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VACCINATIONS IN KANSAS

A CLOSER LOOK

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VACCINATIONS IN KANSAS *A CLOSER LOOK*

FEBRUARY 2023

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Table of Contents

Executive Summary	ii
Introduction	1
Required Vaccinations for School Entry	1
Vaccination Rates in Kansas	3
Medical and Religious Exemptions	5
Vaccine Compliance Gap	7
Vaccine Preventable Diseases	7
A Closer Look at Kansas School Entry Vaccine Requirements and Exemptions	10
How Does Kansas Compare to Other States?	13
The Science Behind Vaccines	15
What is in a Vaccine?	15
Role of the Federal Government in Vaccine Development	18
History of Kansas Vaccination Requirements Starting with the First Kansas Immunization Statutes	18
Movements in Opposition to Vaccines	18
Parental Vaccine Hesitancy	20
Recent Legislation and Discussion Around Vaccines in Schools	22
Appendix A: Vaccine Preventable Disease in Kansas between 2010 and 2019	A-1
Appendix B: Endnotes	B-1

Executive Summary

Figure ES1. Key Findings by Research Topic

Research Topic	Key Findings
Kansas school entry vaccine compliance and case studies of vaccine preventable diseases.	<p>Immunization rates are decreasing for vaccines required for school entry, including those that protect against diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, and chickenpox.</p> <p>Medical and religious exemptions combined have been at or slightly above 2 percent for the last four academic years.</p>
How Kansas compares to other state laws on exemptions.	All states require children attending childcare centers and schools to be vaccinated and all have at least a medical exemption for vaccines.
The science behind vaccines.	The history of vaccines and the science of vaccines extends for hundreds of years.
History of vaccines in Kansas.	The first statutes in Kansas related to immunization began in 1961 and were influenced by the second form of polio vaccine.
Opposition to vaccines and requirements.	Anti-vaccination movements began with the first vaccine against smallpox and many of the same concerns continue today.
Parental concerns on vaccination.	Parental concerns relate to safety, mistrust, alternative beliefs, philosophical views and lack of information.
Recent vaccine legislation in Kansas and nationally.	<p>Several bills were introduced in recent years related to vaccines and school entry, the Secretary’s authority to add new vaccines, and exemptions. 2020 House Bill (HB) 2601 did not make it out of committee and 2021 Senate Bill (SB) 212 did not make it through the Senate. 2022 SB 496 and SB 541 made it out of the Senate, but did not make it out of their respective House committees. In other states, recently enacted legislation includes bills related to tightening exemptions, making changes to required immunizations, and preventable disease education for parents.</p>

Introduction

Vaccinations have been described as one of the greatest public health achievements of the 20th century. During the COVID-19 pandemic, vaccination, and the right to not vaccinate, became a polarizing and dividing issue. Bills introduced in recent years, which did not become statute, demonstrate the divide that exists in Kansas.

The purpose of this report is to provide a starting point for discussion around vaccines, particularly vaccines required for school entry from current and historical perspectives. This report will examine types of vaccines, compliance, and Kansas case studies of vaccine preventable diseases. It will look at the science behind vaccines and the history of the required vaccines. Through an examination of the movement opposing vaccinations and parental concerns about vaccinations, the report will explore key themes and research-based views related to each area of concern. Lastly, it will examine how Kansas compares to other states on medical and religious exemptions.

Required Vaccinations for School Entry

Kansas statute (K.S.A. 72-6262) requires that children enrolling or enrolled in school for the first time in Kansas, and children enrolling in a school-operated preschool or daycare, have the immunizations deemed necessary and approved by the Secretary of the Kansas Department of Health and Environment (KDHE). The Secretary determines the required vaccinations based on recommendations from the Advisory Committee on Immunization Practices and the Centers for Disease Control and Prevention. The current vaccinations for Kansas school children kindergarten through grade 12 during the 2022-2023 academic^{1, 2} year are presented in *Figure 1* (page 2). The vaccines most recently added to school requirements were HepA (for Hepatitis A) and MenACWY (for Meningitis), added in the 2019-2020 academic year³.

Figure 1: School Immunization Requirements for the 2022-2023 Kansas School Year, Required and Recommended



Vaccine Required for School Entry	Vaccine Preventable Disease(s)
DTaP/Tdap	Diphtheria, Tetanus, Pertussis
IPV	Polio
MMR	Measles, Mumps, Rubella
VAR	Chickenpox
HepB	Hepatitis B
HepA	Hepatitis A
MenACWY*	Meningitis
Recommended Vaccine	Vaccine Preventable Disease
HPV	Human Papillomavirus
Influenza	Flu

*Note: MenACWY is required beginning at 7th grade. Licensed child care facilities and early childhood programs operated by schools also have vaccination requirements.
 Source: Kansas Department of Health and Environment; <https://www.kdhe.ks.gov/DocumentCenter/View/21272/2022-2023-School-Requirement-K-12-PDF>

Vaccination Rates in Kansas

KDHE analyzes a sample of public and private kindergarten vaccination records to measure completion of Kansas school entry requirements. Data were collected at the school district level, and statewide estimates are based on the weighted data.

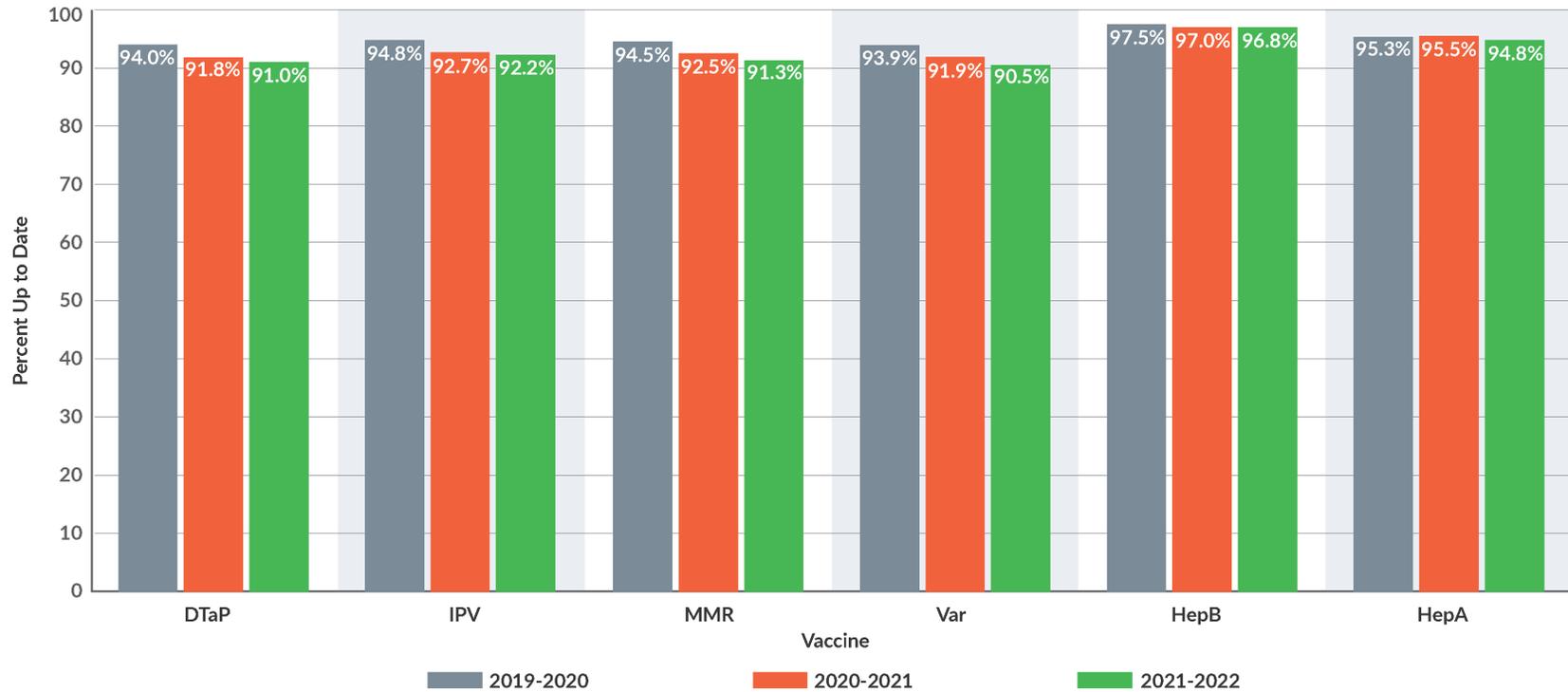
During the 2019-2020 academic year, the methodology used by KDHE changed from county-level data collection to collection by each school district, and the collection point changed from the first day of school to the 60th day of school. Vaccine compliance now reflects additional children vaccinated during the 60-day grace period. Kindergarten immunization rates for the last three school years cannot be compared to previous years because of the change in methodology.

