand women's intent to be vaccinated against human papillomavirus (HPV). They chose to use Fishbein's (2000) Integrative Model of Behavior which is a blend of the theory of reasoned action (Fishbein & Ajzen, 1975), theory of planned behavior (Ajzen and Madden, 1986), health belief model (Becker, 1974), and social cognitive theory (Bandura, 1986). In sum, attitudes, subjective norms, and self-efficacy are considered direct predictors of intention. They found attitude, subjective norms, and perceived control were predictors of intent to vaccinate. From their sample size, intent to vaccinate were formed primarily on the basis of attitudes.

Dillard and Seo randomly sampled 1,800 undergraduate women at a university between the ages of 18 and 26. Three-hundred ninety-six women completed all or some of the survey (22% response rate). Their four theoretical constructs utilized a 7-point semantic scale for attitude, subjective norm, perceived control and intention.

Their findings show interactions between attitude and control and between subjective norm and control both had "higher levels of perceived control strengthened the association of attitude/norm with intention" (p.11). Furthermore, "subjective norm showed a significant positive relationship with intention only at moderate and high levels of control, a result that aligns well with the argument that norms are irrelevant to intentions or behaviors unless there is some real possibility of action" (p.11).

This study had several limitations mainly the low response rate and “constrains confidence in the conclusions” (p.14). The authors also note a lack of racial and ethnic diversity (85% white).

### ***Pediatricians’ communications with parents using TRA***

Roberto, Raup Krieger, Katz, Goei, and Jain (2009) sought to determine if TRA accurately predicted whether or not pediatricians encouraged girls between the ages of 9 and 17 to be vaccinated against human papillomavirus (HPV). Their results suggest that “interventions targeting pediatricians would be effective if organized along the constructs of TRA” (p.16).

They mailed a survey to 1,307 pediatricians in which 406 (34.7% response rate) completed and returned the survey. Results from the returned survey suggest that pediatricians “regularly encouraged parents to get their daughters vaccinated for HPV in the past 30 days, that they intended to continue doing so in the next 30 days, and their attitudes and subjective norms toward the behavior were generally positive” (p.16).

Results also suggest the TRA model worked well for the target audience and their behavior. Four measures of TRA variables using Ajzen and Fishbein’s model were used (behavior, behavioral intention, subjective norms, and attitude).

The authors state three main strengths to their study. First it is theory-based and extends the scope of TRA. Second, they have a high confidence in their results because of the data collection procedures and statistical analyses. Third, they had a large participant sample. They did note, however, that they had a relatively low response rate (34.7%), but they do not believe this hurt their overall results because of the large participant sample.

### ***Role of influencers in shared decision-making process***

Walsh and his fellow authors (2010) sampled more than 1,800 people from the Wisconsin general public and had a response rate of more than 67 percent. In the authors’ review of information needs and use patterns among cancer patients, they found certain groups were likely to use more

information sources, including patients of younger age, higher education and higher income. The authors also added several questions to a population-based cross-sectional study evaluating the quality of cancer care in patients with breast, prostate, colorectal and lung cancer to evaluate the number of information sources used to influence treatment decisions.

Nearly 96 percent of patients surveyed reported obtaining information from at least one source and 69 percent reported obtaining information from a source other than treatment staff, 96 percent reported that at least one source influenced their treatment decisions, and 60 percent said that at least one source that influenced their treatment decisions other than the treatment staff.

Patients under the age of 55 were more likely to use the Internet to influence their treatment decisions. Patients with a college degree were more likely to use scientific research reports to help influence their treatment decisions. The use of support groups was less likely to influence treatment decisions among colorectal patients when compared to breast cancer patients. Overall, 30 percent of respondents used the Internet to obtain information.

According to the authors, this “study indicates that socioeconomic factors are strongly correlated with Internet use to influence cancer treatment decisions.” The authors also suggest that the study has practice and research implications for the way information is delivered to patients. They recommend that treatment staff should suggest clear, accurate and reliable Internet websites, direct patients to support groups and inform their patients of up-to-date research and books on treatment options to aid in the shared decision-making (SDM) process with cancer treatment staff.

***Patients do not make medical decisions on their own***

According to Whitney (2003), in SDM in medical situations, the emphasis on collaboration exists due to the inequality between patients and physicians. Patients have “near-absolute control over his or her own body and treatment” but the physician is more powerful in other ways. SDM allows for the patient’s voice to be heard when medical choices are being made.

Whitney introduces the idea that patients do not make choices on their own; they have friends, family members and even coworkers to consider and physicians have their colleagues and medical consultants to aid in decision making. Whitney proposes a model for SDM which has two characteristics: importance and certainty. It is based on the idea that most patients defer to a physician when a problem has a single correct and definite solution but others wish to participate in the decision process when there are several care alternatives available.

With importance or seriousness of the medical decision, it begins with the likely effect on a patient's health and overall wellbeing. With certainty of the medical decision, in the absence of concrete or suitable data, certainty is present when an expert holds one treatment method or intervention to be superior to others. However, if the attending physician feels that one treatment or intervention is superior but knows that others may disagree, the patient should be informed of the discrepancy and be offered a second opinion with all alternatives on the table.

Whitney provides an example of a woman in labor and although a physician may strongly recommend a cesarean section, even though the decisional priority shifts to the physician, the patient ultimately has decisional authority and may accept or reject the physician's recommendation. In Whitney's model, "decisional priority for choices of high importance and low certainty should rest unequivocally with patients." One of the weaknesses of Whitney's article is that he did not collect any data and it is theoretically based, even though he does use several examples throughout.

### ***Avoiding harm to (protect) others***

Skea (2008) observed discussions from online chat forums in the United Kingdom (UK) about parents' decisions on a range of topics including MMR vaccination. In the analysis, Skea and colleagues focused on conversations about 'avoiding harm to others' which were deemed important considerations for participating parents. According to Skea, in the context of MMR vaccine safety, participants expressed a desire to protect their child *and* protect other children by contributing to herd immunity.

Parents also discussed the implications of vaccination for healthy and vulnerable children which factored into the decision process for whom should 'bear the burden of vaccination.' Skea noted that some parents were critical of other parents who decided not to vaccinate their healthy child and expressed that parents should do so 'on the grounds of social responsibility.'

Their study recommends that social scientists and possibly policymakers should incorporate more messaging about herd immunity, social responsibility and their obligations to society in vaccination communication.

## Research Questions and Hypothesis

The research questions this study will attempt to answer are:

- How do other people within a social network influence parents?
- What motivates parents to vaccinate their children for MMR?
- Why do parents ultimately decide to vaccinate or not to vaccinate their children for MMR?
- How do personal belief systems affect parents' decisions?
- Is there anything that can be done (i.e. education) to motivate more parents to vaccinate their children for MMR?

The research hypothesis states: The primal parental instinct to protect their child is a major factor in the decision-making process to vaccinate or not to vaccinate for MMR. This has roots in their personal belief system and is self-defining. The hypothesis rationale is based off of the author's personal experience as a parent of a now toddler and in his professional experience in the University of Minnesota's Academic Health Center and is in part supported by Skea's (2008) findings. Over several years the author observed and experienced this ever-evolving issue play out and is a topic of great public health concern. Using TRA as a theoretical framework, the research questions should help provide some understanding as to why parents ultimately decide to vaccinate or not to vaccinate for MMR. The author predicts that parents simply want to protect their child and use a network of trusted people and sources in their lives to assist in their decision-making process.

## Methods

An online survey using the TRA model to assess attitudes, subjective norms, and behavioral intentions was developed in Qualtrics. The survey was distributed via email and Facebook to friends, family and acquaintances of the study author on Sunday, March 29, 2015, and the survey was closed on Sunday, April 12, 2015 (14 days in total) (See Appendix 1).

A total of 224 people partially completed the survey. After removing incomplete survey results and removing respondents who said they were not a parent, 137 parents remained in the sample (survey fatigue may have been a factor). Participants ranged in age from 18 to over 55 with the majority in the 25-35 range (59.8%) and a good proportion in the 36-54 range (32.1%). Other parents were between 18- 24 (0.73%) or over 55 (7.3%). Participants self-identified themselves as a parent/guardian who has made medical decisions for a child under the age of 18. If participants indicated they were not parents or guardians, the survey concluded. The number of children for which participants reported making medical decisions for ranged from 1 to 5 ( $M = 1.98$ ,  $SD = 1.00$ ). An overwhelming majority of survey participants (96%) identified as white/Caucasian, and only a handful of respondents identified as American Indian or Alaskan native (1%), Asian (1%), Hispanic or Latino (1%) or mixed race (1%). For respondents' gender, the vast majority identified as female (81%) and the rest identified as male (19%) (See Appendix 2). The sample is then primarily from the mother's perspective and not the father's perspective which may affect the results and responses.

The survey was posted twice to the research author's personal Facebook page one week apart with a survey link and the status message: ATTENTION PARENTS: Please help me with my graduate school capstone project by filling out this survey on your motivations for measles, mumps and rubella (MMR) vaccination. It will take roughly 5-10 minutes. Thanks for your help. I appreciate it! Note: For best results please use a computer or tablet and NOT a mobile device.

Email messages to friends and family who were parents were also distributed. They were encouraged but not obligated or forced to share the survey on their personal Facebook pages to their network of friends and acquaintances. Other friends and acquaintances of the study author began sharing on their own personal Facebook accounts and this snowball sampling method helped to increase survey participants. Open-ended questions were manually coded for keywords, themes, etc. by the research study author.

Following the completion of the survey, a series of in-depth interviews were conducted to help answer some of the primary research questions, expand upon survey findings and look for common themes to support or not support the study hypothesis. In-depth interviews were conducted by phone and via e-mail. Participants were provided the interview questions via email or in-person prior to the interview so they would feel more comfortable with the questions and provide thorough responses. Three groups were interviewed: parents who self-identified as pro-vaccine (PV), parents who self-identified as anti-vaccine/vaccine hesitant (AVVH), and medical professionals (MP). MPs consisted of a pediatric infectious disease physician and researcher, pediatrician, and a pediatric bone marrow transplant physician and researcher.

The PV and MP participants were recruited via the study author's personal network. AVVH participants were initially more difficult to identify in the study author's personal network and the snowball sampling method via Facebook helped to identify and recruit participants with the following Facebook status: If you're a parent who considers themselves anti-vaccine or vaccine hesitant and would be willing to speak with me regarding your experiences and attitudes about the MMR vaccine please send me a message. This is for my grad school capstone. NOTE: All information will be anonymous and records will be kept private. Thanks for your help!

Parents who identified as AVVH contacted the study author directly or through someone within their personal network. In total, 3 PV, 3 MP and 6 AVVH completed the in-depth interviews.



## Results

The survey 'action' question, "Have you vaccinated (or plan to vaccinate) your child for MMR?" shows an overwhelming majority (93.4%) answered 'Yes' (See Appendix 3). The descriptives table (See Appendix 5) illustrates how the respondent identifies in terms of pro- vs. anti-vaccine. The majority identify as pro-vaccine (81.8%) and only a small proportion identify as anti-vaccine (2.9%). Despite the seemingly low response rate of anti-vaccine parents, this is higher than the 1.6% Gust identified (2008) in a survey of 3,924 participants. Gust also found 71.7% had no doubts about vaccination, 10.2% delayed vaccination, and nearly 6% refused one or more vaccinations (could be considered vaccine hesitant) (Gust, 2008).

The other survey respondents identified as neither pro- or anti-vaccine (10.2%). Some 'other' respondents self-identified as other (5.1%) reported in an open text box being generally picky or weary of vaccines, needing more information and doing their own research on each particular vaccine before deciding whether or not to have it administered. These parents may be classified as "vaccine hesitant." For example one respondent said, "I consider myself wary of vaccines and would like to push for longer term research and changes based on known issues. We are choosing to ultimately vaccinate, but on a reduced schedule and questioning various things every step of the way."

The survey question, "For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vaccine administered at the CDC recommended 12-15 months and then again at 4-6 years" serves as the dependent variable and is the basis for attitude towards the MMR vaccine. Vast majority of respondents responded they either strongly agree (61.3%) or agree (25.5%). Only a small proportion of respondents responded they strongly disagree (2.9%) or disagree (3.6%). Even fewer participants were on the fence and responded they neither agree nor disagree (1%) and lastly, participants stated they somewhat agree (4.4%), neither agree nor disagree (0.7%) or somewhat disagree (1.5%). On a scale from 1 to 7, the mean response to this dependent variable was 6.22 ( $SD = 1$ ).

45), which displays that the majority of respondents are generally in favor of the MMR vaccine (See Appendix 3).

Most survey items were significantly correlated with the participant's attitude towards the MMR vaccine (see Appendix 4). A parent's (favorable) attitude towards the MMR vaccine was strongly and positively correlated with their decision to vaccinate or plan to vaccinate their child at the CDC recommended 12-15 months and then again at 4-6 years  $r(137) = .949, p = .000$ . A parent's decision to vaccinate or not to vaccinate for MMR was not identified as part of who they are as a parent  $r(136) = .199, p = .020$ . This suggests that MMR vaccination is not self-defining. Personal beliefs were not significantly correlated with attitude towards the vaccine,  $r(136) = -.096, p = .267$ . This question's response suggests that personal beliefs are not significantly related with attitude towards the MMR vaccine. However, other belief questions (Questions 15-21, Appendix 4) regarding the MMR vaccine's importance, if it's good or bad, usefulness, effectiveness, appropriate or not, etc. were all significantly correlated. This suggests that personal beliefs are significantly related with attitude towards the MMR vaccine. Overall, survey results are mixed for personal beliefs.

The majority of participants report their decision of whether or not to vaccinate is rooted in scientific evidence (76%). Others report their decision to be rooted in personal lifestyle (13%). No respondents endorsed religious beliefs as an influence of the decision whether or not to vaccinate (see Appendix 6). The majority of respondents said nothing would change their minds about whether or not to vaccinate for MMR. Some exceptions include new scientific evidence or research that found it is no longer safe, effective or has too many side effects.

The first series of open-ended questions  $r(97)$  (See Appendix 6) sought to understand the three most and least important factors when making the decision to vaccinate or not to vaccinate for MMR. Some general themes emerged from the most important factors and support the significant correlation observations discussed above. They are:

- Pediatrician and/or CDC recommendation (n = 40)
- Health benefits to child, community/society (herd immunity/public health) (n = 26)
- Safety and effectiveness of vaccine (n = 23)
- Long-term side effects and health (n = 20)
- Scientifically proven research and evidence (n = 16)
- Do benefits outweigh the risks? (n = 10)
- Protecting those who can't be vaccinated yet (n = 9)
- Protection from illness/disease (n = 6)
- Maternal instinct to protect child (n = 6)

Some general themes emerged from the least important factors. They are:

- 'Idiot' celebrities (Ex. Jenny McCarthy) (n = 39)
- Blogs, message boards or social media (n = 37)
- What others think (n = 29)
- Opinions of non-medical professionals (n = 9)
- Anyone who still believes vaccines cause autism (n = 7)
- Unscientific or fraudulent research (n = 6)
- Current trends and fads (n = 6)
- Popular media (n = 4)

The second series of open-ended questions r(100) (See Appendix 6) sought to understand the advantages and disadvantages of vaccinating for MMR. Some general themes emerged from the advantages. They are:

- Prevention and protection from MMR diseases (including future outbreaks) (n = 67)
- Safety and protection for own child, other children, and children who cannot be vaccinated (n = 27)

- Health, safety and part of a healthy lifestyle (n = 16)
- Herd immunity (n = 6)
- Peace of mind (n = 6)
- Creates a healthy community (public health) (n = 6)

Some general themes emerged from the disadvantages\*. They are:

- Possible side effects or adverse reactions (fever, allergic reaction, irritability) (n = 47)
- Temporary or general pain or discomfort afterwards (n = 16)
- Makes them cry (n = 7)
- Not 100 percent effective (need for boosters) (n = 5)
- Hard for parents to see/witness (n = 4)
- No one like shots (n = 3)
- Can be scary for kids (n = 2)

\*Note: (n = 20) cited 'None'

The third set of open-ended questions (See Appendix 6) sought to understand why the parent ultimately decided to vaccinate or not to vaccinate for MMR. The majority of responses mirrored the advantages section, however, the most prominent themes were love and protection, trust in pediatrician/medical professional recommendation, overall personal and public health and benefits outweighing the risks. One parent said, "Because I love her and I want to protect her. I also believe it is my duty as a mother and as a decent human being to protect other individuals who may have vulnerable immune systems" (See Appendix 6).

Those who did not choose to vaccinate for MMR are generally leery of ingredients, side effects and have a general mistrust of the vaccine/pharmaceutical industry. One parent said, "The diseases can be treated. The side effects from the poison in the vaccines cannot." Another parent said, "Until the ingredients change and the companies are no longer making billions of dollars off of vaccines I won't

trust what they are recommending I put in my children's bodies. Especially at the infant stage. There are a lot of adverse reactions in infants and young children but nearly none in school aged children. A delayed vaccination schedule would make me feel safer when vaccinating."

The final open-ended question (See Appendix 6) sought to understand if a close friend or family member talked to the parent about whether or not to vaccinate for MMR, and if yes, did the parent follow through with the close friend or family member's suggestion. Fifty-eight percent of parents said a close friend or family member had talked to them about whether or not to vaccinate. Of those parents (58%), most did not follow through with the suggestion from their close friend or family member (or said they were planning to vaccinate anyway). Most cited that they made up their own mind with the guidance of their pediatrician/personal research and they do not listen to anti-vaccine viewpoints. Others said their personal beliefs were similar to their friends and/or family and that's why they chose to vaccinate.

Participants were asked to rank order what influencers were most important to them when deciding whether or not to vaccinate their children. The list of influencers (See Appendix 7) in order of from most influential to least influential are 1) Pediatrician or licensed medical professional, 2) Government website (CDC), 3) Friends, family or neighbors, 4) Blogs, 5) Online message boards, 6) Popular media, 7) Social media, 8) Celebrities, and 9) Other.

Participants were asked who made the decision to vaccinate or not to vaccinate for MMR (See Appendix 8). Of those parents (92.7%) said they made the decision with their spouse or partner.

In the in-depth interviews, PV parents (See Appendix 9) supported the use of the MMR vaccine to protect their child and other children who cannot be vaccinated (i.e. too young or are immunosuppressed). From the in-depth interviews Mom 2 said, "I have always been of the attitude that vaccines save lives; from all of the studies I have read both before and after I became a parent I believe

that the risks associated with vaccines are extremely minimal, and the benefits they provide to the person receiving them as well as the general population far outweigh the risks.”

PV parents stated they felt the MMR vaccine is safe and effective and provides protection to the child and other children through herd immunity. Mom 1 said, “I choose to vaccinate him to keep him healthy. I would not feel right making the choice to put my son through an illness that I as his mom could have prevented. How could I make such a possibly life altering decision for him? Worst case scenario, he could die. If my son died because I heard on Facebook that a vaccine was no good, so I skipped it- and then he died, who could live with that?” Mom 2 takes into consideration what the CDC recommends along with her daughter’s pediatrician and specialist.

Within their social network, friends and family do have some influence on their decision to vaccinate but cited that most people within their circle are in agreement with them but ultimately the opinion of their spouse and their pediatrician are the most important voices they take into account. And when deciding to vaccinate or not for MMR, they ultimately decided to vaccinate to protect their child. Mom 1 said, “I chose to protect him from a disease that he does not have to suffer through.”

Beliefs about vaccines were developed through their parents growing up (Mom 2), and during that time growing up anti-vaccine “wasn’t a thing” and “parents just did it because a doctor who was educated and informed recommended it” (Mom 1).

In the in-depth interviews, AVVH parents (See Appendix 10) are generally hesitant or against vaccination altogether or against specific vaccinations. They do not believe most are necessary (Mom 3 and Mom 7), don’t think so many should be administered at once (Mom 4), are distrustful of medical professionals (Mom 5), they question the chemicals and ingredients (Mom 6 and Mom 7), drug trial legitimacy (Mom 6), safety and transparency of vaccines (Mom 6), and are suspicious of the increased number of vaccines over the years (Dad 2).

