

American Vaccination Coverage

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I. Threat to Global Health

Vaccination is a staple of modern medical care which has greatly impacted overall quality of health across the globe. Thanks to vaccines, people live healthier, longer lives and deadly diseases which were once commonplace have been outright eliminated in many countries.

However, vaccination has yet to generate its maximum potential impact on society. While there are monetary and logistical reasons for this in developing countries, the circumstances of the United States encapsulate a growing issue in the developed world.

A. Gaps in Vaccination Coverage in the United States

Insufficient access to medical care has contributed to critical gaps in vaccination coverage in the United States. However, it is persistent misinformation campaigns and conspiracy theories from anti-vaccine activists (also colloquially known as Anti-Vaxxers) which have exacerbated the issue to the point of potential crisis. While a majority of American children still receive the vaccines recommended by the Center for Disease Control (CDC) by 24 months of age, gaps in vaccination coverage have left communities susceptible to disease outbreaks.¹ Such outbreaks include the return of communicable diseases previously eliminated in the United States, such as measles².

In the case of measles, first-dose coverage rates have stalled globally at 85%; second-dose coverage hovers even lower, at 69%³. As of 2019, at least 90% of American

¹ Holly A. Hill et al., "Vaccination Coverage by Age 24 Months Among Children Born in 2015 and 2016 - National Immunization Survey-Child, United States, 2016-2018," *MMWR: Morbidity & Mortality Weekly Report* 68, no. 41 (October 18, 2019): 913–18, <https://doi.org/10.15585/mmwr.mm6841e2>.

² CDC, "Measles Cases and Outbreaks," Centers for Disease Control and Prevention, February 3, 2020, <https://www.cdc.gov/measles/cases-outbreaks.html>.

³ "WHO | Measles," WHO (World Health Organization), accessed March 2, 2020, <http://www.who.int/immunization/diseases/measles/en/>.

children born 2015-2016 received one or more doses of the measles, mumps and rubella (MMR) vaccine by 24 months of age. However, this impressive number does not account for uneven coverage. According to a recent National Immunization Survey (NIS) by the CDC, eighteen states (in addition to the nation’s own capital) obtained less than a 90% first-dose coverage rates of the MMR vaccine among children born 2015-16 by 24 months of age. This is concerning, as ideally 95% of a given population would be vaccinated in order to ensure herd immunity against communicable diseases⁴. At the state-level alone, vaccination coverage is incredibly uneven in the United States and leaves many communities vulnerable to outbreaks of disease, such as those seen in California in 2015, Minnesota in 2017, and New York in 2019.

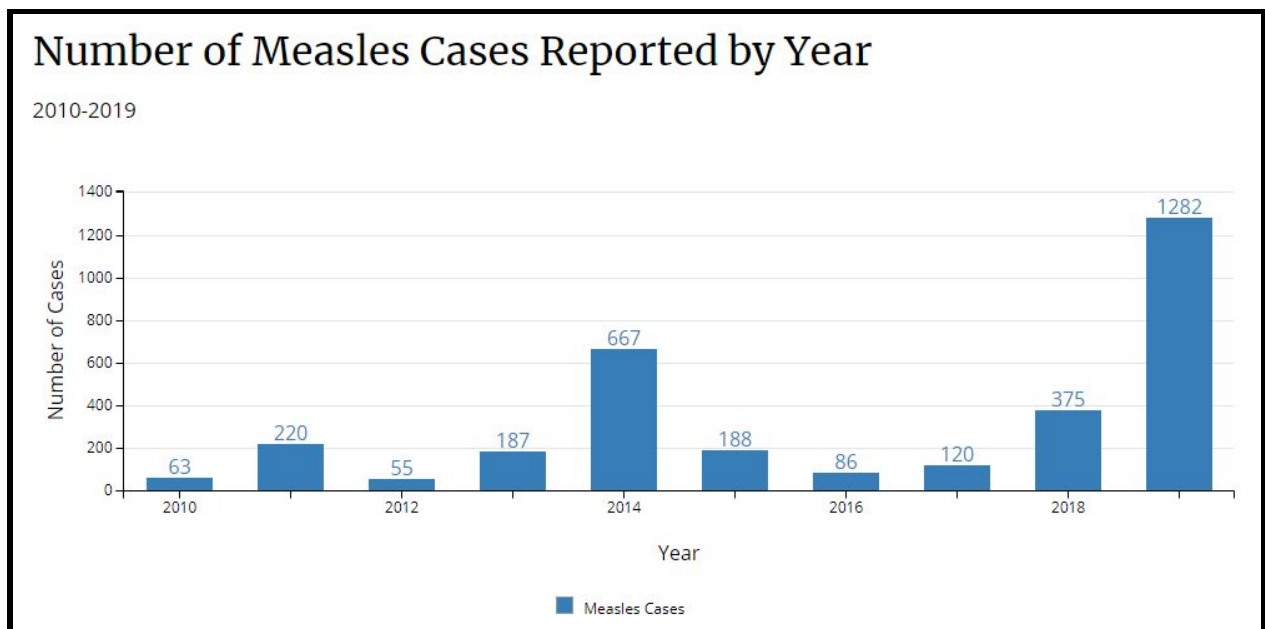


Figure 2. Number of Measles Cases Reported by Year.⁵

⁴ Sebastian Funk et al., “Combining Serological and Contact Data to Derive Target Immunity Levels for Achieving and Maintaining Measles Elimination,” *BMC Medicine*, no. 1 (2019): 1, <https://doi.org/10.1186/s12916-019-1413-7>.

⁵ CDC, “Measles Cases and Outbreaks.”

B. Public Health Authorities and Vulnerable Communities

i. Client and Closely-Aligned Stakeholders

Disease outbreaks pose a threat to public health and concern various actors within American government and society. However, response to outbreaks has principally been the responsibility of our client, the US Department of Health and Human Resources (HHS), its various agencies, and individual state health authorities. The spread of preventable communicable diseases is a particular concern of the National Vaccine Program (NVP) which coordinates immunization-related activities among DHHS agencies like the Center for Disease Control and Prevention (CDC)⁶. As the HHS is an extensive organization, however, various other offices have a stake in the present issue, such as the Office of Minority Health (OMH), which is concerned with the promotion of vaccination among minority populations in order to promote herd immunity across communities⁷.

Other institutions which commonly deal with the effects of disease outbreaks include hospitals and schools, public or private. Children and immunocompromised individuals, such as cancer patients and HIV-carriers, are just two demographics which are already vulnerable to infection by VPDs. In hospital and school settings, these infections can spread especially quickly among these demographics. This fact makes gaps in vaccination coverage a major concern to the US Department of Education and American medical providers in addition to the HHS.

⁶ "History of Vaccine Safety | Ensuring Safety | Vaccine Safety | CDC," August 16, 2019, <https://www.cdc.gov/vaccinesafety/ensuringsafety/history/index.html>.