During the last three years, the Kansas kindergarten immunization rate has started to decline for some vaccines (*Figure 2, page 4*). DTaP5, IPV4, MMR2, and VAR2 have experienced decreases since the 2019-2020 academic year, particularly during the first year of the COVID-19 pandemic. The rates for HepA and HepB have remained similar during these three academic years.

Key point:

- Immunization rates are decreasing for vaccines required for school entry, including those that protect against diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, and chickenpox.

Figure 2: Kansas Kindergarten Immunization Rates by Vaccine Type and Academic Year



Academic Year	DTaP5	Polio4	MMR2	Var2	HepB3	HepA2
2019-2020	94.0 %	94.8 %	94.5 %	93.9 %	97.5 %	95.3 %
2020-2021	91.8 %	92.7 %	92.5 %	91.9 %	97.0 %	95.5 %
2021-2022	91.0 %	92.2 %	91.3 %	90.5 %	96.8 %	94.8 %

Note: Two changes in methodology occurred in the academic year 2019-2020. Data are now collected at the school district level. Data in prior years were collected at the county level. The current data reflect compliance at the 60th day of the school year versus the first day of school. Additional children vaccinated in the 60-day grace period are now reflected in the statewide estimates.
 Source: Kansas Health Institute analysis of kindergarten immunization rates obtained through the Kansas Department of Health and Environment in December 2022.

Medical and Religious Exemptions

Kansas statute allows for both religious and medical exemptions. All schools, both public and private, with a kindergarten class are asked to complete a survey on student exemptions to vaccines and exclusion policies. During the 2018-2019 academic year, 65 percent of the schools reporting had an exclusion policy in place.⁴ *Figure 3* (page 6) shows the percent of Kansas kindergarten medical and religious exemptions by academic year.

The definitions of medical and religious exemptions are in statute (K.S.A. 72-6262).

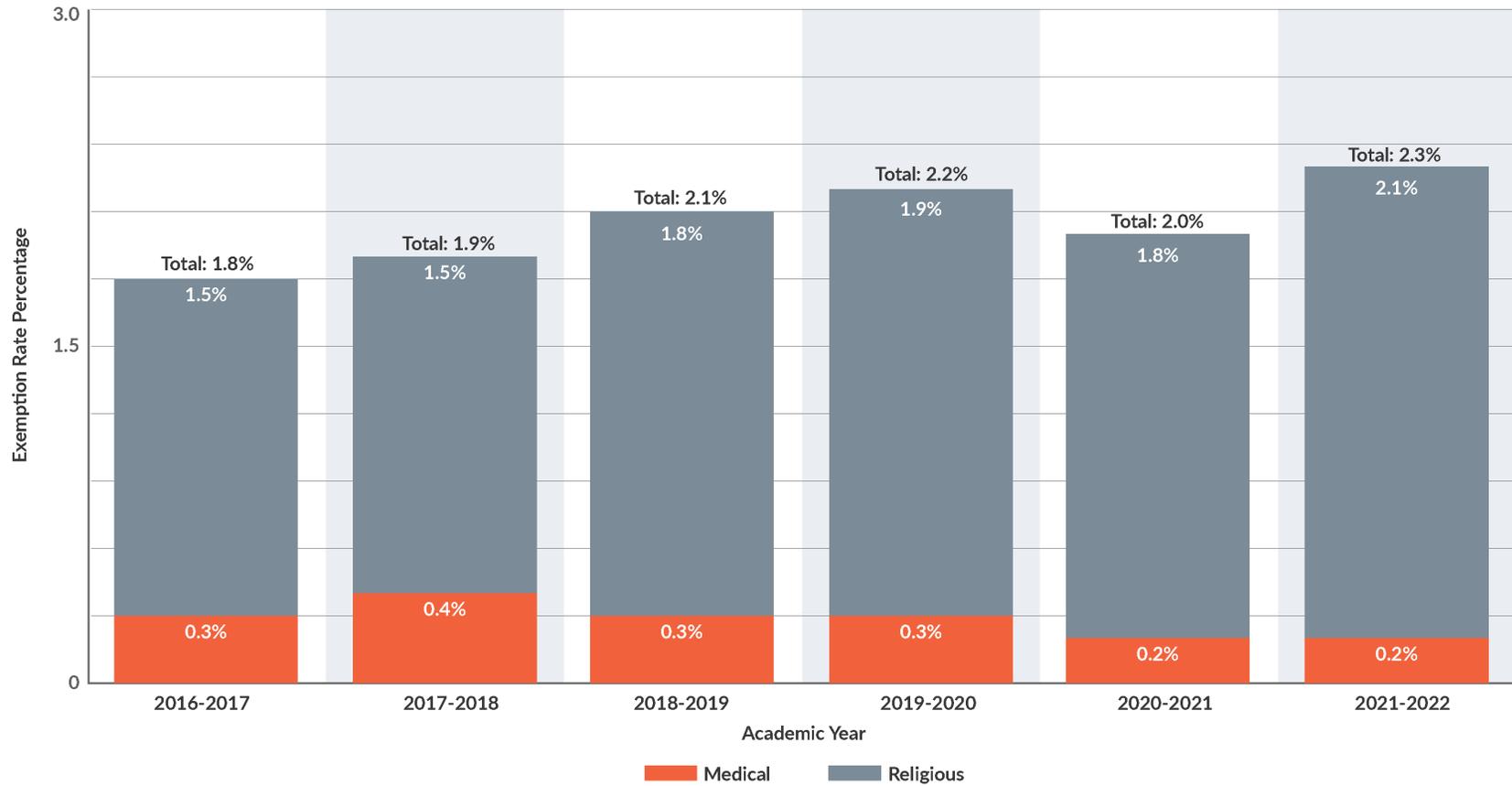
Medical Exemption – An annual written statement signed by a licensed physician stating the physical condition of the child to be such that the tests or inoculations would seriously endanger the life or health of the child.

Religious Exemption – A written statement signed by one parent or guardian that the child is an adherent of a religious denomination whose religious teachings are opposed to such tests or inoculations.

Key points:

- The 2018-2019 academic year was the first year that exemptions, combined medical and religious, exceeded 2 percent.
- Medical and religious exemptions combined have been at or slightly above 2 percent for the last four academic years.

Figure 3: Kansas Kindergarten Immunization Medical and Religious Exemptions by Academic Year



Note: Medical and religious exemptions are reported through a survey to the Kansas Department of Health and Environment. All public and private schools in Kansas are surveyed.
 Source: Kindergarten medical and religious exemption rates from Kindergarten Immunization Rates in Kansas obtained through the Kansas Department of Health and Environment in December 2022.

Vaccine Compliance Gap

The vaccine compliance gap exists for kindergarteners who did not have required vaccinations and did not have a medical or religious exemption (*Figure 4*, page 8). This gap includes students who are in the process of becoming up to date for requirements but as of the 60th day of school had not completed the requirements. This latter group is considered in compliance for school entry, but in the vaccine compliance gap for analysis.⁵

Key points:

- The compliance gap ranges from 0.9 percent for hepatitis B and 7.2 percent for varicella (chickenpox).
- As vaccination rates decrease and exemption rates stay similar, the compliance gap increases.