AVVH parents, in general, chose not to vaccinate, vaccinated eventually or vaccinated hesitantly for MMR. While some parents acknowledge the public health benefits (Mom 4) and the protection it provides against MMR (Mom 5), some parents are still mistrustful of the health care provider (Mom 5), believe it is a survivable illness (Mom 6), and worry about the live virus, chemicals and association with autism (Mom 7).

AVVH parents felt that recent media coverage of the measles outbreak was biased (Mom 3), overblown (Mom 7), overhyped and doesn't provide balanced information (Mom 5). When deciding to vaccinate or not for MMR, AVVH parents considered what they felt was best for their child. Mom 1 said, "All parents just want to have healthy children." AVVH parents took into account what was best for their child (Mom 4), likelihood of exposure to disease, current health status, family history of adverse reactions to vaccines, allergies, age and size of child (Mom 5, Dad 2, Mom 7), never being in a daycare setting (Mom 6), and what the doctor recommended (Dad 2). Dad 2 cited obtaining three opinions before proceeding with the MMR vaccination.

Within the AVVH influencer network, some of the parents said the most important opinions are that of medical professionals (pediatricians, chiropractors, naturopath, doctors), along with other parents. However, some parents said that other people do not play a significant role in their decision-making process. Said Mom 7, "At the end of the day, though, the decision was made by my husband and I."

When ultimately deciding to vaccinate or not to vaccinate for MMR, AVVH parents who vaccinated chose to because of the long-term health of their child, public health (Mom 4), their pediatrician supported an alternate schedule (Mom 5), the doctor recommended it (Dad 2), and they were more afraid of the disease than experiencing a vaccine injury and felt her son's body was prepared for the live virus after delaying vaccination (Mom 7). The AVVH parent (Mom 6) who chose not to vaccinate did so because she felt the risk of the disease was lower than the risk of the vaccine.

\*Note: Mom 1's child is not of age to be vaccinated and is still discussing options with her pediatrician, chiropractor and naturopath.

Beliefs about vaccines were developed by talking with their parents, other parents, talking with their pediatrician, The Vaccine Book by Dr. Robert Sears, personal experiences, CDC, National Vaccine Information Center, chiropractor, friends, family and media. Dr. Sears' book provides an alternative viewpoint to CDC vaccination recommendations and guidelines and Sears has been a popular and strong voice in the AVVH community.

In the in-depth interviews, MP's (See Appendix 11) were overwhelmingly in favor of vaccination, and in particular MMR. Doctor 1 said "vaccines are the greatest public health advance in the history of medicine-the impact all the more profound because the interventions saves young lives." In their opinion, some of the greatest reservations parents have over vaccination, especially MMR, is the fear of autism, despite the link between the MMR vaccine and autism having been refuted by numerous studies. Doctor 1 and Doctor 2 said parents want to protect their children and they're doing the best they can.

Because many parents have not personally seen or experienced measles, they haven't "lived" it and it is not real to them. Said Doctor 2, "Until something is real to parents they don't understand. Some parents have a kid with whooping cough and they don't vaccinate their next kid for whooping cough. It's tough."

Misinformation about vaccines and the MMR vaccine are major barriers and is spread through the parent's social network including parents and peers, social media, the Internet, celebrities, and the media. And therefore, those parents who say 'yes' to the MMR vaccine, Doctor 1 said, "The advice of a trusted care provider is paramount." However, those parents who say 'no' to the MMR vaccine, Doctor 1 said, "the fear of autism, reinforced by a legion of "data" from self-fulfilling websites and peer messages that condemn MMR vaccine."



## Discussion

The purpose of this study was to better understand parents' motivations for measles, mumps and rubella (MMR) vaccination and the role of influencers in the shared decision-making process. This study utilized the theory of reasoned action (TRA) to determine the attitudes, behavioral intentions, and subjective norms of participating parents. In sum, attitudes about the MMR vaccine were strongly and positively correlated to their behavioral intention to vaccinate. The implications of this study are that it supports the premise that the TRA is a viable theory to help predict attitudes and behavior intentions for MMR vaccination.

Influencers within a parent's social network do have an impact on a parent's decision to vaccinate or not to vaccinate for MMR as the overwhelming majority (92.7%) said this decision is made in concert with their spouse or partner. This supports Whitney's (2003) research that patients do not make medical decisions on their own and rely on others (influencers) to help make medical decisions.

The most influential people that help in the decision-making process were licensed medical professionals, government websites and family, friends or neighbors and the least important influencers were online message boards, popular media, social media and celebrities. This is not necessarily surprising given the sample population repeatedly listed those top three influencers within the three most important factors they considered when making a decision to vaccinate or not to vaccinate for MMR. This is, however, contradictory to a recent study (Franklin Fowler, Gollust, 2015) that states news coverage drives down support for vaccination. Their study implied that popular media has a bigger effect on decision-making and states "the more the news media devoted attention to the political controversy, the less the public supported vaccination."

Interestingly, after the California measles outbreak in 2015, the state of Washington saw a 27 percent increase in vaccination rates over the same time period a year prior (Aleccia, 2015). Despite survey and in-depth interview results stating media has very little effect on vaccination, Dad 1 said

although media and celebrities' opinion were mostly noise, it does start to validate your fears on the possible side effects of the vaccine (See Appendix 9).

Survey and in-depth interview findings suggest parents are motivated to protect their child from a preventable illness and regularly cited the benefits outweighing the risks when making their decision. This is in support of the hypothesis that the decision is rooted in a parent's primal instinct to protect their child. When asked why a parent ultimately decided to vaccinate or not to vaccinate for MMR, one parent said, "Because I love her and I want to protect her. I also believe it is my duty as a mother and as a decent human being to protect other individuals who may have vulnerable immune systems."

Protection was also cited for parents who did not choose to vaccinate for MMR. For the same question, one parent said, "It intrinsically does not feel right. I couldn't forgive myself if my child suffered an adverse reaction to a vaccine, but it is more acceptable to me for my child to contract a natural disease. I believe in natural treatments when possible. With that said, I may choose to vaccinate when my child is older and has a more developed immune system."

Based on the survey and in-depth interview results, the two primary differences between PV and AVVH parents and their attitudes of protection are that PV parents cited protection for their child *and* for other children (those who cannot be vaccinated, herd immunity) against the measles, mumps and rubella diseases and AVVH parents cited protection for their child only and/or protection against the vaccine itself and its possible side effects and ingredients.

Survey findings suggest parents ultimately decided to vaccinate for MMR for their child's health and the public's health and many parents cited herd immunity. Many respondents stated it was the responsible and right thing to do. Despite the vast majority (93.4%) of respondents who had already vaccinated or planned to vaccinate for MMR, safety and side-effects of the MMR vaccine were a concern for parents on both side of the issue (See Appendix 4 - questions 39-40).

Based on survey responses, personal beliefs play a significant role in their decision-making process (See Appendix 4 – questions 15-21). The majority (76%) said their decision to vaccinate or not to vaccinate for MMR (Appendix 6) is rooted in scientific evidence and only 13% stated it was rooted in their personal lifestyle, however, in the open-ended response section of this question, several parents said both personal beliefs and scientific evidence played a significant role in their decision-making process. One respondent said, “A combination of religious beliefs, personal beliefs and lack of scientific studies of vaccinated vs unvaccinated children.” Beliefs were developed by PV and AVVH parents over the course of their lifetime and many began with their parents and as they became parents included their personal experiences and interactions with their influencer and social networks (medical providers, friends, family, peers, etc.). Media was cited as an influencer (Mom 7) but most parents in the in-depth interviews were dismissive about the media’s role and influence in their decision-making process.

Misinformation and a lack of trust in medical professionals and research among AVVH parents is a major barrier to MMR vaccination. Mom 3 said, “I find it very difficult to do any research for myself on vaccines. It’s very hard, as the average person, to find legitimate research. Obviously just googling “vaccine safety” doesn’t get decent peer reviewed research that I can trust...I find it very difficult and stressful to make an informed decision because of media bias and lack readily available information” (See Appendix 10). Mom 3 also said, “The more vaccines that are administered, the more money the pharmaceutical companies make. I don’t even know where the government research comes from, or how it is funded so I don’t consider it 100% reliable or unbiased.”

Another barrier to MMR vaccination among medical professionals, especially among the AVVH parents interviewed is the chiropractor. Some AVVH parents (Mom 3 and Mom 7) cited their chiropractor as an influencer in their decision-making process. Doctor 1 said, “Chiropractors are notoriously anti-vaccine! At state fairs and in public ‘educational’ exhibits they actually hand out a lot of anti-vaccine literature. But the bottom line is, yes, they (chiropractors) are educated in their training to

be anti-vaccine. I have seen this repeatedly in many settings over the past 30 years - sometimes with tragic consequences and complications” (See Appendix 11).

Among AVVH parents, the parental quest to do what’s right for their child is paramount and can be very stressful. Mom 4 said, “It’s overwhelming the decisions we have to make each day and I try not to fault or judge those who make decisions different than myself. Parenting is hard enough, judgement is unnecessary and detrimental to the village our children are growing up in.” Mom 4 would also say, “The ‘Mommy Wars’ are real, and often fueled by the media. This [recent media coverage of measles outbreak] is a great example of that, sadly public health has suffered because of it.”

Given the small sample size of parents who identified themselves as anti-vaccine (2.9%) and neither pro- or anti-vaccine (10.2%) in the survey and in-depth interviews (n = 6), it is difficult to predict or make accurate assumptions about what could be done to reach AVVH parents to increase MMR vaccination. Still, the author recommends vaccine education and open communication between all parents and their health care provider that focus on vaccine safety and side effects could possibly be advantageous and/or beneficial. This would apply to all parents because as was stated above, these are concerns that many parents had with the MMR vaccine. A complete list of recommendations are cited in the ‘Recommendations’ section.

## Limitations & Future Research

With any research investigation, there are limitations that are noteworthy. First, the survey was distributed via Facebook so there is a snowball sampling effect that took place because it was shared with other people outside of the author's personal network. This is good because it lends to a potentially more diverse group of people in terms of viewpoints and beliefs. However, the survey could get in front of someone who may wish to sabotage the results for personal or philosophical reasons. In-depth interviews for AVVH parents were also obtained through the snowball sampling method.

Second, the survey did not measure the respondent's education level or household income. Education and household income could potentially be insightful factors when assessing attitudes and behavioral intentions about MMR vaccination and for the best ways to reach certain socioeconomic groups. Also, geographical information was not collected from research participants. A geographical analysis of participants and their responses may provide additional insights to their attitudes and behaviors.

Third, 96% of survey respondents identified as white or Caucasian so there is likely to be some sample bias. Future studies should strive for a more diverse group of respondents that is statistically more representative of the general community/population.

Fourth, only 2.9% of survey respondents identified as anti-vaccine and 10.2% identified as neither pro- nor anti-vaccine. Future studies could specifically target those who identify as anti-vaccine or neither pro- or anti-vaccine (AVVH). This study strategy may help provide additional insights and perspectives for this point of view that could help better understand their attitudes and motivations for not vaccinating for MMR. Statistically significant survey results and conclusions could not be obtained due to the small proportion of parents who identified as anti-vaccine or neither pro- nor anti-vaccine (AVVH). In the in-depth interviews of the six AVVH parents, results and themes were fairly consistent

with survey comments but again are not statistically significant to make concrete assertions or broad generalizations.

Fifth, a detailed breakdown of a parent's beliefs to include vaccine hesitancy like that of Gust was not incorporated in the initial online survey. More options beyond pro-vaccine, anti-vaccine and neither pro- nor anti-vaccine may have provided a different perspective of participant results.

Finally, there could potentially be some bias in the interpretation of study results from the study author because of his pro-vaccine viewpoint.

## Recommendations

Based on literature and previous research, survey results and the in-depth interviews with parents and medical professionals, the following recommendations are proposed to better understand parents' attitudes and motivations for MMR vaccination to possibly increase the likelihood of continued or future MMR vaccination:

1. Better education of vaccination/immunology of medical school students and residents about the importance of MMR vaccination (and vaccination in general) along with strategies and techniques to work with parents to help them make an educated and informed decision about the best course of action for their child. Said Doctor 2, "I think there needs to be better education in medical schools because doctors don't always recommend vaccines as strongly as they should." (See Appendix 11).
2. Medical professionals should be more assertive and strongly recommend MMR vaccination to parents for their child because their opinion is one of the most important voices when parents are deciding whether or not to vaccinate for MMR (and other diseases).
3. Medical professionals should focus on relaying the benefits of the MMR vaccine to the child (Hendrix, 2014). Furthermore, "mentioning societal benefits seems to neither add value to, nor interfere with, information highlighting benefits directly to the child."
4. Medical professionals should focus on listening and understanding parents' concerns and fears (causes autism, ingredients (i.e. aluminum), side effects, etc.) with MMR vaccination and address them individually and tailor the response to the concern. Said Mom 5, "If we can't have a rational discussion about my health care then I have a hard time trusting that health care provider or taking their recommendations" (See Appendix 10).
5. Medical professionals should clear up misconceptions about pharmaceutical industry influence on their decisions and medical research. As Doctor 2 said, "promoting vaccination won't line my

pockets.” (See Appendix 11). Possible literature from the vaccine/pharmaceutical industry with more transparency may also be beneficial. Mom 5 said, “I think the vaccine industry could do a much better job addressing the risks” (See Appendix 10).

6. Medical professionals should focus on building trust and a rapport with parents. They should not rush through the process. Said Dad 2, “...whether the doc is just pushing the recommended vaccine schedule or if he appears to be thinking critically of ALL factors. If a doc doesn’t think critically or appears in a hurry and overloaded I disregard his opinion” (See Appendix 10).
7. Medical professionals should develop a vaccine schedule with AVVH parents they can be comfortable with. For many that is a delayed, staggered or alternate schedule which may include only administering one vaccine at a time. Mom 5 said, “We built a schedule that made sense for our daughter based on these discussions and started vaccines at 6 months, administered only one per month, and skipped a few all together” (See Appendix 10).
8. Medical professionals should have reputable sources available at the time of the visit. The Minnesota Department of Health, for example, has a one-page sheet they provide to medical professionals titled, “Reliable Sources of Immunization Information” and includes websites, videos, publications, mobile apps, and phone numbers for parents.
9. Opel (2013) suggests medical professionals should try a presumptive approach to vaccination (“Well, we have to do some shots” versus the participatory approach to vaccination (“What do you want to do about shots?”). Opting out of vaccination in this scenario is much more difficult for parents to do versus opting in.
10. Medical professionals, health departments and the vaccine/pharmaceutical industry may want to develop literature specifically tailored to AVVH parents and debunk myths about vaccine ingredients (aluminum, etc.) and safety but still acknowledge fears and concerns. It would be



beneficial to address the unfounded link to autism for all parents (PV and AVVH) to help put their mind at ease and/or to help clear up any misinformation.

11. Unfortunately, according to Nyhan (2014), educational materials may not be an effective tool to reach AVVH parents and in some cases may actually increase misperceptions about vaccination and reduce vaccination intent. Furthermore, “attempts to increase concerns about communicable diseases or correct false claims about vaccines may be especially likely to be counterproductive.” Departments of health and medical systems should do a content analysis of their literature materials to see what can be revised, created or adapted to more effectively reach AVVH parents. A keyword search for common phrases (ex. Vaccine safety, vaccine recommendations, etc.) in popular search engines such as Google is likely necessary.

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**Appendix (see attached documents)**

Appendix 1 - Survey questions

Appendix 2 - Demographic information

Appendix 3 - Frequency table and descriptive statistics

Appendix 4 - Table of results - correlations

Appendix 5 - Frequencies pro- vs. anti-vaccine

Appendix 6 - Open-ended questions

Appendix 7 - Rank questions

Appendix 8 - Who makes vaccination decisions

Appendix 9 - In-depth interviews - Pro-vaccine (PV)

Appendix 10 - In-depth interviews - Anti-vaccine/vaccine hesitant (AVVH)

Appendix 11 - In-depth interviews - Medical professionals (MP)

## Default Question Block

As you fill out this survey please remember that there are no right or wrong answers. Your responses are confidential and will never be connected to your name. You have the right to stop at any time. We only ask that you respond to each question honestly. In addition, your responses will not be reported individually; rather, your responses will be combined with all other parents' responses and reported aggregately. This survey is being done for a Graduate Course capstone project by a Graduate Student. The content is not affiliated with the University of Minnesota.

The purpose of this survey is to assess motivations and attitudes about the decision to vaccinate or not vaccinate your child for measles, mumps and rubella (MMR).

The survey will take approximately 5-10 minutes.

Are you a parent/guardian? Note: For the purposes of this survey, a parent/guardian refers to anyone making or who has made medical decisions for a child under the age of 18.

- Yes
- No

Have you vaccinated (or plan to vaccinate) your child for MMR?

- Yes
- No

## How many children do you have under the age of 18 of whom you are making medical decisions for?

- 1
- 2
- 3
- 4
- 5

## Generally, I consider myself

- Pro-vaccine
- Anti-vaccine
- Neither pro- or anti-vaccine
- Other (Please explain)

## For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vaccine administered at the CDC recommended 12-15 months and then again at 4-6 years.

- Strongly Agree
- Agree
- Somewhat Agree
- Neither Agree nor Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

## I plan to or already have given the CDC recommended MMR vaccine at 12-15 months and then again at 4-6 years.

- Strongly Agree
- Agree
- Somewhat Agree
- Neither Agree nor Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

How likely is it that the following will happen to your child if they are given the MMR vaccine? They would be protected from measles, mumps and rubella.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to your child if they are given the MMR vaccine? They would have an adverse reaction to the MMR vaccine.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to your child if they are given the MMR vaccine? They would be accepted by their peers for having the MMR vaccine.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to your child if they are given the MMR vaccine? They would be scrutinized by their peers for having the MMR vaccine.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to you, the parent/guardian, if your child is given the MMR vaccine? You would feel supported in your decision to vaccinate for MMR.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely



How likely is it that the following will happen to you, the parent/guardian, if your child is given the MMR vaccine? You would feel confident in your decision to vaccinate for MMR.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to you, the parent/guardian, if your child is given the MMR vaccine? You would feel excluded for your decision to vaccinate for MMR.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

How likely is it that the following will happen to you, the parent/guardian, if your child is given the MMR vaccine? You would feel scrutinized for your decision to vaccinate for MMR.

- Very Unlikely
- Unlikely
- Somewhat Unlikely
- Undecided
- Somewhat Likely
- Likely
- Very Likely

Vaccinating my child for MMR is:

- Very Bad
- Bad
- Poor
- Neither Good nor Bad
- Fair
- Good
- Very Good

Vaccinating my child for MMR is:

- Not at all Important
- Very Unimportant
- Somewhat Unimportant
- Neither Important nor Unimportant
- Somewhat Important
- Very Important
- Extremely Important

Vaccinating my child for MMR is:

- Very Useless
- Useless
- Somewhat Useless
- Neutral
- Somewhat Useful
- Useful
- Very Useful

Vaccinating my child for MMR is:

- Very Ineffective
- Ineffective
- Somewhat Ineffective
- Neither Effective nor Ineffective
- Somewhat Effective
- Effective
- Very Effective

Vaccinating my child for MMR is:

- Very Inappropriate
- Inappropriate
- Somewhat Inappropriate
- Neutral
- Somewhat Appropriate
- Appropriate
- Very Appropriate

Vaccinating my child for MMR is:

- Miserable
- Unsatisfactory
- Satisfactory
- Excellent
- Delightful

**Vaccinating my child for MMR is:**

- Very Difficult
- Difficult
- Somewhat Difficult
- Neutral
- Somewhat Easy
- Easy
- Very Easy

**When deciding to vaccinate or not to vaccinate my child(ren) for MMR, I make these decisions:**

- By myself
- With my spouse/partner or child(ren) guardian
- I don't make these decisions (My spouse/partner does)

**When making MMR vaccine decisions, I take into consideration the opinions of (select all that apply)**

- Blogs
- Celebrities
- Friends, family or neighbors
- Government website (ex. CDC recommendations)
- Online message boards
- Pediatrician or licensed medical professional
- Popular media
- Social media
- Other (please explain)

**When ultimately making the decision to vaccinate or not to vaccinate my child for MMR, the biggest influence is (rank in order):**

Blogs

Celebrities

Friends, family or neighbors

Government website (ex. CDC recommendations)

Online message boards

Pediatrician or licensed medical professional

Popular media

Social media

Other (please explain)

**How do you think **most people that are important to you** would feel about you having your child vaccinated for MMR?**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## How do you think **your child's pediatrician/health care provider** would feel about you having your child vaccinated for MMR?