⁷ "Immunizations and Hispanic Americans - The Office of Minority Health," accessed March 3, 2020, <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=67>; "Immunizations and Asians and Pacific Islanders - The Office of Minority Health," accessed March 3, 2020, <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=52>; "Immunizations and African Americans - The Office of Minority Health," accessed March 3, 2020, <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=22>.

ii. Vulnerable Demographics and Impact of VPDs

The critical nature of protecting Americans from vaccine-preventable diseases (VPDs) cannot be stressed enough. In the United States, of unvaccinated individuals who contract measles, 1 in 5 will be hospitalized⁸. Like many other VPDs, there is no curative treatment for measles; supportive care throughout the illness is the only course of treatment. Symptoms of measles include a fever and rash, but it is the secondary complications which may prove deadly. 1 to 3 in every 1,000 patients will die of respiratory or neurological complications. 1 in 20 children who contract measles will also contract pneumonia, the leading cause of death among children with measles.

Even those who survive their bout with the disease may suffer lifelong complications. 1 in every 1,000 victims will develop encephalitis (swelling of the brain), which may lead to convulsions, deafness, or intellectual disability. Ear infections are rather common as well. About 1 in every 10 children with measles will develop an ear infection, which in turn may lead to hearing loss.

Measles does not solely affect children under age two. Other demographics at risk for complications from the disease include adults older than 20 years old, immunocompromised individuals, and pregnant women. In fact, pregnant people who contract measles may give birth prematurely. Premature and low-birth-weight infants are prone to their own myriad of lifelong health complications⁹.

⁸ CDC, "Measles Complications," Centers for Disease Control and Prevention, January 14, 2020, <https://www.cdc.gov/measles/symptoms/complications.html>.

⁹ CDC, "Premature Birth," Centers for Disease Control and Prevention, October 17, 2019, <https://www.cdc.gov/reproductivehealth/features/premature-birth/index.html>; "Premature Birth - Symptoms and Causes," Mayo Clinic, accessed March 3, 2020, <https://www.mayoclinic.org/diseases-conditions/premature-birth/symptoms-causes/syc-20376730.p>

Mumps, also prevented by the MMR vaccine, has had a particular impact on young adults in the past two decades. Several universities have dealt with large outbreaks since 2006¹⁰. While not as potentially deadly as measles, associated complications may still be severe and should be avoided. Inflammation of various organs (such as the brain, pancreas, and reproductive organs) can lead to lifelong complications, deafness or shrinkage of male reproductive organs, which may accompany lowered sperm counts¹¹.

The MMR vaccine and the diseases it prevents are not the sole concern of this analysis. Diseases that the public may perceive as more commonplace still pose a significant danger to public health. Chickenpox, often seen as a childhood rite-of-passage, is another VPD whose complications should not be underestimated. As in cases of other preventable diseases, those afflicted may suffer pneumonia and encephalitis¹². Additionally, patients might suffer internal bleeding and bloodstream infections. Such complications may then lead to death. As seen in cases of other preventable diseases, children are not the only vulnerable demographic¹³. Be it chickenpox, measles or another VPD, teens, adults, pregnant women, and immunocompromised individuals are endangered alongside small children by uneven vaccine coverage in the United States.

¹⁰ "Mumps | Cases and Outbreaks | CDC," February 11, 2020, <https://www.cdc.gov/mumps/outbreaks.html>.

¹¹ "Mumps | Complications | CDC," October 8, 2019, <https://www.cdc.gov/mumps/about/complications.html>; "Mumps - Complications," nhs.uk, March 6, 2018, <https://www.nhs.uk/conditions/mumps/complications/>.

¹² "Chickenpox | Complications | Varicella | CDC," January 15, 2019, <https://www.cdc.gov/chickenpox/about/complications.html>.

¹³ "Chickenpox | Complications | Varicella | CDC."

iii. Benefits of Vaccination

While such severe complications are rare, as outbreaks of these diseases increase in scale and severity, so too do the chances that individuals will suffer lifelong or deadly consequences for their lack of immunity. This outcome becomes unacceptable in light of the millions of deaths prevented by vaccinations each year and the negligible side-effects of vaccines as compared to the benefits¹⁴. First and foremost, widespread vaccination has increased herd-community, outright preventing outbreaks. Targeted vaccination campaigns have also contributed to source drying, which is the elimination of communicable disease in particular communities in order to strengthen herd immunity in the greater population.

In the communities which lack effective herd immunity, vaccination still reaps benefits in various forms. Vaccines may mitigate the severity of disease in those afflicted. Though contraction of the disease may not be completely prevented, complications become less likely. Long-term benefits of vaccination include cancer prevention. Some communicable diseases can lead to the development of cancer later in life, as seen in the case of Human Papillomavirus (HPV) and cervical cancer. Therefore, a decline in HPV infection rates can decrease cervical cancer rates. Prevention of death and other health complications from communicable diseases have led to an overall extension of life expectancy in the United States since the introduction of vaccines.

The reduction of disease and improvement to overall public health contribute positively to American society as reduced healthcare costs and greater productivity. Disease outbreaks can cost the United States millions in containment and treatment costs alone as seen in the 2017

¹⁴ “WHO | Vaccination Greatly Reduces Disease, Disability, Death and Inequity Worldwide,” WHO (World Health Organization), accessed March 2, 2020, <https://www.who.int/bulletin/volumes/86/2/07-040089/en/>.

Minnesota measles outbreak¹⁵. Moreover, large outbreaks can cast a dark shadow over economic activities, as seen in the 2020 Coronavirus epidemic¹⁶. Besides climbing death-tolls, long-term costs of continued and escalating outbreaks include the cost of social support for those left disabled by disease complications. In light of these considerations, the cost of greater vaccination coverage becomes an investment in American prosperity.

C. Escalating Threat

There is still an opportunity to address this issue before it incurs major damages. At present, there has been one confirmed measles-related death in the United States since 2000¹⁷. In 2015, an immunocompromised adult woman died from measles complicated by pneumonia. She likely contracted the virus while visiting a medical facility where she came in contact with an infected individual. Her death is a warning to the rest of the United States, as the woman died in Washington, a state which permits both medical and religious exemptions to vaccination.

Vaccination mandates are a common entry-requirement to public education in the United States, however such exemptions are often cited as contributing factors to persistent gaps in vaccination coverage¹⁸. As of 2019, 45 states permit nonmedical exemptions (NMEs) to school

¹⁵ Dorit Rubinstein Reiss and John Diamond, "Measles and Misrepresentation in Minnesota: Can There Be Liability for Anti-Vaccine Misinformation That Causes Bodily Harm?," *San Diego Law Review* 56, no. 3 (Summer 2019): 531–80.

¹⁶ "Federal Reserve Issues FOMC Statement," Board of Governors of the Federal Reserve System, accessed March 3, 2020, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200303a.htm>.

¹⁷ "First Measles Death In 12 Years Renews Vaccination Concerns," NPR.org, accessed March 3, 2020, <https://www.npr.org/2015/07/06/420594973/first-measles-death-in-12-years-renews-vaccination-concerns>.