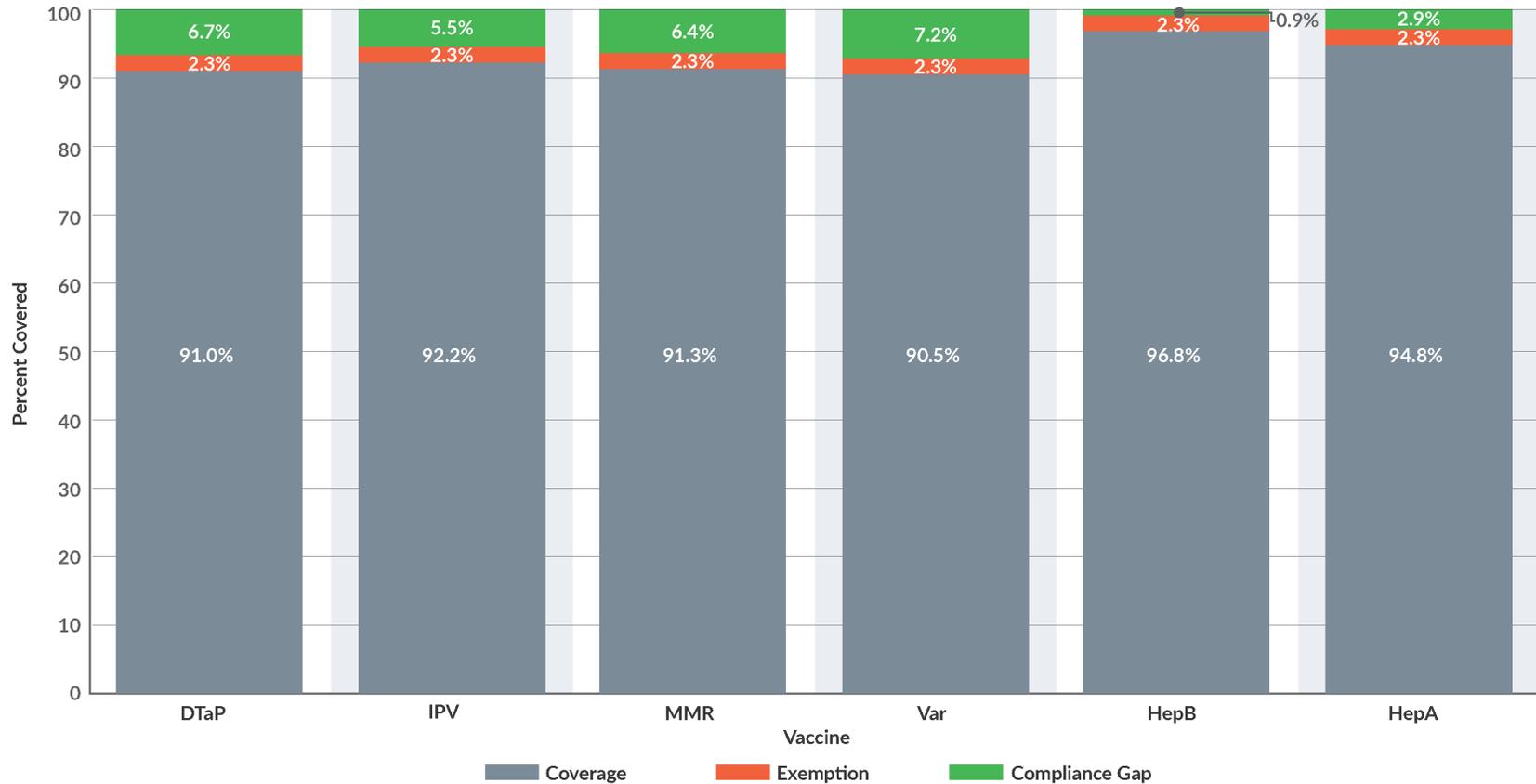
Vaccine Preventable Diseases

Kansas healthcare providers and laboratories are required by statute to notify KDHE regarding suspected or confirmed cases of reportable diseases. Included in the list of reportable diseases are several vaccine preventable diseases. *Figure 5* (page 9) illustrates the outbreaks in Kansas of vaccine preventable diseases⁶ including pertussis (whooping cough), varicella (chickenpox), measles and mumps.

Key points:

- From December 1, 2016, to July 31, 2017, 166 mumps cases were reported in 26 counties in Kansas. Eleven outbreaks were investigated, including two at university campuses.
- Pottawatomie County's low vaccination rates were cited as contributors to a 2013 outbreak of chickenpox, which was the largest outbreak investigated in Kansas, and a 2014 outbreak of whooping cough, which lasted over a year.

Figure 4: Compliance to Kansas Kindergarten Vaccinations, Exemptions, and the Compliance Gap for the 2021-2022 Academic Year



Note: Most recent vaccination compliance rates are compared using medical and religious exemptions, and the resulting compliance gap. The compliance gap includes students that are in the process of becoming up to date, but not fully compliant as of the 60th day of school. Exemptions were calculated in aggregate but vary by vaccine.
 Source: Kansas Health Institute analysis of kindergarten immunization rates and kindergarten medical and religious exemption rates from Kindergarten Immunization Rates in Kansas obtained through the Kansas Department of Health and Environment in December 2022.

A Closer Look at Kansas School Entry Vaccine Requirements and Exemptions

Kansas statutes include vaccination and other health requirements for children in schools and preschool or day care programs operated by schools.⁷ Here are some key facts about what Kansas requires:

- The Secretary of Health and Environment may determine which vaccines are required for attending school.
- Kansas exempts some children from these requirements for medical or religious purposes.
- To receive an exemption for a medical purpose, the student must provide the school with an annual written statement signed by a licensed physician that the required tests or inoculations would seriously endanger the life or health of the student.
- To receive an exemption for a religious purpose, the student must provide the school with a written statement signed by one parent or guardian that the student is an adherent of a religious denomination whose religious teachings are opposed to such tests or inoculations. How often it is required is not described in statute.
- The Kansas Department of Health and Environment provides a uniform medical exemption form for use by school districts.
- No state agency provides a uniform religious exemption form. Some school districts have developed and provide an official form. Other school districts do not provide an official form but do require a written statement signed by a parent.

There are several statutes that relate to immunization requirements for K-12 schools in Kansas. *Figure 6* (page 11) outlines each statute and highlights relevant information as it relates to immunizations. *Figure 7* (page 12) outlines required and recommended vaccinations for the 2022-2023 Kansas school year.

Figure 6: Kansas Statutes Related to School Entry Vaccines

Statute	Subject/Topic	Description
K.S.A. 72-6161	Health tests and inoculations; definitions	(a) "School Board" means the board of education of a school district and the governing authority of any nonpublic school; (b) "school" means all elementary, junior high, or high schools within the state. (c) "local health department" means any county or joint board of health established under the laws of Kansas and having jurisdiction over the place where any pupil affected by this act may reside; (d) "secretary" means the secretary of the state department of health and environment; (e) "physician" means a person licensed to practice medicine and surgery
K.S.A. 72-6262	Health tests and inoculations, certification of completion required, alternatives; duties of school boards	(a) In each school year, every pupil enrolling or enrolled in any school for the first time in this state, and each child enrolled for the first time in a preschool or day care program operated by a school, and such other pupils as may be designated by the secretary, prior to admission to and attendance at school, shall present to the appropriate school board certification from a physician or local health department that the pupil has received such tests and inoculations as are deemed necessary by the secretary by such means as are approved by the secretary. Pupils who have not completed the required inoculations may enroll or remain enrolled while completing the required inoculations if a physician or local health department certifies that the pupil has received the most recent appropriate inoculations in all required series. Failure to timely complete all required series shall be deemed non-compliance. (b) As an alternative to the certification required under subsection (a), a pupil shall present: (1) An annual written statement signed by a licensed physician stating the physical condition of the child to be such that the tests or inoculations would seriously endanger the life or health of the child, or (2) A written statement signed by one parent or guardian that the child is an adherent of a religious denomination whose religious teachings are opposed to such tests or inoculations (c) On or before May 15th of each school year, the school board of every school affected by this act shall notify the parents or guardians of all known pupils who are enrolled or who will be enrolling in the school of the provisions of this act and of any policy regarding the implementation of the provisions of this act adopted by the school board. (d) If a pupil transfers from one school to another, the school from which the pupil transfers shall forward with the pupil's transcript the certification or statement showing evidence of compliance with the requirements of this act to the school to which the pupil transfers
K.S.A. 72-6263	Duties of public health departments and officers; fees, exception to payment	The county, city-county, or multi-county health department shall provide without delay, and to the extent that funds are available, the tests and inoculations required by this act to such pupils as are not provided therewith by their parents or guardians and who have not been exempted on religious or medical grounds. Such tests and inoculations may be provided on a sliding fee scale for administrative charges, with the exception that no child may be denied inoculations for inability to pay an administrative fee. The local health officer shall counsel and advise school boards concerning the administration of this act.
K.S.A. 72-6464	Duties of secretary; forms and certificates; regulations	The secretary shall prescribe the content of forms and certificates to be used by school boards in carrying out this act and shall provide, without cost to the school boards, sufficient copies of this act for distribution to pupils. Schools shall utilize the reporting form adopted by the secretary for documentation of all immunizations. Audit information shall be obtained from this adopted form. The secretary may adopt such regulations as are necessary to carry out the provisions of this act.
K.S.A. 72-6265	Exclusions of pupils from school attendance; adoption of policy; notice; hearing; compulsory attendance law not applicable	a) The school board of every school affected by this act may exclude from school attendance, or by policy adopted by any such school board authorize any certificated employee or committee of certificated employees to exclude from school attendance, any pupil who has not complied with the requirements of K.S.A. 72-6262. A pupil shall be subject to exclusion from school attendance under this section until such time as the pupil shall have complied with the requirements of K.S.A. 72-6262. The policy shall include provisions for written notice to be given to the parent or guardian of the involved pupil. The notice shall (1) indicate the reason for the exclusion from school attendance, (2) state that the pupil shall continue to be excluded until the pupil has complied with the requirements of K.S.A. 72-6262, and (3) inform the parent or guardian that a hearing thereon shall be afforded the parent or guardian upon request therefor. b) The provisions of K.S.A. 72-3120 do not apply to any pupil while subject to exclusion from school attendance under the provisions of this section.