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## How do you think **your close friends** would feel about you having your child vaccinated for MMR?

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## How do you think **other parents** would feel about you having your child vaccinated for MMR?

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## How do you think **your family** would feel about you having your child vaccinated for MMR?

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## How many of the people that are **most important to you** do you think have vaccinated their child for MMR?

- None
- A few
- Some
- Most
- All

## How many of **your close friends** do you think have vaccinated their child for MMR?

- None
- A few
- Some
- Most
- All

**How many of the **parents in your neighborhood or school** do you think have vaccinated their child for MMR?**

- None
- A few
- Some
- Most
- All

The three most important factors I consider when making the decision to vaccinate or not to vaccinate my child for MMR are:

The three least important factors I consider when making the decision to vaccinate or not to vaccinate my child for MMR are:

**What are some of the advantages of vaccinating your child for MMR?**

**What are some of the disadvantages of vaccinating your child for MMR?**



## Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?

## The MMR vaccine helps prevent measles, mumps and rubella:

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## The safety of the MMR vaccine is a concern to me:

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

### **The side effects of the MMR vaccine are a concern to me:**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

### **What others think of my decision to vaccinate or not to vaccinate for MMR is a concern to me:**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

### **My decision to vaccinate or not to vaccinate my child for MMR is part of who I am as a parent.**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

**My decision to vaccinate or not to vaccinate my child for MMR is part of my personal belief system as a parent.**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

**If someone disagrees with my personal beliefs about MMR vaccination and confronts me about them, I am likely to listen to their point of view.**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

**If someone disagrees with my personal beliefs about MMR vaccination and confronts me about them, I am likely to feel attacked.**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Agree
- Strongly Agree

## My decision to vaccinate or not to vaccinate my child for MMR is rooted in:

- Religious beliefs
- Personal lifestyle
- Scientific evidence
- Other (please explain)

## Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.

Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR?

- Yes
- No

Did you follow through with their suggestion to vaccinate or not to vaccinate for MMR? Why or why not?

What is your gender?

- Male
- Female

## What is your age?

- <18
- 18-24
- 25-35
- 36-54
- 55+

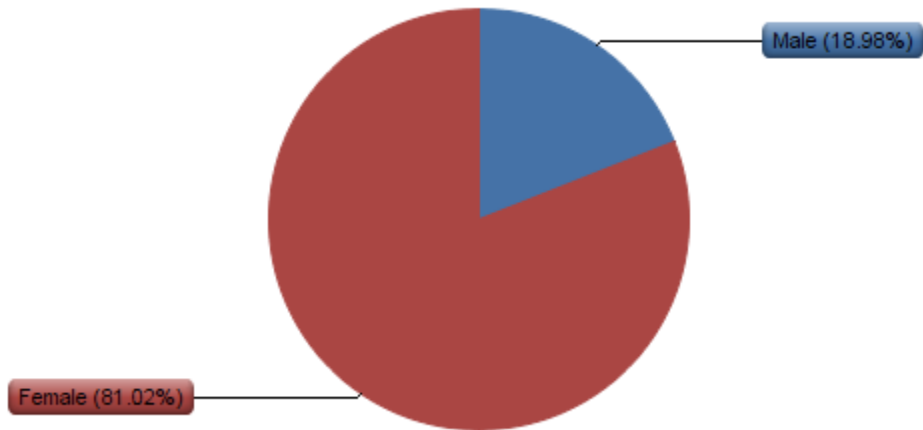
## Which race do you identify with?

- American Indian or Alaskan Native
- Asian
- Black or African American
- Hispanic or Latino
- Middle Eastern
- Native Hawaiian or Pacific Islander
- White or Caucasian
- Other (please explain)

Survey Powered By [Qualtrics](#)

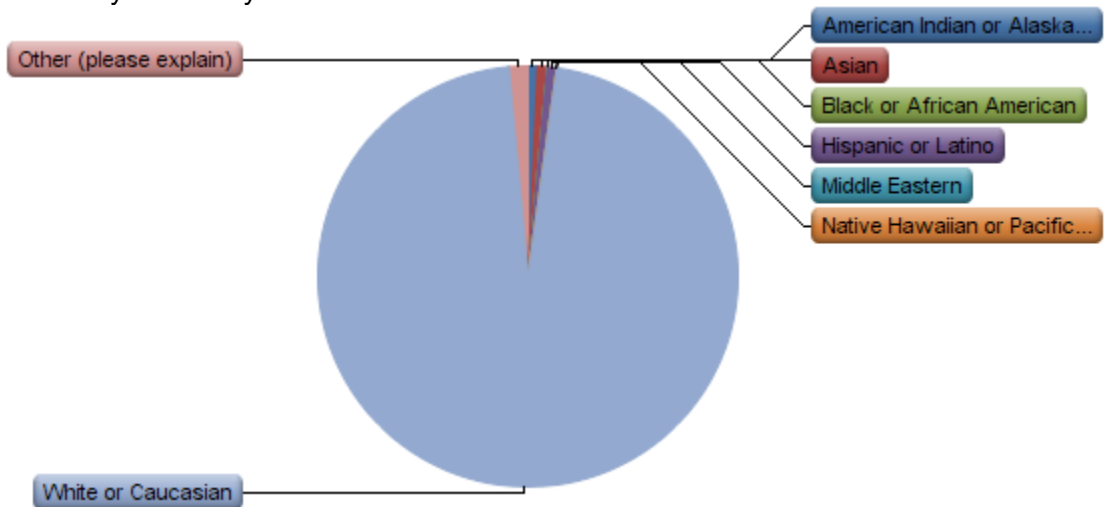
## Appendix 2 – Demographic information

What is your gender?



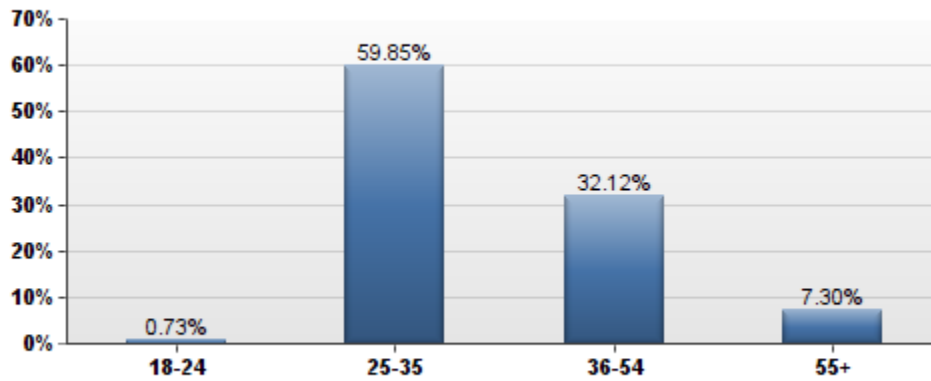
| # | Answer | Response | %    |
|---|--------|----------|------|
| 1 | Male   | 26       | 19%  |
| 2 | Female | 111      | 81%  |
|   | Total  | 137      | 100% |

What race do you identify with?



| # | Answer                              | Response | %    |
|---|-------------------------------------|----------|------|
| 1 | American Indian or Alaskan Native   | 1        | 1%   |
| 2 | Asian                               | 1        | 1%   |
| 3 | Black or African American           | 0        | 0%   |
| 4 | Hispanic or Latino                  | 1        | 1%   |
| 5 | Middle Eastern                      | 0        | 0%   |
| 6 | Native Hawaiian or Pacific Islander | 0        | 0%   |
| 7 | White or Caucasian                  | 132      | 96%  |
| 8 | Other (please explain)              | 2        | 1%   |
|   | Total                               | 137      | 100% |

What is your age?



| # | Answer | Response | %    |
|---|--------|----------|------|
| 1 |        | 0        | 0%   |
| 2 | 18-24  | 1        | 1%   |
| 3 | 25-35  | 82       | 60%  |
| 4 | 36-54  | 44       | 32%  |
| 5 | 55+    | 10       | 7%   |
|   | Total  | 137      | 100% |

**Appendix 3 – Frequency tables and descriptive statistics**

**Statistics**

|   |         |  |  |
|---|---------|--|--|
|   |         | Have you vaccinated (or plan to vaccinate) your child for MMR? | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... |
| N | Valid   | 137  | 137  |
|   | Missing | 0  | 0  |

**Have you vaccinated (or plan to vaccinate) your child for MMR?**

|       |       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes   | 128       | 93.4    | 93.4          | 93.4               |
|       | No    | 9         | 6.6     | 6.6           | 100.0              |
|       | Total | 137       | 100.0   | 100.0         |                    |

**For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc...**

|       |                            | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly Disagree          | 4         | 2.9     | 2.9           | 2.9                |
|       | Disagree                   | 5         | 3.6     | 3.6           | 6.6                |
|       | Somewhat Disagree          | 2         | 1.5     | 1.5           | 8.0                |
|       | Neither agree nor disagree | 1         | .7      | .7            | 8.8                |
|       | Somewhat Agree             | 6         | 4.4     | 4.4           | 13.1               |
|       | Agree                      | 35        | 25.5    | 25.5          | 38.7               |
|       | Strongly Agree             | 84        | 61.3    | 61.3          | 100.0              |
|       | Total                      | 137       | 100.0   | 100.0         |                    |

**Descriptive Statistics**

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|--|---|---------|---------|------|----------------|
|  |   |         |         |      |                |



|  |     |   |   |      |       |
|--|-----|---|---|------|-------|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | 137 | 1 | 7 | 6.22 | 1.449 |
| Valid N (listwise)   | 137 |   |   |      |       |

**Appendix 4 – Table of results – Correlations**

**CORRELATIONS OF SURVEY ITEMS WITH DEPENDENT VARIABLE (Q5 –**

**ATTITUDE)**

**CORRELATIONS**

/VARIABLES=Q5 Q6 Q8 Q9 Q10 Q11 Q12 Q13 Q14

**Correlations**

|   |   | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | I plan to or already have given the CDC recommended MMR vaccine at 12-15 months and then again... | How likely is it that the following will happen to your child if they are given the MMR vaccine?... | How likely is it that the following will happen to your child if they are given the MMR vaccine?... |
|---|---|--|---|---|---|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc...  | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1<br><br>137   | .949**<br>.000<br>137   | -.622**<br>.000<br>137  | .158<br>.066<br>136   |
| I plan to or already have given the CDC recommended MMR vaccine at 12-15 months and then again...   | Pearson Correlation<br>Sig. (2-tailed)<br>N | .949**<br>.000<br>137  | 1<br><br>137  | -.617**<br>.000<br>137  | .181*<br>.035<br>136  |
| How likely is it that the following will happen to your child if they are given the MMR vaccine?... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.622**<br>.000<br>137   | -.617**<br>.000<br>137  | 1<br><br>137  | -.165<br>.055<br>136  |
| How likely is it that the following will happen to your child if they are given the MMR vaccine?... | Pearson Correlation<br>Sig. (2-tailed)<br>N | .158<br>.066<br>136  | .181*<br>.035<br>136  | -.165<br>.055<br>136  | 1<br><br>136  |
| How likely is it that the following will happen to your child if they are given the MMR vaccine?... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.209*<br>.014<br>137  | -.198*<br>.021<br>137   | .233**<br>.006<br>137   | -.131<br>.128<br>136  |

|  |   |                        |                        |                        |                       |
|--|---|------------------------|------------------------|------------------------|-----------------------|
| How likely is it that the following will happen to you, the parent/guardian, if your child is giv... | Pearson Correlation<br>Sig. (2-tailed)<br>N | .427**<br>.000<br>137  | .424**<br>.000<br>137  | -.253**<br>.003<br>137 | .179*<br>.038<br>136  |
| How likely is it that the following will happen to you, the parent/guardian, if your child is giv... | Pearson Correlation<br>Sig. (2-tailed)<br>N | .897**<br>.000<br>136  | .898**<br>.000<br>136  | -.612**<br>.000<br>136 | .236**<br>.006<br>135 |
| How likely is it that the following will happen to you, the parent/guardian, if your child is giv... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.298**<br>.000<br>137 | -.279**<br>.001<br>137 | .263**<br>.002<br>137  | -.095<br>.272<br>136  |
| How likely is it that the following will happen to you, the parent/guardian, if your child is giv... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.278**<br>.001<br>137 | -.273**<br>.001<br>137 | .210*<br>.014<br>137   | -.003<br>.976<br>136  |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## CORRELATIONS

/VARIABLES=Q5 Q15 Q16 Q17 Q18 Q19 Q20 Q21

### Correlations

|  |   | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Vaccinating my child for MMR is: | Vaccinating my child for MMR is: |
|--|---|--|----------------------------------|----------------------------------|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1<br>137   | .893**<br>.000<br>137            | .834**<br>.000<br>136            |
| Vaccinating my child for MMR is:   | Pearson Correlation<br>Sig. (2-tailed)<br>N | .893**<br>.000<br>137  | 1<br>137                         | .910**<br>.000<br>136            |
| Vaccinating my child for MMR is:   | Pearson Correlation<br>Sig. (2-tailed)      | .834**<br>.000   | .910**<br>.000                   | 1                                |

|                                  |                     |        |        |        |
|----------------------------------|---------------------|--------|--------|--------|
|                                  | N                   | 136    | 136    | 136    |
| Vaccinating my child for MMR is: | Pearson Correlation | .833** | .900** | .842** |
|                                  | Sig. (2-tailed)     | .000   | .000   | .000   |
|                                  | N                   | 137    | 137    | 136    |
| Vaccinating my child for MMR is: | Pearson Correlation | .770** | .807** | .794** |
|                                  | Sig. (2-tailed)     | .000   | .000   | .000   |
|                                  | N                   | 136    | 136    | 135    |
| Vaccinating my child for MMR is: | Pearson Correlation | .897** | .916** | .892** |
|                                  | Sig. (2-tailed)     | .000   | .000   | .000   |
|                                  | N                   | 137    | 137    | 136    |
| Vaccinating my child for MMR is: | Pearson Correlation | .616** | .539** | .518** |
|                                  | Sig. (2-tailed)     | .000   | .000   | .000   |
|                                  | N                   | 136    | 136    | 135    |
| Vaccinating my child for MMR is: | Pearson Correlation | .675** | .633** | .637** |
|                                  | Sig. (2-tailed)     | .000   | .000   | .000   |
|                                  | N                   | 136    | 136    | 135    |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## CORRELATIONS

/VARIABLES=Q5 Q25 Q26 Q27 Q28 Q29

### Correlations

|  |                     | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | How do you think most people that are important to you would feel about you having your child v... | How do you think your child's pediatrician/health care provider would feel about you having you... |
|--|---------------------|--|--|--|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Pearson Correlation | 1  | .653**   | .476**   |
|  | Sig. (2-tailed)     |  | .000   | .000   |
|  | N                   | 137  | 137  | 137  |
| How do you think most people that are important to you would feel about you having your child v... | Pearson Correlation | .653**   | 1  | .718**   |
|  | Sig. (2-tailed)     | .000   |  | .000   |
|  | N                   | 137  | 137  | 137  |
| How do you think your  | Pearson Correlation | .476**   | .718**   | 1  |

|  |   |                       |                       |                       |
|--|---|-----------------------|-----------------------|-----------------------|
| child's pediatrician/health care provider would feel about you having you...                   | Sig. (2-tailed)<br>N                        | .000<br>137           | .000<br>137           |                       |
| How do you think your close friends would feel about you having your child vaccinated for MMR? | Pearson Correlation<br>Sig. (2-tailed)<br>N | .799**<br>.000<br>136 | .729**<br>.000<br>136 | .539**<br>.000<br>136 |
| How do you think other parents would feel about you having your child vaccinated for MMR?      | Pearson Correlation<br>Sig. (2-tailed)<br>N | .486**<br>.000<br>137 | .611**<br>.000<br>137 | .505**<br>.000<br>137 |
| How do you think your family would feel about you having your child vaccinated for MMR?        | Pearson Correlation<br>Sig. (2-tailed)<br>N | .738**<br>.000<br>137 | .725**<br>.000<br>137 | .497**<br>.000<br>137 |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## CORRELATIONS

/VARIABLES=Q5 Q30 Q31 Q32

### Correlations

|  |   | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | How many of the people that are most important to you do you think have vaccinated their child... | How many of your close friends do you think have vaccinated their child for MMR? |
|--|---|--|---|--|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1<br>137   | .520**<br>.000<br>137   | .519**<br>.000<br>137  |
| How many of the people that are most important to you do you think have vaccinated their child...  | Pearson Correlation<br>Sig. (2-tailed)<br>N | .520**<br>.000<br>137  | 1<br>137  | .715**<br>.000<br>137  |
| How many of your close friends do you think have vaccinated their child for MMR?                   | Pearson Correlation<br>Sig. (2-tailed)      | .519**<br>.000   | .715**<br>.000  | 1  |

|  |  |               |                |                |
|--|--|---------------|----------------|----------------|
| vaccinated their child for MMR?  | N                                      | 137           | 137            | 137            |
| How many of the parents in your neighborhood or school do you think have vaccinated their child... | Pearson Correlation<br>Sig. (2-tailed) | .213*<br>.013 | .314**<br>.000 | .386**<br>.000 |
|  | N                                      | 137           | 137            | 137            |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

### CORRELATIONS

/VARIABLES=Q5 Q38 Q39 Q40

#### Correlations

|  |   | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | The MMR vaccine helps prevent measles, mumps and rubella: | The safety of the MMR vaccine is a concern to me: |
|--|---|--|---|---|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1<br>137   | .639**<br>.000<br>136                                     | -.481**<br>.000<br>136                            |
| The MMR vaccine helps prevent measles, mumps and rubella:  | Pearson Correlation<br>Sig. (2-tailed)<br>N | .639**<br>.000<br>136  | 1<br>136  | -.381**<br>.000<br>135                            |
| The safety of the MMR vaccine is a concern to me:  | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.481**<br>.000<br>136   | -.381**<br>.000<br>135                                    | 1<br>136  |
| The side effects of the MMR vaccine are a concern to me:   | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.528**<br>.000<br>136   | -.454**<br>.000<br>135                                    | .716**<br>.000<br>136                             |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### **NOTE NONSIGNIFICANT VARIABLES ON THIS PAGE RELATED TO PERSONAL BELIEFS**