¹⁸ Jacqueline K. Olive et al., "The State of the Antivaccine Movement in the United States: A Focused Examination of Nonmedical Exemptions in States and Counties," *PLoS Medicine* 15, no. 6 (June 12, 2018): 1–10, <https://doi.org/10.1371/journal.pmed.1002578>; Heidi L. Pottinger et al., "Parental Attitudes and Perceptions Associated with Childhood Vaccine Exemptions in High-Exemption Schools," *PLoS ONE* 13, no. 6 (June 14, 2018): 1–13, <https://doi.org/10.1371/journal.pone.0198655>; Filippo Trentini et al., "The Introduction of 'No Jab, No School' Policy and the Refinement of Measles Immunisation Strategies in

immunization requirements in the form of religious and/or philosophical exemptions¹⁹(See Figure 3 below).

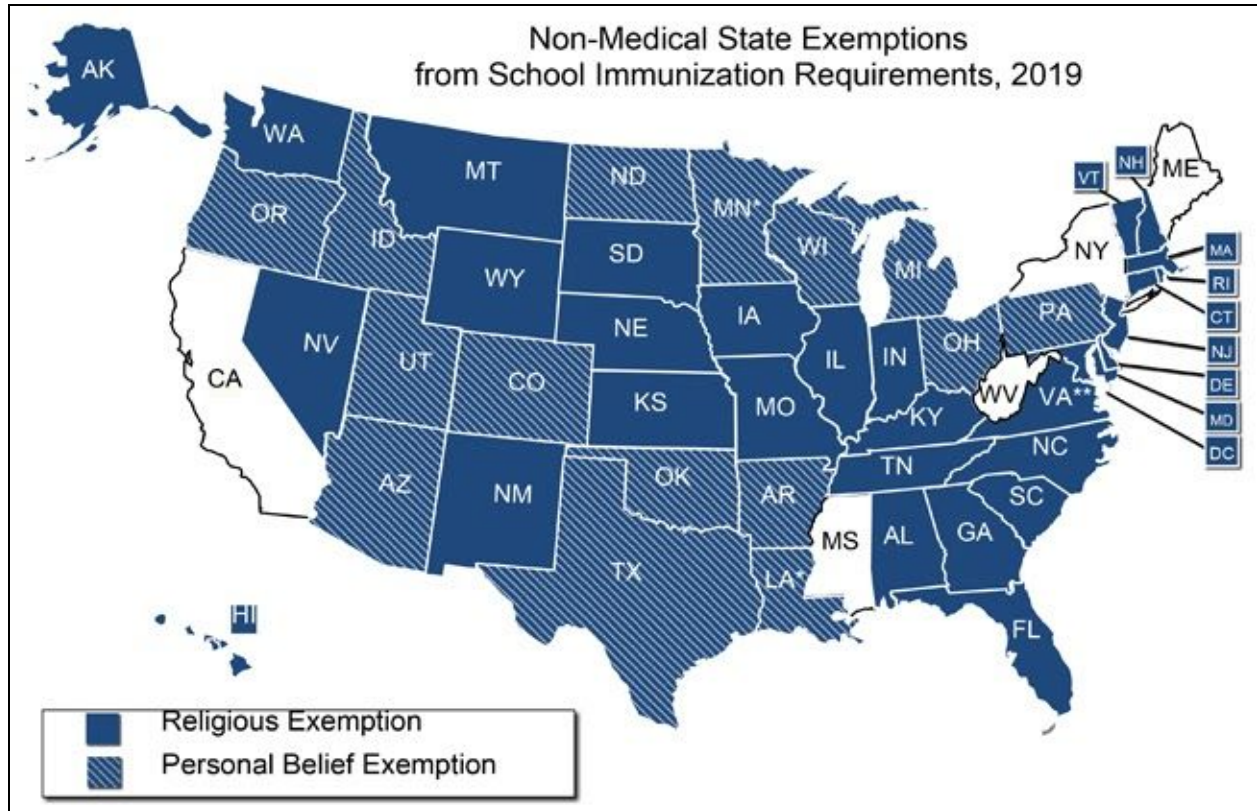


Figure 3. Non-Medical State Exemptions from School Immunization Requirements, 2019.²⁰

According to the 2018-2019 School Year Vaccination Coverage Report by the CDC, uneven vaccination coverage persists among children entering kindergarten²¹. While there is no data on Alaska and Washington, D.C, at least nine states reported estimated MMR vaccine

High-Income Countries,” *BMC Medicine* 17, no. 1 (May 17, 2019): 1–8, <https://doi.org/10.1186/s12916-019-1318-5>.

¹⁹ Rane Seither et al., “Vaccination Coverage Among Children in Kindergarten -- United States, 2014-15 School Year,” *MMWR: Morbidity & Mortality Weekly Report* 64, no. 33 (August 28, 2015): 897–904, <https://doi.org/10.15585/mmwr.mm6433a2>.

²⁰ “States With Religious and Philosophical Exemptions From School Immunization Requirements,” accessed March 2, 2020, <https://www.ncsl.org/research/health/school-immunization-exemption-state-laws.aspx>.

²¹ Seither et al., “Vaccination Coverage Among Children in Kindergarten -- United States, 2014-15 School Year.”

coverage rates below 95% among kindergarteners. All of these states permit NMEs.

Furthermore, these states often reported relatively high estimated rates of Non-Medical Exemptions among children entering Kindergarten (See Figures 4 and 5).