Source: Kansas Department of Health and Environment, <https://www.kdhe.ks.gov/DocumentCenter/View/1233/Kansas-Statutes-Related-to-School-Immunizations-PDF> Accessed December 2022.

Figure 7: Required and Recommended Vaccinations for Attending School in Kansas

Vaccination	Required Dosage	Notes
Required		
Diphtheria, Tetanus, Pertussis (DTaP/Tdap)	5	Doses should be given at 2 months, 4 months, 6 months, 15-18 months, and 4-6 years (prior to kindergarten entry). The 4th dose may be given as early as 12 months of age, if at least 6 months have elapsed since dose 3. The 5th dose is not necessary if the 4th dose was administered at age 4 years or older. A dose of Tdap is required at entry to 7th grade.
Hepatitis A (Hep A)	2	Doses should be given at 12 months with a minimum interval of 6 months between the 1st and 2nd dose.
Hepatitis B (Hep B)	3	Doses should be given at birth, 1-2 months, and 6-18 months. Minimum age. Minimum age for the final dose is 6 months.
Measles, Mumps, and Rubella (MMR)	2	Two doses required. Doses should be given at 12-15 months and 4-6 years (prior to kindergarten entry). Minimum age is 12 months and interval between doses may be as short as 28 days.
Meningococcal-Serogroup A,C,W,Y (MenACWY)	2	Two doses required. Doses should be given at entry to 7th grade (11-12 years) and 11th grade (16-18 years). For children 16-18 years, with no previous MenACWY, only one dose is required.
Poliomyelitis (IPV/OPV):	4	Doses should be given at 2 months, 4 months, 6-18 months, and 4-6 years (prior to kindergarten entry). Three doses are acceptable if 3rd dose was given after 4 years of age and at least 6 months have elapsed since dose 2.
Varicella (Chickenpox)	2	Doses should be given at 12-15 months and 4-6 years (prior to kindergarten entry). The 2nd dose may be administered as early as 3 months after the 1st dose, however, a dose administered after a 4-week interval is considered valid. No doses are required when student has history of varicella disease documented by a licensed physician.
Recommended		
Human Papillomavirus (HPV)	2	Recommended at 11 years of age or three doses if the series is started after 15 years.
Influenza	Dependent upon age and doses given in previous years	Recommended for all ages > 6 months of age.

Source: Kansas Department of Health and Environment; <https://www.kdhe.ks.gov/DocumentCenter/View/21272/2022-2023-School-Requirement-K-12-PDF>.

How Does Kansas Compare to Other States?

All states require children attending childcare centers and schools to be vaccinated and all have at least a medical exemption for vaccines. Others have a combination of medical, religious, and/or philosophical exemptions. Philosophical exemptions are based on personal or moral grounds, rather than strictly religious beliefs.⁸ Here is how Kansas compares to other states by the numbers.

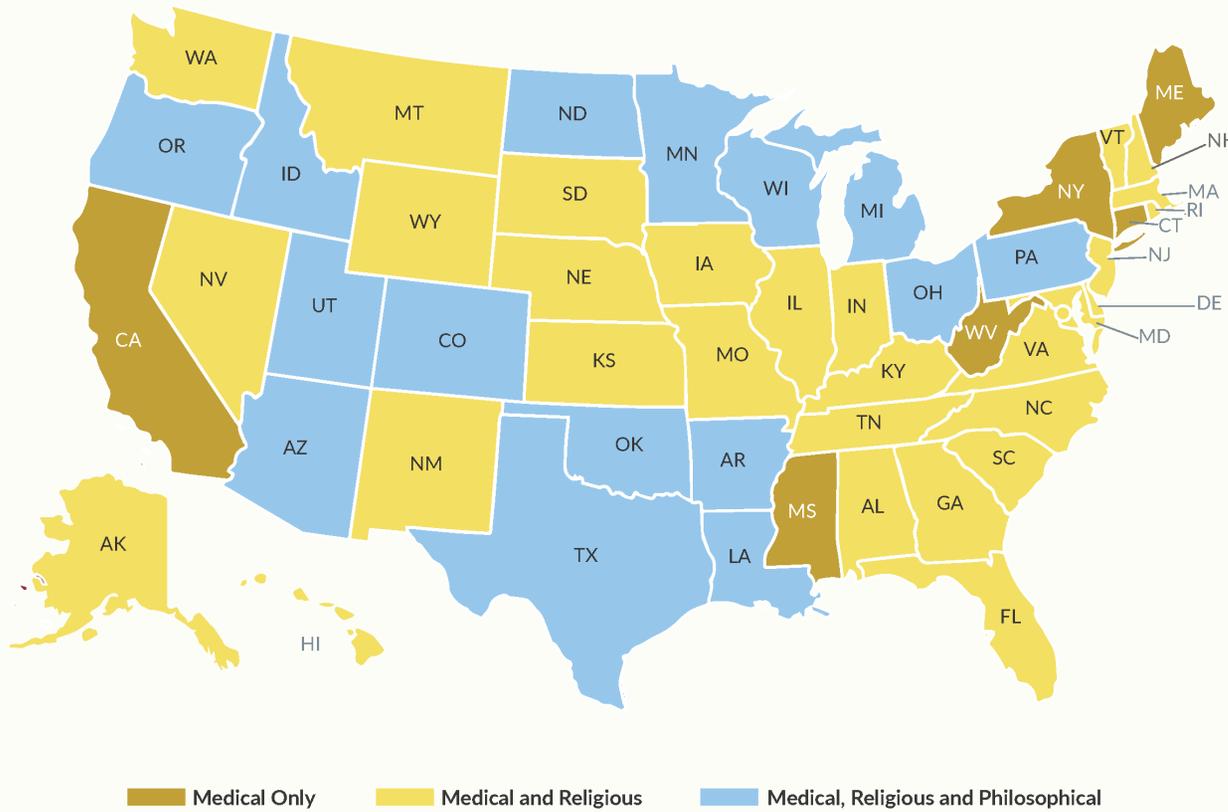
All states require children attending childcare centers and schools to be vaccinated against specific diseases. Alabama, California, New Hampshire, and South Dakota require the fewest, at 7 vaccinations, while Rhode Island requires the most, with 13 vaccinations. The average number of required vaccinations by a state is 9. Kansas requires 10 vaccines for children and students.⁹

All 50 states provide at least one type of exemption from mandatory vaccine requirements. Six states – California, Connecticut, Maine, Mississippi, New York, and West Virginia – only allow medical exemptions from vaccines. All other states allow some combination of medical, religious, or philosophical exemptions from mandatory vaccines (*Figure 8*, page 14). For example, the majority of states (29) allow for medical and religious exemptions while 15 states allow for all three types of exemptions.

Key facts about exemption laws across the U.S. and how they compare to Kansas:

- The majority of states across the U.S., including Kansas, have medical and religious exemptions.
- Several states that have medical exemptions address how long medical exemptions are valid in their laws. Kansas requires an exemption form to be filled out and approved annually.
- Other states exclude exemptions from outbreaks, meaning if there is an outbreak occurring in a particular area, exemptions from particular vaccines may not apply. In some cases where there are outbreaks, states may require parental acknowledgement of an exemption they have during an outbreak.
- Some states, such as Illinois and Michigan, require parental education on vaccines.

