

# Master of Public Health

## Integrated Learning Experience

**“Impact of the COVID-19 Pandemic on Vaccine Hesitancy Towards Routine Childhood Immunizations in Kansas”**

by

**Gregory Van Fields**

MPH Candidate

submitted in partial fulfillment of the requirements for the degree

MASTER OF PUBLIC HEALTH

**Graduate Committee:**

Ellyn Mulcahy, PhD, MPH

Justin Kastner, PhD

Paige Adams, DVM, PhD

**Applied Practical Experience Site:**

EnVisage Consulting, Inc.

February 13 – August 29, 2025

**Applied Practical Experience Preceptor:**

Connie Satzler, MS

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2025

## **Abstract**

The COVID-19 pandemic was a devastating event causing loss of life, long-term illness, economic distress and daily disruptions beginning in early 2020. The consequences of this event are still evident in the medical community as there appears to be a resurgence in vaccine hesitancy for routine immunizations in children. The state of Kansas has shown a decline in routine childhood immunizations since the pandemic began leaving more children vulnerable to vaccine-preventable diseases.

My applied practice experience was a project to better understand the challenges that immunizers in Kansas have been facing in recommending routine vaccines to children. By working under the advisement of Connie Satzler at EnVisage Consulting, Inc., Manhattan, KS, I developed seventeen questions to ask immunizers around the state of Kansas at in-person interviews to gain insight into what they are experiencing every day at the local level.

After conducting thirty interviews, I determined that immunizers are facing more challenges now compared to before the pandemic began. Even though there appears to be fewer barriers to childhood vaccine availability, there has been an increase in the time it takes for immunization visits. Social media has caused confusion among parents on whether to vaccinate their children. More training would be beneficial for healthcare workers in tracking adherence rates, communicating with parents about vaccine hesitancy, and using social media as a tool to address misinformation. There is a sense of frustration among immunizers, and more collaboration would be useful to share ideas of what is working to increase acceptance of routine childhood immunizations from parents in Kansas.

**Keywords:** Vaccine hesitancy; Childhood immunizations; COVID-19 pandemic; Kansas; Public health; Qualitative research; Thematic analysis; Vaccine misinformation; Social media influence; Healthcare providers; immunization adherence.

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# Chapter 1 – Introduction

## Historical Success of Childhood Vaccines

Vaccines have been utilized as protective measures in children since the late 1700's when Edward Jenner discovered that inoculating an eight-year-old boy with cowpox could provide protection against smallpox (1). Years later, the American Academy of Pediatrics (AAP) began encouraging and giving advice on routine immunization schedules for children. The AAP was one of the first groups of medical professionals in the United States to recommend vaccines for children, with a formal guide for scheduling these immunizations published in "The Red Book" in 1938(2). The first vaccines recommended in this publication protected children from smallpox, diphtheria, tetanus and pertussis. New vaccines were added to this schedule, and by the 1960s children were offered protection from measles, mumps, rubella and polio. The impact of these vaccines was almost instant, as cases of polio and measles dropped by over 90% in the United States (2).

In 2024, the World Health Organization (WHO) conducted a comprehensive analysis of the historical impact vaccines have had on public health. In 1974, the WHO created the Expanded Programme on Immunization (EPI) to allow access to vaccines across the globe. Mathematical and statistical models were used to determine the impact of 50 years of immunizations against 14 different pathogens. According to this study, since 1974, vaccinations have prevented the deaths of 146 million children younger than five years of age, and they have accounted for 40% of the decline in global infant mortality (3).

## Vaccine Hesitancy

As long as vaccines have been around, there have been skeptics of the safety, efficacy and necessity of these products. The WHO defines vaccine hesitancy as the "delay in acceptance or refusal of vaccines despite availability of vaccine services." In 2019, they also listed vaccine hesitancy as a top ten threat to global health (4). There have been several examples of times throughout history when vaccines became a public topic of controversy. Even before the introduction of vaccines, there was opposition to the idea of preventing diseases through scientific intervention. In the 1720's, variolation was a method used in Europe and America where material

from individuals with smallpox was used to induce immunity. In response to this procedure, an English Reverend, Edmund Massey, preached a sermon in 1722 called “The Dangerous and Sinful Practice of Inoculation”. In this sermon, Massey preached that diseases were a natural punishment from God, and attempting to prevent these diseases would be a form of blasphemy (5).

In the 1800’s, there was a movement to reject vaccines due to personal freedoms. This movement was widespread among the population of Stockholm, Sweden in 1873. Only 40% of these residents were vaccinated against smallpox while the rest of the country had adherence rates of 90%. The following year, an outbreak of smallpox occurred in Sweden. The mortality rate resulting from this outbreak was 10 times higher in Stockholm compared to the rest of the country (5).

Unfortunately, errors in development and manufacturing have also given cause for the rise of vaccine hesitancy in the past. One example of this is the Cutter Incident in 1955. During a time of high confidence in science, as well as great fear of polio, an unfortunate error by the Cutter Laboratories in Berkeley, California, led to several deaths and many seriously injured by defective vaccines (4). It was discovered that 120,000 doses of the new polio vaccine produced at this facility contained live poliovirus due to difficulties in developing the formaldehyde inactivation technique into mass production (4). This incident caused widespread distrust in pharmaceutical companies, the government and science.

In more recent years, false claims by some members of the medical community have contributed to a rise in vaccine hesitancy. In 1998, Dr. Andrew Wakefield published a study in the *Lancet* where the claim was made that the measles-mumps-rubella (MMR) vaccine was linked to autism in children. The scientific community quickly disproved this claim, but the damage had been done. Over the course of the next decade, a trend began in the United States where the MMR vaccine was delayed in children of college-educated mothers because of exposure to negative information about these vaccines (6).

## COVID-19 Pandemic Impact in US, 2020

In early January 2020, pneumonia-like infections from SARS-CoV-2, a novel coronavirus, were reported in Wuhan, China. On January 21, the first case was confirmed in the state of Washington in an individual who had just returned from Wuhan the week before. By the end of the month, there were over 9800 cases of COVID-19 and over 200 deaths globally, and the WHO declared a public health emergency (7). On March 11, 2020, the WHO declared COVID-19 as a pandemic, and two days later, President Donald Trump declared it a national emergency in the United States. This allowed billions of US dollars of federal funds for use in fighting the disease (7).

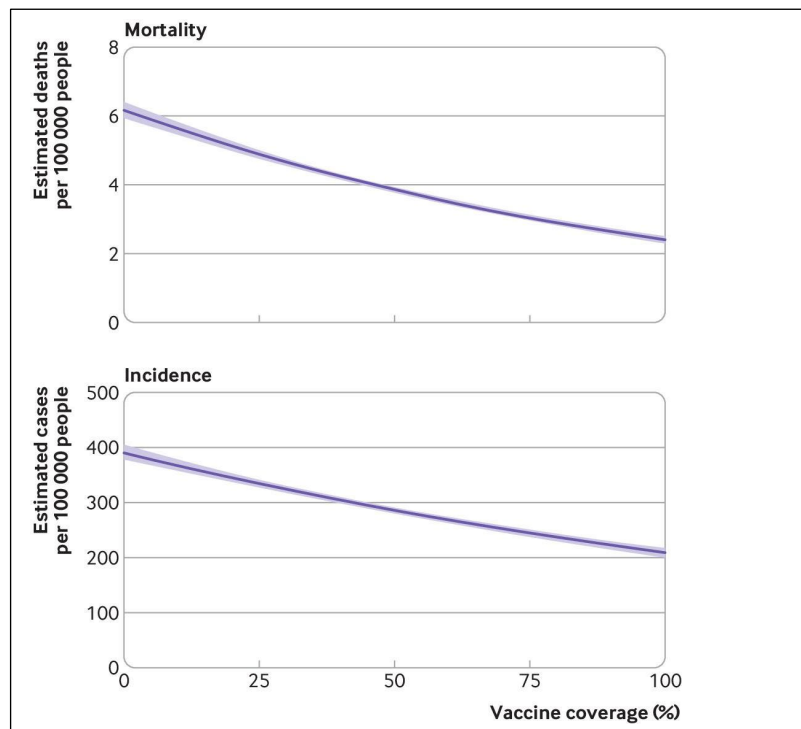
Throughout 2020, there were many devastating developments due to the COVID-19 pandemic, but mortality data from that year demonstrates the severity of the disease. In April of 2021, the CDC published provisional mortality data for the United States for the year 2020. The daily mortality reports of COVID-19 were useful for tracking deaths, but these numbers could underestimate the actual numbers because of delayed reporting or incomplete data. The Centers for Disease Control and Prevention (CDC) listed COVID-19 as the underlying or contributing cause of death in 377,883 individuals in the United States in 2020. This was the third leading cause of death after heart disease and cancer (8).

## Introduction of COVID-19 Vaccines

To speed up the development and approval process for vaccines to prevent COVID-19, President Trump launched Operation Warp Speed (OWS) on May 15, 2020. The Biden administration later renamed this operation the HHS-DOD COVID-19 Countermeasures Acceleration Group (CAG). The purpose of CAG was to speed up the development, production, and distribution of both vaccines and therapeutics to counter COVID-19 (9). The typical timeline for vaccine development and approval would not be appropriate to combat a serious pandemic. In the United States, from beginning research to approval, vaccine development will normally take ten to fifteen years (10). With the formation of OWS in May, large-scale efficacy trials of COVID-19 vaccines began in July, and on December 11, 2020, the first vaccine to protect against COVID-19

received emergency use authorization (EUA) in the United States (9). The scientific community has studied the impact of these vaccines throughout the world. In an investigation recently published in the Journal of the American Medical Association Health Forum, scientists have estimated that more than 2.5 million deaths have been averted globally from the time these vaccines were first available through October 1, 2024 (11).

The immediate impact of the COVID-19 vaccines was evident in the United States as well. In an observational study conducted by epidemiologists and published in the British Medical Journal (*BMJ*), scientists found that throughout counties in the United States from December 14, 2020 to December 18, 2021, there was an 8% reduction of mortality rates and 7% reduction in COVID-19 incidence for every 10% improvement in vaccination coverage (12). This data is illustrated in Figure 1.1 below.