### CORRELATIONS

/VARIABLES=Q5 Q41 Q42 Q43 Q44 Q45 Q46

### Correlations

|  |   | For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | What others think of my decision to vaccinate or not to vaccinate for MMR is a concern to me: | My decision to vaccinate or not to vaccinate my child for MMR is part of who I am as a parent. |
|--|---|--|---|--|
| For the child(ren) I make medical decisions for, I am generally in favor of having the MMR vacc... | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1<br><br>137   | -.134<br>.120<br>136  | .199*<br>.020<br>136   |
| What others think of my decision to vaccinate or not to vaccinate for MMR is a concern to me:      | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.134<br>.120<br>136   | 1<br><br>136  | .154<br>.073<br>136  |
| My decision to vaccinate or not to vaccinate my child for MMR is part of who I am as a parent.     | Pearson Correlation<br>Sig. (2-tailed)<br>N | .199*<br>.020<br>136   | .154<br>.073<br>136   | 1<br><br>136   |
| My decision to vaccinate or not to vaccinate my child for MMR is part of my personal belief sys... | Pearson Correlation<br>Sig. (2-tailed)<br>N | .096<br>.267<br>136  | .077<br>.373<br>136   | .604**<br>.000<br>136  |
| If someone disagrees with my personal beliefs about MMR vaccination and confronts me about them... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.246**<br>.004<br>135   | .123<br>.155<br>135   | -.160<br>.064<br>135   |
| If someone disagrees with my personal beliefs about MMR vaccination and confronts me about them... | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.066<br>.448<br>136   | .051<br>.556<br>136   | .188*<br>.028<br>136   |
| My decision to vaccinate or not to vaccinate my child for MMR is rooted in:                        | Pearson Correlation<br>Sig. (2-tailed)<br>N | -.251**<br>.003<br>137   | -.070<br>.417<br>136  | -.147<br>.087<br>136   |

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Appendix 5 – Frequencies – Pro-vaccine vs. Anti-vaccine

### Generally, I consider myself

|       |                              | Frequency | Percent | Valid Percent | Cumulative<br>Percent |
|-------|------------------------------|-----------|---------|---------------|-----------------------|
| Valid | Pro-vaccine                  | 112       | 81.8    | 81.8          | 81.8                  |
|       | Anti-vaccine                 | 4         | 2.9     | 2.9           | 84.7                  |
|       | Neither pro- or anti-vaccine | 14        | 10.2    | 10.2          | 94.9                  |
|       | Other (Please explain)       | 7         | 5.1     | 5.1           | 100.0                 |
| Total |                              | 137       | 100.0   | 100.0         |                       |



**Appendix 6 – Open-ended survey questions responses (See attached)**

## Open ended Qs

Last Modified: 04/23/2015

### 1. Generally, I consider myself

| # | Answer                              | Response | %    |
|---|-------------------------------------|----------|------|
| 1 | Pro-vaccine                         | 143      | 76%  |
| 2 | Anti-vaccine                        | 6        | 3%   |
| 3 | Neither pro-<br>or anti-<br>vaccine | 29       | 16%  |
| 4 | Other<br>(Please<br>explain)        | 9        | 5%   |
|   | Total                               | 187      | 100% |

#### Other (Please explain)

Selective vaccine/choosing to wait on some such as Hep that was on the schedule at birth  
 I don't have enough information to make a qualified decision and believe most of the information out there is be funded by the same companies that make billions off of vaccines. I am cynical...  
 Picky about which ones  
 depends on the vaccine. mostly pro-parents rights  
 I consider myself wary of vaccines and would like to push for longer term research and changes based on known issues. We are choosing to ultimately vaccinate, but on a reduced schedule and questioning various things every step of the way.  
 We research each vaccine, especially the new ones, and discuss with our doctor. We have chosen to not give one vaccine, that was pulled just two weeks after or decision.  
 I am in favor of giving parents ALL information about vaccines (side effects, risks, etc) so they can make an informed decision.  
 Pro educational decision making ant some vaccines, pro some vaccines  
 Pro educated decision making

| Statistic          | Value |
|--------------------|-------|
| Min Value          | 1     |
| Max Value          | 4     |
| Mean               | 1.49  |
| Variance           | 0.85  |
| Standard Deviation | 0.92  |
| Total Responses    | 187   |

## 2. The three most important factors I consider when making the decision to vaccinate or not to vaccinate my child for MMR are:

### Text Response

Her extreme prematurity (therefore a weakened immune system, which makes immunizations all the more important for her), protection of the immunosuppressed that cannot be immunized, prevention of disease outbreak.

Recommendations from pediatrician Health of my child Health of other children

Is the vaccine relevant-yes. Is it proven-yes.

Protecting my child, my family, and others, from contracting or spreading MMR.

health, safety and social acceptance

Occurrences of moderate to serious side effects, child's previous reactions to past vaccines, effects of disease being vaccinated against (I.E. is it lethal?)

The end result. Is my child safe and insulated from MMR. That's the bottom line. When the net benefit is so significantly greater than the potential complications, it is a no-brainer. Science. I think someone once said that the best part about science is that whether you believe it or not, it's still true.

Continued health, community safety,

Health, life, and safety

Reaction to other ingredients in the vaccine (one that is not the actual vaccine), compared to the affects of the diseases. Reaction to the actual MMR vaccine. What they will have to endure if they aren't vaccinated and contract one of the MMR diseases.

Dr. recommendations Research Family members

What is best for my child, what is the right thing to do, how will this affect the safety of my child.

Their health. The health of our greater community. It's the right thing to do.

Evidence, personal health, public health

longevity of trials side effects

Whatever my doctor says.

Doctors recommendation Safety Long term effects

Pediatrician/CDC recommendation, To protect my child from illness, and to protect other people from illness that could have been spread from my child had I not had him vaccinated

1. Do the benefits outweigh the risks? (I believe they do.) 2. Will this protect my child? (I believe it will.) 3. Will this protect other loved ones or individuals who have compromised immune systems? (I believe it will.)

Cdc Md opinion History of success

Reputation of the vaccine, doctor recommendations, child's physiology

1. Risk factors of disease v vaccine 2. Medical research 3. Pediatrician recommendation

Health of my child Health of other children they are around Advice from Dr

Getting ill, getting others sick, and doing what I feel is right

Safety of my child Long term affects Risk to others

Risk analysis (weigh benefits vs risks), child's immunity

Research Professional recommendation AAP rec

protection, safety, necessity

If my child responded well to the vaccination the first time. Will it effectively keep them safe

1. History and success of vaccinations as demonstrated by research. 2. The recommendation from my child's pediatrician. 3. The overall health and well-being of the entire population of children input country.

Their continued good health Protection from getting measles mumps rubella Not being a vector in givin measles mumps or rubella

Is the vaccine safe and effective? Is it the best thing to do for my child? What does my child's pediatrician recommend?

Pediatricians advice, trusted medical journals, and desire to foster public health

Doctor, health, my child

The benefits, the risks and what their doctor says

side effects, allergic reactions possibilities, pediatricians opinion

\*his health \*health of others

Risk to my child (currently know and what I believe is still unknown risk due to lack of long-term research). Risk to others. Social acceptance/school difficulties, attacks by other parents, etc. against my child if we decided against vaccinating.

Keeping my child healthy

So they won't ever get these illnesses.

Doctor's recommendations, continued health of my child, herd immunity for others who cannot vaccinate

Following doctors orders Following how things were done for my by my and my husband's parents Flowing what the majority of what other people do

Scientific research medical professionals and my spouse

Pediatrician recommendation. Risk versus benefit. My own personal research.

Their safety and the safety of others they come in contact with What the scientific and medical communities say about the vaccination Peace of mind as a parent

Doctor recommendation That is all

CDC, professionals, Doctors and nurses

My child's individual health factors, including past reactions to vaccines, studies about vaccines, inserts from vaccine manufacturers (package inserts).

Medical efficacy Herd immunity Doctor's advice

It works Has been around for a long time Listen to doctor recommendation

Their health Health of others who cannot vaccinate

Timing of vaccinations.

The health benefits for my children, the benefits to society, the recommendations of medical science

The poison that is in the suspension of the vaccine. I would rather risk my child contracting a disease, than knowingly inject them with poison and suffer the consequences associated with that.

Protecting kids/adults who can't be vaccinated due to illness Protecting ourselves Documented medical studies proving they are safe and effective

Pediatricians recommendation; news I've read (generally mainstream health and science reporting); protecting my children from serious disease

1.Public safety - kids with weakened immune systems should worry about disease because idiots won't vaccinate. 2.why bring back a deadly disease 3.nothing will happen from a vaccine you stupid ignorant imbroads!

health

My child's health Doctor recommendation Community health

Is it safe for my child?, Do the benefits out weight the risks?, and Will it hurt my child.

Long term effects, my experience with being vaccinated, the severity of the MMR diseases

Is it safe, is it recommended, is it helpful

Pediatricians recommendations, cdc schedule, protecting the greater community

My Childs best interest Other children's best interest Long term health

Vaccine Efficacy, vaccine safety and availability.

Health, Safety, Community protection

The health and safety of my child. The health and safety of my other child. The health and safety of other children.

Risks if not vaccinated weighed against risks of vaccination, child's overall health and wellness, community need for immunization

Is the vaccine safe, is my child healthy enough to be vaccinated, would not vaccinating be worse for my child if they were exposed to the disease

Impact on my kids, the history behind the vaccine, and the statistics.

research my decision as a parent health providers

Health, health and health

my child's susceptibility to MMR the result of having MMR my responsibility to keep my child, and other children safe

Safety, efficacy, what our pediatrician recommends

Likelihood of negative side effects. Immunity to deadly disease. Keeping other children who cannot be vaccinated away from these diseases such as newborns.

Safety, effectiveness and pain

Health safety medical facts

Health

Risk/benefit analysis of the vaccine (including ingredients, potential reactions, etc) vs contracting the diseases themselves Our own child & family's health Age of child & individual circumstances

Studies that are being conducted or recently conducted on the ingredients and reactions of the MMR vaccine. Where was the vaccine made and what company made it. Risk/benefits of vaccinating or not. (how bad is the disease if my children get it)

Side effects Adverse Reactions Benefits

Benefits vs risks Pediatricians recommendation

Being exposed Overall health of my child Doctors recommendation and why

The safety of my child The safety of other children The safety of my self and husband

Doctor Parents Educators

Side effects, if exposed what could happen, positive things from it

Protecting not only my children but other children also.

Dr. Dr. Dr.

1. I don't want my child to suffer from something that is preventable, 2. I would never want to expose another child who is not old enough to receive the vaccine yet to such diseases, 3. I feel it's my duty as a parent to make logical and educated decisions that I believe are most beneficial to society as a whole.

Pediatrician recommendations, public health (CDC/MDH) recommendations, my child's health living in a global community.

Maternal instinct, advice from health care professionals, books/ journal articles

My child's health, pros and cons

The public's health Ease Side effects

My child's health. Community Health. Recommendation of health professionals

1. Evidence base; 2. Medical advice; 3. Own education in public health.

Medical professional recommendation Risk of diseases being vaccinated against Child's individual reaction to any other vaccinations

How MMR affects Autistic children (father is high functioning autistic), including heavy metals and other ingredients. How long and through which routes vaccine is shed. Strength of herd immunity (how many people are not vaccinated in my area).

safety of my child from MMR Safety of other children do not have a 3rd

The health and safety of my child and family. The health and safety of my community. The likelihood of my children having a negative reaction to the MMR (very little to none) versus the likelihood of them getting the measles if unvaccinated (much more likely).

Doctor recommendations Science

Probability, research, potential outcomes

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 103   |

### 3. The three least important factors I consider when making the decision to vaccinate or not to vaccinate my child for MMR are:

#### Text Response

Pretty much anyone else's opinion besides myself, my husband and our daughter's pediatrician and specialists.

Others opinions Others beliefs Others suggestions

What someone I don't know has to say about a vaccine.

Opinions of non medical professionals, social acceptance, celebrity influence.

trends, opinions and risks

Opinions of people that spout without putting serious thought into it: sheeple, parrots and loudmouths

What an idiot celebrity thinks. What the hell gives Jenny McCarthy the right to think she knows better than any true professional?!? I think Will Ferrell as Robert Goulet once posited: You wouldn't hire a clown to fix a leak in the john. Celebrities are successful in their own right, but why on God's green earth would I put my child's health in their hands?!?

What naysayers say, alarmists exaggerating claims to make their case,

Media, public opinion, pressure

How I feel about them getting a shot. What other people think about me vaccinating my child.

Whether or not they will remember being vaccinated.

Celebrities Social media blogs

What a blog says, what Jenny McCarthy thinks is true, what someone who isn't educated about vaccines thinks.

Worries about vaccines causing long term side effects like Autism. Short term side effects like rashes and fever. Doubts about effectiveness.

celebrities, opinions, blogs and websites

peoples opinions

Whatever social media says.

what others think Cost

Any of the choices that I ranked 4-8 on the ranking question.

1. Opinions of celebrities. 2. Opinions of friends who still believe that vaccines cause autism. 3.

"Studies" people post on social media.

social media Media Jenny McCarthy.

Celebrity opinions, social media, scare tactics

1. Celebrity opinion 2. Blogs 3. Fraudulent research

Social media What celebrities are doing Pressure from family & friends

What other people think What social media/blogs say What small research says

Popular opinion, celebrities

Social opinion Anti-vaccine propaganda / autism scare tactics

na

Celebrity opinions. Conspiracies about vaccinating Unfounded ideas about vaccines hurting kids.

1. What everyone else thinks 2. Fear of side effects 3. Autism

other people's opinions Other people's opinions Other people's opinions

The opinion of people who are not doctors

celebrities, scare tactics, guilt

Others, that it hurts, cost

What friends think, what tabloids say and what anti vaccine people think

social media, friends opinions, blogs

\*popular media \*celebrities

Availability of the vaccine (not a factor), effectiveness (I know it's effective) and cost (covered by insurance).

Celebrities and other morons claiming it is bad. Blogs. Morons.

Other people's opinions, celebrities

celebrities Internet(you can find articles to support both sides) Non medical professionals opinion

Celebrities, popular media and hysteria

What celebrities say. What social media says.

What the latest trends are in child rearing People who publicly declare their decisions and try to persuade others

celebrities, blogs, social media

blogs, social media

What other people will think (this is my child and our decision to make), what celebrities are doing (who cares!), what other people are doing.

Fake research

celebrities Social media Religion

Side affects

Peer pressure, social media, unresearched fears of dangers of vaccinations

unfounded opinions circulated through social media or celebrities

1.Hippies 2.Religion 3.Idiots at large

others opinions

Celebrity opinions Media Non medically backed information

Social media, Everyone else, blogs

other parents opinion, celebrity , media

How will this play on social media, my own uneducated research, temporary pain

Blogs, biomed autism "research", and science deniers.

Others opinions Cost Convenience

Stories or reports not based in factual information, celebrity opinions, opinions of others outside my immediate family.

Non-medical opinions, blogs, celebrities

What other's think or say without informing themselves through scientific fact first. What is popular.

Trying to ignore pop culture discussions as I don't know what is accurate/factual and what is convenient information

Is the vaccine safe, is my child healthy enough to be vaccinated, would not vaccinating be worse for my child if they were exposed to the disease

Outside influences who are not in the medical profession, social media, or message boards

other people's opinions blogs celebrities

What other people think, say or do

Others' opinions on my decision. What social media and celebrities say about it The

social media opinions, celebrity opinions,

celebrities. Government control. Social media.

cost, what others are doing, what the media says

social media, popular media, celebrities

The cool club

What other people (family, friends, neighbors, etc) think about our decision for our family

What other parents think(unless they themselves are educated on the subject) What social media says. Information greater than 10 years old.

Other peoples opinions

Opinions of non medical people Media



Decisions of other people Rare side effects  
 Celebrities Social media Others opinions  
 Social media  
 social media, what everyone else is doing, blogs  
 Dummies on the Internet- especially if they are quoting celebrities who know nothing.  
 1. What Jenny McCarthy says, 2. What is currently "trendy" , 3. Pressure from anyone  
 Celebrities, blogs, isolationist parents.  
 social media, peer pressure, scare tactics  
 Celebrities, trend, overly pro-vaccine parents.  
 Trends Social media Others' opinions  
 Celebrity stories Social media Fear  
 1. Other parents; 2. Fear tactics; 3. Popularity.  
 Non-medical professional opinions in any form  
 Celebrities, Blogs, other people's opinions of the validity of the vaccine.  
 celebrities anti-vexxers  
 Celebrities/fads. Studies that have been proven to be falsified. What other parents choose to do with their children.  
 Someone I've never heard of says I shouldn't No/questionable alternatives Anti vaccine blogs  
 Celebrities, other people's children, how others feel  
 1) others opinions (general public) 2) popular opinion 3) message boards/blogs  
 other people's opinions

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 97    |

## 4. What are some of the advantages of vaccinating your child for MMR?

### Text Response

Protection from disease, prevention of her returning to the hospital, protecting the population in general.

keep my children and other children healthy.

Mine got the measles from the vaccine so I know she has had the immune response necessary for immunity. She won't get it.

Protecting my child from mmr, contributing to herd immunity.

health, low risk for disease, ability to safely be in daycare, school, public, etc.

Decreased odds of getting measles, mumps and rubella

Not contracting Measles Mumps or Rubella.

Safety, health for my child and the community

Health safety

Very high chance of never contracting any of the MMR diseases. Don't have to worry as much about whether or not other children were vaccinated. As with any vaccine, can effectively eliminate the disease.

Healthy lifestyle

Safety for my child, the protection that she is providing for those who are unable to get the vaccines themselves, not having to worry about diseases that are all but eradicated from our country.

I don't have to worry about many childhood illnesses that can cause harm and death. Diseases that their Grandparents suffered through. We are lucky medicine has come so far in just 40 or 50 years.

Protection from dangerous and preventable diseases

health

They more than likely won't get the disease.

Safety Better health

To protect my child from preventable illnesses and to protect others who are immunocompromised or cannot get vaccinated for some reason (infants, for example).

It will give my daughter a better chance of not contracting measles, mumps, or rubella. It will also help to protect her friends and family who cannot be vaccinated due to serious medical conditions.

Immunity to measles mumps rubella. Healthy life , disease free.

prevention of the disease both for my children and for vulnerable populations

Not contracting an otherwise preventable disease that has serious long term affects.

Decreasing risk of infection to others that cannot have the vaccination.

Not getting mumps, measles or rubella

Not worrying about illnesses.

Prevent of dangerous illness, prevention for society as a whole

Mostly protected from those diseases

Protection

keep them safe, alive and immune

Greatly decreases the risk of contracting diseases that vaccines have made it unnecessary to worry about like people used to have to. Knowing they are protected even if their friends' parents don't vaccinate.

Already having a strong immunity to something that nearly destroyed populations of people just decades ago. Not worrying that my son is going to get most strains of measles, mumps or rubella.

no illness

My child won't get measles, mumps or rubella My child won't spread measles, mumps and rubella to vulnerable populations

Knowing the odds are that I am protecting my child & other children from the side effects of these diseases

They won't get the disease

Health safety

Helps prevent future outbreaks, not just for my kids but for others.

Protects all children from the spread of MMR

Protection against those diseases for my child and others; acceptance

Not getting MMR

They won't get measles, mumps or rubella.

Preventing disease, herd immunity

safe from those diseases

Protection from preventable horrific disease and possible death as well as herd immunity

Protection from disease.

Protection for them and those around them from the diseases.

they don't die of a preventable disease

protecting all of us

My child receives some degree of immunity that may or may not last. For mumps and rubella, there are protections for fertility and a developing baby in-utero later in my children's lives.

My kids won't get M, M or R.

so they don't get the diseases Don't give it to other people

healthier Stronger immune system

Protection for our children and other children around us.

Protection from disease for my children, eradication of dangerous diseases from society/the world

none

Immunity to a life threatening disease.

Protecting them from serious disease; ability for them to be at school with many children and preventing serious infectious disease or in public places (parks, children's museum, zoo).

you continue to live in a first world country

protection from deadly diseases

they won't get measles, mumps, or rubella

Being less likely affected by MMR later in life.

protection from MMR diseases and preventing the spread of them.

Protection against debilitating or deadly disease, protection for other children unable to be vaccinated due to illness or parental refusal, long term eradication of diseases

Herd immunity

Health Longevity Security

Better chance of my children not contracting Measles, Mumps and Rubella. If they do contract it, it is possible it will not be so severe. Protecting little ones and people who cannot receive the vaccine due to age or compromised immune systems.

Creating a healthier community

Protection from harmful diseases and illnesses.