Figure 8: State School Vaccine Exemptions by Type



Type of Exemption	Number of States	States
Medical only	6	CA, CT, NY, ME, MS, WV
Medical and Religious	29	AL, AK, DE, FL, GA, HI, IL, IN, IA, KS, KY, MA, MD, MO, MT, NE, NV, NH, NJ, NM, NC, RI, SC, SD, TN, VT, VA, WA, WY
Medical, Religious and Philosophical	15	AZ, AR, CO, ID, LA, MI, MN, ND, OH, OK, OR, PA, TX, UT, WI

Source: Centers for Disease Control; <https://www.cdc.gov/phlp/docs/school-vaccinations.pdf> Updated by KHI with recent changes in exemptions from States with Religious and Philosophical Exemptions from School Immunization Requirements published by the National Conference on State Legislature, 2022.

The Science Behind Vaccines

Vaccines have significantly reduced the burden of vaccine preventable diseases. The eradication of smallpox in 1979 and the reduced incidence of other serious and deadly infectious diseases are among the greatest success stories of public health. To better understand the science behind Kansas school entry vaccines, this section will explore a brief timeline of vaccine history prior to Kansas' first immunization requirements, describe what is in a vaccine, and outline Kansas school entry vaccines by preparation methods.

Figure 9 (page 16) details key events in vaccination history prior to 1961.^{10,11}

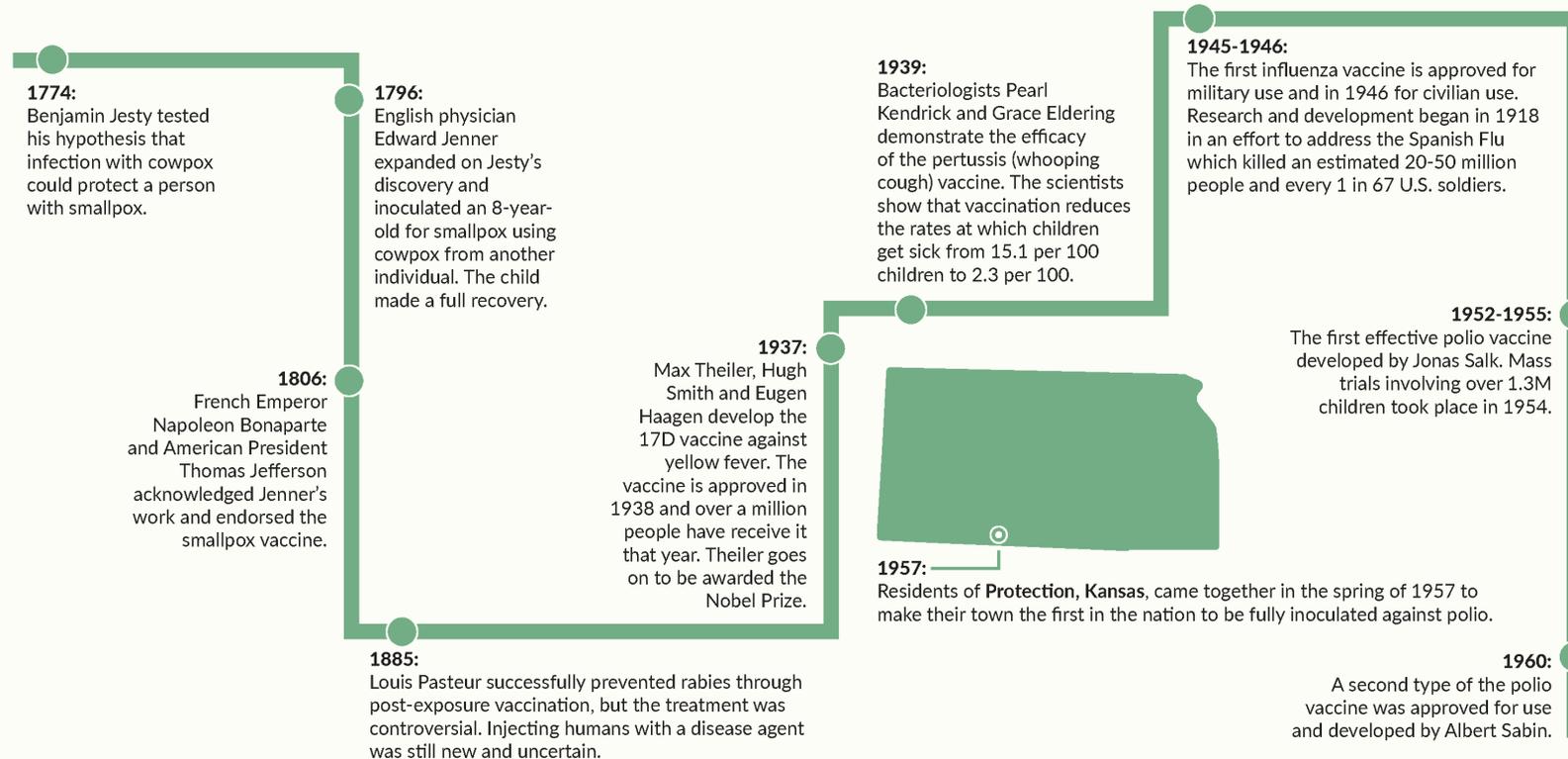
What is in a Vaccine?

Vaccines are intended to prepare your immune system to fight off infections and prevent disease. Vaccines are effective because of two components, antigens and adjuvants. Antigens are a toxoid or foreign substance that induces an immune response. They direct the specificity of the immune response toward a particular pathogen. Adjuvants are either naturally occurring, as with the adjuvants in live attenuated and inactivated vaccines, or added. Adjuvants need to be added in some formulations to generate signals required for an immune response.¹² Alum is an example of an added adjuvant commonly used in childhood vaccines.

The different types of vaccines require different methods of preparation. The first human vaccines used weaker or attenuated viruses to generate immunity. For example, smallpox vaccines used cowpox for protection without serious illness. Vaccines are made using several processes. *Figure 10* (page 17) outlines the vaccine type, vaccine preventable disease and how it is made for each of the vaccines required or recommended for school entry in Kansas.

While not found in all vaccines, trace amounts of stabilizers, residual inactivating ingredients, residual antibiotics, residual cell culture materials or preservatives can sometimes be found. The Johns Hopkins Bloomberg School of Public Health website maintains a full list of components for each vaccine.¹³

Figure 9: History of Vaccines Through the Years (1774-1960)



Source: Kansas Health Institute Analysis of World Health Organization "A Brief History of Vaccination", Kansas Department of Health and Environment and Kansas Legislative Research Department publications; KCUR <https://www.kcur.org/news/2021-01-11/this-kansas-town-was-the-first-to-line-up-for-polio-vaccine-but-now-pandemic-skeptics-abound>

Figure 10: How Kansas-Required and -Recommended School Entry Vaccines are Made

- Antigens are a toxoid or foreign substance that induces an immune response.
- Adjuvants are non-antigen components of the vaccine that stimulate the immune response. Live attenuated and inactivated vaccines have a natural adjuvant.

Vaccine Type ¹	Vaccine Preventable Disease	How It's Made ²
Live attenuated 	Measles, Mumps, Rubella, Chickenpox, Influenza (nasal), Rotavirus (oral form)	The most common method is passing the disease-causing virus through a series of cell cultures. Eventually, the attenuated virus will not replicate well in human cells.
Inactivated 	Polio, Influenza (injectable form)	These types of vaccines are created through heat or chemicals that destroy the pathogen's ability to replicate, but leave it intact enough that the immune system can recognize it. IPV, used in the United States, is of this form and cannot mutate to a virulent form like the OPV used in other countries.
Virus like particles 	HPV	When isolated proteins are expressed, virus-like particles (VLP) are created. These VLPs contain no genetic material from the virus, but prompt an immune response.
Toxoid 	Diphtheria, Tetanus	Because some bacterial diseases such as tetanus cause symptoms through the toxins they produce, this process is similar to inactivated viruses. Like inactivated viruses, these inactive toxins are created through heat or chemical processing.
Recombinant subunit 	Hep A, Hep B, Pertussis	These vaccines are created from isolating a specific protein and presenting it as an antigen. Recombinant vaccines use gene coding for a vaccine protein to insert into another virus or cells in a culture.
Conjugate 	Pneumococcal, Meningitis	Similar to recombinant vaccines, however, conjugate vaccines are made using pieces from the coats of bacteria that are chemically linked to a carrier protein.