**Fig 1.1: “Effect of vaccination coverage on COVID-19 related mortality (top) and incidence (bottom) during first year of vaccine roll-out. Analyses are from 2558 counties in 48 US jurisdictions. Model controlled for county population size, social vulnerability index, and mobility changes” (12).**

While morbidity and mortality rates have significantly been reduced since the introduction of COVID-19 vaccine, infections are still being reported by the CDC in the United States. According to the CDC's data from the week ending September 27, 2025, 6.7% of Americans who were tested for COVID-19 were positive for the disease, and 0.8% of deaths in the United States were caused by COVID-19 (13).

## COVID-19 Vaccines Controversy

Despite the success of COVID-19 vaccines, controversy from the pandemic has remained prominent in the United States for the last five years. According to the Pew Research Center, the pandemic hit during a time of a large divide between the political left and right, an increase in distrust of many institutions, and a large fragmentation of where citizens obtained their information (14). Pew researchers went on to state that a large portion of US adults received COVID-19 vaccinations during the first year of the pandemic, but by the fall of 2024, most Americans claimed that they would not take the vaccine. The political divide has been evident in this attitude, as 81% of Republicans said that they would not get the updated COVID-19 vaccine in 2024 while 62% of Democrats said that they were planning on getting the vaccine or had already received it (14).

There are conflicting reports on whether the pandemic caused an actual increase in vaccine hesitancy among parents towards routine childhood immunizations. In a study conducted in Colorado from 2018 to 2021, researchers found that vaccine hesitancy remained at a similar level (20.4% of parents were vaccine hesitant), but the pandemic did seem to cause a change in trust of vaccine information, and parents were more polarized in their attitude towards vaccination (15). Another study showed that vaccine hesitancy among parents of children aged 5 – 11 years increased after the authorization of the COVID-19 vaccine by 1.2% (16).

In a study published in 2025, researchers found that the introduction of the COVID-19 vaccines had both positive and negative effects on vaccine hesitancy (17). While these vaccines positively impacted public health by reducing severe illness and disease, increasing investment development and production infrastructure, and raising awareness of vaccination, there were also

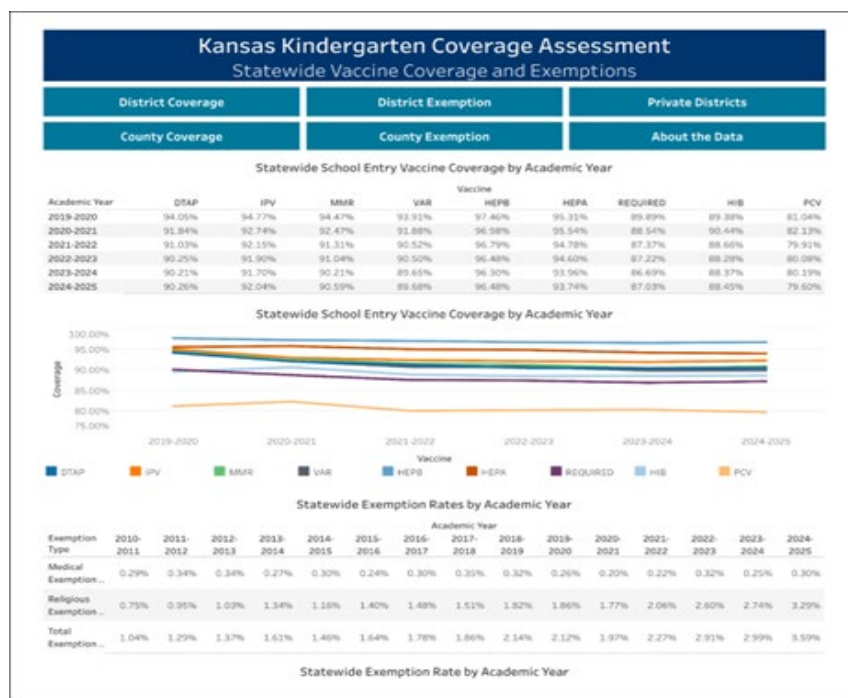
negative results. The negative impact included misinformation through social media amplification and the erosion of public trust in the medical community (17). Researchers analyzed 100,601 posts from Twitter related to COVID-19 vaccine conspiracy theories and found that they significantly influenced public discourse. Only 12.7% of the malicious accounts studied which were posting harmful vaccine content were suspended (17). The authors also found that political division was especially significant in the United States, as 43.4% of Americans were more likely to be vaccinated for COVID-19 when they had a higher trust in government compared to only 15.8% when they had a lower trust (17).

## Childhood Immunization Rates in Kansas

Prior to the introduction of COVID-19 vaccines, research had been conducted on vaccine hesitancy in the state of Kansas. Family physicians in Kansas were surveyed in late 2019 and early 2020 to determine what their opinions were on why parents of their young patients may be hesitant towards vaccines (18). The physicians who responded to the survey claimed that the most common reason for denial of vaccines from parents is the concern over long-term complications (73.8%). The most common vaccines that these providers saw denied were Human Papilloma Virus (HPV) (33.5%), Influenza (24.3%) and Measles Mumps and Rubella (MMR) (15.1%). This study found that before the COVID-19 pandemic, one fifth of Kansas physicians dismiss families from their practice if they refuse the vaccine schedule offered (18).

Recently, researchers conducted a study to understand what factors have influenced parental decisions towards COVID-19 vaccinations for their children in Kansas. They looked at data from the U.S. Census Bureau's Household Pulse Survey collected between January 4 and January 16, 2023. Data from the state of Kansas were extrapolated from this survey, and of the 1,231 Kansas respondents, 563 were parents with children under the age of 18 living in their household. Most of these parents (73.5%) had concerns that led them to not vaccinate their children against COVID-19. The investigators found that concerns of side effects, distrust in the safety of the vaccines, and belief that their children were not at high risk of serious illness from COVID-19 were the reasons for vaccine hesitancy towards COVID-19 vaccines (19).

The recent pandemic has appeared to have an impact on vaccine hesitancy towards other childhood immunizations beyond the COVID-19 vaccine. According to the Kansas Department of Health and Environment (KDHE), vaccination rates for kindergarten aged children in Kansas have declined since the 2019-2020 academic year. These data are shown in Figure 1.2 below, which is the most recent immunization data dashboard published by the KDHE. As this figure shows, all listed childhood immunizations decreased the following year after the pandemic began, with the exception of the hepatitis A, *Haemophilus influenzae* type B, and the pneumococcal conjugate vaccines. During the following four years, all vaccines listed fell below and remained lower than the 2019-2020 academic school year (20). Exemption rates for vaccines have also increased during this same time period. Religious exemptions for receiving required kindergarten vaccines went from 1.86% in 2019-2020 to 3.29% in 2024-2025 (20). Kansas allows for both medical and religious exemptions (21). Medical exemptions did not change during this same time period (20).



**Fig 1.2: Dashboard showing immunization data of kindergarten students 5-7 years of age on August 31<sup>st</sup> in the fall semester of the academic year listed (20).**

Vaccine hesitancy is not unique to the state of Kansas, and the COVID-19 pandemic has been another factor that has contributed to concerns of all childhood immunizations. Many

studies on the safety and efficacy of vaccines as well as the issue of vaccine hesitancy have been conducted, but understanding the challenges that physicians and nurses deal with as a result of the COVID-19 pandemic is crucial to increase adherence rates of routine childhood vaccines. The purpose of this project is to survey immunizers across Kansas to understand how the COVID-19 pandemic changed attitudes towards routine vaccines for children. Increasing communication at the state level can help healthcare professionals understand vaccine challenges, improve the effects of vaccine fatigue, and determine what strategies are effective in addressing vaccine hesitancy.

In the spring of 2025, I began discussions with Connie Satzler, President of EnVisage Consulting, Inc. to better understand the impact of the COVID-19 pandemic on immunizers throughout the state of Kansas. Based in Manhattan, KS, Connie has worked for over 30 years in public health, supporting programs and initiatives such as Healthy Kansans 2020, the Maternal Child Health Council, the Riley County Community Health Improvement Plan, and the Immunize Kansas Coalition. Connie is passionate about public health and has served many of these organizations to help promote the health of their constituents. Connie is a member of the K-State Industrial and Manufacturing Systems Engineering (IMSE) Professional Academy, the IMSE Advisory Council, and she was recognized as the 2025 Outstanding IMSE Alum. She enjoys mentoring undergraduate and graduate students in fields including engineering and public health.

## Chapter 2 – Project Description and Methods

Together, Connie and I decided on developing an in-person survey (Appendix A) that would be conducted at several locations across the state of Kansas. The survey would provide individuals who administer vaccines to children an opportunity to describe their experiences since the COVID-19 pandemic – the challenges they have faced, the changes they have seen in vaccine hesitancy, what has been beneficial in helping address current issues, and what resources they need moving forward. We decided that interviews would be conducted with open questions that allow the participants to give as much information as possible.

Two products were produced from this project: a presentation to Immunize Kansas Coalition (IKC) and a one-page summary of the survey results (Appendix C). The presentation is a short summary of the research with the findings delivered during a quarterly IKC meeting. The one-page summary will be made available to any organization that would find recent impact data useful in the state of Kansas to improve childhood vaccination rates.

### Study Participants and Locations

Participants were contacted by phone, email or in-person to find out if they were willing to answer questions confidentially from a survey about their experiences with offering routine childhood immunizations before and after the COVID-19 pandemic. If they agreed, interviews were conducted in-person and recorded so they could later be transcribed for analysis. Participants were any healthcare professional who educates families about or administers childhood vaccines in the state of Kansas. An effort was made to interview healthcare workers who had experience with childhood vaccines before the COVID-19 pandemic began in early 2020 and were still working with families in the area of routine immunizations. Health departments and private practice pediatric offices were the target locations for participants. The study protocol was approved by the institutional review board (IRB#12927) of Kansas State University, and informed consent was obtained by all participants.