It reduces the risk of the diseases that this vaccination prevents. That they don't put others who can't get the vaccination yet at risk (children under the age of 12 months).

To protect her from the unnecessary risks that she could face if she contracts one of those diseases

prevent them from getting measles mumps or rubella, protects children who cannot be vaccinated

Gives my children protection (most of the time) or theta immune system protection and antibodies to ward off potential infections.  
protecting child from health issues  
health  
Helping with herd immunity. Reducing or eliminating the risk for my child getting MMR which could potentially kill him depending on his age.  
Keeping them protected from MMR.  
Immunity to deadly diseases Keeping children who cannot receive vaccinations clear from the diseases.  
Keeps my child and everyone else safe  
being immunized from these illnesses & protecting immunocompromised people  
keeping them healthy  
Potential, temporary immunity to measles, mumps and rubella  
An increased chance of your body fighting off the virus and not showing symptoms or getting sick.  
The higher chance of her NOT contracting one of the disease or having a less severe case.  
Not having to worry about horrible, preventable diseases  
Protection  
they are protected in case they are in contact with this virus.  
Public health  
Protecting my child, protecting other people's children, societal respect, preventing long term potential issues and medical bills, etc....  
Feeling confident that we are doing our part to increase herd immunity so that outbreaks of these diseases are less likely to spread. Feeling hopeful that my child is protected if an outbreak occurs.  
increased protection against disease, possibly  
Slight protection from MMR  
Prevent measles mumps or rubella for my child and the people she comes in contact with.  
The health and well-being of my child and the community.  
Protecting child from disease; protecting other children who cannot be vaccinated from disease; reducing overall disease burden.  
Protection from measles, mumps and rubella Protection for other people who are unable to vaccinate for medical reasons For child that is a girl, protection for any future unborn children of hers (to eliminate risks of her getting rubella while pregnant)  
Increased immunity to those diseases.  
n/a  
My children stay healthy.  
Protects them from diseases  
They most likely will not get measles, mumps, rubella  
Immunity to measles, mumps, & rubella

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 100   |

## 5. What are some of the disadvantages of vaccinating your child for MMR?

### Text Response

She typically has a slight fever afterwards for a few hours, and like anyone, she doesn't like shots. Both of these factors are extremely minor in my opinion, a fever is a sign that the body is recognizing said vaccine, meaning the vaccine is doing its job.

It makes them cry ;)

Getting the disease you are trying to protect against.

None for our child. If someone can get the vaccine without any adverse health reactions the should.

watching child cry

Chances of serious to moderate side effects

Very few. Especially since SCIENCE has refuted any links of vaccinations to autism.

Initial reaction, discomfort

Getting these diseases

Possibility of an allergic reaction to vaccine or other ingredients. Child being one of the few people who can't be vaccinated because the vaccine doesn't take in 100% of vaccinations.

I do not know if I agree that there is anything wrong with vaccinating.

She cried for a few minutes at the doctors office I guess, but she's tough and got over it pretty quickly ;)

It's unpleasant for them to be vaccinated. It hurts. It's scary. They are miserable for a day or two.

none

side effects

They'll be sick for a day.

none

Possible side effects and other than having a sore leg for a few days and a possible fever, I can think of none.

She ran a low grade fever after her MMR vaccine, and was a total grump for about a week.

Some people have allergies to ingredients in vaccines so that can be a disadvantage.

Reactions to vaccine. Even if minor. (Pseudo measles)

pain, possible reaction to vaccine

Small chance of vaccine injury or side affects - autism is not one.

Possible reaction

reactions to medicine and giving the shot

Risk of possible side affects

Risks

Adverse reactions

none

The slight possibility of a bad reaction to it. Otherwise nothing.

I don't see any. If anything the shot will hurt and make my son sad. But that's temporary and in my opinion a necessary discomfort that is so brief. What would I rather my son have? A poke that lasts only seconds or an illness that has dire consequences for life? Seems like an easy decision to me...

none

My child cried for a few minutes afterward.

Reaction at the injection site and fever for my most recent infant.

pain at shot

watching the kids get shots is kind of hard to see. The low fever that follows for my kids is no

fun either.  
he doesn't like shots!  
Unknown risks associated with an un-natural substance being directly injected into her blood stream. Immune system reaction and the possibility of auto-immune conditions.  
Bringing your child in to the doctor and perhaps them crying from the shot.  
It might hurt for a while.  
Mild initial discomfort when administering the shot.  
Fear of vaccination side effects or damage to child  
None  
None.  
None. Maybe a low grade fever and irritation around the injection site  
for my family, none  
compromising the immune system  
It is not always effective.  
There are side effect risks.  
None  
small instance of bad reaction  
side affects  
Potential side affects  
Small risk of side effects  
Taking a risk of the side effects caused by the poisons in the vaccine.  
Fever spike  
It's always hard to see your very young child get a shot a cry!  
nothing!  
slight risk of adverse side effects  
They cry for a few minutes after getting the shot  
The pain the child endures from the shots.  
the pain of the shots  
Temporary discomfort or pain  
Temporary discomfort  
Initial pain of shots Small chance of complications/side effects  
My kids get cranky. That is the only disadvantage.  
None  
Possible side effects  
It hurts my child - momentarily. It can be a little scary for them. There may be side-effects, however my children have not experienced them.  
That she could be one of the very small number that are adversely affected.  
possible allergic reaction  
They're easily susceptible to most infections.  
possible reaction  
None  
Tendency to spike a fever post immunization. Although, i'd be worried if he didn't as it is a live virus and the body should respond in such a way. You have to wait until 1 year of age to vaccinate, and there are people who choose not to, and place my child at risk during that 1 year window.  
Possible side effects  
Possible side effects and could contract the diseases anyways.  
none  
none  
painful, risk  
Only provides temporary immunity and requires boosters rather than contracting the diseases

and having lifelong immunity. Potential for adverse reactions, many of which are not anticipated beforehand

Toxic ingredients, adverse reactions, MMR adaption to the vaccine rendering it useless.

Adverse reactions. Problems with the ingredients.

Pain, discomfort for a few days from the vaccine

Not 100 percent protection

Side effects can be bad at times

I suppose there's a slight risk of allergy or something, but the herd health mentality is worth the risk

Personal bad reaction

Nobody likes to see their children get shots. I get sick to my stomach each time. But it's necessary and I know I'm protecting them long term. The benefits far outweigh the risks. The quick pain they feel is easily the worst part/biggest disadvantage. Also there is always some hesitation the first time a child receives a shot since there is a slight risk of reaction (allergic or otherwise). But I do believe the risk is incredibly minimal and worth taking.

None.

adverse reactions, unknown long term side effects in at-risk population

Vaccine reactions, no natural immunity

Hard to see your child in pain.

Slight health risks.

None.

Potential side effects

The failure rate seems higher than advertised on packaging and there isn't enough data on how it affects children who may be genetically predisposed to developing autism. Also, the science seems weak on how long the vaccine truly protects without boosters.

n/a

The poke from the shot hurts for a moment. That's literally it.

None

Ingredient list, natural immunity, possibility of an adverse reaction (or even side effects such as fevers that results in missed work/school)

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 101   |

## 6. Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?

### Text Response

It is in her best interest for her to continue being healthy and safe from potentially deadly disease.

it's what's best (in our opinion) for the health of our children.

Because even though she got the measles, I know her case was not as bad as it could've been if she caught a 'wild' strain.

Both of our children can accept the vaccine. we want to protect them from mmr and contribute to the herd immunity necessary to protect those who can't get the vaccine for medical reasons. it is in the best interest of my child's health

See above

Duh.

Health, health, health

Health concerns

Because the benefit of being protected from these diseases, and not spreading the diseases far outweighed any risk that maybe associated with the MMR vaccine.

Better for their health

Because it's the best form of protection of these infectious diseases and it's the right thing to do for the children and adults that are unable to get the vaccines themselves because of their own health reasons.

Because it's better for their health and the for the health of our greater community.

to protect them from preventable diseases

They need the protection

Because it's the smart thing to do. You'd be an idiot not to.

because ot is important for school

To protect my child from a preventable illness.

Because I love her and I want to protect her. I also believe it is my duty as a mother and as a decent human being to protect other individuals who may have vulnerable immune systems.

These diseases are not just inconvenient. They can kill.

because it's mostly eradicated the diseases and there just aren't scientific facts to back up claims its harmful.

doctor recommendation

Benefits outweigh risks.

Health of my child

rather have the bad side effects than dying from measels.

Overall safety for my child

Benefits most likely outweigh risk but I will most likely separate it out into three separate shots and will do at a later time/schedule than recommended.

Pros outweigh risks

to have my child live a long healthy life.

Vaccinating is the responsible thing to do.

For the overall health and well-being of all of our children throughout our country. We have not had one of these health epidemics for centuries and to start one now because people believe in things that aren't true (autism, etc.) is polish and irresponsible.

my childrens continued good health and those around them

Because it is good for my child and it may help to erradicate serious childhood diseases.

Faith. I pray for wisdom

To protect my children



Because I think in the long run its safer for his health

It is safer and healthier to vaccinate!

for his health and the health of others

Fear over her contracting the disease, exposing others who are more vulnerable than she is and acceptance/avoiding difficulty later with school, daycare and the judgement of other parents.

To eliminate their chances of getting a horrible disease that can easily be avoided

Because it is doctor recommended and usually required to go to school.

To prevent disease

I trust my doctors

Because it's the smart thing to do for them and the community

Because the CDC and my pediatrician still say it's important.

Herd immunity is only effective if everyone that is able to be vaccinated does so. It is my responsibility to make sure that not only my children are protected from the disease but to also stop the potential spread of the disease should it appear in our community. Vaccines aren't 100% effective for everyone so it's possible that even though someone has gotten a vaccine they are not immune to a disease. Furthermore, there are populations who are unable to be vaccinated. If I expect other people to protect my children from disease then I am also responsible for protecting others.

so they don't die of a preventable disease in a industrialized first-world country

read and follow CDC guidelines

Would protect them from bad diseases

It is a decision based on the totality of risk factors for each individual child.

I have confidence in our medical community.

so they don't get the measles, etc.

to protect them and those who cannot vaccinate there's for medical reasons

I believe in the power of vaccinations and the herd theory.

Benefits outweigh risks, socially responsible thing to do

The diseases can be treated. The side effects caused from the poison in the vaccines cannot.

to keep harmful and preventable diseases away from my family and friends families.

Trusted our pediatrician that the MMR was necessary to protect from disease; that the science did not link MMR to conditions like autism.

because no one needs deadly diseases coming back!

to protect from preventable disease

Because vaccination is important to their health

Because I want my child to be safe and healthy

For their protection, and safety of others

It's critically important we consider public health and scientific evidence as we think about vaccinations. The diseases the MMR vaccination prevents are deadly or debilitating, and momentary or minor pain and discomfort are less important when considering something that could save my child's life or the life of other children. It was also important for me to remember, while the MMR vaccine DOES NOT cause autism in any child, a child with autism is still a living child even if they think or act differently. We should not be so scared of our children being a different that we are willing to risk not only their lives but the lives of everyone around us. It is insulting and dangerous.

Because it's the best thing we have to protect ourselves from large scale outbreaks of VPDs.

Stated above. My Childs best interest Other children's best interest Long term health

I do not want to see a resurgence of diseases that have harmed/killed so many people from past generations. I don't want my children to endure these afflictions. We have the tools and the scientific know how to eradicate these diseases from our lives. It is up to us to use them.

Because it's the right thing to do.

for their safety and well-being.

The health and safety of my child.

The risks of the diseases and possibility that she could contract one of them seem to outweigh my anxiety about the possibility that she could be adversely affected by the vaccine.

health of my child and community

I want what's best for my children.

recommended

Health

I feel as a parent it's the right thing to do, herd immunity. Protecting your child as much as you can when there is an option to do so is the right thing to do.

To protect their health

The positives outweighed the negatives. I feel 12-18 months is old enough to withstand the side effects. I would not want unvaccinated children around my newborn to possibly give her a disease. So why would I do that to someone else's family.

safety of my children and everyone we know

to protect them & others. I don't want my child to have those illnesses

because the docs tell us to

It is a decision for each individual parent/family. Based on our life circumstances we have chosen not to vaccinate at this time. We choose to support our immune systems in other ways than vaccines (ex. by following a traditional, old world diet to support optimal health and the immune system, among many other things). We also do not fear for our children or for us to contract these diseases. We have support (from our doctor and others) and resources should we contract a disease. We constantly reevaluate our decision based on our circumstances. We would like to see more comprehensive studies done for vaccines, particularly a double-blind placebo study where the placebo vaccine used does not include anything other than saline (not an older version or other adjuvants). We are very comfortable with our decision and do not care what others decide as we feel that vaccines are medical procedures that should be the decision between the parent/child and their doctor.

Until the ingredients change and the companies are no longer making billions of dollars off of vaccines I won't trust what they are recommending I put in my children's bodies. Especially at the infant stage. There are a lot of adverse reactions in infants and young children but nearly none in school aged children. A delayed vaccination schedule would make me feel safer when vaccinating.

Possible lung issues from having the diseases when my child already has a genetic lung condition that we don't want to make worse.

It's what's best/safest for my child, and for the population in general to eradicate these diseases

To protect my child from severe illness when I have the control of making the important decision

protection

Better health

because it's the right thing to do for society

It was working

The reasons mentioned above. Protection for my child and others. Shots suck. But potential disease, hospital stays, IV's, permanent disabilities, death, etc..... that sucks way more.

We vaccinate because there is no compelling reason not to and there are many important and compelling reasons to do so (increasing herd immunity in order to protect those too young or sick to be vaccinated, protecting ourselves from possible outbreaks, doing our part to help eradicate these diseases through advances in modern medicine).

It intrinsically does not feel right. I couldn't forgive myself if my child suffered an adverse reaction to a vaccine, but it is more acceptable to me for my child to contract a natural disease.

I believe in natural treatments when possible. With that said, I may choose to vaccinate when my child is older and has a more developed immune system.

We don't vaccinate after a reaction to DTaP in our oldest. We stopped his vaccines and his younger siblings remain vaccine free.

My commitment to public health

The overwhelming evidence shows that it is medically sound and extremely important prevention for children and communities.

Protecting child from disease; protecting other children who cannot be vaccinated from disease; reducing overall disease burden.

Weighing the medical pros and cons, the pros GREATLY outweigh cons

I decided to vaccinate because there are large communities of non-vaccinating people in my area and would regret my decision to not vaccinate if my child were exposed. I am, however, nervous about the booster as my son had noticeable developmental lags until age three (when he was up to date on vaccines). He has been assessed for autism at 3.5 and was labeled "on track," but we were encouraged to re-test around 8-10 years if symptoms of mild autism don't fade in an age appropriate trajectory.

because it is right for my child and society

To keep them safe and healthy. The same reason I didn't smoke or drink alcohol during my pregnancies and had prenatal care and took vitamins.

Because it was the right thing to do.

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 103   |

## 7. My decision to vaccinate or not to vaccinate my child for MMR is rooted in:

| # | Answer                 | Response | %    |
|---|------------------------|----------|------|
| 1 | Religious beliefs      | 0        | 0%   |
| 2 | Personal lifestyle     | 18       | 13%  |
| 3 | Scientific evidence    | 104      | 76%  |
| 4 | Other (please explain) | 15       | 11%  |
|   | Total                  | 137      | 100% |

| Other (please explain)  |
|---|
| Both personal beliefs and scientific evidence intuition mostly. only a fool believes everything they're told. it's blind faith either way.  |
| Both personal and scientific  |
| Society and governmental expectations to keep our children safe.  |
| I work with children with autism and have seen many suspicion things that differ from the scientific evidence. It is a struggle for me to navigage the evidence vs my experience. |
| faith and evidence go hand-in-hand  |
| Societal pressure   |
| Trusting doctors in what they think is best for my children   |
| Trusting my pediatrician.   |
| Common sense  |
| A combination of religious beliefs, personal beliefs and lack of scientific studies of vaccinated vs unvaccinated children  |
| Mother in law is a nurse and sees the positives in it   |
| LIFE. We will not risk our child's well being with vaccines. The reaction outweighs the risk of the disease.  |
| Vaccine ingredients and risks   |

| Statistic          | Value |
|--------------------|-------|
| Min Value          | 2     |
| Max Value          | 4     |
| Mean               | 2.98  |
| Variance           | 0.24  |
| Standard Deviation | 0.49  |
| Total Responses    | 137   |

## 8. Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.

### Text Response

My doctor and I made the decision together.

No.

No. There is overwhelming scientific evidence that supports my reason for vaccinating my child. Not really. I don't believe the studies, or the conspiracy people. It's all bullshit IMO. Doctors only know what they're told (which is mostly theories based on questionable studies) but they present it as if it was scientific fact. Anti vaccine people have a nothing but viral information. Like I said before, it's blind faith in either direction. The only thing I know for sure is that I will laugh in the face of anyone who acts like they have the right answer.

Long-term research that repudiated current-held evidence (not likely)

Don't believe at this time, believe more evidence its a Heath benefit

Probably not, unless there was a significant jump in allergic reactions to the vaccine or it's other ingredients, or if there was a sudden drop in effectiveness of the MMR vaccine.

No, it's scientifically proven to help with the eradication of infectious diseases and my social responsibility to do so.

No

Years and years of new evidence based science

No. Only doc's opinion matters to me with that.

Yes, if side effects were terrible and likely.

I do what is best for my child and the community as a whole. If for some reason my next child is immunocompromised, then there may be a change in schedule of vaccinating, but that is something that would be discussed with a doctor.

No. There would have to be several major studies that either prove it is dangerous or ineffective. Anecdotal evidence and "studies" that involve small numbers of children are not proof enough. I need to see the science.

Not likely. Only Scientific evidence that the pediatric providers were on board with.

Medical reports that indicate an issue with the vaccine

Scientific research that has been replicated.

If quality research substantiated that the risks were much greater than the benefits

Not sure but don't think my mind will change at this point.

Research that indicates greater health risks than currently available

no

A well researched, well documented reason why it is found to be unsafe or ineffective

There would have to be some very strong scientific evidence proving that the risk far outweigh the benefits. I don't see that now in current research.

No. Too much scientific background to support it.

If MMR were shown to have serious side effects in (scientific) testing, so that the risk of the shot outweighed the risk of getting the disease.

New, compelling research. God's prompting

No because they need them

My children have all been vaccinated already not to sure much of anything could prevent me from having them vaccinated in the future.

NO

Additional, longer term, scientific evidence that shows the proven risks. Basically, I think the type of longer term research that I'm looking for does not exist and we are forced to rely on 4-6 week studies of the effects as proof that vaccines are not dangerous. That, coupled with

societies pressure to vaccinate has caused us to choose vaccinations even though us as parents are not entirely comfortable with that decision.

No.

If there were proper scientific studies showing that the risk is greater than the reward or there was some alternative that proved better.

Yeah if kids started dying instantly from them.

Only a recommendation from my doctor that is backed up by scientific evidence and the recommendation from the overall medical community

only if it could hurt my children's health

Science

If the vaccine suddenly wasn't working on a widespread basis.

Scientific evidence. It is the reason the vaccinations exist so it would be the only thing that could change my mind.

no. Our experience was perfectly fine.

no

A new, rigorous scientific study and a change in the general doctor consensus would change my mind.

If a lot of kids died after getting the shot

Perhaps- there needs to be more studies for vaccine safety carried out, not for individual vaccines, but for giving two or three at the same time. There also needs to be better documentation of side effects for children with specific medical issues, such as gastrointestinal problems, mitochondrial disorders, etc. There also needs to be honest discussion about the risks of vaccinations, not just blanket statements about safety and responsibility to the community.

No

No

Empirical evidence

No---I have seen the effects of infectious diseases on people in my generation and my parents' generation. I couldn't put my children and others at risk of an outbreak of these diseases.

If there was documented scientific evidence that it was harmful.