¹Iwasaki, A., & Omer, S. B. (2020). Why and how vaccines work. *Cell*, 183(2), 290-295.

²The College of Physicians of Philadelphia. (2022). <https://historyofvaccines.org/vaccines-101/what-do-vaccines-do/different-types-vaccines>

Role of the Federal Government in Vaccine Development

The Food and Drug Administration (FDA) oversees the development and authorization of vaccines along with an external advisory committee, the Vaccines and Related Biologic Products Advisory Committee. The CDC and the Advisory Committee on Immunization Practice, also an external group, review clinical trial data and other research to recommend vaccinations for specific populations. More information about the testing and approval process is available at the [CDC](#) and [FDA](#).

History of Kansas Vaccination Requirements Starting with the First Kansas Immunization Statutes

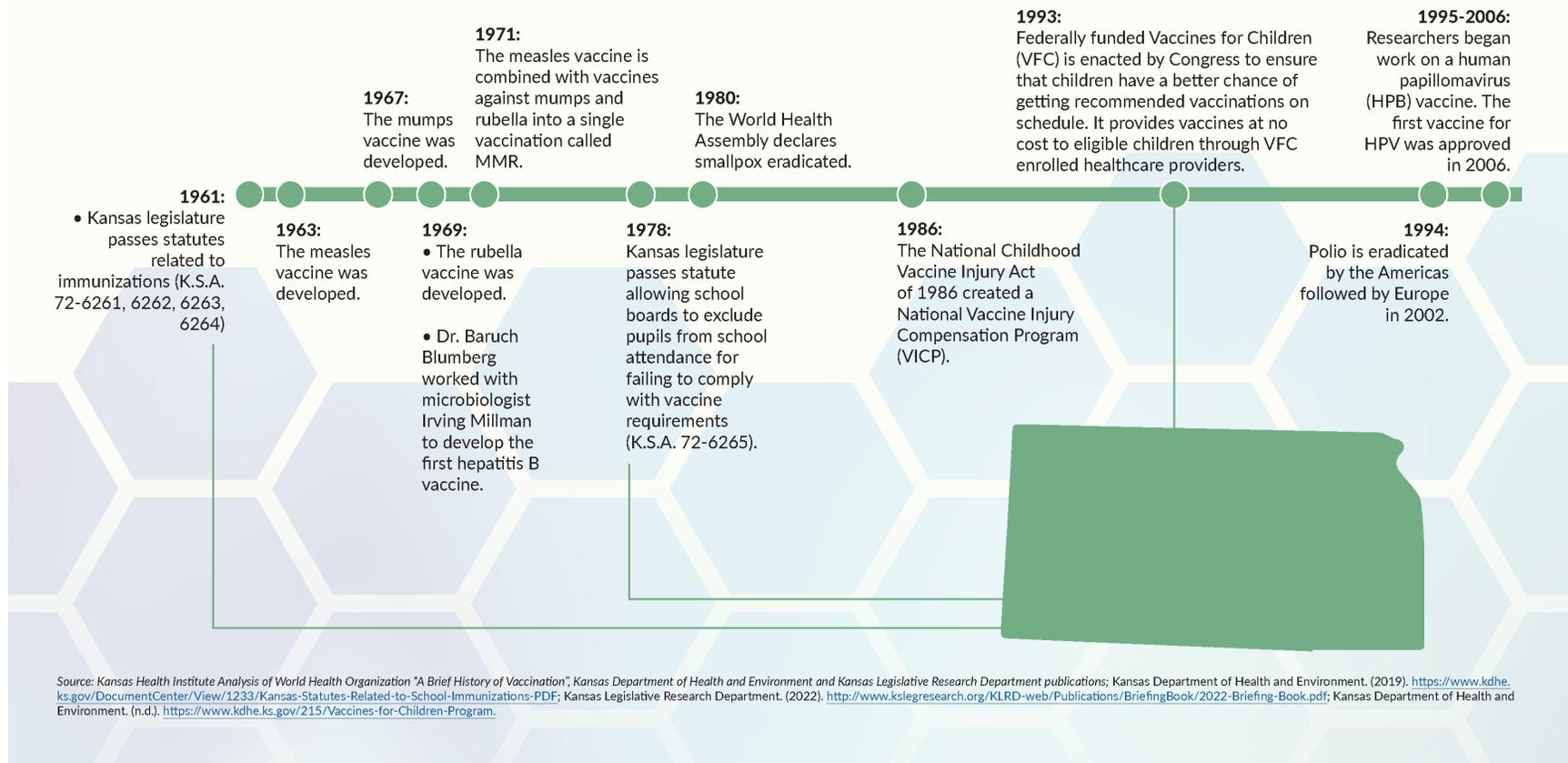
The first Kansas statutes related to immunizations took effect in 1961. The events of 1961 are influenced by the long history of vaccines described earlier, including the development of a second form of Polio vaccine. *Figure 11* (page 19) continues noteworthy events, including the development of major vaccines and key statutes and/or regulations in Kansas as it relates to vaccines.

Movements in Opposition to Vaccines

Health and medical scholars have described vaccination as one of the greatest public health achievements of the 20th century.¹⁴ The first anti-vaccination movement started with the introduction of vaccine against smallpox and was prominent in the US in the late 1800s. More recent vaccination controversies such as the use of aluminum, mercury, fetal tissue and porcine gelatin in vaccine production, as well as concerns of links to autism, have all received national attention. Each of these controversies is examined in this section. Controversies around vaccines began centuries ago with the introduction of the smallpox vaccine. At the time, vaccines were seen as unclean, unchristian, unsafe, and a violation of personal liberty and mirror many of the same concerns today.¹⁵

Adjuvants are non-antigen components of the vaccine that stimulate the immune response. Aluminum salts are a commonly added adjuvant in childhood vaccines that raised concerns. Because aluminum is 8.1 percent¹⁶ of the earth's crust, it is found in air, food and water. The amount of aluminum in vaccines is equivalent to the amount found in 33 ounces of infant formula.¹⁷

Figure 11: History of Vaccines Through the Years (1961-2006)



Source: Kansas Health Institute Analysis of World Health Organization "A Brief History of Vaccination", Kansas Department of Health and Environment and Kansas Legislative Research Department publications; Kansas Department of Health and Environment. (2019). <https://www.kdhe.ks.gov/DocumentCenter/View/1233/Kansas-Statutes-Related-to-School-Immunizations-PDF>; Kansas Legislative Research Department. (2022). <http://www.kslegresearch.org/KLRD-web/Publications/BriefingBook/2022-Briefing-Book.pdf>; Kansas Department of Health and Environment. (n.d.). <https://www.kdhe.ks.gov/215/Vaccines-for-Children-Program>.

MMR Vaccine was called into question as causing a series of events that led to autism by Dr. Andrew Wakefield. Dr. Wakefield's research was found flawed¹⁸ and withdrawn from the Lancet, the medical journal that published it. Many research studies have been conducted to determine the safety of MMR vaccine and none have found a linkage between the vaccine and autism.

Religious concerns about vaccines relate to the use of fetal tissue and porcine gelatin. Two cell lines developed from aborted fetal tissues in the 1960s are still used today. These cell lines have an indefinite lifespan, meaning no new aborted fetuses are ever used. The Vatican released a statement in 2003, *Moral Reflections on Vaccines Prepared from Cells Derived from Aborted Human Foetuses*,¹⁹ which reasoned that the use of vaccines for the protection of children and those that come into contact with them (pregnant women) was lawful and outweighed passive material cooperation. Another religious objection was the use of pork products in the production of gelatin, a stabilizer in some vaccines. Pork is prohibited in Jewish and Muslim food laws. The 2001 Seminar of Islamic Organizations determined, as a result of the transformation, the gelatin is pure and judicially permissible to eat.²⁰ Rabbi Abraham Adler stated that it was not against Jewish law because it was a non-oral medication.²¹ Religious objections still exist for some members of the Dutch Reform Church, Christian Scientists, and a small number of faith-healing denominations.²²

Thimerosal, a once common preservative used in vaccines that contains ethylmercury, was a concern because of its confusion with methylmercury. Methylmercury is a toxin in the food chain impacting fish, animals and people. At high levels, it is toxic. Thimerosal is made from a different type of mercury, ethylmercury, which is broken down and excreted from the body more rapidly than methylmercury. Thimerosal is no longer an ingredient in childhood vaccines. Research on autism rates after thimerosal was removed found no link between thimerosal and the development of autism.