## Survey

I developed a survey with advisement from Connie Satzler, EnVisage Consulting, Inc. containing seventeen questions. All questions were asked during an in-person meeting with participants, and included:

1. Health department, FQHC, private practice (pediatric, family practice), other?
2. Type of provider – physician, nurse, MA, supervisor, etc.?
3. Do you offer all CDC recommended childhood vaccines? If not, which ones are not offered?
4. Could you describe your process for recommending available vaccines for children, from the time a family walks in the door through vaccination?
5. Approximate racial/ethnic population that is served?
6. What percentage of your vaccines are VFC? What percentage is private pay? Other?
7. Approximately how much time is spent for each child immunization visit?
8. Are standing orders utilized in your practice? For which vaccines? How?
9. Do you track adherence rates for recommended immunizations for children?
10. Have you seen a difference in adherence rates in children from 2019 to 2024? If so, which vaccine adherence rates have changed? Can you share specific data?
11. Describe changes in the conversations with parents when it comes to routine childhood immunizations over the past five years.
12. What new challenges have you experienced since 2019 when it comes to following standard immunization schedules for children?
13. What reasons are given by parents when not accepting all recommended childhood immunizations for their children?
14. Are patients experiencing any barriers to receiving routine childhood immunizations in the last five years? And if so, what are they?
15. Other than Covid, what routine immunizations are parents either denying for their children or delaying?
16. What resources do you need to help combat vaccine hesitancy?
17. What else would you like to share? Is there anything else you think would be important for me to know?

Questions were asked in an open-ended method so that participants were allowed to answer as freely as possible. All interviews were recorded on an Apple iPad and were later transcribed in a single Word document.

Questions 4, 9, 11, 12, 13, 14, 16 and 17 were examined using inductive thematic analysis. We determined that qualitative research would be useful for this investigation. Thematic analysis is a practical method for analyzing qualitative data because it allows for a flexible way to identify themes within survey responses. The Braun and Clarke six-phase framework was the method I followed to analyze data from the surveys (22). Meaningful features were identified and labeled from the responses to these questions. This process determined codes within each question, and related codes were then placed into groups which became themes. Themes were then defined and named. The themes were not predetermined but emerged from the answers of each individual respondent.

## Chapter 3 – Results

I conducted in-person interviews from the end of May 2025 through the end of August 2025. Thirty interviews were conducted throughout the state of Kansas. A summary of the participants answering survey questions is in Table 3.1 below. Participants were located at 22 (73.3%) health departments and 8 (26.7%) private pediatric offices in Kansas. Office sites where interviews were conducted were sorted by population density classification in Kansas, 2024. The Institute for Policy and Social Research, The University of Kansas used data from the most recent U.S. Census Bureau to classify Kansas counties by population of persons per square mile (ppsm) (20). The designations are: Frontier – (less than 6.0 ppsm), Rural – (6.0 – 19.9 ppsm), Densely-settled Rural – (20.0 – 39.9 ppsm), Semi-Urban – (40.0 – 149.9 ppsm) and Urban – (150.0 or more ppsm). The location of medical offices where participants were located are as follows: 10 (33.3%) in Urban counties, 11 (36.7%) in Semi-Urban counties, 5 (16.7%) in Densely-settled Rural counties and 4 (13.3%) in Rural counties. The type of providers surveyed were self-identified as the following: 3 (9.1%) Pediatricians, 1 (3.0%) Nurse Practitioner, 1 (3.0%) Medical Assistant (MA), 1 (3.0%) Licensed Practical Nurse (LPN), 11 (33.3%) Immunization Nurses, and 16 (48.8%) Nurse Managers. Note – the total number of providers is 33, while the total number of facilities and surveys conducted are 30. One interview was conducted with two participants, and one interview was conducted with three participants per their request.

Twenty-seven (90.0%) of the 30 locations offered all CDC recommended vaccines for children. The three (10.0%) locations that did not offer all CDC recommended vaccines did not carry the COVID-19 vaccine, and one of those three locations did not offer the meningitis B vaccine. All three of these locations were private pediatric offices.

**Table 3.1: Participation in surveys**

| Category         | Facility Type/Location/Provider                                  | Count | Percentage |
|------------------|------------------------------------------------------------------|-------|------------|
| Facility Type    |                                                                  |       |            |
|                  | Health Department                                                | 22    | 73.3%      |
|                  | Private Practice Pediatric                                       | 8     | 26.7%      |
| Location         |                                                                  |       |            |
|                  | Urban                                                            | 10    | 33.3%      |
|                  | Semi-Urban                                                       | 11    | 36.7%      |
|                  | Densely-settled Rural                                            | 5     | 16.7%      |
|                  | Rural                                                            | 4     | 13.3%      |
| Type of Provider |                                                                  |       |            |
|                  | Pediatrician                                                     | 3     | 9.1%       |
|                  | Nurse Practitioner                                               | 1     | 3.0%       |
|                  | MA                                                               | 1     | 3.0%       |
|                  | LPN                                                              | 1     | 3.0%       |
|                  | Immunization Nurse                                               | 11    | 33.3%      |
|                  | Nurse Manager (Director, Supervisor, Manager, Coordinator, etc.) | 16    | 48.8%      |

As I analyzed the answers from respondents for question 4, three themes emerged: immunizers surveyed indicated that they offered all recommended vaccines (76.7%), they have a strict vaccine compliant policy (13.3%), or at some point in their process they allow parents to choose the option of vaccines for their children or allow for a delayed schedule (43.3%). These results are shown in Table 3.2 below.

Question 5 (race/ethnicity patient demographics) did not generate similar answers to formulate patterns or themes. Additional research will be required for accurate demographic information of patients served by clinics throughout Kansas.

**Table 3.2: Themes in recommending available vaccines for children**

| Code | Theme                                                                                   | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | All recommended vaccines offered (23/30 – 76.7%)                                        | <i>"We recommend everything that is on the routine schedule."</i><br><i>"We go through all recommended vaccines that they are due for."</i><br><i>"...we still recommend they get all of them – everything recommended from the CDC, not just what is required for school."</i>                                                                                                                                                                  |
| 2    | Vaccine compliant policy (4/30 – 13.3%)(all 4 locations were private pediatric offices) | <i>"We have a policy that patients have to be up to date on vaccines to be patients here...We tell them that this is what they are due for today. It is not optional."</i><br><i>"We are a vaccine compliant facility, so all patients must follow the CDC required vaccines for school entry, and we follow their guidelines for administration windows."</i>                                                                                   |
| 3    | Let parents choose options of vaccines or delayed schedule (13/30 – 43.3%)              | <i>"...we give them the options of what they need. We let them decide which vaccines they will get."</i><br><i>"You can usually tell if a parent is hesitant. Then we adjust how we say it, like 'the school is going to require these'. If they want to split them up we can do whatever they are comfortable with."</i><br><i>"Some will want to do a slow schedule. It's frustrating, but I try to work with them so they get something."</i> |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

The percentage of Vaccines For Children (VFC) program use was observed in responses to question 6. These results are summarized in Table 3.3 below.

**Table 3.3: Proportion of VFC use by office type**

| VFC/Private Pay | Private Pediatric Office | Health Department |
|-----------------|--------------------------|-------------------|
| Higher VFC      | 67.5% VFC (n=2)          | 77.5% VFC (n=18)  |
| Lower VFC       | 22.3% VFC (n=3)          | 30% VFC (n=1)     |
| Equal VFC       | n=0                      | n=1               |
| No VFC          | n=2                      | n=0               |
| Not sure        | n=1                      | n=2               |

Table 3.4 shows the average time spent during each childhood immunization visit. The average time spent at private pediatric offices was 13.25 minutes, while the average time spent at health departments was 24.7 minutes.

**Table 3.4: Average time spent for childhood immunization visit**

| Average time Private Pediatric Office (n=8) | Average time Health Department (n=22) |
|---------------------------------------------|---------------------------------------|
| 13.25 minutes                               | 24.7 minutes                          |

Question 8 results are summarized in Table 3.5. All respondents at health departments said that standing orders are used for all vaccines at their locations. Five of the eight private pediatric offices surveyed used standing orders for all vaccines and only one of these offices used standing orders for Influenza vaccines. Two private pediatric offices surveyed do not use standing orders at all.

**Table 3.5: Standing orders used by clinic**

| Standing Orders | Private Pediatric                 | Health Department |
|-----------------|-----------------------------------|-------------------|
| <b>Yes</b>      | 5 – All Vaccines<br>1 – Flu shots | 22 – All Vaccines |
| <b>No</b>       | 2                                 | 0                 |
| <b>Total</b>    | 8                                 | 22                |

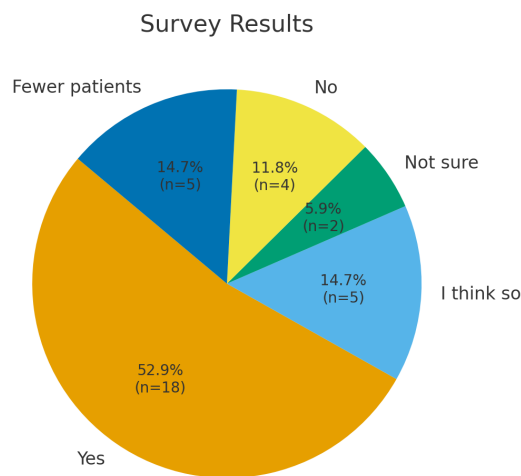
I used thematic analysis to find themes in responses to question 9 (Table 3.6). There was a variety of answers to the question of whether the office tracks adherence rates for recommended childhood immunizations. A higher percentage of private pediatric offices track adherence rates (62.5%), while fewer health departments surveyed tracked these rates (54.5%). More health departments claimed that they can track rates compared to private pediatric offices (27.3% vs 12.5%), while 13.6% of health department workers were not sure if they could track rates. Two private pediatric offices answered that they do not track rates (25%), while one health department answered that they do not track rates (4.5%).