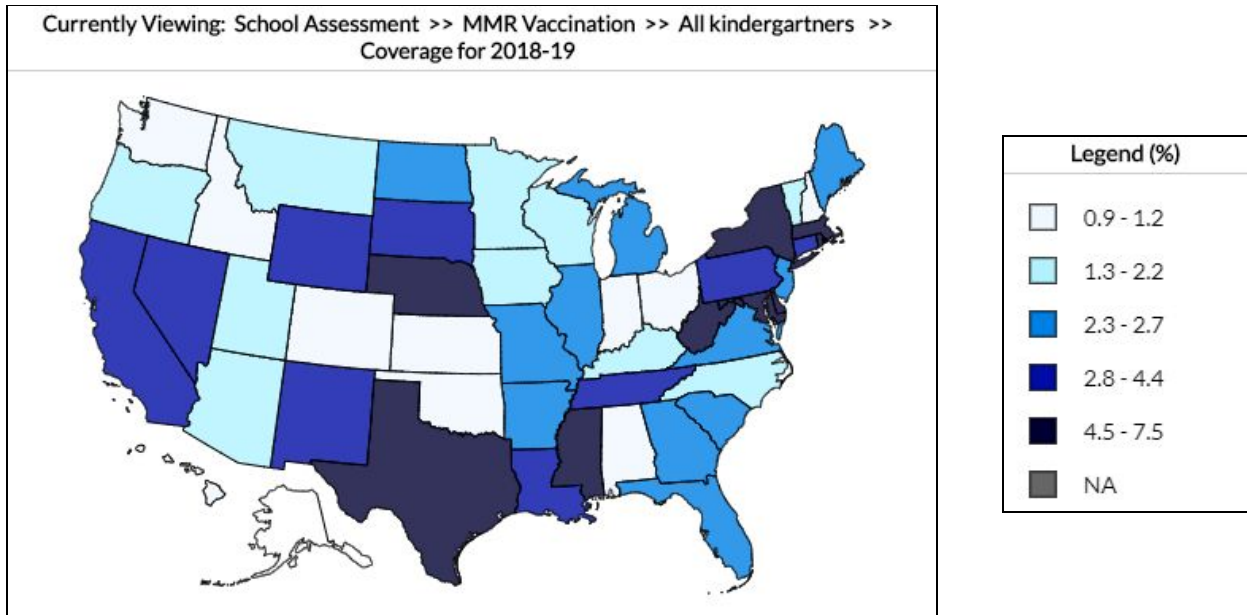
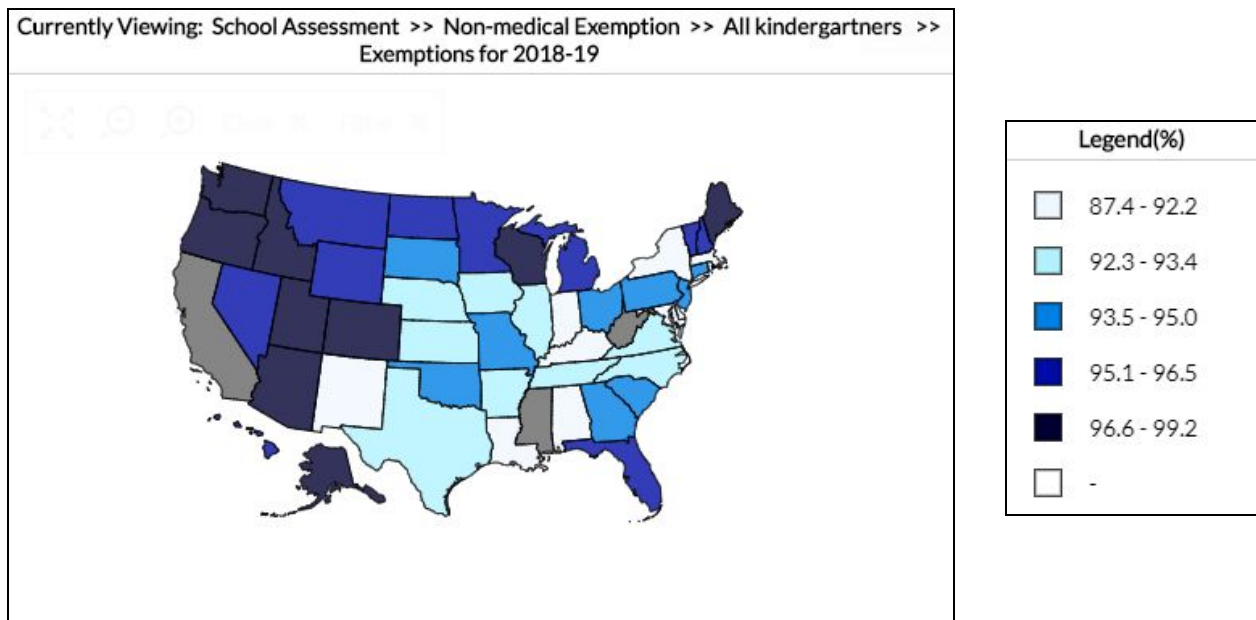


Figure 4. Estimated MMR vaccination coverage among children enrolled in kindergarten by state and the United States, School Vaccination Assessment Program, 2018-19 school year.²²



²² "SchoolVaxView | School Vaccination Coverage Reports 2018-19 | CDC," November 6, 2019, <https://www.cdc.gov/vaccines/imz-managers/coverage/schoolvaxview/data-reports/coverage-reports/2018-19.html>.

Figure 5. Estimated number and percentage of children enrolled in kindergarten with an exemption from one or more vaccines by state and the United States, School Vaccination Assessment Program, 2018-19 school year.²³

An NIS by the CDC confirms that while national vaccination coverage remains high in spite of these permitted exemptions, there was an increase in the proportion of children born from 2011 to 2016 who had not received any vaccinations by 24 months of age²⁴. A worrying proportion of these unvaccinated children will enter school without their recommended vaccinations if something is not done to remedy the abuse of NMEs.

D. History of Non-Medical Exemptions

The issue of NMEs can be traced back to the medical progress of the nineteenth century.²⁵ As the causes and treatments of deadly diseases were identified with increasing precision, a more “medicalized” approach to children’s health took shape. At the same time, licensing requirements for medical practitioners became stricter. As a result, homeopaths, hydropaths, and other types of “folk healing wisdom” lost legitimacy as medical treatment in the eyes of the law. Those who employed such treatments for their children’s ailments could therefore be found guilty of neglect under U.S. law.

This conflicted with various ideologies, including Christian Scientists and other faith-based healing practitioners. Christian Scientists in particular believed that the act of prayer for metaphysical intervention qualified as sufficient medical attendance to their children in light

²³ “SchoolVaxView | School Vaccination Exemptions Reports 2018-19 | CDC,” November 6, 2019, <https://www.cdc.gov/vaccines/imz-managers/coverage/schoolvaxview/data-reports/exemptions-reports/2018-19.html>.

²⁴ Hill et al., “Vaccination Coverage by Age 24 Months Among Children Born in 2015 and 2016 - National Immunization Survey-Child, United States, 2016-2018.”

²⁵ Lynne Curry, *Religion, Law, and the Medical Neglect of Children in the United States, 1870-2000*. [Electronic Resource] : “*The Science of the Age*,” Palgrave Studies in the History of Childhood (Palgrave Macmillan, 2019).

of their religious doctrine. Throughout the following century, such groups combatted the perceived invasion of the government into the traditional family sphere by securing legal exemptions to public health and child welfare policies under the banner of religious freedom.

This is not a clear-cut issue of science versus religion, however, as vaccines have been subject to safety concerns in the past. In 1955, Cutter Laboratories sent out batches of polio vaccines which contained live strains of the virus²⁶. At least 230 cases of polio were linked to these bad vaccines. This event was addressed by the US government by the implementation of the National Vaccine Injury Compensation Program. Similarly alarming recalls and results from studies, such as the Andrew Wakefield article which claimed a link between the MMR vaccine and autism, were eventually disproven as tangible dangers to vaccine-recipients. However, the lingering fear and trepidation contribute to a prevailing mistrust of vaccines which leads parents and guardians to seek NMEs for their children.

E. Public Health v. the First Amendment

While many solutions to the issue at hand have been theorized, only two approaches have established histories in the United States or similarly developed countries that one might glean insight from. Both approaches emphasize the use of existing legal frameworks rather than public relations or information campaigns to motivate parents or guardians to adhere to conventional medical advice.