Parental Vaccine Hesitancy

Parental refusal of vaccines is a concern for the outbreak of vaccine preventable diseases. A number of studies examine the reasons parents are vaccine hesitant. Five major areas of concern are 1) safety; 2) mistrust; 3) alternative beliefs about childhood immunity, vaccine scheduling and perceived toxicity; 4) philosophical views; and 5) lack of information.²³

Concern About Safety of Vaccines

Parents concerned about the safety of vaccines focus on risks associated with vaccinating their children. These concerns may be related to beliefs about toxic ingredients, potential side effects, vaccines causing serious disease and disrupting the immune system.²⁴ Certain ingredients in vaccines can very rarely cause severe hypersensitive reactions and local reactions. Other vaccine ingredients including preservatives, adjuvants and manufacturing residuals are often misunderstood and have not been shown to cause any other adverse events.²⁵

Mistrust

Some parents are suspicious of vaccine-related institutions and vaccine information. In some cases, medical mistrust reflects historical and ongoing injustices experienced by socially and economically marginalized groups. In other cases, the mistrust is based on misinformation.²⁶

Alternative Beliefs

Some alternative beliefs include that vaccination is contrary to the development of natural immunity or that vaccination interferes with the natural immunity of breast feeding. Scheduling concerns are based on the idea that immune systems can be overloaded. Parents also question the number of shots or vaccines that may be administered in one visit. Toxicity concerns relate to a childhood free of chemicals and toxic ingredients. The immune systems of infants and young children encounter millions of antigens in their environment every day and vaccines contain only a small fraction of a typical child's exposure. Refusing or delaying vaccines, or following alternative schedules, has been shown to increase risk.²⁷

Philosophical Views

Philosophical views include religious views on vaccines and childhood illness in addition to the feeling of personal responsibility to not be pressured into acting contrary to one's beliefs.

Lack of Information

Parents need to be fully informed before making vaccine-related decisions. Hesitant parents express concerns about vaccine information in the media as contradictory and biased. Reliance on other sources of information also is related to vaccine hesitancy.

Despite the fact that healthcare professionals remain the primary source of health information, including vaccines, the internet has grown as a source for finding information. One systematic literature review looked at primary studies that examined the use of social networks and anti-vaccine movement related to measles outbreaks and HPV vaccines. Researchers observed that Twitter seemed to be the most-used social network by the anti-vaccine movement. While fewer in number than pro-vaccine Twitter users, the anti-vaccine users were more active. Posts are related to vaccine risk, autism, vaccine components and conspiracy theories. The authors recommended greater training for the population to detect fake news and health agencies to be more attentive to possible misinformation.²⁸

In another study, researchers examined knowledge deficiency as it relates to a parent's negative attitudes toward vaccines, acceptance of scientifically inaccurate data about vaccines and institutional trust. Researchers also looked at the resulting communication patterns of parents and found that parents with negative attitudes toward vaccines sought out more information, forwarded information to others more often and made advance judgments about the value of the information.²⁹

Other Concerns

In 2017, the Kansas Health Institute hosted a panel, *Vaccine Hesitancy: A conversation with health leaders and concerned parents*. Parents at the event raised a few different concerns. Parents on the panel reported that they experienced feelings of hostility from healthcare providers when voicing concerns, emphasizing the importance of healthcare providers listening to parents and responding to questions. Another concern was the way in which vaccine injury claims must be filed. A third area of concern was that the small number of children who experience adverse events were disregarded as “collateral damage.” A key takeaway from these concerns was the need for greater understanding of those susceptible to the rare adverse effects of vaccines.³⁰

Recent Legislation and Discussion Around Vaccines in Schools

Several bills have been introduced recently relating to vaccines and the Secretary of the Kansas Department of Health and Environment's authority to add new vaccines to required immunizations for school entry. HB 2601 was introduced in 2020, SB 212 was introduced in 2021, and SB 496 and SB 541 were introduced in 2022.

HB 2601 would have:

- Codified the vaccination list currently in KAR 28-1-20 as a requirement for all children attending maternity and childcare facilities governed by KSA 65-508 and students attending schools governed by KSA 72-6262.
- Allowed the Secretary to only add new immunizations to the required list if they find there is “an imminent hazard to the public safety,” and such rule and regulation would expire on July 1 of the following calendar year.
- Authorized the Secretary to remove any tests or vaccines from the list should they determine the immunization is no longer necessary or is unsafe.³¹

HB 2601 did not make it out of Committee. The House Committee on Education held a hearing with over 300 individuals and organizations providing testimony.³²

Similar provisions were put into SB 212 in 2021, which was recommended by the Senate Committee on Public Health and Welfare, where 126 testified either in support or opposition to the bill. SB 212 did not make it through the Senate.³³

SB 496 would have:

- Changed a parent’s right to make healthcare and medical decisions for their child including regarding vaccinations and immunizations to state a parent has a right to be able to make healthcare and medical decisions for their child.³⁴

SB 496 was amended and passed by the Senate, but the bill did not make it out of the House Committee on K-12 Education Budget.

SB 541 would have:

- Amended student health statutes related to alternative certifications (exemptions) for required tests and inoculations (immunizations) for first-time enrollment at child care facilities and schools. The bill would replace language in the current religious exemption provision to provide that children and students enrolling in such facilities and schools would be exempt from immunizations required by the Secretary if the student presents a written statement signed by one parent or guardian that the immunizations would violate sincerely held religious beliefs of the parent, guardian, or child.
- Provided that an exemption based on sincerely held religious beliefs would be granted without inquiring into the sincerity of the request. The bill would specify that “religious

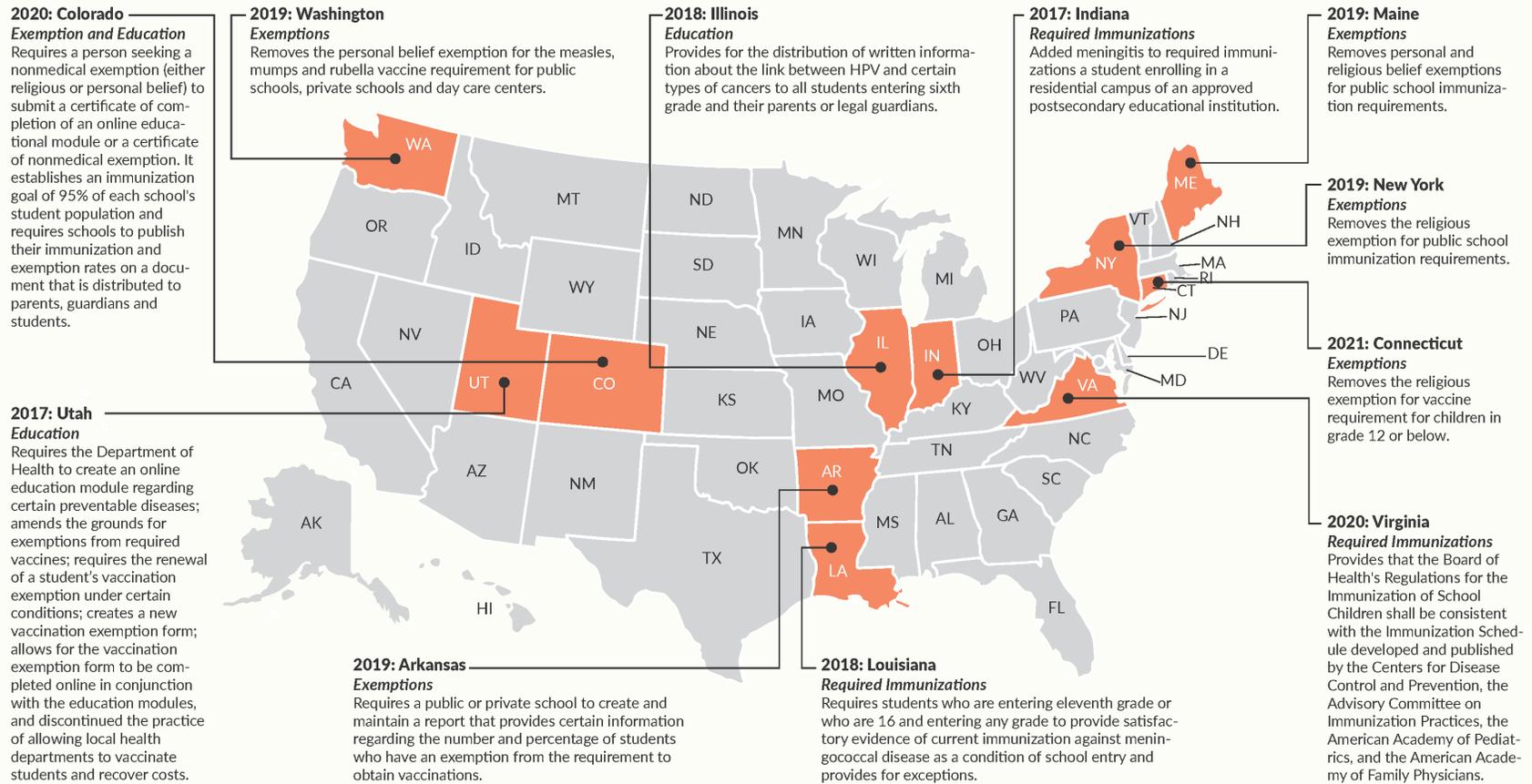
beliefs” include, but are not limited to, theistic and non-theistic moral and ethical beliefs as to what is right and wrong that are sincerely held with the strength of traditional religious views.