**Table 3.6: Routine childhood immunizations adherence rate tracking**

| Code     | Private Pediatric Office | Health Department | Theme        | Examples                                                                                                                        |
|----------|--------------------------|-------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b> | 5 (62.5%)                | 12 (54.5%)        | Yes/We do    | "Yes. We get reports of missed opportunities."<br>"Yes. Very closely."                                                          |
| <b>2</b> | 1 (12.5%)                | 6 (27.3%)         | We can       | "We can, but we don't typically track rates."<br>"We could pull data from the state registry. Our HER has the ability as well." |
| <b>3</b> | 0                        | 3 (13.6%)         | I'm not sure | "I'm not sure. We are working on that"<br>"I don't know. We probably do."                                                       |
| <b>4</b> | 2 (25.0%)                | 1 (4.5%)          | No           | "No."                                                                                                                           |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

Figure 3.1 below shows results from question 10 of seeing a difference in adherence rates in children from 2019 to 2024. Eighteen respondents (52.9%) claimed that they have seen a decline in adherence rates. Five respondents (14.7%) answered that they think they have seen a decline in rates, and four respondents (11.8%) said that they have not seen a change in immunization rates. Two respondents (5.9%) were not sure if adherence rates had changed in that time frame, and five respondents (14.7%) answered that they are seeing fewer patients in their clinic since 2019. From those who answered that they have seen a change in adherence rates, the vaccines they have noticed declining are listed in Table 3.7 below with the frequency of mentions in the survey.



**Figure 3.1: Observation of difference in adherence rates in children from 2019 to 2024**

**Table 3.7: Vaccines with declining rates**

| Mentioned vaccine adherence rates declining | Frequency |
|---------------------------------------------|-----------|
| All Vaccines                                | 9         |
| HPV                                         | 5         |
| MMR                                         | 5         |
| Influenza                                   | 5         |
| COVID                                       | 4         |
| Hepatitis B                                 | 2         |
| Combination Vaccine                         | 2         |
| Any New Vaccine                             | 1         |
| Meningitis B                                | 1         |

When asked how conversations with parents have changed when it comes to routine childhood immunization in the last five years (question 11), thematic analysis was used to code

and uncover themes in responses. The results are listed in Table 3.8 below. Twenty-nine of the thirty individuals answered this question, and only one respondent (3.4%) claimed that there has been no change in immunization conversations since 2019. The most common theme uncovered was that conversations have become longer, and more information is given to parents (31.0%). More parents are asking for delayed or alternate schedules (24.1%), misinformation and safety concerns are addressed (20.7%), and immunizers are becoming fatigued and giving weaker recommendations (17.2%).

**Table 3.8: Changes in conversations over the past five years**

| Code | Theme                                                  | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | More information/longer conversations (9/29 – 31.0%)   | <p><i>"We do spend more time answering some of the questions (parents) bring in from YouTube videos. That shifts to where we have to give more information on the ingredients and finding out where all of this comes from. We deep dive more with some families."</i></p> <p><i>"We give a lot more information than we used to because they ask for it, and we know that information is the best way to get them to change their mind."</i></p> |
| 2    | Ask for delayed or alternate schedules (7/29 – 24.1%)  | <p><i>"More parents are coming in splitting or delaying the vaccines more than they were before COVID."</i></p> <p><i>"There are a number of parents who are spreading them out farther than before."</i></p>                                                                                                                                                                                                                                     |
| 3    | Afraid COVID-19 shot will be slipped in (4/29 – 13.8%) | <p><i>"...we heard people asking if we were slipping the COVID vaccine in with others."</i></p> <p><i>"A lot of people think that we sneak the COVID vaccine in with other vaccines."</i></p>                                                                                                                                                                                                                                                     |
| 4    | Lost faith in medical community (2/29 – 6.9%)          | <p><i>"I feel like some of our patients' parents lost faith in the medical community right away...there was re-teaching because people lost faith in the system."</i></p> <p><i>"...people are hesitant about big pharma, and vaccines are a part of that."</i></p>                                                                                                                                                                               |
| 5    | No change in conversations (1/29 – 3.4%)               | <i>"No changes in conversations."</i>                                                                                                                                                                                                                                                                                                                                                                                                             |
| 6    | Misinformation/safety concerns (6/29 – 20.7%)          | <p><i>"Parents are seeing a lot on social media, so they are asking more than they were before the pandemic. Asking if they will get 'antigen overload'."</i></p> <p><i>"People are worried about the ingredients."</i></p> <p><i>"All the misinformation and disinformation about the COVID vaccine has spilled over and has affected all vaccines."</i></p>                                                                                     |
| 7    | More urgent/stronger conversations (4/29 – 13.8%)      | <p><i>"I know we make it more urgent to them now when we recommend vaccines."</i></p> <p><i>"Stronger encouragements. I changed how I present it. I now say that this is what is recommended at this age instead of just what is required by schools."</i></p>                                                                                                                                                                                    |
| 8    | More fatigued/weaker recommendations (5/29 – 17.2%)    | <p><i>"I feel like I'm inquiring rather than presenting information."</i></p> <p><i>"At two months when we start, I feel like I'm gun shy about getting into vaccination. I'm supposed to sell it more, but I have felt a little more fatigued. I am more reserved now about getting into vaccination schedule."</i></p>                                                                                                                          |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

Other changes observed are that parents are afraid the COVID shot will be “slipped in” (13.8%), conversations have become more urgent or stronger (13.8%), and faith has been lost in the medical community in the last five years (6.9%).

Question 12 addresses new challenges that immunizers have been dealing with during the last five years when it comes to following standard immunization schedules for children. Responses to this question are summarized in Table 3.9 below. There were 28 responses to this question, and the two most common themes uncovered were social media information (28.6%) and complications with alternate schedules/changing recommendations (28.6%).

**Table 3.9: New challenges following immunization schedules for children since 2019**

| Code | Theme                                                                              | Examples                                                                                                                                                                                                                                                                                                                                                                |
|------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Social media information (8/28 – 28.6%)                                            | “There are more ‘wellness influencers’ and misinformation that we need to address now.”<br>“With the internet giving so much information, people have more questions, so it is time consuming to answer all of these questions.”                                                                                                                                        |
| 2    | Political information (5/28 – 17.9%)                                               | “Currently with the political forefront, there are more challenges. I am very worried and very concerned about what is happening. I’m worried about ACIP being reorganized.”<br>“Trying to keep political issues out of it and focusing on the medical side of vaccines.”                                                                                               |
| 3    | Lack of trust in healthcare industry (3/28 – 10.7%)                                | “...they don’t have as much trust in us because the health department was the ‘bad guy’ during the pandemic.”<br>“Trust in the healthcare system. The industry before was more trustworthy, but now there is more hesitancy towards recommendations in general.”                                                                                                        |
| 4    | More vaccine hesitancy (5/28 – 17.9%)                                              | “It feels like people are more wary of all vaccines, not just the COVID vaccine or the flu vaccine.”<br>“They are hesitant because there is so much information on both sides of it that it can be overwhelming, so they just say they want to do something in the middle and slow it down a little.”                                                                   |
| 5    | Complications with alternate schedules and changing recommendations (8/28 – 28.6%) | “I’m seeing so many more people who want to proceed forth with an alternate schedule...”<br>“More people want to do a delayed schedule or on their own schedule. A lot of people only want one shot given each visit. Prioritizing vaccines and figuring out what the parents are ok with is a newer challenge.”                                                        |
| 6    | Other (6/28 – 21.4%)                                                               | “We are now taking a motivational interviewing class because that is now a skill that is needed with our patients.”<br>“Overall, we provide the guardian a text reminder, but you never know if they will come back to finish the vaccine doses.”<br>“The decimation of competent staff and KDHE professionals has been dramatic.”<br>“Parents equate new to untested.” |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

Political challenges (17.9%) and an increase in vaccine hesitancy (17.9%) were the next common themes. A lack of trust in the healthcare industry was mentioned three times (10.7%) and code 6 gives some examples of other challenges mentioned by respondents.

Question 13 from the survey prompted eleven different themes in response to the question of what reasons given by parents when they do not accept all recommended vaccines for their children. These themes are listed with examples in Table 3.10 below. Twenty-nine respondents gave answers to this question. Fear of side effects or local reactions (31.0%) was the most common theme given by respondents. Parents wanting to spread out vaccines for their children for fear of antigen overload and not trusting vaccine ingredients were the next two most common themes (24.1%) according to respondents. Other reasons given were autism (10.3%), political reasons (10.3%), not necessary (6.9%), may contain aborted fetal cells (6.9%), and following advice of friends or doctors (6.9%). Respondents also said that some parents simply do not give a reason (17.2%).