²⁶ “Historical Vaccine Safety Concerns | Vaccine Safety | CDC,” January 29, 2020, <https://www.cdc.gov/vaccinesafety/concerns/concerns-history.html>.

i. Medical Child Neglect Charges

In the nineteenth and twentieth centuries, charges of medical neglect were levied toward parents who denied their ill children treatment in accordance with modern medical standards²⁷ These cases did not always relate directly to vaccination; more frequently, parents were penalized for refusing to bring their child's condition to the attention of a licensed medical professional. Nonetheless, these cases offered a precedent for classifying the denial of medical treatment as a form of child neglect, as "protecting children's bodies represented a core function of the law, even if it meant interfering in parents' private decisions in caring for them."²⁸

However, the legal landscape of the United States is in constant flux. Moreover, the letter of the law varies greatly state to state, from jurisdiction to jurisdiction. One problem which persisted throughout many medical neglect cases were highly variable interpretations of legal definitions. The definition of child neglect was a particularly contentious issue in regard to faith-healing in many courts.

The trend of medical child neglect charges against parents succumbed to the same cultural pressure which eventually spawned religious and philosophical exemptions to vaccination. Religious groups such as Christian Scientists and those interested in alternative medicine such as homeopathy successfully advocated for greater protection of "traditional parental authority" in the form of the Parental Rights and Responsibilities Act of 1995.²⁹

The introduction of religious exemptions complicated cases relating directly to vaccine-preventable diseases. While at least seven cases in the United States deemed lack of

²⁷ Curry, *Religion, Law, and the Medical Neglect of Children in the United States, 1870-2000*. [Electronic Resource].

²⁸ Curry.

²⁹ Curry.

vaccination as child neglect, six predated the Parental Rights and Responsibilities Act³⁰. The 2013 case was prosecuted in West Virginia, which does not permit religious or philosophical exemptions to vaccination among school-aged children. Legal experts Efthimios Parasidis and Douglas Opel suggest that greater legal clarification of vaccination denial as medical neglect would be required in order to successfully pursue similar cases in the future³¹. Even then, successful prosecution would likely be limited to jurisdictions which do not offer NMEs.

ii. Eliminating NMEs

Elimination of Non-Medical Exemptions to vaccination among school-aged children has been perceived as a more straightforward solution, both abroad and in some American states. In 2017, the Italian government introduced a new law which eliminated ideological exemptions to mandatory vaccinations among children aged 0-16³². This law applies toward children enrolled in both public or and private schools. In the United States, California famously eliminated NMEs in response to the 2015 measles outbreak³³. More recently, New York state has followed suit in response to its own measles outbreaks³⁴.

The Italian government was able to implement such a far-reaching policy thanks to a provision of the Italian constitution which permits vaccination as a form of non-consensual

³⁰ Efthimios Parasidis and Douglas J. Opel, "Parental Refusal of Childhood Vaccines and Medical Neglect Laws," *American Journal of Public Health* 107, no. 1 (January 2017): 68–71, <https://doi.org/10.2105/AJPH.2016.303500>.

³¹ Parasidis and Opel.

³² F Chirico, "The New Italian Mandatory Vaccine Law as a Health Policy Instrument against the Anti-Vaccination Movement," *Annali Di Igiene: Medicina Preventiva E Di Comunita* 30, no. 3 (June 5, 2018): 251–56, <https://doi.org/10.7416/ai.2018.2217>.

³³ Salini Mohanty et al., "California's Senate Bill 277: Local Health Jurisdictions' Experiences With the Elimination of Nonmedical Vaccine Exemptions," *American Journal of Public Health* 109, no. 1 (January 2019): 96–101, <https://doi.org/10.2105/AJPH.2018.304768>.

³⁴ Jeffrey Brainard, "New York Ends Vaccine Exemption," *SCIENCE* 364, no. 6446 (June 21, 2019): 1115–1115.

medical treatment³⁵. The United States differs structurally from Italy and does not possess such a provision within its own constitution. Considering past contensions of religious freedom in regard to medical treatment, it is possible that similar national policy would first require a constitutional amendment in the United States.

In the few short years since this type of policy was implemented, however, flaws have become apparent, particularly in the case of California. Parents and guardians determined to not vaccinate their children have found “work-arounds” to obtain medical exemptions for their children, typically through amenable doctors³⁶. Criteria to determine need for a medical exemption has been found to be rather lax. This fact, in addition to a lack of oversight in processing Medical Exemption petitions, has contributed to a lackluster performance by the overall policy.

³⁵ Chirico, “The New Italian Mandatory Vaccine Law as a Health Policy Instrument against the Anti-Vaccination Movement.”

³⁶ “Eliminating Nonmedical Immunization Exemptions in California: Is It Working? | American Academy of Pediatrics,” accessed March 4, 2020, <https://www.aappublications.org/news/2019/05/22/eliminating-nonmedical-immunization-exemptions-in-california-is-it-working-pediatrics-5-22-19>.

II. Potential Policy Solutions to Coverage Gaps

A. Policy Goals

Every four years, the US Department of Health and Human Services (DHHS) issues a strategic plan in order to address the current health issues of Americans. The most recent plan, “Strategic Plan FY 2018 - 2022”, directly names the prevention, treatment, and control of communicable diseases such as HIV and Vaccine Preventable Disease (VPDs) as an objective³⁷. Age-appropriate vaccination is named as a strategy to meet this goal. Improvement of age-appropriate vaccination coverage in the US is therefore the primary policy goal in mind when considering policy options.

B. Potential Vaccination Policies

i. Eliminate Non-Medical Exemptions Nationwide

The elimination of Non-Medical Exemptions (NMEs) to school vaccination requirements is quickly emerging as a popular solution to suboptimal vaccination coverage rates in developed countries. In 2017, Italy eliminated NMEs nationwide in response to outbreaks of VPDs³⁸. In the United States, following an outbreak of measles in 2015, California made a similar move at the state-level³⁹. In 2019, the state of New York followed suit⁴⁰. This policy will leverage access to education in order to promote higher vaccination rates among school-aged children⁴¹. It is presumed that in the absence of the philosophical or religious choice to not vaccinate their

³⁷ Assistant Secretary for Planning and Evaluation (ASPE), “Strategic Goal 2,” Text, HHS.gov, January 14, 2015, <https://www.hhs.gov/about/strategic-plan/strategic-goal-2/index.html>.

³⁸ Chirico, “The New Italian Mandatory Vaccine Law as a Health Policy Instrument against the Anti-Vaccination Movement.”

³⁹ Mohanty et al., “California’s Senate Bill 277.”

⁴⁰ Brainard, “New York Ends Vaccine Exemption.”

⁴¹ Olive et al., “The State of the Antivaccine Movement in the United States.”

children in order to enroll them at a public or private institution, parents or guardians will consent to vaccination for the sake of their child's education.