Actual scientific evidence that proves the risks outweigh the benefits. If not then why are we going to kill millions over it by bringing back a deadly disease.

No

If for some reason there is hard scientific proof showing me that it could result a bad outcome after vaccination.

If it was linked to more negative side effects that were research proven

If evidence-based, verifiable, large sample research was released showing significant negative reactions and responses to MMR, I would not vaccinate. However, all of this type of researcher proves the effectiveness, safety, and reliability of the MMR vaccine.

Scientific evidence that the vaccine does not work, or a different vaccine to prevent M, M, and R.

If researchers proved a link to vaccinations to long term health problems, I would reconsider. A celebrity or blogger does not have the scientific background to make allegations associating vaccinations to various complications.

If for some reason, it was found out that the vaccine had definite, regularly expected, severe side effects I would not have my kids vaccinated.

No

No.

If a child I know is adversely and irreparably affected by a vaccine

Only knowing my child would have an adverse reaction.

I keep an open mind and will listen and conduct research to find out whether or not something

|   |
|---|
| will be beneficial for my children  |
| If there were suddenly  |
| The negatives outweighed the positives. True immunity to these diseases was never proven in history to help stop the spread of these diseases   |
| No  |
| Scientific facts proven w/studies & dr.'s recommendations   |
| Yes. Certain circumstances where the risk (that we feel) of a diseases outweighs the risk of the vaccine. Also, more evidence/studies that are not done by the vaccine manufacturers that shows the benefits of vaccinating outweigh the benefits of not vaccinating.   |
| Removing the preservatives in the vaccines and holding vaccine manufacturers accountable to any mistakes would likely sway me. My children get vaccinated but we do it on a delayed schedule. I think most people would feel safer if there was accountability for errors on the manufacturers part. Right now we are just on the Honor system. Humans have shown little honor when billions are at stake.  |
| Increased accurate reporting of adverse reactions.  |
| If my child was immune compromised and not medically able to have the vaccine, or had some traumatic reaction to the vaccine previously.  |
| no  |
| No  |
| scientific evidence   |
| If children started dying from it, I'd reconsider its safety  |
| New info  |
| If one of my children had a severe reaction to the vaccine for any reason then I would probably think twice about vaccinating the next child, but I firmly believe things such as autism cannot firmly and solely be traced back to vaccinating. I would have to hear directly from my doctor, whom I trust and have a great relationship with, that she would not recommend it.  |
| If reliable research studies showed there were legitimate safety concerns that outweighed the benefits, if our pediatrician discouraged it, if trends changed and most parents were not vaccinating.  |
| A scientific study stating that my child would absolutely die without the vaccine would change my mind.   |
| No, because we are not willing to risk our child's life for a vaccine.  |
| Shifting body of evidence from research that clearly demonstrated MMR was not safe/effective.   |
| If medical recommendations changed, then I would absolutely re-evaluate the decision.   |
| Futher double blind studies on environmental (in this case vaccine related) causes of autism in genetically at risk children would likely help me make in informed decision on whether or not to continue vaccinating my child. There are studies that indicate autistic children may not do as well with heavy metals and other toxins and may be at risk of not being able to expel toxins at the same rate as NT children before the age of 4, which would make me want to delay vaccinations until more studies are done. |
| no  |
| If there was widely regarded science behind why I should not vacinnate, then I would pause.   |
| The ingredients.  |

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 84    |

## 9. Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR?

| # | Answer | Response | %    |
|---|--------|----------|------|
| 1 | Yes    | 79       | 58%  |
| 2 | No     | 58       | 42%  |
|   | Total  | 137      | 100% |

| Statistic          | Value |
|--------------------|-------|
| Min Value          | 1     |
| Max Value          | 2     |
| Mean               | 1.42  |
| Variance           | 0.25  |
| Standard Deviation | 0.50  |
| Total Responses    | 137   |



## 10. Did you follow through with their suggestion to vaccinate or not to vaccinate for MMR? Why or why not?

### Text Response

Yes, but we had already made the decision to do vaccines.

Not because of them, but my decision was in line with their opinion.

Yes. We were going to vaccinate anyway

No, vaccinated anyway

Still made my own decision

No, because our decision was already made.

No, it's important to my husband and me to vaccinate our child.

I made my own decision to vaccinate

I vaccinated.

No I vaccinated because I feel it is important

My cousin recommended that we "stretch out" the vaccines. (Instead of having shots in a day, doing one a week.) We talked to our pediatrician, whom we thoroughly trust, and went ahead with the recommended schedule.

No, because the discussion happened later.

Yes. She said whether you do or you don't you have to feel comfortable either way. So if they get measles and you didn't vaccinate, can u live with it. Or if u give the shot can u live with side effects like fevers, and autism ect.

Yes

My son isn't at that age yet but others' opinion isn't a strong influence on me.

Yes

I just listened to their opinion of why we shouldn't vaccinate but knew they couldn't change my mind

No. I don't worry about their opinion.

Yes. It was the prudent, sensible and correct thing to do for the child's health

The conversation had no effect on my choice. My spouse and I speak to our child's pediatrician to help us make those choices.

Some say yes and some say no. At the end of the day I try to do my homework & pray about what is best for our family

NO, a friend of mine doesn't vaccinate her children. She thinks it is a big thing that the government is poisoning kids...definitely not listening to her.

They were just making sure I was planning to vaccinate for MMR.

At first no, but ultimately yes. We are on a delayed schedule and that caused a lot of tension among some of our family and friends.

It wasn't a suggestion; it was a conversation we had, and I'd already vaccinated my child, so the conversation didn't influence my decision at all.

No I trusted my doctor

I associate with very smart people. (-that's not a snarky remark)

I based my decision on scientific evidence and my pediatrician recommendation, not what my friends say.

A coworker has studied infectious diseases so she has a lot of knowledge regarding the subject. I had already vaccinated my kids at that point but she was able to explain exactly how vaccinations work. It gave me a better understanding and solidified my decision to vaccinate.

No. I have common sense and common courtesy.

follow CDC guidelines

Their opinion reinforced my decision to vaccinate.

Yes, we both agree it is important.

I did not. It was an emotional argument that was not based in fact.

No. Disagreed with their stance.

No-my children had already been vaccinated, but I felt that their point of view was misinformed

We agreed that vaccinations were important not only for our own families but for our communities.

Nope because i choose to vaccinate

No - I knew someone who delayed vaccinations for her child but it never was a consideration for my spouse and I.

Yes, vaccinating protects everyone not just your child. Our family has kids with disabilities and they were in no way caused by a vaccine

My close friends and family all share my pro-vaccine stance.

No, because we believe in evidence based medicine.

No. I strongly believe in vaccinations and shared my beliefs as to why I believe in them.

Yes - to vaccinate

I will be vaccinating my now one year old next week

No, I believe in vaccinating. I have read enough clinical evidence to disbelieve mmr vaccine causes autism

I chose to vaccinate based on my own belief, regardless of their opinion

I will still vaccinate

It is not anyone else's decision but ours as parents to decide. We are thankful to have caring, thoughtful friends and family members, but they do not make choices for us as a family.

No, friends and family of most Americans are getting information from Facebook and not actually doing the research themselves. Facebook is not a scientific journal and should never be used to make a life altering decision.

No my best friend who doesn't work and doesn't send her child to daycare never has vaccinated her child. I work in the public schools and my child attends daycare. I vaccinate because it's not my life it's my child's life and if anything ever happened because of my lack of vaccinating I would never forgive myself.

Yes, I thought it was important

No. The safety of all of us depends on all of us getting the damn vaccine. It can't work if 1/2 don't get it.

Vaccinating is a very common topic of conversation amongst parents now but ultimately I would never be swayed by another friend or family member without thoroughly researching myself and talking with my doctor.

Yes, their belief system is similar to mine.

Yes, because they understood.

They asked me if they should vaccinate. I said yes and gave scientific evidence why. They ended up getting vaccinations for their kids.

| Statistic       | Value |
|-----------------|-------|
| Total Responses | 57    |

## Appendix 7 – Rank questions

| Statistic          | Blogs | Celebrities | Friends, family or neighbors | Government website (ex. CDC recommendations) | Online message boards | Pediatrician or licensed medical professional | Popular media | Social media | Other (please explain) |
|--------------------|-------|-------------|------------------------------|--|-----------------------|---|---------------|--------------|------------------------|
| Min Value          | 1     | 2           | 1                            | 1  | 3                     | 1   | 3             | 1            | 1                      |
| Max Value          | 9     | 9           | 6                            | 9  | 8                     | 8   | 8             | 9            | 9                      |
| Mean               | 5.01  | 7.64        | 2.91                         | 2.59   | 5.48                  | 1.57  | 5.66          | 6.67         | 7.47                   |
| Standard Deviation | 1.49  | 1.49        | 0.95                         | 1.16   | 1.23                  | 1.32  | 1.33          | 1.36         | 2.85                   |
| Total Responses    | 137   | 137         | 137                          | 137  | 137                   | 137   | 137           | 137          | 137                    |

### Other (please explain)

1-3 are the only that matter, the rest are null

my own research

research

White papers and other academic, sourced research (can be government or independent)

Scientific facts

vaccine package inserts, medical journal articles, vaccination studies

My decision as a parent with husband

NIH

Informational sources about the disease, complications, and typical treatments.

I am a public health professional. Nothing ranked below #3 impacts my decision on whether I vaccinate.

myself

## Appendix 8 – Who makes vaccination decisions

When deciding to vaccinate or not to vaccinate my child(ren) for MMR, I make these decisions:

|       |  | Frequency | Percent | Valid Percent | Cumulative<br>Percent |
|-------|--|-----------|---------|---------------|-----------------------|
| Valid | By myself  | 9         | 6.6     | 6.6           | 6.6                   |
|       | With my spouse/partner or<br>child(ren) guardian         | 127       | 92.7    | 92.7          | 99.3                  |
|       | I don't make these decisions<br>(My spouse/partner does) | 1         | .7      | .7            | 100.0                 |
|       | Total  | 137       | 100.0   | 100.0         |                       |

## **Appendix 9 - Pro-vaccine (PV)**

### **Mom 1**

#### **Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

I think that vaccines are very important for the health of children. Not only my child, but those that he is in contact with at any given time. I don't think that the MMR vaccine is any more important than any other vaccine in the line-up, but I think thanks to the media it's the one that has really been rallied against. As a parent who is on facebook, and works in healthcare I see and hear a lot of arguments against the MMR vaccine. Specifically, that the vaccine causes autism. Working as a pediatric nurse I see a lot of kids who are immunocompromised in one way or another, and are unable to receive vaccines. So when a parent with a healthy child denies a vaccine because of something that they heard on social media, or otherwise, they affect the whole immunocompromised population. This, makes me mad on so many levels. But we will get to that.

#### **What are your thoughts about the measles, mumps and rubella vaccine?**

I think that the vaccine is completely safe. It has been in use since the 70's (I believe), and it had proven to work on every level. By 2000 the measles were considered eradicated in the United States. If that doesn't prove that the Vaccine is effective, I'm not sure what else people are looking for. As far as I know, autism has boomed in the last decade or so. Whether it be that the diagnosis is newer, or the MD's use the diagnosis as a catch all- It didn't come around as increased rate of diagnosis at the same time MMR was introduced.

#### **Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

It drives me batty when media gets ahold of snippets of information not backed up by fact and shares it with the general public. Jenny McCarthy, for example. (my arch nemesis, btw) It is truly unfortunate that her son was diagnosed with autism, and I do have empathy for her, or any parent dealing on a daily basis with such a hard diagnosis. However, McCarthy also has no hard facts that the MMR vaccine is what caused her son's autism. Zero. The fact that perhaps he was diagnosed around the same period of time that the vaccine was given, was likely a coincidence. The MMR vaccine is usually recommended around age 12-18 months for the first dose. This is also the same time that a child will begin to hit certain milestones such as talking, interacting, etc. A child who is born with autism may not show signs until this time- the same time that the vaccine is given. Unfortunately, a lot of parents need to blame something/someone when control is taken away from them. (Clearly, just my opinion) Also, there are numerous studies backing up the MMR vaccine and the fact that it does not, in fact, cause autism. But somehow, science isn't right in that case.

#### **When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

MMR has proven to be very effective. Look at the statistics, they say it all. My son is a very healthy child. He has nothing medically wrong, and he is a candidate for the vaccine. I choose to vaccinate him to keep him healthy. I would not feel right making the choice to put my son through an illness that I as his mom could have prevented. How could I make such a possibly life altering decision for him. Worst case scenario, he could die. If my son died because I heard on facebook that a vaccine was no good, so I skipped it- and then he died, who could live with that. Call me crazy, I am all for free will but I am not sure why the government is allowing parents to make that choice for their children and then still

knowingly expose their child to other kids. Which brings me to the next point. MMR is a live vaccine. So children, or adults who are immunocompromised cannot get the vaccine, healthy babies under one year, and babies in utero also cannot get the vaccine. These people have to live their lives, they have to go out into public, go to doctors clinics, hospitals, schools, etc. When an unvaccinated child is exposed, or carrying the virus without knowing it, they are unconsciously making the choice to alter someone else's life. Another thing that I look at when making that choice for my child is science. There are numerous scientific studies that can tell us MMR does not cause autism. There are no credible studies telling us otherwise. I'm not sure what's cloudy for people with that. Apparently McCarthy has hypnotized a group of followers and she is above science, who knows.

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

The people close to me in my life, friends, family, etc all seem to be on the same page with me. If they aren't, they have never said anything directly to me. I do have some friends on social media who seem to post daily articles about why not to vaccinate, "top 10 reasons why you should not vaccinate", some silly sort of blog written by a stay at home mom with nothing better to do that watch McCarthy on the daily talk shows. I try not to voice my opinion to everyone on the daily, so they don't get to stay my Facebook friend for long! Because I work in pediatric health care, the company I work for offers a lot of seminars and classes about the facts related to vaccines, MMR specifically. As a nurse it is sometimes up to me to educate patients families about the risks and side effects so they can make an informed decision for their child. (If they have that option) I feel that my company truly supports the MMR vaccine and uses research to back up their claims.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

The most important factor I consider when vaccinating is, is this right for my child? Will it do more benefit than harm. Is the risk of a possible side effect worth it? Secondly, how will my decision impact others? Will he expose a live virus to others, will there be a possibility of harm to him or those around him? Of course, the benefit is greater. I refuse to watch my son suffer from something preventable. And I see no scientific evidence that he will be harmed from the vaccine.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

To protect him. I choose to protect him from a disease that he does not have to suffer through. Prevention is key. Secondly, to protect those around him who cannot vaccinate themselves for various reasons. The evidence is there in the statistics, Measles was eradicated in 2000. It is only making its way back (in a big way) because of the anti-vacc efforts.

**How do other people's opinions or your perceived opinions of you impact your decision process?**

I don't generally run into anyone who opposes my decisions directly. While I see articles and blogs, no one is face to face with me telling me that I am wrong, That I have made a bad choice that is affecting them. If someone has an opinion that vaccination is wrong, I would be more than happy to explain my reasoning to them. In the end, it is my choice to protect my child.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

If a scientific study were published, that said MMR in fact causes autism- and not just a very small risk but a large risk, then I would reconsider vaccination. However, without that evidence there is only scientific support as to why the vaccine is safe. Of course, there are side effects, but everything has side

effects. It's about weighing the risk vs. Benefit of everything. Also, I may consider to withhold the vaccine if the ingredients were to change, and contain something that would be dangerous to my child. (ie: lead, carcinogens, etc)

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

Growing up anti-vacc just wasn't a thing. You didn't hear about parents withholding medicine like that. Parents just did it because a doctor who was educated and informed recommended it. No one had linked serious side effects with receiving vaccines. So I think it is just what I knew. You just vaccinate because a doctor says it is what is recommended. As an adult, going through nursing school we learned about the side effects, the risks and the benefits. I saw and studied scientific evidence and it just made sense to me to vaccinate. Why would I go against science? Having kids it seemed like a no brainer. Do I want to protect my kids from a disease, a possibly deadly disease- or take that risk? Protection every time.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

Honestly, there isn't much I can say about this one. All those that are close to me choose to vaccinate and generally we are on the same page about the vaccinations. It has never really been an open conversation because no one feels there is a conversation to be had- we just vaccinate, there isn't anything to talk about or discuss. With that said if I did have someone close to me who had issues I would hear them out and listen to their opinions. If they chose not to vaccinate it may be an issue having to decide whether to isolate my children from them in an outbreak situation.

**Anything else you want to say that I did not specifically ask you?**

The biggest thing I always think about it what parents are saying about children with autism. Are they so horrible? Is it worth risking your child's life potentially, to keep them from having autism? Imagine parents who have autistic children and still believe in vaccines. The world is in uproar, children are dying from something that is preventable- all from keeping a child from turning into something they deal with daily, autism. I promise you no parent loves their child less because they have autism. Given the choice, if autism was in fact caused by the MMR vaccine- I would rather live with my child who has autism, than live without a child at all. If people are so passionate about saving their kid from autism, have they realized the alternative? That death is a real reality? I would like to think that if they were faced with measles in their child that they would see the pain and experience emotions that would make them realize that at worst- Autism is not that bad. It's not a death sentence, it's not pain and suffering. It's a delay, something that can be lived with. I still do not believe that MMR vaccine causes autism, (if you haven't caught on by now!) But even if it did, im choosing a life filled with the love of my autistic child over a life without my child at all.

Also, can McCarthy please be infected with measles- or is she also immune by vaccination? I would love to know how many parents who choose not to vaccinate, are themselves protected by vaccines.

**Dad 1**

In general I would say that getting vaccinated(on a specific schedule) is part of life in the modern world. That was until I had a coworker tell me about his personal experience with a child that had autism. He was 100% certain that the MMR vaccine had caused his sons' autism. He said that it was like a switch had been turned on immediately after given the vaccine. He said that I should read a book called the "Vaccine book", by Dr. Sears.

I read the book and naturally it left my wife and I with many concerns because we had a brand new baby boy(our first) on the way. Having a somewhat limited timeline to make decisions on our first baby we turned to friends and our pediatrician because nobody in our family had children yet. On top of all of the information from the book, we had seen various actors speaking out against vaccines, making the decision even more difficult. Our pediatrician understood our concerns and admitted that there had been a lot of controversy about vaccines, especially the MMR vaccine. He (our pediatrician)said that we should certainly vaccinate but he understood and would accept us going with an alternative vaccine schedule similar to what Dr. Sears recommended in his book. This meant that our child(ren) would have to have more frequent vaccinations but if there was some type of reaction from any of the vaccines we would know the specific vaccine that we were dealing with.

Also, hopefully with their small bodies, having the spaced out vaccines would allow their bodies to adjust instead of having so many vaccines all at once. Autism was the biggest concern for us, especially with our boys. We used all of the people's opinions that I previously spoke of but the most important opinions were from our pediatrician and the book, in that order. I wouldn't change the way we vaccinated (we vaccinated our kids with the MMR vaccine)or to vaccinate or not. Our kids, thankfully, haven't had any major reactions to any vaccines so far(that we know of). Based on the Sears book and our fears of not having a "normal child" was really what drove our concerns.

**What influence if any did media, celebrities, etc. have on your decision? Was it something you paid attention to or was it just background noise?**

It was mostly noise but hearing from celebrities when you have done other research starts to validate your fears on the possible side effects.

**What were some of the most important factors when you were trying to decide whether to vaccinate or not for MMR?**

What our pediatrician thought about the possible side effects (autism was our biggest concern).

**Having gone through this experience already and knowing what you know now, would you do anything differently such as sources of information, research, etc. What advice would you offer for expecting parents or parents with young children?**

No, I wouldn't have done anything different. We did as much research as we could and made a decision based on worst case scenario, at the time, and tried to spread out the vaccines. Luckily for us it seems like we are in the clear but others aren't so lucky. People try and do what's best for their kids and hope the government is looking out for their safety but I can't blame them if they don't trust the government.

**Mom 2**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

I have always been of the attitude that vaccines save lives; from all of the studies I have read both before and after I became a parent I believe that the risks associated with vaccines are extremely minimal, and the benefits they provide to the person receiving them as well as the general population far outweigh the risks. When our daughter was born extremely premature, we had a whole new set of research laid in front of us, with our main goal being how best to protect a child facing many medical procedures and being considered immunosuppressed due to her extreme prematurity. In her case it was decided with the neonatologists, my husband and I that it would be in her best interest to continue with a normal immunization schedule. The MMR vaccine in particular has been just fine, the only



occurrence that we have had with the MMR is a low grade fever a few hours after receiving the vaccine, which went away shortly after. As I have read before and as my husband attests to as a medical professional, this is simply a sign of the body recognizing the vaccine and learning from it.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I have always had a positive perspective of the MMR vaccine as well as others, but I have become even more passionate about the importance to immunize against Measles, Mumps and Rubella in the past five years. I was diagnosed with a chronic autoimmune disease a few years ago, before I even had a child of my own. Because of this disease I am highly susceptible to illness, and I am at higher risk of illness putting me into the hospital or causing death because of the immunosuppressing medications I am on. When I look back at the history of vaccines and how they have almost obliterated diseases like measles, mumps and rubella in our country, I really cannot understand the reasoning why you would not vaccinate against these diseases, unless you have a known allergy to something contained in the MMR vaccine, or you are immunosuppressed, etc. the research available about the MMR vaccine gives ample evidence of it's major impact in protecting individuals as well as others through herd immunity. We immunized our daughter with MMR not only because of the risks she faced but also to protect other people she is around.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

I have heard the vast majority of the dramatization surrounding vaccines recently, it is hard to hear, especially in social media venues where comments/responses are allowed to be shared. I can't really wrap my head around the logic of the anti-vaccination debate that so many people have come to believe and in turn, follow. Scientific evidence has debunked the Autism debate linked with vaccination, and yet people still seem to believe it to be a possible risk. I completely understand that everyone has the right to make choices for their own children, but every time I see the argument presented again, it is linked to yet another non-credible source with no scientific evidence to back it up. As an immunosuppressed person and the parent of a child with a weakened immune system, it really makes me worry when we meet new people whether or not their child(ren) have been vaccinated or not. I debate on whether or not I should be asking people this question, but I also do not want to appear overly paranoid. However when it comes to events like the Measles outbreak that occurred in Disneyland recently it renews my worst fears.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

I take into consideration what the CDC recommends, I consider their recommendations to be of the highest authority. I consider what our daughter's pediatrician and specialists recommend as they know her medical history and the complications she has faced. I give high regard to my husband's opinion as he repeatedly does research on vaccines every year and is knowledgeable about the most up-to-date research that is done on them due to the line of work he is in. Of course most important is our daughter's current state of health when the vaccine is being given, and I also consider her vaccinations a protection to others.

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

I think I am pretty open-minded to hearing opinions from family, friends and co-workers on deciding whether or not to vaccinate, however most everyone I know is on the pro-vaccination side of the debate. If I were to be approached by one of these people in our lives about anti-vaccination beliefs, I

feel I would be open to listening to their opinions and where they formulated their beliefs from, however ultimately my husband and I make the decision to immunize together. It may sound bias, but a major factor for me in how seriously I would take a friend/family member/co-worker's advice on this particular subject would be their level of education in combination with the sources that they have developed their anti-vaccination beliefs from.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

Most important would be my child's health status at the time of vaccination, current recommendations of the CDC, my husband's opinion as well as mine, our pediatrician's recommendation. Least important factors would be social media, friend's/families opinions/beliefs, and basically anything lacking scientific evidence.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

To protect my child and the people around her from dangerous, often deadly diseases.

**How do other people's opinions or your perceived opinions of you impact your decision process?**

They don't impact my decision on immunizations at all. My child's health and the welfare of others (especially those who are unable to receive vaccines due to their own medical complications) ultimately comes first, whether others like it or not, and my well-educated opinion is that vaccination is the best option.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

The only thing(s) that would possibly change my mind on the subject of vaccination would be if my daughter were to ill to safely receive her vaccination on-time, or if new scientific evidence showed a significantly increased risk of vaccines causing harm to those receiving them. In both cases I would need to see ample evidence and/or research that indicated the vaccine is more detrimental than beneficial.

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

Originally I would say I developed a positive belief in vaccines from my parents who believed vaccines were in the best interests of both my brother and I when we were young. I've heard stories from my grandmother and her accounts as a nurse with many of the diseases we vaccinate against today, and her great regard for the triumph vaccines have had over diseases such as Polio, Measles, Rubella, and Whooping Cough. Throughout my early career I did my own research on studies regarding vaccines due to my own curiosity and just wanting to be better educated on the subject in general. I felt it was important to know more about the subject being a teacher at the elementary level. I think the more recent anti-vaccination debates sparked my interest to learn more about vaccines in general as well, and I did a lot of reading on the subject alongside my husband when our daughter was born at 25 weeks gestation.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

I have never really experienced an in-depth conversation with a close friend or family member on this subject, any discussion around vaccines that I have had have been very brief I believe mainly because the person I was discussing it with was pro-vaccination which is where my husband and I stand as well.

**Anything else you want to say that I did not specifically ask you?**

I feel like I am typically someone who can see two sides of a debate, even if I primarily agree with one side more than another. The problem I run into with the anti-vaccination debate is that there is no valid scientific evidence/clinical studies available (at least to my knowledge) to validate the claim that vaccinations cause more harm than good, so I have a difficult time relating in any way to the anti-vaccination debate. I really struggle when I hear "my child, my choice", because although people have all the right to make decisions with their own child, choosing not to vaccinate them without a valid reason (allergies, medically fragile for example), is putting my daughter who has a weakened immune system and a paralyzed vocal chord (which makes her much more susceptible to serious respiratory illness and can cause major complications with respiratory illness) at serious risk of hospitalization or even death if she were to contract one of these diseases that are nearly preventable with regular immunizations.

## **Appendix 10 - Anti-vaccine or vaccine hesitant (AVVH)**

### **Mom 3**

#### **Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

I am generally hesitant about vaccines in general for many reasons. The first reason is that I don't believe that most of them are necessary, and I believe that the human body is designed to heal itself. The other reason that I am hesitant is because I find it very difficult to do any research for myself on vaccines. Its very hard, as the average person, to find legitimate research. Obviously just googling "vaccine safety" doesn't get decent peer reviewed research that I can trust. Its really difficult as a parent to know how to make the right choices. I'm certainly not paranoid about autism, and I don't think that vaccines are some conspiracy theory or anything nuts like that. I'm also not some crazy hippy who wants to light incense and rub oil on my kid to try to heal them. But I am concerned about putting chemicals into my child's body. Especially a small infant. I am concerned about injecting that much foreign substance into a tiny baby all at once. So far I have delayed a couple of vaccines from the regular schedule and skipped a couple. I also won't do more than once vaccination in a day. If there are 2 or 3 vaccines that are scheduled for the same appt, I will schedule separate appointments with the nurse so I can do 1 at a time, then come back in a week to do the next one. I haven't had to decide about MMR yet because my child isn't 1. I have very mixed feelings. On one side, its obvious to choose the vaccination so that my child doesn't get the illnesses. But on the other side, there are always risks with vaccinations, and its highly unlikely that measles, mumps or rubella will kill my child or cause any serious health problems. Its hard to know which side has less risk. I fully understand that there is also a public health risk with not getting vaccinated. But, I also feel like everyone should be able to make their own choice. If you feel like the vaccine is the best choice for you and your family, then protect yourself. But individuals should have the same choice on the other side. I should be able to decide for my family if the illnesses or the vaccine have a smaller risk.

#### **What are your thoughts about the measles, mumps and rubella vaccine?**

#### **Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

I have a hard time with media coverage because no matter what, its biased. I don't think that the media should be a main source of medical information. I wish that there was easier access to medical journals/studies, etc. I also feel like social media plays WAY too large of a role in people's medical decisions. I think a huge problem in our society is that we turn to media/social media for information,

when that's really not the best way to get information. I think that there is lots of media "bullying" on hot topics like this. I feel like there is a current push in shaming non-vaxers. Its just not the best way to get information across.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

This is the hard part for me. Obviously everyone on every side of the spectrum wants the same thing. All parents just want to have healthy children. Before my child's 12 month appointment, I will have a discussion with her pediatrician, as well as my chiropractor and naturopath about the risks involved with vaccinating or not.

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

My husband thinks that I'm a crazy hippy because I would even consider skipping a vaccination. My parents think the exact same thing. I really just don't want to blindly trust the first thing that a doctor tells me. Just because he thinks that a vax is safe, doesn't mean that every dr. thinks the same thing. I don't want to blindly trust the first vax schedule that I see. I certainly also ask my friends with children about their peds and vax schedules and thoughts on the subject. The most important influences for me are from medical professionals from all sides of the spectrum-MD, Naturopath, etc. The least important influences are public opinion and social media. I don't want to make a choice to follow society's norm. I think my mind is very open to being changed in general because I haven't made a solid decision about whether I will get the MMR vaccination for my child. I would change my mind based on solid, balanced research.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

**How do other people's opinions or your perceived opinions of you impact your decision process?**

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

I'm not sure how I specifically came up with my thoughts. I just know that I want to do my best to provide my child with the best health possible-nursing, organic food, etc. Its my main goal to keep anything processed out of my child's body for as long as possible, vaccines included. For me, no matter what the benefit, it's still a foreign substance in my child's body, and there are risks involved with that. One family friend has talked to me quite a bit about being anti-vax. He is a chiropractor who has a very holistic approach to health. His children are 9 and 12 and have never had a single vaccination. He thinks that the risk of vaccinations outweigh any benefit. He thinks that the aluminum that they use in vaccinations are too dangerous. I'm not necessarily going to jump on his bandwagon, but I think it's important to be open to both sides of the argument, and all risks involved.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

**Anything else you want to say that I did not specifically ask you?**

I'm not necessarily pro vax or anti vax and I want to be able to make an informed and educated decision. However, I find it very difficult and stressful to make an informed decision because of media bias and lack readily available information.

**You mentioned not having reliable information. Do you not trust government information or pediatrician information? What are your go-to sources for information?**

My main problem with information from the government and ped is that pharmaceutical companies have too much influence in the "research" that is available. The more vaccines that are administered, the more money the pharmaceutical companies make. I don't even know where the government research comes from, or how it is funded so i don't consider it 100% reliable or unbiased.

**If your pediatrician and chiropractor have differing opinions on vaccination, whose opinion will you trust more? Please explain.**

As far as deciding between chiro and ped, I really just try to meet in the middle when their opinions clash. That's when I try to skip/delay/stagger vaccines based on the related side effects/risks.

**If you knew where government research came from and how recommendations were determined would that help you trust this information more?**

Theoretically yes. But whether it's government research, independent research, whatever, it's hard to know what to trust. Personally I compare this type of issue to the FDA. It's a government agency that we are supposed to be able to trust for reliable nutrition information and food safety, but if you dig deep enough you'll find that the fda is basically funded by big food processor Giants, which is obviously a conflict of interest. So one of my main problems with finding any reliable research on vaccines is that it's always biased (whether it's pro vax or anti vax) so it's hard to make informed and educated choices.

**Mom 4**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

I am for vaccines, but not for so many at one time (i.e. baby well visits during which 3 or 4 vaccines are given at once). For this reason, both of my children only receive one vaccine at a time & no more than one in a week. We are lucky to have a pediatrician who is supportive of this & helped us come up with a schedule which prioritized vaccines based on imminent threat to health.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I think it's a very important one; it is priority in our vaccine schedule. My boys are both lucky enough to be very healthy, healthy enough to receive and be protected by vaccinations. I know other children who are not healthy enough & for those children, and those too young for the MMR, it is essential for public health.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

Yes, I have followed the media coverage casually. Presently parents are getting a lot of flack for not permitting their children to receive the MMR and in light of the recent outbreaks of Measles and having an infant who is too young for the MMR, I feel it's justified.

While the thought of my baby contracting the Measles from a child who didn't get the MMR by the choice of their parent was terrifying, I know there was a time - not that long ago - when parents felt

shamed by the media for allowing the child to receive the MMR as perhaps it would cause their child to be on the Autism Spectrum. I get that fear too, that's pretty real.

"The Mommy Wars" are real, and often fueled by the media. This is a great example of that, sadly public health has suffered because of it.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

Ultimately what I take into account is what is best for my child. I read & talked with my friends and our doctor. From what I understood, the ASD tie to the MMR was debunked and I knew I could never forgive myself if one of children contracted an ailment that a modern vaccine would have protected them from.

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

Any person in my life who is a parent is someone I spoke with regarding vaccinations. Their opinions & experiences played a huge role in my decision.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

Long term health & public health.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

Long term health of my child & public health.

**How do other people's opinions or your perceived opinions of you impact your decision process?**

I would like to say that it doesn't, but people whose opinions are truly value - close friends and family who I find to be very like minded by way of child rearing & prenatal care - are those who I ultimately modeled by decision after.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

No, I feel very good about my decision.

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

Reading, talking with other parents, talking with our pediatrician who I respect & trust implicitly.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

Yes. I explained what we do & why we decided to take the approach we did. I'm not sure of the outcomes, as I didn't ask.

**Anything else you want to say that I did not specifically ask you?**

Ultimately, parents make decisions driven by the love for their child. It's overwhelming the decisions we have to make each day & I try not to fault or judge those who make decisions different than myself. Parenting is hard enough, judgement is unnecessary and detrimental to the village our children are growing up in.

**Mom 5**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

My parents were generally distrustful of medical professionals, due in part to an adverse reaction my father had to a tetanus vaccine as a teenager. As such, both my younger sister and I were unvaccinated as infants and children. This experience shaped my general attitude about vaccines – I am also skeptical but as an engineer, a logical and science-based decision maker. I wanted to learn about the risks both of vaccine injury and contracting a vaccine-preventable disease before making a decision about vaccines for my own children.

Before the birth of my daughter, now 4, I read *The Vaccine Book* by Dr. Robert Sears after it was recommended as a balanced view of the risks without a lot of hyperbole. The book made a lot of sense to me and we opted to pursue a modified schedule of vaccines, with the full support and participation of our pediatrician. I will mention that while pregnant, we sought out a pediatrician who would be supportive of alternate vaccine schedules. We talked with her about the risks of contracting each vaccine-preventable disease, risks of reaction to each vaccine, our specific child care situation (home with mom for 6 months, while dad worked from home, therefore very little exposure to germs, and then home with a nanny for 4 months and then starting group care at 12 months old), travel plans and risk factors. We built a schedule that made sense for our daughter based on these discussions and started vaccines at 6 months, administered only one per month, and skipped a few all together.

With regard to the MMR vaccine, it was our pediatrician's suggestion that we hold off on that one until my daughters speech was well-established, which was at age 3. I was supportive of this as I have read first-hand accounts of people who believe their infant/ young child was harmed by the MMR vaccine, particularly in the speech/ communication development, but do not know of anyone who had ever suffered from measles, mumps or rubella.

We now have an infant son who is 9 months old and we have opted to hold off on any vaccines for now. He seems to be allergic to wheat/gluten (develops eczema on his face when I eat gluten – but it clears up when he and I are gluten free as he is breastfed) and I would like to understand this allergy before we introduce any vaccines to his system. Once we start with vaccines, we will follow a similar schedule as we did with my older daughter. Also given that males have a higher incidence of autism, I support delaying the MMR vaccine until his language, social and communication skills are developed.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I think the vaccine protects people who have received it from contracting the measles, mumps or rubella. I also think there are risks associated with the vaccine some that can be more serious than the diseases it protects from. I have read more than a few first-hand accounts of parents who are absolutely convinced that the MMR vaccine damaged their child neurologically. I think the vaccine industry could do a much better job addressing these risks – I don't think the self-reported VAERS database is effective and the fact that families have won court cases due to damage caused by vaccines points to a lack of transparency.

I have myself received 2 doses of the vaccine with no adverse reactions, though I was a teen when I got them. I do recall being pressured by a doctor in my early 20s to get a 3rd dose of the vaccine with scare-tactics that if I got pregnant my baby would be at risk (I was not sexually active at the time). This pressure adds to my skepticism – if we can't have a rational discussion about my health care then I have a hard time trusting that health care provider or taking their recommendations. I was able to negotiate

to be tested for rubella immunity prior to becoming sexually active or becoming pregnant and I tested immune. My daughter received the first MMR vaccine at age 4 with no adverse reaction.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

I have heard the recent media coverage surrounding vaccines. Generally speaking, the media over-hypes the issue and does not do a great job of providing balanced information. I prefer to rely on reputable books by doctors and my own pediatrician for information about vaccines – not the media.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

I would consider the risks of contracting measles, mumps or rubella and the risks of having an adverse reaction to the disease:

- Exposure to the diseases – time spent in group settings and planned or expected travel for the person proposed to get the vaccine and those living with that person.
- In children, developed and established communication because the damage that I have heard of in other children is related to communication ability.
- Child's current health status and would not give a vaccine to a sick child as I don't want to overload the child's immune system
- Family history of adverse reactions to vaccines
- Allergies to any of the ingredients in the vaccine (eggs in particular)
- Age and size of the child, a larger body is better able to disperse the toxins in the vaccine

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

Generally speaking, the opinions of those around me do not play a role in my decisions about medical care for me or my family. If there was a person or child in those groups with a compromised immune system due to disease I would limit contact between that person and anyone in my family at risk for contracting that disease.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

I would consider all the factors listed in the question above equally important.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

I believe that the MMR vaccine protects against diseases that are unpleasant at best and harmful at worst. Once they started group care/ preschool and the exposure to others increased, it made sense for them to receive the vaccine. I supported my pediatrician's advice to wait until communication was fully established. The MMR vaccine has also been around a long time with most people/ children who receive it having no adverse reactions.

How do other people's opinions or your perceived opinions of you impact your decision process?

I highly regarded the opinion of my daughter's pediatrician and my partner's opinion. No others' opinions impacted my decision process.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

If my infant son is allergic to a component of the vaccine, then I would choose to avoid that one or if he has an adverse reaction to any other vaccine (outside of a low-grade fever or lethargy).



**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

I developed my beliefs about MMR and vaccines in general through my parents, my daughter's pediatrician, The Vaccine Book by Robert Sears, my own personal experience with doctors and vaccines.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

Close friends have spoken to me about their decision to avoid vaccines, due to their own research and allergic reactions in their children. A close friend has a son, with the same pediatrician as my daughter, who also gets eczema on his cheeks and were advised to hold off on vaccines until the cause of the allergy is determined. This makes sense to me, she is a well-educated, intelligent woman who can speak knowledgeably and rationally about the topic and I respect her thoughts. She did not pressure me at all to follow her lead in anyway, but shared her experience. My aunt also feels very strongly that children should not be vaccinated and she has also shared her thoughts on the subject but never pressured me to do the same.

**Anything else you want to say that I did not specifically ask you?**

I firmly believe that the decision to vaccinate should be made jointly with a child's pediatrician and should include discussion of that specific child's risk factors both of contracting a vaccine-preventable disease and suffering damage from a vaccine. I disagree with the AAP's suggested schedule of administering more than one vaccine at a time. The levels of aluminum in each vaccine is very high and unproven as safe for all children (per The Vaccine Book). For a healthy, normally developing child, I think one vaccine at a time is appropriate. This also increases the ability to know which vaccine caused an adverse reaction, if one is noted. I believe parents should have the right to choose which vaccines, if any, make sense for their children and their families.