**Table 3.10: Reasons given by parents when not accepting recommended childhood vaccines**

| Code | Theme                                            | Examples                                                                                                                                                                                                                                      |
|------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Side effects/Local reactions (9/29 – 31.0%)      | “They are fearful of side effects.”<br>“They are afraid of the child being sore or have fevers.”                                                                                                                                              |
| 2    | Autism (3/29 – 10.3%)                            | “Some long-term parents who have a new child don’t want vaccines of a sudden because they know someone who was diagnosed with autism after receiving a vaccine.”<br>“Or it’s the autism concern.”                                             |
| 3    | Political reasons (3/29 – 10.3%)                 | “If they are very political, they don’t trust the government.”<br>“The person in charge of HHS says that it’s not safe.”                                                                                                                      |
| 4    | Spread out shots/antigen overload (7/29 – 24.1%) | “They don’t want the antigen overload – don’t want so many vaccines at once.”<br>“Too many at one time. It will overload their system.”                                                                                                       |
| 5    | Encourages promiscuity (3/29 – 10.3%)            | “Also religious exemptions with HPV. They think it encourages promiscuity.”<br>“They think Hep B was a sex thing, same with HPV.”                                                                                                             |
| 6    | Don’t trust ingredients (7/29 – 24.1%)           | “Ingredients/preservatives are concerns.”<br>“We’ve heard a lot about metal toxins in vaccines. Parents bring in information about how much aluminum is in a vaccine.”                                                                        |
| 7    | May contain aborted fetal cells (2/29 – 6.9%)    | “Don’t like that vaccines are developed with aborted fetal cells.”<br>“We’ve had questions about fetal material in the vaccines.”                                                                                                             |
| 8    | Not necessary (2/29 – 6.9%)                      | “They’re fearful of if they are actually necessary.”<br>“People say that they follow ‘mom groups’ and they say that they haven’t seen polio because it has been eradicated, so they don’t need to vaccinate their children for that anymore.” |
| 9    | Don’t give a reason (5/29 – 17.2%)               | “A lot of times there is no reason given.”<br>“They have decided that they don’t want to vaccinate. They don’t necessarily give a reason.”                                                                                                    |
| 10   | Following advice of friends/doctor (2/29 – 6.9%) | “One patient had a doctor who gave an altered or delayed schedule.”<br>“...or they just were recommended by a friend or a doctor to just specifically get certain vaccines.”                                                                  |
| 11   | Only want school-required vaccines (2/29 – 6.9%) | “When kids are starting school, parents are bringing their kids and asking for only vaccines that are required to attend school.”<br>“They are receptive to the school required vaccines.”                                                    |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

Answers to survey question 14 are summarized in Table 3.11 below. Four themes were uncovered in the answers to this question. Most of the respondents claimed that there are no new, or even fewer barriers for patients receiving routine childhood immunizations over the last five years (66.7%). Money or cost was mentioned as a new barrier since the pandemic began (13.3%), and transportation was listed as a possible new barrier to children receiving immunizations (10.0%). The opinions of parents and family members was the final theme that respondents mentioned as a barrier for kids receiving routine immunizations (10.0%).

**Table 3.11: Barriers patients experience to receiving routine childhood immunizations**

| Code | Theme                                | Examples                                                                                                                                                                                                                                   |
|------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | No new/less barriers (20/30 – 66.7%) | <p>“The barriers before have gotten better now.”</p> <p>“No new barriers. We are fearful it will become an issue, but not now.”</p> <p>“I don’t think so. If they don’t have insurance, we have VFC”</p>                                   |
| 2    | Transportation (3/30 – 10.0%)        | <p>“Transportation may be a bigger barrier since the pandemic. Not knowing where to go.”</p> <p>“Maybe transportation, but we do a lot of outreach events to meet them where they are. Hopefully we can continue to operate this way.”</p> |
| 3    | Money/Cost (4/30 – 13.3%)            | <p>“People didn’t realize they could come here if they didn’t have insurance.”</p> <p>“Some of the high-deductible insurance plans are causing problems with some of the new vaccines.”</p> <p>“Money is a barrier.”</p>                   |
| 4    | Parents/Family (3/30 – 10.0%)        | <p>“Parents are becoming the barriers. No financial barriers.”</p> <p>“Opinions, family members, friends, media personalities.”</p>                                                                                                        |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

With the responses given to question 15 about vaccines that parents are either denying or delaying for their children, I was able to compile results in a quantitative manner. The results of the responses to this question are listed in Table 3.12 below. All 30 respondents answered this question. The most common vaccine listed as being denied or delayed was the Human Papillomavirus (HPV) vaccine (63.3%) followed by meningitis B (Men B) (33.3%). Other specific vaccines mentioned were Flu (30.0%), Hep B (23.3%), MMR or MMRv (23.3%), Hep A (10.0%), Men ACWY (6.7%), Polio (6.7%) and Hib (3.3%). Five respondents (16.7%) answered that all vaccines are denied or delayed by some parents, and three (10.0%) said that there are parents who refuse combination vaccines.

**Table 3.12: Childhood vaccines denied or delayed**

| <b>Vaccines Denied or Delayed</b> | <b>Frequency mentioned</b> |
|-----------------------------------|----------------------------|
| <b>HPV</b>                        | 19 (63.3%)                 |
| <b>Meningitis B</b>               | 10 (33.3%)                 |
| <b>Influenza</b>                  | 9 (30.0%)                  |
| <b>Hepatitis B</b>                | 7 (23.3%)                  |
| <b>MMR/MMRv</b>                   | 7 (23.3%)                  |
| <b>All Vaccines</b>               | 5 (16.7%)                  |
| <b>Hepatitis A</b>                | 3 (10.0%)                  |
| <b>Combination Vaccines</b>       | 3 (10.0%)                  |
| <b>Meningitis ACWY</b>            | 2 (6.7%)                   |
| <b>Varicella</b>                  | 2 (6.7%)                   |
| <b>Rotavirus</b>                  | 2 (6.7%)                   |
| <b>Polio</b>                      | 2 (6.7%)                   |
| <b>Hib</b>                        | 1 (3.3%)                   |

Participants were asked what resources would help them combat vaccine hesitancy in question 16. Responses to this question were organized in Table 3.13 below. All 30 survey participants answered this question. Eight respondents (26.7%) mentioned using social media as a tool to address vaccine hesitancy with their patients. Other suggestions that I found in the responses were fact sheets (20.0%), staff training (16.7%), getting patients to clinics (13.3%) and disease-state posters (10.0%). Three respondents (10.0%) said that additional resources would not be needed.

Six respondents gave examples of resources that they have found useful in addressing vaccine hesitancy with their patients. These examples are TikTok videos by Dr. Zachary Rubin, two different websites that they direct their patients to - [knowyourvaccines.org](https://www.knowyourvaccines.org) and [backtothevax.com](https://www.backtothevax.com), and the booklet distributed by Immunize Kansas Coalition - “Vaccine Fears Overturned by Facts”.

**Table 3.13: Resources needed to help combat vaccine hesitancy**

| Code | Theme                                                        | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Disease-state posters (3/30 – 10.0%)                         | <p>“We love posters that show pictures of vaccine preventable diseases.”</p> <p>“Infographic posters – here are symptoms, this is what the disease can look like. Things that show how devastating these diseases can be.”</p>                                                                                                                                                                                                                                                                                     |
| 2    | Social media presence (8/30 – 26.7%)                         | <p>“I think what we could benefit from is a voice, or several voices, in the spaces where these people go to find information. If TikTok or YouTube is where they are going to go, we can’t think they are going to go read a journal. We need to have a presence where they are.”</p> <p>“Maybe a social media site that combats the social media information that they are seeing.”</p> <p>“Things we can link to our own social media to help combat the misinformation that people get from social media.”</p> |
| 3    | Fact sheet (6/30 – 20.0%)                                    | <p>“Numbers, like rates of cases in the US that are up to date. Information sticks out. If it’s accessible and easy to find and give to patients so they can understand the risks of the disease.”</p> <p>“A fact sheet. A big paragraph about the importance of vaccines and how it actually helps other people.”</p>                                                                                                                                                                                             |
| 4    | Getting patients into the clinic (4/30 – 13.3%)              | <p>“If patients are here we can go through the information with them, so just getting them here is important.”</p> <p>“I feel like we are well equipped. Just getting people here.”</p>                                                                                                                                                                                                                                                                                                                            |
| 5    | No additional resources needed (3/30 – 10.0%)                | <p>“I feel like we have all of the resources, it’s just that people don’t want to listen to it.”</p> <p>“We need to stop ‘combating’ vaccine hesitancy...You let time take its course and everyone will come back to the best-case scenario eventually.”</p>                                                                                                                                                                                                                                                       |
| 6    | Staff training (5/30 – 16.7%)                                | <p>“More training or education about what false information is out there. It’s easier to shut down false information when we know what people are hearing. Little training sessions that talk about new concerns that we are hearing and then here is evidence to refute that.”</p> <p>“We are doing more training on how to approach certain vaccines with families. Specific messaging on how to share information without trying to scare parents. More training in this area would be helpful.”</p>            |
| 7    | Example of resources that have been effective (6/30 – 20.0%) | <p>“TikTok videos by Dr. Rubin”</p> <p>“A website – knowyourvaccines.org. I gave that to a mom, and she changed her mind.”</p> <p>“The website we use is great (backtothevax.com). Two moms who were anti-vax who wrote a book after they changed their opinion.”</p> <p>“Vaccine Fears Overturned by Facts booklet”</p>                                                                                                                                                                                           |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

Additional comments were made by 23 of the 30 respondents. Examples of these comments are listed below in Table 3.14.

**Table 3.14: Additional comments regarding the impact of COVID pandemic**

| Code | Theme                                                           | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Better communication/empathy needed with parent (10/23 – 43.5%) | <p>"I think that I have matured in my practice over 20 years. At first we were taught that we need to have strong language and give strong recommendations. I was less understanding of relationships. I have learned that if you stop and ask them what they have heard and find out why they are worried...listen and then share information...I now give patients the opportunity to feel heard."</p> <p>"As long as people have access to the sources that they need. Proper educational information needs to be out there."</p> <p>"I think one of the biggest things that we sometimes forget about or we miss, is that these are well-intentioned people who are doing what they think is the right thing by their child...All these things are fed into their social media feeds. It caters to what you've already been watching and what you are interested in, so it feeds into their fears. They are just a product of fear mongering. They are not bad humans, and I think they get very defensive. That's the space we need to approach them in...But this form of vaccine hesitancy feels different, and the amount of misinformation available to these people is different...and we have to find a space where we can move forward and help people with empathy for them, giving them grace, and not making them feel bad."</p> |
| 2    | Navigating changing climate around vaccines (6/23 – 26.1%)      | <p>"I've never seen so many changes in immunizations like I've seen over the last five years. It seems like we have changed, and there's just more vaccines now."</p> <p>"(Change) has to occur at the federal level. It's gone the wrong direction. Between the CDC and RFK Jr. it is a mess."</p> <p>"It changes every single day. We hear a new story everyday, and we have to deal with it the best we can."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3    | Fear of funding cuts (2/23 – 8.7%)                              | <p>"We are concerned that funding for vaccines will go away such as VFC."</p> <p>"Funding cuts are a concern...This is a major concern for us. Rising costs of pharmaceuticals are hurting health departments. Vaccine refrigerators are expensive, and outreach programs can be expensive as well."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 4    | Other (5/23 – 21.7%)                                            | <p>"Vaccine hesitancy is something I will struggle to understand, but kids can't choose."</p> <p>"With the pandemic or any type of outbreaks, it prevents them from going out to get vaccines because they have to isolate. That impacts the ability of people to get vaccines in a timely manner...clinics were shut down for a while, so we had to figure out how to get kids up to date."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Thematic coverage was measured by the number of times each theme was identified in the responses divided by the total number of responses and was also provided as a percentage.