1. Federal and State Governments as a Resource

As an apparatus of the federal U.S government, the Department of Health and Human Services is able to propose legislation and regulations in response to public health concerns⁴². While these proposed laws and regulations require congressional approval, if passed into law, they do permit nationwide action on a particular issue. The HHS is also able to coordinate with individual state health authorities in order to eliminate NMEs at the state-level.

2. Feasibility

a. Anti-Vaxxers

One problem posed toward the implementation of this policy is the anti-vaccination movement. As new laws or regulations in regard to vaccination would likely require either congressional approval or approval by respective state governments, this outspoken demographic could successfully lobby against such legislation. Furthermore, the ideology of this movement is rather diverse and furnishes many potential defenses against legislative action. Numerous states offer either religious or philosophical exemptions to vaccination, if not both. These exemptions were first introduced in response to arguments that mandatory vaccination violated parents' First Amendment right to Freedom of Religion⁴³. While NMEs have been eliminated in California and New York already, it is possible that federal action would be challenged on constitutional grounds.

⁴² Assistant Secretary for Public Affairs (ASPA), "Laws & Regulations," Text, HHS.gov, January 29, 2015, <https://www.hhs.gov/regulations/index.html>.

⁴³ Curry, *Religion, Law, and the Medical Neglect of Children in the United States, 1870-2000*. [Electronic Resource].

Kevin Malone and Alan Hinman, a General Attorney to the CDC and a public health expert respectively, examined the relation between public health imperatives and individual rights⁴⁴. They concluded that school vaccination mandates have been imperative to combatting VPDs and that the need to protect the public good generally supersedes individual rights, though balancing against such rights has been generally favored by states who have introduced NMEs. However, Dr. Sarah Fujiwara argued that these individual rights can be bridged in light of public health crises and one's individual duty to the public good.⁴⁵

b. Insurance Coverage

Uneven insurance coverage also poses a challenge to this policy solution. Even if successfully implemented, such a policy would not make medical care or insurance which enable vaccination more accessible. NMEs are cited as a major contributing factor to uneven vaccination coverage rates, however there remains a great disparity between coverage rates among privately-insured demographics and uninsured demographics⁴⁶. In any case, it is notable that in high-exemption areas, medical access is not usually a prevalent issue⁴⁷. This suggests that eliminating NMEs would only be effective in areas which already have adequate access to medical care as opposed to low-income or remote communities. In the latter types of

⁴⁴ Kevin M. Malone and Alan R. Hinman, "Vaccination Mandates: The Public Health Imperative and Individual Rights," in *Law in Public Health Practice*, ed. Richard A. Goodman et al. (Oxford University Press, 2007), 338–60, <https://doi.org/10.1093/acprof:oso/9780195301489.003.0014>.

⁴⁵ Sarah Fujiwara, "Is Mandatory Vaccination Legal in Time of Epidemic?," *AMA Journal of Ethics* 8, no. 4 (April 1, 2006): 227–29, <https://doi.org/10.1001/virtualmentor.2006.8.4.hlwa1-0604>.

⁴⁶ Holly A. Hill, "Vaccination Coverage by Age 24 Months Among Children Born in 2015 and 2016 — National Immunization Survey-Child, United States, 2016–2018," *MMWR. Morbidity and Mortality Weekly Report* 68 (2019), <https://doi.org/10.15585/mmwr.mm6841e2>; "States With Religious and Philosophical Exemptions From School Immunization Requirements."

⁴⁷ Pottinger et al., "Parental Attitudes and Perceptions Associated with Childhood Vaccine Exemptions in High-Exemption Schools."

communities, this policy could negatively impact access to education in areas which are likely already incredibly vulnerable.

c. “Work-Arounds”

Even if implemented, there is concern that eliminating NMEs will be ineffective in the long-term if certain “work-arounds” are not addressed⁴⁸. Following California’s elimination of NMEs, increased vaccination coverage among school-aged children proved temporary. Within two years, it is suspected that anti-vaxx parents found medical practitioners willing to petition for a medical exemption. There is little to no recourse to combat this issue, as qualifications for a medical exemption can be rather vague. Moreover, there is little oversight in the petitioning process in order to identify potential fraud. In order to make elimination of NMEs more effective in the future, policy must clarify criteria for medical exemptions and monitor incoming petitions more thoroughly for fraudulent claims. Moreover, policy must address the complicity of medical practitioners who enable flagrant disregard for vaccination mandates.

d. Home-Schoolers

Home-Schooled children represent another potential “work-around” that might be abused if NMEs are successfully eliminated⁴⁹. In the United States, the population of homeschooled children has increased in recent years. These children are not necessarily subject to the same oversight as their counterparts in public or private education. It is possible, if not probable, that anti-vaxxers will begin to homeschool their children in order to avoid stricter vaccination

⁴⁸ “Eliminating Nonmedical Immunization Exemptions in California: Is It Working? | American Academy of Pediatrics.”

⁴⁹ Donya Khalili and Arthur Caplan, “Off the Grid: Vaccinations Among Homeschooled Children,” *Journal of Law, Medicine & Ethics* 35, no. 3 (September 2007): 471–77, <https://doi.org/10.1111/j.1748-720X.2007.00169.x>.

requirements for school enrollment. In order to avert this outcome, policy to eliminate NMEs at the federal or state level must also make provisions to regulate home-school enrollment.

e. University Students

University students represent another demographic which any policy pertaining to NMEs should account for explicitly. In the United States, vaccination policy is not standard across higher education institutions.⁵⁰ This has led to numerous outbreaks of VPDs in the past two decades⁵¹. While NMEs are not a cited reason for uneven vaccination coverage among university students, implementing stricter vaccination standards for enrollment might incentivize unvaxxed young adults to catch up with their age-appropriate vaccines. This would neatly side-step the issue of parental consent, as most university students enter higher education at age 18 or older.

f. “Catch-Ups”

It is also thought that the elimination of NMEs would not be as effective as hoped if not implemented alongside “catch-up” campaigns among children already enrolled in school⁵². This would close existing gaps in vaccination coverage as well as ensure continued high coverage rates. Of course, this issue would likely require financial backing from government authorities, as the issue of uneven insurance coverage still applies.

ii. Clarify Child Neglect Law Nationwide

In the past, inadequate medical attendance to a child was sometimes resulted in charges of medical child neglect . However, variable codes and interpretations of law and the extent of

⁵⁰ “Immunization Laws and Policies Among U.S. Institutes of Higher Education,” *Journal of Law, Medicine & Ethics* 47, no. 2 (Summer 2019): 342–46, <https://doi.org/10.1177/1073110519857292>.

⁵¹ “Mumps | Cases and Outbreaks | CDC.”

⁵² Paul L. Delamater and Saad B. Omer, “Legislative and Administrative Actions to Increase Vaccination Coverage in Washington Schools,” *HUMAN VACCINES & IMMUNOTHERAPEUTICS*, November 17, 2019, <https://doi.org/10.1080/21645515.2019.1678358>.

First Amendment protections resulted in equally variable outcomes in these cases.⁵³ The solution to this, and perhaps uneven vaccination coverage rates by extension, would be the standardization of child neglect law codes across states.⁵⁴ The policy solution would criminally penalize members of the anti-vaxx movement in order to promote compliance with vaccination mandates.

1. Federal and State Governments as a Resource

As previously stated, as an apparatus of the federal U.S government, the Department of Health and Human Services is able to propose legislation and regulations in response to public health concerns⁵⁵. While these proposed laws and regulations require congressional approval, if passed into law, they do permit nationwide action on a particular issue. The HHS is also able to coordinate with individual state health authorities and child protective agencies in order to promote policy change at the state level. Furthermore, the Department’s Administration of Children and Families oversees the Children’s Bureau (CB); in turn, the CB researches and monitors child abuse and neglect in the United States⁵⁶. The CB could head initiatives to promote this policy nationwide.

2. Feasibility

a. Anti-Vaxxers

The anti-vaccination movement remains a significant obstacle to significant policy reform using this strategy. Like new vaccination regulations, standardized definitions of child

⁵³ Curry, *Religion, Law, and the Medical Neglect of Children in the United States, 1870-2000*. [Electronic Resource].

⁵⁴ Curry; Kathleen Ramirez, “Protect Our Children: Vaccination Exemptions Can Establish Child Abuse and Neglect,” *Family Court Review* 57, no. 2 (April 2019): 258–72, <https://doi.org/10.1111/fcre.12412>.

⁵⁵ Affairs (ASPA), “Laws & Regulations.”

⁵⁶ “Child Abuse & Neglect,” Children’s Bureau | ACF, accessed March 9, 2020, <https://www.acf.hhs.gov/cb/focus-areas/child-abuse-neglect>.

abuse would require either congressional approval or approval by respective state governments. In which case, the anti-vaxx movement would likely lobby against legislation which defines vaccination refusal as medical neglect. It bears repeating that the ideology of this movement is rather diverse and furnishes many potential defenses against legislative action, particularly in regard to religious exemptions.

b. Dependence on NMEs

While parental vaccination refusal has been successfully prosecuted as child medical neglect in the past in the United States, these cases were prosecuted in jurisdictions which either did not permit NMEs or in circumstances where the religious basis to refusal was found to be insincere⁵⁷. It can be assumed that standardized definitions of child neglect might be rendered largely ineffective without the elimination of NMEs. In which case, all potential obstacles associated with the elimination of NMEs would also apply toward this policy option.

c. Uneven Insurance Coverage

Uneven insurance coverage still poses a challenge to increased vaccination coverage among lower-income communities. Even if successfully implemented, standardized definitions of child abuse would not make medical care or insurance more accessible (Hill 2019; “States With Religious and Philosophical Exemptions From School Immunization Requirements” n.d.). This policy then runs the risk of disproportionately affecting low-income families and effectively criminalizing poverty.

⁵⁷ Parasidis and Opel, “Parental Refusal of Childhood Vaccines and Medical Neglect Laws.”

iii. Lower Age of Consent for Medical Intervention

Lowering the age of consent to medical intervention below that of the age of majority is a more obscure proposed solution to uneven vaccination coverage. This solution would address the issue of parental refusal by eliminating its importance altogether.⁵⁸ Nine states already permit minors to consent to vaccination and other medical treatment without parental approval, usually in the case of sexually transmitted diseases.⁵⁹ If such policies are implemented nationwide, this could increase vaccination coverage rates, particularly in regard to the HPV vaccine and age-appropriate booster shots.

1. Federal and State Governments as a Resource

As previously stated, as an apparatus of the federal U.S government, the Department of Health and Human Services is able to propose legislation and regulations in response to public health concerns.⁶⁰ While these proposed laws and regulations require congressional approval, if passed into law, they do permit nationwide action on a particular issue. The HHS is also able to coordinate with individual state health authorities in order to promote policy change at the state level. At present, no federal law pertaining to consent to vaccination exists (English et al. 2008). This would then be new territory for the federal government. Evidently, there has been success at the state level with such policy.

2. Feasibility

a. Anti-Vaxxers

⁵⁸ Allison M Whelan, "Lowering the Age of Consent: Pushing Back against the Anti-Vaccine Movement," *The Journal Of Law, Medicine & Ethics: A Journal Of The American Society Of Law, Medicine & Ethics* 44, no. 3 (September 2016): 462–73, <https://doi.org/10.1177/1073110516667942.w>

⁵⁹ "9 States Where Minors Can Get Vaccinated without Parental Consent," accessed March 10, 2020, <https://www.beckershospitalreview.com/quality/9-states-where-minors-can-get-vaccinated-without-parental-consent.html>.

⁶⁰ Affairs (ASPA), "Laws & Regulations."

The anti-vaccination movement remains a significant obstacle to significant policy reform using this strategy. Not only in the form of lobbying and campaigning against such legislation, but also in the domestic sphere. Anti-vaxx parents have significant influence on their children and may indoctrinate them into the ideology. In which case, lowering the age of consent to vaccination would only prove effective if implemented alongside extensive education programs about vaccination safety and benefits. This perhaps warrants reforms in the informed consent process as well, in order to effectively combat anti-vaccine misinformation.⁶¹

b. Uneven Insurance Coverage

Uneven insurance coverage rates remain a challenge to increased vaccination coverage among lower-income communities.⁶² Lowering the age of consent to vaccination will not make medical care or insurance more accessible to minors from low-income backgrounds. Additionally, even insured children might be deterred from seeking vaccination as they are likely insured under policies held by their parents or guardians. Minors might lack access to important insurance information, knowledge of how to navigate the medical care system, or fear the consequences should their parents learn they received vaccinations. All considered, this policy option would require education of minors about their rights in regards to medical treatment and privacy, as well as protections against retaliation by anti-vaxx parents and guardians.

c. Implications

⁶¹ Dorit Rubinstein Reiss and Nili Karako-Eyal, “Informed Consent to Vaccination: Theoretical, Legal, and Empirical Insights,” *American Journal of Law & Medicine* 45, no. 4 (November 2019): 357–419, <https://doi.org/10.1177/0098858819892745>.

⁶² Hill, “Vaccination Coverage by Age 24 Months Among Children Born in 2015 and 2016 — National Immunization Survey-Child, United States, 2016–2018”; “States With Religious and Philosophical Exemptions From School Immunization Requirements.”

Additional implications of lowering the age of consent to vaccination must also be considered. Such action opens the possibility of lowering the age of consent to other medical activities, such as abortion. This possibility might draw criticism and opposition to this policy option, as abortion remains a contentious issue in the United States.⁶³

III. Policy Recommendations

A. Criteria for Recommendation

i. Economically Feasibility

The ideal solution to gaps in US vaccination coverage should be economical. While the US Department of Health and Human Services (DHHS) has many resources at its disposal, recommendations should avoid new extensive funding requirements. Furthermore, policy recommendations should avoid proposing a complete overhaul of the American healthcare system, such as the implementation of universal healthcare coverage.

As previously discussed, uneven insurance coverage is a major contributing factor to uneven vaccination coverage in the United States.⁶⁴ However, universal healthcare or other expansions in medical coverage remain a highly fraught subject in contemporary American politics. It is unlikely that new vaccination initiatives would be approved for extensive federal funding.

ii. Legally Feasibility

The ideal solution to gaps in US vaccination coverage would be legally feasible to implement. This means that the solution would appeal to legal precedent and not violate the US

⁶³ Jeremiah Castle, “New Fronts in the Culture Wars? Religion, Partisanship, and Polarization on Religious Liberty and Transgender Rights in the United States,” *American Politics Research* 47, no. 3 (May 1, 2019): 650–79, <https://doi.org/10.1177/1532673X18818169>.

⁶⁴ Hill et al., “Vaccination Coverage by Age 24 Months Among Children Born in 2015 and 2016 - National Immunization Survey-Child, United States, 2016-2018.”

Constitution. Furthermore, the policy would have a reasonable chance of implementation on a large scale across multiple legal jurisdictions. Opponents to the policy, such as Anti-Vaxxers, should not have a guaranteed means of legally opposing the primary recommended policy.

iii. Significant Impact on Vaccination Coverage Rates

The ideal solution to gaps in US vaccination coverage should be highly effective in both scale and duration. The policy should have great potential for large-scale implementation in most American states and impact on sizable populations. Furthermore, the policy should be expected to yield long-term benefits to American vaccination coverage rates.

B. Primary Recommended Policy

i. Eliminate Non-Medical Exemptions to School Vaccinations

With the above criteria in mind, the elimination of non-medical exemptions to school vaccination requirements is the best-suited solution to the issue at hand. Leveraging access to education against anti-vaccination ideology will force Anti-Vaxxers to either vaccinate their children or remove them from environments where they pose a danger to others. There is a precedent to this policy solution both in the United States and abroad.⁶⁵ While associated issues must also be addressed in order to render this policy effective in the long-term, it remains the most legally feasible option at hand.

C. Large-Scale Implementation

i. Advocate Policy at State-Level

The DHHS will implement this policy solution by first instructing state health authorities to advocate for it at the state-level. Additionally, the DHHS will partner with the US Department

⁶⁵ Mohanty et al., “California’s Senate Bill 277”; Chirico, “The New Italian Mandatory Vaccine Law as a Health Policy Instrument against the Anti-Vaccination Movement”; Brainard, “New York Ends Vaccine Exemption.”

of Education to urge state educational systems to advocate for the elimination of NMEs. State health authorities will partner with local congressmen, state senators, and governors in order to introduce this policy to state legislative bodies or other relevant authorities. In conjunction with or in absence of political allies, public campaigns will be launched in an effort to stir local support for the elimination of NMEs.

This initiative will require support and funding from relevant agencies and operational authorities of the DHHS. This primarily concerns those dealing in public outreach, such as the Secretary for Public Affairs.⁶⁶ The aim of the DHHS is to successfully advocate for the elimination of NMEs in as many states as possible in order to promote greater vaccination coverage.

Opposition in the name of the First and Fourteenth Amendments might pose a challenge to this policy. However, history suggests that these individual rights do not outweigh one's obligation to public good and health.⁶⁷ At the very least, considering its critical nature, the policy would be worth the Supreme Court battle.

D. Closing the Gaps

i. Catch-Up Campaigns

One criticism of the elimination of NMEs as a policy solution to gaps in vaccination coverage is that the policy frequently does not account for students who are not up-to-date on their recommended vaccinations.⁶⁸ In order to account for this issue, the elimination of NMEs

⁶⁶ Assistant Secretary for Public Affairs (ASPA) Digital Communications Division (DCD), "ASPA Organization," Text, HHS.gov, June 17, 2015, <https://www.hhs.gov/about/agencies/aspa/aspa-organization/index.html>.

⁶⁷ Fujiwara, "Is Mandatory Vaccination Legal in Time of Epidemic?"

⁶⁸ Olive et al., "The State of the Antivaccine Movement in the United States"; "Eliminating Nonmedical Immunization Exemptions in California: Is It Working? | American Academy of Pediatrics."

should be accompanied by catch-up campaigns across school districts and grade levels. This strategy will help close existing gaps in vaccination coverage in local communities.

ii. Establish Procedure for Evaluating Medical Exemption Petitions

Another criticism of NME elimination as a policy solution is the trend of Anti-Vaxxers utilizing “workarounds” to continually avoid vaccinating their children⁶⁹ The primary “workaround” is obtaining a fraudulent medical exemption. This process is enabled by lax standards for medical exemptions and a lack of oversight in the petitioning process.

This criticism will be addressed by establishing strict and clear-cut standards for medical exemptions to school vaccination requirements. Additionally, procedures for verifying the validity of medical exemptions will be established by local school systems and health authorities. Fraudulent exemptions might be further curbed by the penalization of those who file fraudulent petitions and complicit parties.

iii. Extend Vaccination Requirements to Homeschooled Students

In order to ensure maximum effectiveness of this policy, measures must be taken to address the homeschooled student population.⁷⁰ The elimination of NMEs will be extended to homeschooled students, particularly those who wish to participate in events co-sponsored by local school systems or private schools where they might infect or be infected by students who genuinely cannot receive vaccinations to VPDs. Such events might include school sports, after-school programs, and standardized testing. This measure will both extend vaccination coverage among school-aged children as well as prevent Anti-Vaxxers from avoiding vaccination by outright withdrawing their children from public and private schools.

⁶⁹ “Eliminating Nonmedical Immunization Exemptions in California: Is It Working? | American Academy of Pediatrics.”

⁷⁰ Khalili and Caplan, “Off the Grid.”

iv. Extend Vaccination Requirements to Institutions of Higher Education

Students in higher education represent another demographic of youth with existing gaps in vaccination coverage.⁷¹ In order to ensure the effectiveness of the elimination of NMEs, the policy will be extended to higher education institutions. Accompanying catch-up campaigns and evaluations of exemption petitions will also apply.

v. Bring Vaccines for Children (VFC) Program to Schools

The VFC program is a pre-existing program funded through the Center for Disease Control (CDC) and managed across federal, state, and local jurisdictions.⁷² This program aims to provide free vaccines to qualified children, such as the uninsured, under-insured, and medicaid-eligible. While this program is offered through 38,420 health care providers across the United States, accessibility to this program will be maximized by bringing the VFC directly to students at schools. This will ensure greater vaccination coverage among students in spite of their individual insurance statuses, thus addressing concern that access to education for low-income students might become restricted by the proposed policy solution.

⁷¹ “Immunization Laws and Policies Among U.S. Institutes of Higher Education.”

⁷² CDC, “Vaccines for Children,” Centers for Disease Control and Prevention, April 16, 2018, <https://www.cdc.gov/features/vfcprogram/index.html>.

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