**Mom 6**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

In general, I like the idea of vaccines, but I question the ingredients, drug trial legitimacy, safety, and transparency of vaccines. The MMR vaccine is specifically questionable to me because of its reputation, but also because it's a combined vaccine. I'm slightly more comfortable with vaccines that are not grouped with other vaccines.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I think a lot of parents stress about this vaccine. I don't doubt parents that say their child was adversely affected by the MMR vaccine, especially since it is given after 12 months, as your child grows, it's very easy to know if your child is acting strangely. Measles, Mumps, and Rubella are, in my opinion, survivable illnesses, and I'd love for the Rubella vaccine to be able to be given as a single vaccine. I acknowledge the importance of being immunized against Rubella for pregnant women, but I wish it would be the responsibility of pregnant women to make sure they're immunized, rather than giving every 12 month old a vaccine. I do trust the scientists who have stated that the MMR does cause brain damage, even if they've later admitted they were wrong in putting out this conclusion, as I believe they were pressured to reverse their conclusions.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

Honestly, I wish the media would concentrate on things that are actually actively harming children in vastly greater numbers (Cars, pollution, chemicals, environmental degradation, GMOs, pesticides, abuse, neglect). The media is feeding the “fire” that the government and pharmaceutical industry wants the public to believe exists. Imagine if they reported on the number of kids that were killed due to cars each day. Also, modern medicine cures a lot of the previously incurable diseases that vaccines inoculate against. The media reports on diagnosed cases, but they rarely follow up and state that the child survived unharmed.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

I chose not to vaccinate my child at all, at this time (she’s 3 now), and to perhaps selectively vaccinate in the future, so declining the MMR vaccine was just another one to decline at that time. I had taken into account that my daughter would never go to daycare (or be around many kids at all for that matter), that both her father and I work from home (so we don’t come into contact with highly infectious areas), and that she was breastfed for 3 years getting immune properties from my breastmilk, in order to help her immune system be strong in our already low-risk environment. Also, her father was never vaccinated and he has one of the best immune systems I’ve ever seen. He never gets sick, and I believe this was because his immune system was allowed to develop naturally without vaccine intervention.

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

My family mostly disagrees with my decision. My brother used to not let my child play with his children until they were fully vaccinated, but as time passes and the kids get older, he seems to be less strict about being “exposed” to my child. It’s mostly something that isn’t talked about, because my decision is backed by countless hours of research, personal experience, and my opinions aren’t really changing anytime soon, so what’s the point of getting everyone’s arms up?

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

Most importantly, I look at our risk factors and the amount of exposure we get to others. Least importantly is what others think of my decision.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

I’ve had measles (after being fully vaccinated as a child), my mother has also had measles, and we were fine. The risk of the diseases are lower than the risk of the vaccine in my opinion.

**How do other people’s opinions or your perceived opinions of you impact your decision process?**

They hardly impact them. I’m pretty stubborn, although informed, and I don’t really care if others disagree with what I feel is best for our family.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

No

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

I’ve done a lot of research, mainly the CDC pink book, the National Vaccine Information Center; and my own experience with vaccine preventable diseases, and also my own vaccine injury in developing my beliefs on vaccines. In 2010, I was diagnosed with a liver condition after receiving 2 doses of the

Hepatitis A vaccine. When I became pregnant later that year, I had done countless hours of research on vaccine injuries and had decided that I wouldn't risk vaccinating my child after what I had been through.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

Yes, my brother has, as well as my mother. My mom is more understanding and trusting of my decisions, although she's from the era that you trust anything doctors say. My brother is also very into vaccinating, and thinks I'm crazy for not vaccinating my child. Any conversations with him become heated and end up with us not talking to each other for months at a time. It's not really worth bringing up because we're both set in our decisions and opinions so I'd rather not get upset at each other but instead allow each other to have our separate ways in raising our children.

**Anything else you want to say that I did not specifically ask you?**

I'm a big conspiracy theorist. I remember learning about the US Government handing out small-pox infected blankets to the Native Americans. I'm not convinced that our government is past doing something that incredibly dangerous and detrimental in the name of public health. I'm not saying they're going to do that again, but I'm using past examples to question them now. Also, you can't have vaccines be such a profitable thing and not have people question the motives of the CDC (of which pharmaceutical executives are on the board of) and the drug companies.

**Dad 2**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

I am suspicious of the increase in vaccines over the years and also the increasing aggressiveness of the vaccine schedule. My youngest had some poor reactions to the vaccines but since so many are lumped together we could not identify which one gave her the reaction.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I'm not qualified to speak on it. My thoughts are nothing but conjecture. We give our kids this vaccine.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

I haven't really seen much media coverage on vaccines

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

Age of child, health of child, doctors recommendations (we got 3 opinions before proceeding)

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

Gathering information or recommendations on which doctor to go to. The opinion of anyone else besides my wife and the doctor mean nothing to me when it comes to vaccines.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

Health of our child. Risk of side effects. Seriousness of disease being vaccinated against, docs opinion, whether the doc is just pushing the recommended vaccine schedule or if he appears to be thinking

critically of ALL factors. If a doc doesn't think critically or appears in a hurry and overloaded I disregard his opinion.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

Doc recommended it. They are serious diseases.

**How do other people's opinions or your perceived opinions of you impact your decision process?**

They don't.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

Yes, if presented evidence or a compelling argument one way or the other.

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

Experience with my children, watching the vaccine schedule increase inexplicably.

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

No.

**Anything else you want to say that I did not specifically ask you?**

No.

**Mom 7**

**Please explain your general attitudes about vaccines. The MMR vaccine? What has your experience been like?**

The number of vaccines given at one time makes me nervous. The chemicals and other ingredients (formaldehyde, aluminum, aborted fetus cells, etc) makes me question safety. I do not believe certain vaccine are medically necessary (hep b), unless a child is at risk. It worries me that there is not evidence of safety in infants or effectiveness (the flu vaccine). I worry about interaction of too many vaccines at once. I am not against vaccines, however my family has chosen to give at an alternate schedule. I believe certain vaccines could be avoided if child is breastfed and at home – not daycare setting. I wonder why we don't test tieters to see if child is already has immunity from mom.

MMR - I think the older the child, the better equipped they are to handle vaccines – more robust immune system, more weight. We waited until 2 to give MMR. We gave it alone – not with any other vaccine. I prepped his body – extra vit c, vit a and vit d, fish oil. I wanted his immune system to be strong and prepared for the vaccine. We have a wonderful integrative med doc that was on board with our decision and helped guide us to a certain extent.

**What are your thoughts about the measles, mumps and rubella vaccine?**

I worry about the live virus. I worry about the chemicals. I worry about association with autism. I worry about other vaccine related injuries that could occur. I wonder if MMR can be fought off by our immune system. I wish they were still separate shots – not a combo shot.

**Have you heard about the recent media coverage surrounding vaccines? What are your thoughts on that?**

Yes and I think it was overblown by the media. I think that media and politics get too involved. I think there have been other outbreaks – it wasn't an epidemic. It was isolated, to an extent. However, it was still scary. I would have avoided Disney Land even though my child was vaccinated.

**When deciding to vaccinate or not to vaccinate for MMR, what are some of the key considerations you take into account? Please explain.**

Age of child, what other vaccines he will get at the same time. Is my child ill? Has he had a reaction to any other vaccines? Will he need it once he goes to school? Will he potentially be around other children that he could be infected by?

**How do other people in your life such as friends, family members, neighbors, co-workers, etc. play a role in your decision? Please explain.**

Those friends and family members that have the same thoughts and attitudes as my family – I would solicit advice and experience(s) from them. What vaccine schedule did they use – were there any concerns? I would also use those ppl to have conversations with – weighing pros and cons. Solicit literature from them to read about topics concerning the MMR. At the end of the day, though, the decision was made by my husband and I. We never experienced any pressure to do one thing over another.

**What are the most and least important factors you consider when deciding to vaccinate or not to vaccinate for MMR?**

Honestly, his age and his health were my #1. I knew we would do it eventually – but it needed to be the right timing.

**Why do you ultimately decide to vaccinate or not to vaccinate your child for MMR?**

I was more afraid of the actual disease (and likely the scare tactics used by media) than my son experiencing a vaccine injury. He did fine with all other vaccines and was thriving. His body was prepared for the live virus.

**How do other people's opinions or your perceived opinions of you impact your decision process?**

They don't. However with that being said, I do not discuss vaccines with those that I know don't hold my same values. It's not worth getting into an argument.

**Would anything change your mind about whether to vaccinate or not to vaccinate your child(ren) for MMR? Why or why not? Please explain.**

A scientific study outlining risks for children that match my family's demographic – that would cause me to really rethink the decision to vaccinate with MMR.

**Where did you develop your beliefs about the MMR vaccine or vaccines in general?**

Literature, family dr, chiropractor, friends, family, media

**Has a close friend or family member ever talked to you about whether to vaccinate or not to vaccinate for MMR? Please explain situation and outcome.**

No.

**Anything else you want to say that I did not specifically ask you?**

We will never vaccinate our children with flu or hep b at a young age. I do not believe hep b is necessary for my children and I do not think that the flu vaccine is effective. I sincerely believe in an alternate vac

schedule. They still get (most) shots, just not all at once. When I was a kid, we had 1/2 of the vaccines they give to our children today. I would not give my dog 6 shots at once – why would I have my newborn baby that many? I understand it is for convenience and ease and some families don't have option otherwise. However, I feel very grateful that I do have that option.

## **Appendix 11 - Medical professionals**

### **Doctor 1 (Pediatric infectious disease physician and researcher)**

#### **Please explain your general attitudes about vaccines. The MMR vaccine?**

My general attitude is that most people - physicians and the general public alike - don't fully appreciate the devastating impact of vaccine preventable infections on our lives over the last century. Even my own grandmother lost many siblings to diseases that are vaccine-preventable today like measles, diphtheria, and polio. We take these vaccines for granted. My opinion is that vaccines are the greatest public health advance in the history of medicine-the impact all the more profound because the interventions saves young lives. Thus, I am very pro-vaccine both as a scientist and as a child growing up, like many Americans, in a family that had lived through the misery and heartache that infectious diseases could wreak on families.

#### **What are some of the reservations parents have about the MMR vaccine?**

The biggest reservation in my estimation is the fear of autism. They don't realize the impact of measles and rubella, and to a lesser extent mumps, on society. They haven't "lived" it. And they want to protect their children. The refusal to vaccinate with MMR is parents trying to do the best they can for their kids. Sadly, they don't fully understand the truth - that the MMR/autism 'connection' is really the product of unadulterated fraud.

#### **From your perspective, what factors contribute to parent's decision to vaccinate or not vaccinate?**

What other parents think and say is very important, and not much talked about. It's in essence a form of 'peer pressure' - trying to fit in, and not be 'shamed', when confronted by peer parents who don't vaccinate. Another factor contributing to the decision not to vaccinate is 'pseudoscience' and 'internet research' - the idea that they've really 'investigated' it, and drawn conclusions based on lies, pseudoscience, and misinformation. And as noted above, the sense that "these diseases don't exist anymore, and I don't need to worry about them" is another factor.

#### **From your experience, what internal and external factors go into their decision process?**

Some of these factors include other parents and peers; the internet; and the media. Some internal factors may include a distrust of "authority" figures, a libertarian "streak" that resists governmental or other thought body controls on personal decisions, and a desire to live a more "natural, wholesome, organic" lifestyle. My personal bias also is that the millennials and modern society in general is much less egalitarian than the baby boomer generation. Personal autonomy reigns over the collective good. I have no real data to back that up. It's just a personal (but firmly held) conviction.

#### **How do other people in their social network and the information they consume affect whether they vaccinate or not for MMR?**

The Social network has a HUGE impact. The information that is consumed and offered plays a big role in the decision to not vaccinate in general, and use MMR in particular. Again, personal convictions and no data here, but I believe that the cloak of anonymity offers a shield for the millennial generation that grew up browsing the web and drawing conclusions from the web. There are three ironies here: one, there is

no anonymity (Yahoo, for example, know EXACTLY what web sites I frequent, and offer content and options that match my web browsing habits); two, and related to point 1, web browsing is the ultimate exercise in a "self fulfilling prophecy", where what sites you frequent and what content you read match your values, beliefs and expectations; there is no contrary view; there is no objectivity; and the content you consume simply reinforces your bias; and three, the web browser may not appreciate that everyone is "out to make a buck". Behind every web site that is anti-vaccine, there is a book or video to be sold; a chelation treatment to purchase; vitamins, minerals and whole, natural foods to be shopped for; and any of a variety of creams, salves or potions to be marketed.

### **Why do parents ultimately decide to vaccinate or not to vaccinate for MMR?**

For those who say yes: the advice of a trusted care provider is paramount.

For those who say no: the fear of autism, reinforced by a legion of "data" from self-fulfilling web sites and peer messages that condemn MMR vaccine.

It is rare that someone vaccinates their child because they understand the science, the epidemiology, or have been personally affected by the diseases being prevented. So the decision to vaccinate is ultimately a matter of trust. There is a shortage of trust in all institutions - religion, medicine, government, you name it.

### **What, if anything, would change their mind about whether to vaccinate or not to vaccinate their child(ren) for MMR? Please explain.**

Talk doesn't seem to help. The paper by Nyhan and Gary Freed showed, counterintuitively, that the more you educate about vaccines, the more the resisters resist! So my thinking these days is driven by economic and competitive variables. Get your child immunized so they can get a job. A company won't hire you if you aren't immunized. Schools won't let you attend if you aren't immunized. There is no intrinsic moral right to a job or to go to college. It's a privilege. So stress with parents that if they want their children to be economically competitive, make sure they have had their shots. A cynical view perhaps, but one that I think might work.

### **How do personal belief systems affect parents' decisions?**

This is very interesting. I think this begs the question of "religious and philosophical exemption". What religion? The Bible, Quran and Torah don't mention vaccines. What philosophy? A philosophy that mitigates against egalitarianism, against a greater good? I wish someone would flesh out what exactly these belief systems are. But I think, to answer your question, they are hugely important. As I note above, I think they are generational, at least in part, and have to do with evolving concepts about individual autonomy, trust of authority figures, and the "greater good" for society.

### **Anything else you want to say that I did not specifically ask you?**

I can't think of anything else. These are great questions and very thoughtful. I am impressed by your thoughtful approach to this whole issue. Many of my comments are personal bias, and non-data driven. I hope these thoughts help you some. I think you should look at the Nyhan and Freed paper if you aren't familiar with it. I will think about this more issue more, also,

My grandmother used to say, "if you need a suit of clothes, you don't go to the shoemaker". What she meant of course is that in life we all have areas of expertise. This is the one issue in the anti-vaccine movement that galls me the most - the idea that non-scientists can consider themselves "experts" on such complex issues by doing some "internet research". It galls me, not because it threatens any sense

of pride as an immunologist or vaccine research, but because it defies the simple common sense sentiments of my grandmother. I would not go to NASA Mission Control and tell them "no, no, I've researched this and you're doing the space landing all wrong". It defies common sense. And, vaccine research is clearly NOT rocket science (thank goodness).

I've seen this in media and with a few responses from anti-vaccine/vaccine hesitant parents: The parents are taking the vaccine advice of their chiropractor over the advice of their pediatrician. Why do you think chiropractors in general are against vaccines? Is there any truth to this? What is it about chiropractors' education/viewpoints/training that seems to align with anti-vaccine/vaccine hesitant parents?

Chiropractors are notoriously anti-vaccine! At state fairs and in public "educational" exhibits they actually hand out a lot of anti-vaccine literature. I have never understood the "scientific" basis of this - I think it has something to do with holistic ideas - that spinal manipulation is in-and-of-itself somehow therapeutic for the immune system.

There is some interesting information on this topic here:

<https://www.sciencebasedmedicine.org/chiropractic-pediatrics-firmly-in-the-anti-vaccination-camp/>

But the bottom line is, yes, they (chiropractors) are educated in their training to be anti-vaccine. I have seen this repeatedly in many settings over the past 30 years - sometimes with tragic consequences and complications.

Chiropractic practice in general is an interesting topic because my understanding is that they are not held "liable" in the medical-legal system (i.e., in malpractice suits) because the judicial system recognizes that it's a different standard of care. But from a public health and public safety perspective, this is probably a bad thing. Maybe there should be warning signs on their doors - "caution: your children may be harmed by entering this establishment"! But, don't quote me on that one just yet!

## **Doctor 2 (Pediatrician)**

The most important thing in the parent's view is the protection of their child, either way. In theory, this comes from a good place but unfortunately there is a lot of misinformation. Parents may not realize herd immunity is happening but they don't see it because other people are choosing to vaccinate. They're enjoying the benefits of vaccination and they don't see it. That's one of the pieces that is not emphasized.

Social media, family have said autism scares them. Celebrities are not helping in what they're saying, too. Generally, I tell my patients to look for reputable science and there's support for it (vaccination). From my experience, a strong pediatrician recommendation has shown to help parents in their decision making. They don't always understand the timing of the shot. There's a reason it's timed that way but they don't always understand the nuances of vaccination schedules. I think there needs to be better education in medical schools because doctors don't always recommend vaccines as strongly as they should. Some parents no matter what you say won't change their minds.

To conspiracy theorists it's hard to get through to them. When I speak with them, I will give concessions. It's important to listen to them and understand what specific things concern them. There's decades of science backing this up. If this doesn't work then I have to explain the risks of their decision and what



could happen to their child and to other children if they decide not to vaccinate. I try to explain that promoting vaccination won't line my pockets. That's always a concern for some parents.

My final thoughts are that until something is real to parents they don't understand. Some parents have a kid with whooping cough and they don't vaccinate their next kid for whooping cough. It's tough. Doctors need to take time to address their concerns and listen to them and explain the benefits and risks of their decisions. With some parents you will never reach them so we can only do the best we can. It's tough.

### **Doctor 3 (Pediatric blood and marrow transplant physician)**

#### **Please explain your general attitudes about vaccines. The MMR vaccine?**

The vaccine is safe and life saving

#### **What are some of the reservations parents have about the MMR vaccine?**

The largest one is that there are associations w/autism, which are completely unfounded. However, others are opposed to vaccines as a whole (want "natural immunity"). Others have even more bizarre idea—they put in trackers that can keep track of where you are (or what you think...or something like this).

#### **From your experience, what internal and external factors go into their decision process?**

I think that if you spend the time, most people can be made to understand that vaccines are safe an "natural"

Thus, I guess most of the factors that go into not want to be vaccinated have to do w/misinformation or misunderstanding

#### **How do other people in their social network and the information they consume affect whether they vaccinate or not for MMR?**

As above. I think people are heavily influenced by the internet and misinformation

#### **Why do parents ultimately decide to vaccinate or not to vaccinate for MMR?**

Most (>90%) will do this w/o question. There is a small % 5% who is adamant to not do it and another 5% who are not sure. The adamant people are hard to sway, but it's possible.

#### **What, if anything, would change their mind about whether to vaccinate or not to vaccinate their child(ren) for MMR? Please explain.**

A detailed explanation of prior studies and mechanisms of how vaccines work. However, I think it's important to understand what their fears are. So, it's not a one size fits all type of approach. If they are worried about autism, then you need to address that there are now associations w/this and explain that the age of dx (of autism) is right around the time of MMR. If it's a natural type thing (vaccines aren't natural) then you need to explain that it is natural. So again, it needs to be tailored to the concern

#### **How do personal belief systems affect parents' decisions?**

In some instances, these affect decisions a lot. These can, by the way, extend to church, etc.

#### **Anything else you want to say that I did not specifically ask you?**

I've had some parents where one wants the kid to not get vaccines and the other wants it. In some cases the parent has taken the child in w/o the other parent and get vaccinated. Very complex ethically and personally.

**From your experience with immune-suppressed patients, how important are vaccinations to their safety and wellbeing?**

Vaccinations are probably very important in their safety and well being. For instance, flu vaccines can be life saving. MMR is a bit different since there is herd immunity (meaning the herd or the population is immune, so the risks of getting any of the viruses in MMR is pretty low). However, these viruses are serious and kill people.

**Will education or strong recommendations from pediatricians work or is their beliefs too strongly rooted to be changed?**

As for education from pediatricians I think if done correctly, parents views can be changed.