## Chapter 4 - Discussion

Through the development of this survey, we wanted to determine what effect the COVID-19 pandemic has had over the last five years on professionals providing and/or recommending routine childhood immunizations in Kansas. We decided on a qualitative approach, with open-ended survey questions to allow for non-biased responses. This created an environment where participants were free to offer personal experiences and beliefs without the limitations of selecting pre-determined answers on a questionnaire.

### Quantitative Analysis

Questions 1,2,3,6,7,8,10 and 15 provided responses which could be recorded and analyzed to find commonalities between locations. Health departments were the most common location where interviews were conducted (73.3%) compared to private practice pediatric offices (26.7%). The population size of the county where interviews were conducted was predominantly larger counties in Kansas (Urban – 33.3%, Semi-Urban 36.7%). Most interview participants identified themselves as some type of nurse or nurse manager. The three pediatricians and one nurse practitioner surveyed gave unique perspectives of not actually giving the vaccines, but they are very involved in talking with the parents about the importance of immunizations. If this project is to be continued, it would be beneficial to interview more pediatricians. It is more difficult to gain time with these individuals, but they tend to have more in-depth conversations with parents about the importance of routine immunizations, especially during the first childhood visits.

Most locations have available and offer all recommended CDC vaccines for children (90%). With the exception of one pediatric office not carrying the meningitis B vaccine, the only other vaccine that is not offered by three pediatric offices is the COVID-19 vaccine. This shows that the recommended schedule by the CDC is widely available and offered across the state of Kansas.

The VFC program is federally funded, and provides free CDC recommended vaccines for children under 19 years old. Anyone in this age range will qualify for these vaccines if they are eligible for Medicaid, Uninsured or Underinsured, or if they are American Indian or Alaskan Native (25). This program has eliminated a major barrier of vaccine availability in the United States. Only

two of the locations surveyed do not carry VFC vaccines. Both of these were private pediatric offices, and they do refer their patients who qualify for these vaccines to the local health department. While this does create an additional step in the process, and can be viewed as a barrier, the recommended vaccines are still being offered, and they are available for all patients. The VFC program is clearly being used at a high rate, with 20 out of the 30 respondents answering that VFC vaccines are used at a higher rate than private pay (commercial) vaccines.

The time spent for each childhood immunization visit was significantly higher in the health departments (24.7 minutes) compared to the private pediatric offices (13.25 minutes). Based on conversations with participants, the main reason for this is that immunizations are only one part of the well-child visit at the pediatric offices. Also, many of the pediatric offices have a longer discussion about vaccinations at the first infant visit. Expectations are given for what vaccines the child will receive at follow-up visits, so there are not as many questions from parents during later visits. Health departments typically have more of a transient population. Vaccine records need to be looked up more often at these locations to see what the child is due for. Conversations can be significantly longer at each immunization visit at health departments.

All health departments use standing orders for vaccine administration. It is rare for a prescriber to be on location at a health department, so this would be necessary for a quick immunization process. 25% of the private pediatric offices do not use standing orders for vaccines. These offices always have providers on hand to give direction on what vaccines patients should be given at each visit.

Most respondents claimed that they have seen (52.9%) or think they have seen (14.7%) a decline in vaccine adherence rates in children since 2019. Only 11.8% of respondents said that they had not seen a decline in these rates and 5.9% were not sure. Five of the respondents (14.7%) stated that they see fewer patients than they did before the pandemic. This response was also noted on other questions of the survey, especially within health departments. Pediatric offices seemed to keep their patient population throughout the pandemic, but several of the health departments stated that they did not see as many children coming in as they did before 2020. For those who gave answers on which vaccines they have seen decline, the most common answer was

“all vaccines” (n=9). HPV, MMR and Flu vaccines were all mentioned by five respondents. Actual adherence rate numbers would be beneficial if this study is continued. These were the same three vaccines that family physicians from Kansas referenced as commonly being denied by parents in the survey conducted just prior to the COVID-19 pandemic (18). According to the KDHE data shown in Fig. 1.2, the MMR adherence rates for Kansas kindergarten aged children declined from 94.47% in 2019-2020 to 90.59% in 2024-2025 (20). This could imply that the COVID-19 pandemic had a similar impact on HPV and Flu vaccine adherence rates, but more specific data analysis from the state of Kansas would be needed to confirm this.

In response to question 15 “Other than Covid, what routine immunizations are parents either denying for their children or delaying?”, the most common answer was HPV (63.3%) followed by Meningitis B (33.3%) and Influenza (30.0%). These vaccines may be denied more than other vaccines for reasons other than vaccine hesitancy because of the pandemic. The HPV vaccine does have a routine recommendation from the CDC, but it is not required for secondary school attendance in the state of Kansas (26). There were also several responses on the survey about the perception that this vaccine encourages promiscuity in adolescents. The Men B vaccine also has a weaker recommendation than other adolescent vaccines with a Shared Clinic Decision-Making (SCDM) recommendation instead of a Routine recommendation from the CDC (27). Vaccines with a SCDM recommendation are still required by law to be covered by private insurance, and they will be provided by the VFC program, but most schools do not require proof of vaccination with these vaccines for entry (28). Based on these answers, the pandemic may not have had much of an impact on which vaccines are being delayed or denied, but it has had an impact on the rate of denials or delays overall.

## Inductive Thematic Analysis

Emerging themes were identified in questions 4, 9, 11, 12, 13, 14, 16 and 17. The responses from question 4 showed that most respondents claimed to offer all childhood recommended vaccines to their patients (76.6%). 43.3% of respondents, at some point in their answer, said that they would let parents either choose the options of vaccines for their children or chose a delayed schedule. Half of the private pediatric offices (4/8) have some type of vaccine compliant policy for

their patients. These policies range from strongly encouraging parents to following the CDC recommended schedule for children to a strict policy where the office will not see patients unless they follow their schedule exactly. The pediatric offices with these policies take much less time for immunization visits because the conversations about vaccines usually take place with parents before the child is born or at the first visit. The adherence rates did not change in these offices, although some pediatric office respondents stated that they did lose patients after the pandemic because of their strict vaccine policy.

There was some confusion when answering question 9 “Do you track adherence rates for recommended immunizations for children?”. While most participants gave a firm “yes” answer, several individuals had some hesitation and answered, “we can”. There were respondents from health departments who were not sure if they track adherence rates, and 25% of those from pediatric offices and 4.5% from health departments gave a firm “no”. The ability to track vaccine adherence rates is available to all medical offices. There may need to be greater emphasis placed on the value of tracking routine childhood immunization rates and possible training for efficient ways to do this, especially at health departments in Kansas.

The most common theme that emerged from the answers to question 11 regarding the changes in conversations about vaccines with parents over the last five years was that the conversations were much longer now. More time is spent during immunization visits because more information is now requested by the parents. Several participants said that more parents ask for an alternate or delayed schedule compared to before the COVID-19 pandemic. Dealing with misinformation and safety concerns from parents was a common theme, and there was also a sense that those who give vaccines are more fatigued and give weaker recommendations than they did before the pandemic. Several of respondents mentioned this change specifically, but I sensed a lot of frustration in some of the other responses as well. Another impact of the pandemic was that several immunizers claimed to be giving more urgent or stronger recommendations about vaccines now. From this question, it appears that more time is now required for routine childhood immunizations compared to before the COVID-19 pandemic. With the increased time and information needed for routine vaccination visits, more resources and training may be beneficial for immunizers across Kansas.

There were many different answers given to question 12 referring to new challenges that immunizers have been dealing with since the pandemic began. Social media has become a major issue, and it appears that some of the other issues like political challenges, vaccine hesitancy, and a lack of trust in the healthcare industry are originating from social media sources.

Eleven different themes emerged from answers to question 13, “What reasons are given by parents when not accepting all recommended childhood immunizations?”. The large variety of answers indicates that the issue of vaccine hesitancy is complex and confusing. There are many challenges that healthcare workers must overcome, and each time a parent refuses a vaccine, the reasoning could be a new excuse. A separate survey sent to immunizers across the state of Kansas asking for the reasons given by parents for refusing vaccines may be beneficial for developing a resource to combat vaccine hesitancy.

The answers to question 14, “Are patients experiencing any barriers to receiving routine childhood immunizations in the last five year, and if so, what are they?” were mostly “no new/less barriers”. Cost and transportation were barriers listed a few times, but when they were mentioned, it appeared that those barriers had not changed much since before the pandemic. The only barrier that was most likely a change from the pandemic was the influence of parents and family (10.0%). This seems to be a result of social media influence, and more attention needs to be given to addressing this issue.

The most common resource mention to help combat vaccine hesitancy was a presence on social media or using social media as a tool. Immunizers recognize that TikTok videos, YouTube and Facebook have become the source of most of the misinformation that parents of their patients get. It makes sense to use this same media source to bring accurate, scientific information to the public. A greater emphasis and a more dominant presence on social media would be a valuable tool to combat vaccine hesitancy. This would not only increase public education but would help drive more patients into clinics. The websites and booklets mentioned by some respondents are good sources of information that could be linked to social media sites.

The comments that respondents gave to the last question showed that more emphasis and training is needed to address the impact of the COVID-19 pandemic on routine childhood

immunization rates in Kansas. There appears to be fear and uncertainty among many immunizers that I spoke to, and there was a common theme of wanting to be better equipped to handle questions from parents in a caring and empathetic manner.