- Provided an exemption to the immunization requirement when an immunization does not have final approval by the U.S. Food and Drug Administration. To qualify for this exemption, the student could present the same written statements to the Secretary as for other exemptions authorized by law, but for an exemption based on the endangerment of the life or health of the child, such statement could be signed by a parent or guardian in addition to a licensed physician.
- Stipulated that no student who has presented alternative certification pursuant to the above provisions could be denied enrollment or participation in any school activity, or segregated or separated from other students as a result of such student’s vaccination status. The bill would also make technical amendments to this section, including replacing the word “pupil” with “student.”³⁵

SB 541 passed as amended in the Senate but did not make it out of the House Committee on Judiciary.

In other states there has been some activity related to school immunizations as shown in *Figure 12* (page 25), which outlines legislation across the country since 2017. The figure shows that the most legislative activity related to school vaccines occurred in 2019. Maine and New York removed personal and/or religious belief exemptions for public school immunization requirements. Washington removed the personal belief exemption for the measles, mumps and rubella vaccine requirement for public and private schools and daycare centers. Most legislation is related to vaccine exemptions, but states also have addressed education and have made adjustments to required vaccines in recent years.

Figure 12: Enacted Legislation Related to School Vaccines by State, 2017-2021



Source: Kansas Health Institute Analysis of States with Religious and Philosophical Exemptions from School Immunization Requirements published by the National Conference of State Legislatures, 2022.

Appendix A: Vaccine Preventable Disease in Kansas between 2010 and 2019

Whooping Cough – A total of 2,967 cases of whooping cough reported and of those cases, 879 were associated with 45 whooping cough outbreaks in the ten-year period.

2011 (Ford County): 13 cases – Community-wide

2012 (Douglas County): 5 cases - School and household

2012 (Johnson, Franklin, Wyandotte counties): 205 cases - Community-wide

2012 (Nemaha, Brown counties): 7 cases - School

2012 (Pottawatomie County): 20 cases - Community-wide

2012 (Riley County): 12 cases - School and household

2012 (Sedgwick County): 6 cases - Long-term care facility

2012 (Sedgwick County): 9 cases - School

2013 (Leavenworth County): 32 cases – School district (elementary, middle and high school)

2013 (Finney County): 11 cases - School

2013 (Johnson County): 3 cases - School

2013 (Johnson County): 3 cases - School

2013 (Leavenworth County): 4 cases - School

2013 (Pawnee, Montgomery counties): 6 cases - Extended family gathering

2013 (Pawnee County): 5 cases - Workplace

2013 (Stafford County): 3 cases - Daycare

2013 (Sedgwick County): 4 cases - School

2013 (Sedgwick County): 6 cases - School district

2014 (Harvey County): 11 cases – School district (elementary and high school)

2014 (Marion County): 15 cases – Community-wide, daycare, school, church and other

2014 (Montgomery County): 22 cases – Community-wide, schools and contacts

2014 (Pottawatomie, Jackson, Wabaunsee and Shawnee counties): 137 cases - Schools, church and surrounding counties

2014 (Pratt County): 3 cases - School

2014-2015 (McPherson County): 19 cases - School district (elementary, middle and high school)

2015 (Reno County): 95 cases – Community-wide, schools, home, daycare, other or unknown

2015 (Barton County): 27 cases – Community-wide, school, other schools in the area and daycares

2015 (Harper County): 6 cases - Long-term care facility

2015 (Johnson County): 7 cases - School

2015 (Sedgwick County): 7 cases - School

2015 (Sedgwick County): 7 cases - Extended family gathering

2016 (Leavenworth County): 9 cases - School district

2016 (Sedgwick County): 5 cases - School

2017 (Barton County): 5 cases - Extended family gathering

2017 (Douglas County): 3 cases - Extended family

2017 (Johnson County): 8 cases - School

2017 (Sedgwick County): 3 cases – Daycare

2017 (Labette County): 11 cases – School district

2017 (Douglas County): 15 cases – Private school and contacts

2018 (Pottawatomie County): 3 cases - Extended family

2018 (Reno County): 45 cases - Community, church

2018 (Sedgwick County): 3 cases - School

2019 (Saline County): 5 cases - School

2019 (Wyandotte County): 6 cases - School

2019 (Wyandotte County): 3 cases - Households

2019 (Wyandotte County): 45 cases - Community-wide

Mumps – A total of 209 cases of mumps reported and of those cases, 140 were associated with 14 mumps outbreaks in the ten-year period.

2016 (Riley County): 3 cases - College

2016 (Douglas County): 20 cases – The University of Kansas

2017 (Riley County): 17 cases – Kansas State University
2017 (Crawford County): 16 cases – Family event
2017 (Finney County): 3 cases – High school event and contacts
2017 (Thomas County): 6 cases – High school event and contacts
2017 (Marshall County): 35 cases – High school
2017 (Johnson County): 15 cases – Workplace and contacts
2017 (Johnson County): 2 cases – Post secondary school
2017 (Trego County): 6 cases – High school
2017 (Johnson County): 5 cases – Healthcare facility
2017 (Wyandotte County): 3 cases – Workplace
2017 (Johnson, Leavenworth, Wyandotte counties): 6 cases - Workplace
2019 (Johnson County): 3 cases - Households

Measles – A total of 50 cases of measles reported and of those cases, 43 were associated with 4 measles outbreaks during the 10-year period.

2012 (Finney County): 6 cases – Foreign travel, church and contacts
2014 (Johnson and Sedgwick counties): 14 cases – Kansas City metro area, household and workplace contacts
2017 (Butler County): 2 cases – Foreign travel to European country experiencing an outbreak and flight contact
2018 (Johnson, Linn, Miami counties): 21 cases – International travel, daycare, healthcare, household

Chicken Pox – A total of 2,475 cases of chicken pox reported and of those cases, 206 were associated with 14 chicken pox outbreaks during the 10-year period.

2012 (Shawnee County): 11 cases in students – School district (elementary, middle and high school)
2012 (Ellsworth County): 5 cases - School
2013 (Pottawatomie, Wabaunsee, Shawnee and Jackson counties): 111 cases in school-age children primarily in Pottawatomie County

2013 (Shawnee and Douglas counties): 5 cases in day care center
2013 (Cowley County): 7 cases - Household and neighborhood gathering
2013 (Jackson County): 7 cases - School
2013 (Labette, Cherokee counties): 6 cases – School
2013 (Shawnee County): 10 cases – Church
2014 (Reno County): 5 cases - School
2015 (Pottawatomie County): 11 cases - School and church
2015 (Douglas, Leavenworth, Jefferson counties): 7 cases – School
2015 (Harper County): 5 cases – Daycare
2018 (Douglas County): 11 cases – Private school and household contacts
2019 (Harvey, Sedgwick, McPherson counties): 5 cases - Daycare

Appendix B: Endnotes

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