## Limitations

There are more challenges in gaining participation with in-person interviews compared to sending out an online survey. Finding willing participants is more difficult due to the time it takes to travel to various locations and finding individuals willing to spend several minutes answering questions. Interviews were conducted without examination of the questions ahead of time by the participants. There were some instances where respondents were able to look up information related to the clinic where they worked, but the majority of responses were based on their memory or what they believed. This could result in recall bias or confirmation bias from the respondents. Recall bias could occur if a significant amount of time had passed causing the respondents to misremember information. Confirmation bias could occur in a comparable manner with respondents. If they do not remember exact answers, they may be more likely to give an answer that would align with their current beliefs or the overall attitude of the clinic (23).

Errors were encountered where I inadvertently skipped a question during an interview. This was not common, but it did change the number of responses for a few of the questions. An online or paper questionnaire would avoid this limitation.

The population density by county used to classify the size of the population served at each location (24) shows 37 counties that are classified as Frontier (less than 6.0 persons per square mile). I was unable to conduct interviews from a clinic located in a Frontier county. Several attempts were made in different Frontier locations, but no data in this project could be obtained from this smallest population density size of county. With more than a third of Kansas classified as this population density size, some themes could be significantly different for many or all survey questions. In future studies, care should be taken to gather information from all county population classifications. To get an accurate representation of Kansas communities, more information should be collected from Frontier counties since they represent over a third of the counties in the state.

Basic quantitative analysis could be performed on some questions such as the facility type, type of provider, VFC percentage and standing order use. However, the answers given for the approximate racial/ethnic population served were all very different and random. That question could be worded in a more specific manner, or actual data could be obtained at the state level if further research is conducted in this area. If this project is continued, I would get specific racial/ethnic population data from each location where surveys were conducted. Themes could be traced back to determine if any trends were more likely to occur based on ethnic backgrounds of patient populations.

As answers were given for resources needed to combat vaccine hesitancy, one of the emerging themes was “example of resources that have been effective”. If I was going to update the survey for project continuation, I would add a question that specifically asked for resources that have helped immunizers overcome vaccine hesitancy since the pandemic began. This would allow for more responses and would increase the opportunity for collaboration at different sites.

Finally, while the benefit of the open-ended questions is to generate un-biased and free responses, the limitation is that there may be missed information because the respondent did not think about something in their answer. For example, in question 4, participants were asked to describe their process for recommending available vaccines for children. Just because someone may not have answered that they offer all recommended vaccines, this doesn’t mean that they don’t do that routinely on every visit. If that option was listed on a multiple-choice questionnaire, there may have been a higher percentage of this response to this question.

## Conclusion

The pandemic that began in 2020 has had lasting effects over the last five years. This issue is of significant concern to immunization professionals across the state of Kansas. The survey results from this project have shown that there is frustration regarding vaccine hesitancy across the state. A significant number of parents are asking for delayed vaccine schedules for their children or denying recommended vaccines. Health professionals want to communicate with families in an empathetic and convincing manner, and they want to increase the number of

children coming to their clinics for immunizations. Social media has played an important role in causing confusion and spreading misinformation about vaccines during the last five years. This survey has shown a desire from the medical community to use social media as a tool to combat this misinformation. I found that most of the healthcare workers I interviewed were passionate about speaking to this issue. Many of the respondents were excited to talk about successes they have had in convincing parents of the importance of vaccines, and they were troubled by the challenges that they have experienced during the last five years. More training and collaboration can be helpful as they work to protect young patients from preventable diseases. Further research is needed to understand the changing environment of childhood vaccines so that useful resources can be made available to Kansas immunizers.

## Chapter 5 – Synthesis and Integration of Competencies

The competencies described in Table 5.1 below were utilized throughout my ILE experience as I applied the knowledge I gained from my MPH courses. Communication skills, biostatistics analysis, epidemiological research and the study of vaccines were valuable tools that I used to research the impact of the current issue of childhood vaccine hesitancy in Kansas.

**Table 5.1: Synthesis and integration of MPH foundational and IDZ competencies**

| Number and Competency |                                                                                                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MPH 2</b>          | Select quantitative and qualitative data collection methods appropriate for a given public health context | I conducted surveys with thirty immunizers from across the state of Kansas to evaluate themes of vaccine hesitancy challenges. Quantitative data was organized to determine common use of standing orders, location and type of clinics, use of public-pay versus private-pay vaccines, and time spent giving immunizations. I used inductive thematic analysis to categorize emerging themes found in qualitative data. These themes allowed me to integrate both data collection methods to evaluate challenges that immunizers experience because of the COVID-19 pandemic.                        |
| <b>MPH 4</b>          | Interpret results of data analysis for public health research, policy or practice                         | I compiled survey data and presented information to Immunize Kansas Coalition. This data was organized in a manner to evaluate recent challenges that immunizers encounter with their patients in Kansas regarding childhood vaccine hesitancy and possible solutions to overcoming barriers they experience. This information will help create updated resources for healthcare workers in combating vaccine hesitancy.                                                                                                                                                                              |
| <b>IDZ 2</b>          | Host response to pathogens/immunology                                                                     | I summarized the pathogenesis of infectious diseases and immune protection through reading and assignments in AAI 852 (Vaccinology). In MPH 754, (Epidemiology) I assessed the importance of adherence rates in vaccines and challenges to preventing disease among populations. I synthesized this knowledge into creating a tool to gather current information on the impact of the COVID-19 pandemic on routine childhood immunizations in Kansas. This work is an effort to theorize why Kansas has experienced declining adherence rates in recommended vaccines for children from 2020 to 2025. |

|               |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MPH 19</b> | Communicate audience-appropriate (i.e., non-academic, non-peer audience) public health content, both in writing and through oral presentation | I organized the data gathered from my ILE research and compiled the findings in a one-page document. This document was created to assist public health workers manage resistance to routine vaccines for children in Kansas. Current objections and recent successes are described in the document. I also had the opportunity to present these findings to the Immunize Kansas Coalition at their quarterly meeting virtually. A summary of my research and the one-page document were both presented at this meeting with an opportunity to address any questions from this organization. |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Table 5.2: MPH Foundational competencies and course taught in**

| <b>22 Public Health Foundational Competencies Course Mapping</b>                                                                                                                               | <b>MPH<br/>701</b> | <b>MPH<br/>720</b> | <b>MPH<br/>754</b> | <b>MPH<br/>802</b> | <b>MPH<br/>818</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>Evidence-based Approaches to Public Health</b>                                                                                                                                              |                    |                    |                    |                    |                    |
| 1. Apply epidemiological methods to settings and situations in public health practice                                                                                                          | x                  |                    | x                  |                    |                    |
| 2. Select quantitative and qualitative data collection methods appropriate for a given public health context                                                                                   | x                  | x                  | x                  |                    |                    |
| 3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate                                                         | x                  | x                  | x                  |                    |                    |
| 4. Interpret results of data analysis for public health research, policy or practice                                                                                                           | x                  |                    | x                  |                    |                    |
| <b>Public Health and Health Care Systems</b>                                                                                                                                                   |                    |                    |                    |                    |                    |
| 5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings                                            |                    | x                  |                    |                    |                    |
| 6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and systemic levels |                    |                    |                    |                    | x                  |
| <b>Planning and Management to Promote Health</b>                                                                                                                                               |                    |                    |                    |                    |                    |
| 7. Assess population needs, assets and capacities that affect communities' health                                                                                                              |                    | x                  |                    | x                  |                    |
| 8. Apply awareness of cultural values and practices to the design, implementation, or critique of public health policies or programs                                                           |                    |                    |                    |                    | x                  |
| 9. Design a population-based policy, program, project or intervention                                                                                                                          |                    |                    | x                  |                    |                    |
| 10. Explain basic principles and tools of budget and resource management                                                                                                                       |                    | x                  | x                  |                    |                    |
| 11. Select methods to evaluate public health programs                                                                                                                                          | x                  | x                  | x                  |                    |                    |
| <b>Policy in Public Health</b>                                                                                                                                                                 |                    |                    |                    |                    |                    |
| 12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence                                                                                       |                    | x                  | x                  | x                  |                    |
| 13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes                                                                   |                    | x                  |                    | x                  | x                  |

|                                                                                                                                                   |         |   |   |   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|---|---|
| 14. Advocate for political, social or economic policies and programs that will improve health in diverse populations                              |         | x |   |   | x |
| 15. Evaluate policies for their impact on public health and health equity                                                                         |         | x |   | x |   |
| <b>Leadership</b>                                                                                                                                 |         |   |   |   |   |
| 16. Apply leadership and/or management principles to address a relevant issue                                                                     |         | x |   |   | x |
| 17. Apply negotiation and mediation skills to address organizational or community challenges                                                      |         | x |   |   |   |
| <b>Communication</b>                                                                                                                              |         |   |   |   |   |
| 18. Select communication strategies for different audiences and sectors                                                                           | DMP 815 |   |   |   |   |
| 19. Communicate audience-appropriate (i.e., non-academic, non-peer audience) public health content, both in writing and through oral presentation | DMP 815 |   |   |   |   |
| 20. Describe the importance of cultural competence in communicating public health content                                                         |         | x |   |   | x |
| <b>Interprofessional Practice</b>                                                                                                                 |         |   |   |   |   |
| 21. Integrate perspectives from other sectors and/or professions to promote and advance population health                                         |         | x |   |   | x |
| <b>Systems Thinking</b>                                                                                                                           |         |   |   |   |   |
| 22. Apply a systems thinking tool to visually represent a public health issue in a format other than a standard narrative                         |         |   | x | x |   |

**Table 5.3: Infectious Diseases/Zoonoses (IDZ) emphasis area competencies**

| <b>Number and IDZ Emphasis Area Competency</b> |                                              | <b>Description</b>                                                                     |
|------------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------|
| <b>1</b>                                       | <b>Pathogens/pathogenic mechanisms</b>       | Evaluate modes of disease causation of infectious agents.                              |
| <b>2</b>                                       | <b>Host response to pathogens/immunology</b> | Investigate the host immune response to infection.                                     |
| <b>3</b>                                       | <b>Environmental/ecological influences</b>   | Examine the influence of environmental and ecological forces on infectious diseases.   |
| <b>4</b>                                       | <b>Disease surveillance</b>                  | Analyze disease risk factors and select appropriate surveillance.                      |
| <b>5</b>                                       | <b>Disease vectors</b>                       | Investigate the role of vectors, toxic plants and other toxins in infectious diseases. |

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## **Appendix**

### **Appendix A:**

#### **Survey Questions**

1. Health department, FQHC, private practice (pediatric, family practice), other?
2. Type of provider – physician, nurse, MA, supervisor, etc.?
3. Do you offer all CDC recommended childhood vaccines? If not, which ones are not offered?
4. Could you describe your process for recommending available vaccines for children, from the time a family walks in the door through vaccination?
5. Approximate racial/ethnic population that is served?
6. What percentage of your vaccines are VFC? What percentage is private pay? Other?
7. Approximately how much time is spent for each child immunization visit?
8. Are standing orders utilized in your practice? For which vaccines? How?
9. Do you track adherence rates for recommended immunizations for children?
10. Have you seen a difference in adherence rates in children from 2019 to 2024? If so, which vaccine adherence rates have changed? Can you share specific data?
11. Describe changes in the conversations with parents when it comes to routine childhood immunizations over the past five years.
12. What new challenges have you experienced since 2019 when it comes to following standard immunization schedules for children?
13. What reasons are given by parents when not accepting all recommended childhood immunizations for their children?
14. Are patients experiencing any barriers to receiving routine childhood immunizations in the last five years? And if so, what are they?
15. Other than Covid, what routine immunizations are parents either denying for their children or delaying?
16. What resources do you need to help combat vaccine hesitancy?
17. What else would you like to share? Is there anything else you think would be important for me to know?

**Thank you for your time! These will be the next steps...**

## Appendix B:

If you are performing research involving human subjects, it is your responsibility to address the issue of informed consent. This template is intended to provide guidance for crafting an informed consent document. The Committee for Research Involving Human Subjects (IRB) *strongly* recommends that you model your consent form on this template. However, if you choose a different approach, it must contain at a minimum the same elements as this standard version. Language and terminology used in the consent form must be written at no more than the 8<sup>th</sup> grade level, so that the potential participant can clearly understand the project, how it is going to be conducted, and all issues that may affect his or her participation. In addition, please write the consent form in a manner that addresses your subjects directly instead of writing it in a manner that addresses the University Research Compliance Office directly. *Information on the important issue of informed consent can be found in 45 CFR 46 at <http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html#46.116>. Federal law mandates that all signed and dated informed consent forms be retained by the P.I. for at least three years following completion of the study.*

**WAIVER OF INFORMED CONSENT:** *There are limited instances where the requirement for a formal informed consent document may be waived or altered by the IRB.*

*45 CFR 46 states that “An IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it*

- finds either:*
- 1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or*
  - 2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.”*

If a study employs only questionnaires and surveys as the source of their data, it may generally be assumed that to answer and return the questionnaire is an appropriate and sufficient expression of free consent. However, there are circumstances that might call this assumption into question - e.g., teacher-student relationship between the investigator and the subject, etc. However, a statement should be included on the questionnaire or survey form indicating that participation of the subject is strictly voluntary, the length of time reasonably expected to complete the questionnaire or survey form, and that questions that make the participant uncomfortable may be skipped.

### Form Content

**PROJECT TITLE:** Full title of project. If possible, the title should be identical to that used in any funding/contract proposal.

**PROJECT APPROVAL DATE/ EXPIRATION DATE:** provided in the approval letter, must be in place before distributing to subjects.

**LENGTH OF STUDY:** Estimate the length of time the subject will be expected to participate.

**PRINCIPAL INVESTIGATOR/CO-INVESTIGATOR(S):** Must be a regular member of the faculty.

**CONTACT DETAILS FOR PROBLEMS/QUESTIONS:** Name, phone number and/or email address of the P.I.

**IRB CHAIR CONTACT INFORMATION:** *For the subject should he/she have questions or wish to discuss on any aspect of the research with an official of the university or the IRB. These are:* Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224; Cheryl Doerr, Associate Vice President for Research Compliance, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

**PROJECT SPONSOR:** Funding/contract entity.

**PURPOSE OF THE RESEARCH:** Explain in lay terms that this is a research project, and why the research is being done.

**PROCEDURES OR METHODS TO BE USED:** Explain in lay terms and in language understandable at the 8th grade level how the study is going to be conducted and what will be expected of participants. Tell participants if they will be audio or videotaped, if they will be paid, etc.

**ALTERNATIVE PROCEDURES OR TREATMENTS, IF ANY, THAT MIGHT BE ADVANTAGEOUS TO SUBJECT:** Explain any alternative procedures or treatments if applicable.

**RISKS OR DISCOMFORTS ANTICIPATED:** Describe any foreseeable risks or discomforts from the study. If there are no known risks, make a statement to that effect.

**BENEFITS ANTICIPATED:** Describe any *reasonably expected* benefits from the research to the participant or others from the research.

**EXTENT OF CONFIDENTIALITY:** Explain how you plan to protect confidentiality.

**IS COMPENSATION OR MEDICAL TREATMENT AVAILABLE IF INJURY OCCURS:** *In cases where more than minimal risk is involved.*

**PARENTAL APPROVAL FOR MINORS:** If minors or those who require the approval of a parent or guardian are participants, you should include a space for their consenting signature.

**PARTICIPANT NAME/SIGNATURE:** Name of research participant and signature.

**WITNESS TO SIGNATURE (PROJECT STAFF):** Staff signature.

**If any of the following content sections do not apply to your research, feel free to delete from the consent form.**

**PROJECT TITLE:**

The Impact of COVID-19 Pandemic on Vaccine Hesitancy Towards Routine Childhood Immunizations in Kansas

**PROJECT  
APPROVAL  
DATE:**

5/16/2025

**PROJECT  
EXPIRATION  
DATE:**

11/16/2025

**LENGTH  
OF STUDY:**

6  
months

**PRINCIPAL  
INVESTIGATOR:**

Ellyn Mulcahy, PhD, MPH, Associate Professor and Director, Master of Public Health Program. College of Veterinary Medicine, Kansas State University; emulcahy@k-state.edu.

**CO-  
INVESTIGATOR(S):**

Greg Fields, Master of Public Health Candidate. College of Veterinary Medicine, Kansas State University

**CONTACT DETAILS FOR  
PROBLEMS/QUESTIONS:**

Greg Fields. 1086 Heritage Dr., McPherson, KS 67460; 620-242-4339; fieldsgreg@ksu.edu.

**IRB CHAIR CONTACT  
INFORMATION:**

Lisa Rubin, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224, [rubin@ksu.edu](mailto:rubin@ksu.edu).

**PROJECT SPONSOR:**

n/a

**PURPOSE OF THE RESEARCH:**

The aim of this project is to understand trends and causes of recent vaccine hesitancy throughout the state of Kansas after the COVID-19 pandemic. You are being asked to be a subject in a research study about the changes in attitudes, acceptance of and barriers towards routine childhood vaccines. You have been asked to participate in the research because you are a healthcare professional who administers, encourages or tracks recommended vaccines for children in Kansas. Your participation in this research is voluntary and if you decide to participate, you are free to withdraw at any time without penalty.

**PROCEDURES OR METHODS TO BE USED:**

Healthcare professionals in Kansas will be asked to participate in one in-person interview (data collection). The survey will consist of questions of less than 30-minutes. All surveys will be conducted in person and audio of the interview will be recorded.

**BIOLOGICAL SAMPLES COLLECTED (Describe procedure, storage, etc.):**

n/a

[Select a statement from the drop down menu]

**Not Applicable.**

**ALTERNATIVE PROCEDURES OR TREATMENTS, IF ANY, THAT MIGHT BE  
ADVANTAGEOUS TO SUBJECT:**

You have the option to not participate in this study.

**RISKS OR DISCOMFORTS ANTICIPATED:**

To the best of our knowledge, completing interviews, has no more risk of harm than you would experience in everyday life and normal learning practices, other than inconvenience of time. Throughout the interview, you may skip any question that you do not wish to answer. Concerning future use of data, your de-identified information could be used for research dissemination and publication.

**BENEFITS ANTICIPATED:**

Taking part in this research study may not benefit you personally, but researchers may learn new information that will improve education to parents and improve recommended childhood immunization rates.

**EXTENT OF CONFIDENTIALITY:**

We will use all reasonable efforts to keep your personal information confidential. Your personal information will not be collected or distributed. When this research is discussed or published, data collected will be shown in aggregate only; no one will know that you were in the study.

**Terms of participation:** I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

(Remember that it is a requirement for the P.I. to maintain a signed and dated copy of the same consent form signed and kept by the participant).

**PARTICIPANT  
NAME:**

**PARTICIPANT  
SIGNATURE:**

|  |
|--|
|  |
|--|

**DATE:**

|  |
|--|
|  |
|--|

**WITNESS TO  
SIGNATURE: (PROJECT  
STAFF)**

|  |
|--|
|  |
|--|

**DATE:**

|  |
|--|
|  |
|--|

**Debriefing:**

Thank you for participating in the project. As mentioned in the consent portion of this document, the purpose of this research is to increase understanding of vaccine hesitancy and to improve communication with parents in regard to acceptance of recommended childhood immunizations. If at any time you decide to withdraw from the interview process or do not want your anonymous interview statements used in the research, please contact Greg Fields [fieldsgreg@ksu.edu](mailto:fieldsgreg@ksu.edu). If there are any questions regarding the interview process, purpose/procedure of the research, or if you have any research-related problems, please contact the graduate student Greg Fields [fieldsgreg@ksu.edu](mailto:fieldsgreg@ksu.edu), the principal investigator Dr. Ellyn Mulcahy [emulcahy@k-state.edu](mailto:emulcahy@k-state.edu), or the IRB chair Dr. Lisa Rubin [rubin@ksu.edu](mailto:rubin@ksu.edu). Thank you again for participating in this project.

## Appendix C:

