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Preparing for the Next Pandemic: U.S. and Rhode Island Pandemic Preparedness

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Executive Summary

- The United States was ill-prepared for the COVID-19 pandemic in 2020, and this crisis exposed the inadequacy and weakness of the U.S. public health system.
- Given the history of pandemics and epidemiological crises, there will undoubtedly be another pandemic in the future. U.S. lawmakers and public health officials must take immediate action to strengthen pandemic preparedness and response policies.
- There are three major influenza pandemics that parallel the experiences with the coronavirus: Spanish Flu (1918-1920), Asian Flu (1957-1958), and Hong Kong Flu (1968-1969). These pandemics provide key insights into the decentralization of public health policy, the inadequacy of previous legislation, the significance of disease surveillance systems, and the importance of vaccines. The history of these pandemics informs contemporary policy debates, and illuminates new policy solutions.
- U.S. lawmakers and public health officials can and must enact a comprehensive set of policies to ensure that the U.S. public health system is effectively prepared for the next pandemic: (1) pass the Pandemic and All-Hazards Preparedness and Response Act of 2023, (2) develop a Universal Influenza Vaccine, (3) expand and modernize disease surveillance systems, and (4) improve and standardize state pandemic preparedness plans.

Introduction

COVID-19 was not "unprecedented." Past pandemics caused massive devastation and reshaped society. Three major influenza pandemics inform modern pandemic preparedness and response policies: the Spanish Flu pandemic of 1918-1920, the Asian Flu pandemic of 1957-1958, and the Hong Kong Flu pandemic of 1968-1969. Each pandemic showcased distinct trends and wave behavior, public health spending, and vaccination rates. There are clear similarities, but also some differences, between COVID-19 and Spanish Flu. The coronavirus pandemic required an unmatched level of emergency funding that broke historical trends in public health spending. By contrast, the federal government made little effort to mitigate the Spanish Flu in 1918. As a result, states, cities, and independent relief organizations managed the pandemic response absent federal assistance. The decentralization of U.S. public health policy meant that state and local governments adopted different policies and strategies to combat the spread of the disease. Most local governments implemented strict quarantine orders and masking mandates, and met harsh backlash from their citizens. The United States was better prepared to deal with the Asian Flu and Hong Kong Flu pandemics, though they were less deadly. U.S. public health officials were aided by the advent of disease surveillance and vaccine technologies. The disease surveillance systems were crucial in the response to these two pandemics, as the government was able to track the origin and progress of the diseases throughout the country and the world. Additionally, the development of a vaccine to treat the specific strain of the flu in 1957 and 1968 provided for greater protection against the virus. Given the historical patterns of pandemics, there will undoubtedly be another pandemic in the future. Therefore, this policy issue merits immediate action. Four policy solutions will bolster the nation's defenses against future pandemics and ultimately save countless lives: (1) pass the Pandemic and All-Hazards Preparedness and Response Act of 2023, (2) develop a Universal Influenza Vaccine, (3) expand and modernize disease surveillance

systems, and (4) improve and standardize state pandemic preparedness plans.

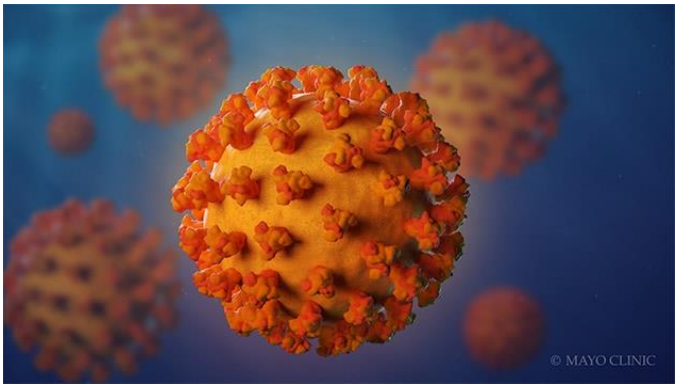


Figure 1: SARS-CoV-2

Policy

Policy Issue and Context

The issue of preparedness and response for future disease outbreaks was a hot topic during the first two years of the COVID-19 pandemic, but it fell by the wayside as rising inflation and the war in Ukraine took center stage (Figure 1).[1] Nevertheless, COVID-19 caused massive human and financial losses in addition to political turmoil. According to the World Health Organization (WHO), the death toll as of November 2023 was 6,981,263 globally, and 1,138,309 in the U.S.[2] The death toll in Rhode Island was over 4,148.[3] Today, the issue of pandemic preparedness and response is no longer at the forefront of U.S. public policy due to complacency and fatigue. The disease is no longer upending daily life due to the protection afforded by the vaccine and herd immunity. For this reason, President Biden ended the national public health emergency on April 10, 2023.[4] Additionally, in July 2023, he canceled funding for DEEP VZN, a disease surveillance program that tasked researchers with collecting and cataloguing exotic wildlife pathogens that someday may infect humans. The opponents of DEEP VZN were worried about the risk of an accidental outbreak.[5] The cancellation is especially concerning given that virologists have already discovered a new strain of the flu, Influenza D, that has pandemic potential.[6] On the other hand, some politicians continue to push for increased funding and preparedness. Senators Mitt Romney (R-UT) and Bob Casey (D-PA) introduced the Pandemics and All-Hazards Preparedness and Response Act (PAHPA) in July 2023. The legislation passed out of committee, and now awaits a full vote on the Senate floor.[7] Given the lack of attention to this issue, it is imperative that the federal government act now to prepare the nation's public health system for the next pandemic, through increased funding and improved planning and coordination at the federal, state, and local levels. The capacity of the federal government to manage a pandemic is shaped by several laws. The Public Health Service Act of 1944, the Defense Production Act of 1950, and the Pandemic and All-Hazards Preparedness Act of 2006 have all been integral to past pandemic responses. In addition, several major court rulings have set the legal standard for compulsory vaccination laws. The most important of these was *Jacobson v. Massachusetts* in 1905. However, while the federal government has developed response plans and strategies, during the COVID-19 pandemic much of the responsibility for implementation fell on the states. Therefore, Rhode Island must take steps to bolster its own public health system for a worst-case scenario. To help solve these problems, Rhode Island lawmakers may look for insights from historical analogues, particularly the Spanish Flu pandemic of 1918-1920, the Asian Flu pandemic of 1957-1958, and the Hong Kong Flu pandemic of 1968-1969.

Literature Review Overview

The issue of national-level pandemic preparedness and prevention is no longer a hot topic among researchers and policy analysts. This is partially because U.S. policymakers have failed to adopt any meaningful policy. The Build Back Better Act of 2021, which included provisions for public health infrastructure and pandemic preparedness programs, remains stalled in Congress.[8] Nevertheless, the available policy literature, much of which was published during the height of COVID-19, offers valuable insights and comprehensive policy recommendations (see Appendix A).

A number of relevant policy papers focused on federal preparations for future pandemics. Some discussed broader takeaways from the COVID-19 pandemic, rather than specific policies.[9] Others offered specific and detailed policy recommendations. In *What Can the United States Do to Prevent Another Pandemic? Commit to Modernizing Influenza Vaccines*, the Center for Strategic and International Studies argued that the U.S. should support the development of a Universal Influenza Vaccine (UIV).[10] The Bipartisan Policy Center authored *Positioning America's Health System for the Next Pandemic*, which adopted a different approach by proposing 10 overarching policy solutions. The most novel recommendations included creating a National Board for Pandemic Preparedness, establishing an integrated infectious diseases surveillance system, and increasing funding for the Prevention and Public Health Fund.[11] A report from the Center for American Progress

in 2022 titled *How Investing in Public Health Will Strengthen America's Health,* advocated for $4.5 billion in public health funding to prepare the U.S. for future disease outbreaks. It also outlined other policy options, including the PREVENT Pandemics Act.[12]

The literature pertaining to state-level public health policy was limited, but significant. In the early 2000s, two Congressional Research Service (CRS) reports addressed pandemic preparedness at the state-level. Both reports acknowledged the decentralized nature of the U.S. public health system.[13] Similarly, The Commonwealth Fund's *2022 Scorecard on State Health System Performance* evaluated the states, including Rhode Island, according to five criteria related to healthcare and pandemic response. It included a COVID-specific measure, and presented several broad pandemic-related policy recommendations. The recommendations entailed developing state pandemic preparedness strategies, fighting misinformation, and requiring hospitals to develop disaster response strategies. Other recommendations included making the Medicaid "continuous eligibility" permanent without the need to apply for a federal waiver. [14] The Commonwealth Fund's *2023 Scorecard on State Health System Performance*, centered more on reproductive care and women's health.[15] Lastly, the Ballotpedia article *Healthcare Policy in Rhode Island*, though somewhat outdated, provided detailed background and statistics on Rhode Island's healthcare system.[16]

The policy literature concerning pandemic preparedness provides U.S. and Rhode Island lawmakers with several options. The U.S. government can increase public health funding, develop disease surveillance programs, and improve disaster response strategies. Additionally, the states can make preparations of their own, including developing pandemic preparedness plans. A coordinated and robust pandemic response will help ensure that the next pandemic is short-lived and far less deadly.

Law

Legal Overview

Most U.S. public health policy is devised and implemented at the federal level. However, during both the Spanish Flu epidemic of 1918 and the recent COVID-19 epidemic, the states were responsible for the implementation of social distancing, quarantine, testing, and vaccine policies. Therefore, Rhode Island policymakers must be familiar with both federal and state law concerning public health and pandemic preparedness (see Appendix B).

The two central legal foundations of modern U.S. public health law were the Commerce Clause of the U.S. Constitution and the Supreme Court case *Jacobson v. Massachusetts* (1905). The Commerce Clause granted Congress the power to regulate interstate commerce, a broad concept that was construed to include public health.[17] The *Jacobson* case centered on a city of Cambridge compulsory vaccination regulation. The court's decision established that compulsory vaccination laws were a legitimate exercise of the state's police powers and did not violate the Equal Protection Clause of the Fourteenth Amendment.[18]

Later decisions solidified the legal standard set by *Jacobson*. In *Zucht v. King* (1922), the Supreme Court upheld a city ordinance in San Antonio, Texas that made vaccination a requisite for school attendance. Once again, the court considered compulsory vaccination to be consistent with the Fourteenth Amendment.[19] The Supreme Court of Mississippi ruled that religious exemptions to vaccination were unconstitutional in *Brown v. Stone* (1979).[20] Recent lower court decisions in New York and Rhode Island confirmed that religious exemptions were not constitutionally required.[21]

The three landmark pieces of legislation that shaped the capacity of the federal government to respond to the COVID-19 pandemic were the Public Health Service Act of 1944, the Defense Production Act of 1950, and the Pandemic and All-Hazards Preparedness Act of 2006. The Public Health Service Act created the foundation for the U.S. Public Health Service. The law promoted the cooperation of the federal government and the states on matters of public health and invested the Surgeon General with the authority to impose quarantine measures.[22] The Defense Production Act enabled the President to requisition equipment, supplies, or other materials if necessary for the national defense.[23] Public health was construed to be part of national defense. The Pandemic and All-Hazards Preparedness Act assigned the Secretary of Health and Human Services with responsibility to implement a National Response Plan. The law created the Assistant Secretary of Preparedness and Response, who was tasked with developing several plans and processes to bolster the nation's public health capabilities.[24]

Rhode Island law contains several statutes regarding public health law and vaccination. Most importantly, Title 23 states that the Governor and the Rhode Island Department of Health (RIDOH) have the power to impose quarantine measures and develop procedures for annual vaccination.

Taken together, this body of public health law is informative for U.S. policymakers who wish to develop legislation to prepare the nation for the next major pandemic. The COVID-19 pandemic exposed several glaring weaknesses in the current public health system, and it is important to examine those flaws and remediate them.

History

Historical Framework

The word "pandemic" came from the Greek word *pándēmos*.[25] In ancient societies, people viewed disease as a form of divine punishment. In the fourteenth century, Venice developed the practice of quarantine. Edward Jenner invented the first smallpox inoculation in 1798, which utilized cowpox to induce prophylaxis against the disease. Today, pandemics, quarantine, and vaccination remain central to public health policy. The cholera epidemics of the mid-1800s coincided with the experiments of John Snow, Louis Pasteur, and Robert Koch, which helped pioneer germ theory. In the twentieth century, the emergence of modern medicine, as well as new strains of pandemic diseases, such as influenza, changed the dynamics and conceptions of public health.

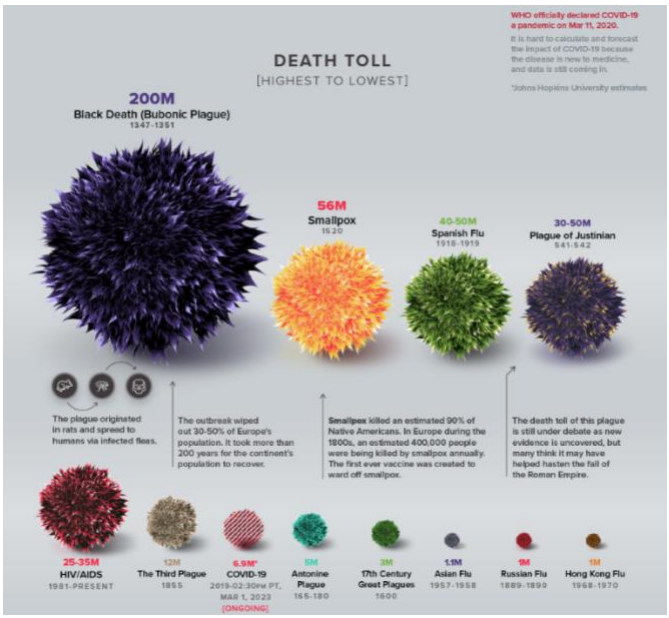


Figure 2: The History of Pandemics

The Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968 serve as the strongest analogues for COVID-19 and contemporary debates surrounding pandemic preparedness and response.

Prior to the advent of modern medicine and public health, bubonic plague, smallpox, and cholera were the greatest disease threats to humans. The Plague of Justinian killed around 19.1% of the global population between 541 and 542 C.E. The infamous Black Death wiped out an estimated 51.0% of the global population between 1347 and 1351. The disease spread throughout medieval Europe and Asia on the backs of rats and fleas and killed 200 million people. Beginning in 1520, European exploration and conquest brought smallpox to the New World, which ravaged Native American populations. During this time, 56 million people died of smallpox – approximately 12.1% of the global population. Cholera killed upwards of 1 million people worldwide between 1817 and 1923.[26] The three deadliest cholera epidemics occurred in 1832, 1849, and 1866. At the outset of the first cholera pandemic, "most practitioners had still regarded cholera as a vague atmospheric malaise" rather than a specific disease entity.[27] In 1854, John Snow linked the spread of cholera to a contaminated water supply in London, though theories of contagion "had been so recently and so definitively discredited" by the European medical establishment that his discovery "commanded little attention" at the time.[28]

There have been several pandemics in recent history that have impacted the United States. The Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968 were most similar to COVID-19. In 1918, limited scientific knowledge meant that public health professionals were ill-prepared for the Spanish Flu. The scientific consensus at the time held that influenza was caused by a bacterium, *B. influenzae*, rather than a filterable virus. The impact of the pandemic in the United States was worsened by the inaction and negligence of the President and the U.S. Public Health Service.[29] Given the lack of federal direction, states and locales implemented their own measures to control the spread of the disease, such as masking mandates, quarantine orders, restrictions on public gatherings, and the closure of public buildings. These policies were controversial, and engendered strong criticism and opposition.[30] The Spanish Flu killed an estimated 40 to 50 million people between 1918 and 1920, or around 2.5% of the global population (Figure 2).[31] Other sources calculate a death toll as high as 100 million.[32] Not until the 1930s did scientists isolate the H1N1 virus or produce an effective influenza vaccine.[33] Disease surveillance systems played a major role in the Asian Flu pandemic of 1957-1958 and the Hong Kong Flu pandemic of 1968-1969. These disease surveillance programs enabled U.S. public health officials to track the origin and spread of diseases, and make adequate preparations for an outbreak.[34] Additionally, scientists developed proper vaccines to prevent the spread of the virus in both 1957 and 1968.[35] These

pandemics were relatively mild compared to their predecessor: Asian Flu deaths totaled 1.1 million, and Hong Kong Flu deaths totaled 1 million. The Swine Flu of 2009-2010 was the most recent influenza pandemic, though the virus resulted in only minimal deaths in the U.S.[36] As of 2020, HIV/AIDS resulted in the deaths of around 25-30 million people, an amount comparable to the Spanish Flu. However, AIDS became an endemic and chronic disease after the 1980s, and historians considered the condition "a long, slow process … analogous to cancer."[37]

The Spanish Flu, Asian Flu, and Hong Kong Flu pandemics represent the best analogues for COVID-19 and current public health policy problems for several key reasons, including: the comparable epidemiology and death toll, the decentralization of the U.S. public health response, the role of pharmaceutical interventions such as vaccines, the significance of non-pharmaceutical interventions such as quarantine orders and masking mandates, the role of disease surveillance systems, and the importance of medical surge capacities. By contrast, bubonic plague, smallpox, and cholera occurred prior to modern medicine, and HIV/AIDS was a chronic sexually transmitted disease (STD) that merited a long-term response. An in-depth discussion of Spanish Flu, Asian Flu, and Hong Kong Flu illuminates similarities with the coronavirus pandemic, and offers insights into pandemic preparedness and response in the twenty-first century.

Historiographical Overview

In the aftermath of COVID-19, Rhode Island can improve its pandemic preparedness and response through a careful analysis of U.S. and Rhode Island history. Given the dearth of scholarship on Rhode Island's history of public health and epidemic disease, applied historians can gain insight from other national and local histories of pandemic diseases, including the Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968 (see Appendix C).

In the past fifty years, many historians have published broad surveys of the history of epidemic diseases. William H. McNeill's *Plagues and Peoples* (1976) is the seminal work in this body of literature. This book provided a sweeping global history of infectious disease from ancient times to modernity. The final chapter covered the history of medicine from 1700 to the 1950s. McNeill identified smallpox inoculation, the advent of germ theory, and the centralization of public health capacity as the most crucial developments of the modern era.[38] The HIV/AIDS crisis prompted further study of the history of epidemic diseases.[39] A few historians explored "intellectual repercussions" and the sociocultural effects of infectious diseases across time.[40] Other scholars addressed specific epidemics, such as cholera or typhus.[41] The COVID-19 pandemic inspired another re-examination of the history of epidemics.[42]

The available historical scholarship on public health and epidemic disease in Rhode Island, though minimal, provides important background for modern state policymakers. William McLoughlin's *Rhode Island: A History* (1986) failed to address the state's experiences with infectious diseases.[43] However, other historians have studied this subject in detail. Robert Tatge's article "A Quarantine Quandary: Ship Fever and Yellow Fever in Providence, Rhode Island, 1797" examined the impact of yellow fever on eighteenth-century maritime commerce in Providence. In "Public Health and Preventive Medicine in Providence, 1913," Abby Cohen connected a milk scandal to broader themes of the era such as the growth of cities and issues with sanitation and disease as well as the application of scientific principles to public health.[44] In "Smallpox Vaccination: A Leap of Faith," Joan Retsinas re-considered the arguments of early twentieth century anti-vaccinators and argued that they were not obstructionists. Rather, they took a "leap of faith" and embraced a new perspective on public health.[45] Cynthia Comery Ferguson's article "Public Need and Public Health: The Early Years of the Providence District Nursing Association" detailed the history of the Providence District Nursing Association (PDNA), and their efforts to provide in-home care to needy persons in the early 1900s.[46] Similarly, Jessica Robbins described the work of tuberculosis nurses in the broader United States.[47]

There are several important studies of the 1918-1919 Spanish Flu pandemic. The most notable account was John Barry's *The Great Influenza: The Epic Story of the Deadliest Plague in History* (2004). Barry covered the government's response to the pandemic in great detail. President Wilson publicly ignored the epidemic, and Surgeon General Rupert Blue failed to make any preparations for an outbreak. As a result, states and localities were forced to mitigate the epidemic without federal assistance.[48] Nancy Rockafellar and Richard H. Peterson discussed Seattle and San Diego, respectively, and their strong responses to the Spanish Flu.[49] In "'A Blessing in Disguise': The Influenza Pandemic of 1918 and North Carolina's Medical and Public Health Communities," David Cockrell argued that the flu exposed the weaknesses in North Carolina's public health system. In the aftermath, the state began to upgrade medical facilities, construct new hospitals, establish new local health departments, and provide funds for rural

sanitation programs.[50] Bradford Luckingham and Ana Luisa Martinez-Catsam spotlighted the Southwestern perspective of the Spanish Flu with their examination of the responses of Tucson and San Antonio.[51] Christina Stetler addressed the story of Philadelphia, the nation's hardest-hit city during the pandemic in "The 1918 Spanish Influenza: Three Months of Horror in Philadelphia." The rapid spread and deadly impact of the virus in Philadelphia was largely due to a shortage of doctors and nurses. Stetler emphasized the role of medical students and nuns in the city's response.[52]

Studies of the Asian Flu of 1957 and the Hong Kong Flu of 1968 are mostly the work of social scientists and public health scholars. Historical scholarship is limited to the importance of disease surveillance systems and vaccines.[53] In "Fifty Years of Influenza A(H3N2) Following the Pandemic of 1968," Barbara J. Jester, Timothy M. Uyeki and Daniel B. Jernigan highlighted the speedy production of a vaccine and the use of antiviral drugs during the Hong Kong Flu pandemic.[54] Stephanie Lundquist-Arora authored *The Asian Flu Pandemic of 1957*, in which she covered its history. She primarily focused on the U.S. response, and celebrated Maurice Hilleman's efforts to develop and distribute an effective vaccine.[55]

This wide-ranging historical literature presents a great opportunity to study the historical framework of epidemic diseases as well as their policy implications. Applied historians must examine both policy successes and failures to better inform Rhode Island public health policy. The Spanish Flu, the Asian Flu, and the Hong Kong Flu serve as particularly strong historical analogues, but insight can also be gleaned from Rhode Island's history of public health.

Trend Analysis: Parallels Between COVID-19, Asian Flu, and Hong Kong Flu

The U.S. public health system has changed drastically since the 1918-1919 Spanish Flu pandemic. Over the course of the twentieth century, the federal government gradually absorbed more responsibility for the funding and administration of public health and healthcare policy. At the same time, major disease outbreaks, such as the Asian Flu pandemic of 1957-1958, the Hong Kong Flu pandemic of 1968-1969, and the COVID-19 pandemic of 2020-2023 tested the U.S. public health system. These four pandemics were similar in nature and effect. They were all viruses with seasonal variations, they each triggered significant government intervention, and all required mass vaccination efforts. An analysis and comparison of key trends of these three pandemics will be informative for applied historians and policymakers who seek to improve public health and pandemic preparedness policies.

The different waves of the COVID-19 pandemic in the U.S. showed distinct fluctuations in mortality rates which also followed seasonal patterns. The death toll was highest during the fall and winter, and lowest during the spring and summer. As shown in Figure 3, mortality peaked during four distinct periods. The first wave began in March 2020, when the virus first arrived in the country, and subsided by summertime. The second and deadliest wave lasted from November 2020 to March 2021. On January 11, 2021, the U.S. hit an all-time high of 23,312 deaths in one day. The third wave lasted from August to November 2021. The fourth and final wave immediately followed the third, and lasted from December 2021 to March 2022.[56] The Delta variant provoked the third wave of infections and resulted in renewed social distancing and masking measures. Only a month later, the confluence of the Delta and Omicron variants were responsible for the fourth wave. Omicron was the most transmissible variant and caused extremely high death rates, until it subsided in the spring.

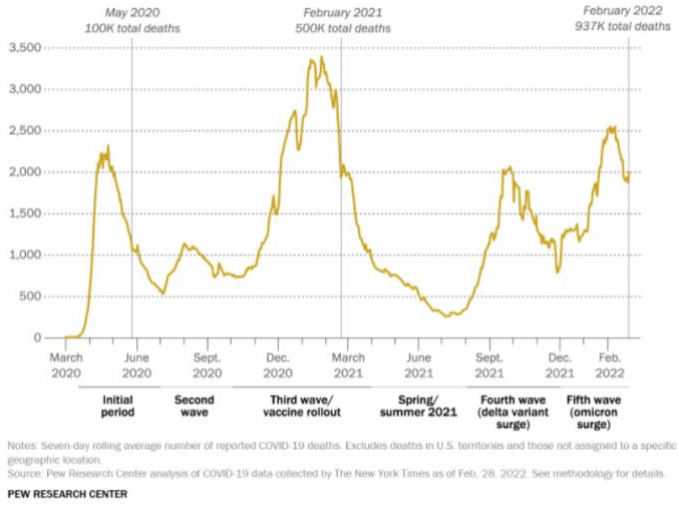


Figure 3: Average Number of Daily Reported Coronavirus Deaths in the U.S., 2020-2022

The different waves of the COVID-19 pandemic mimicked the spread of the Asian Flu pandemic of 1957-1958 and the Hong Kong Flu pandemic of 1968-1969. Those two viruses also followed seasonal trends. The influenza-classed mortality rates were highest in the fall and winter and lowest during the spring and summer. The Asian Flu death toll was at its highest between October and March. The influenza-classed mortality peaked during October and November, at 13.1 and 18.8 deaths per 100,000 population, respectively. Similarly, the Hong Kong Flu death toll peaked in December and January, at

16.4 and 23.3 deaths per 100,000, respectively. However, the "Pandemic years were difficult to distinguish from non-pandemic seasons, even in terms of peak monthly mortality." As revealed in Figure 4, overall influenza death rates have declined since the 1940s.[57]

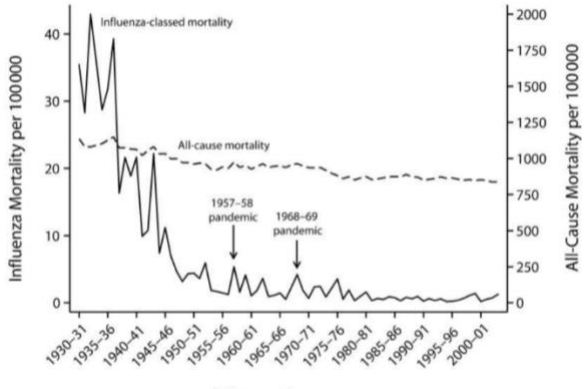


Figure 4: Influenza Mortality per 100,000, 1930 to 2004

An analysis of government spending on public health indicates how the U.S. government failed to react aggressively to previous pandemics. As depicted in Figure 5, trends in public health spending demonstrated no clear

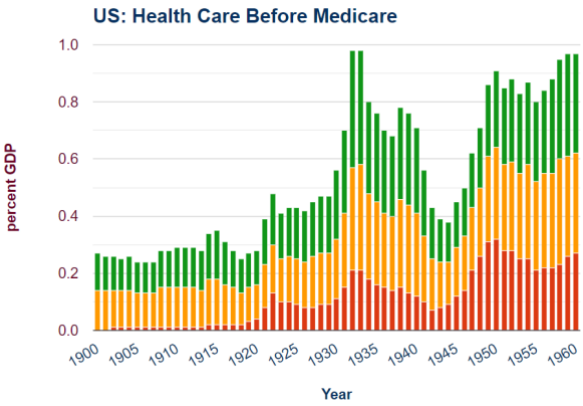


Figure 5: U.S. Healthcare Spending as Percent of GDP, 1900 to 1960

correlations with major disease outbreaks. Rather, government spending increased or decreased in response to other exogenous events, such as the Great Depression and World War II. In 1932, the federal government spent 0.21% of GDP on healthcare, state governments spent 0.36%, and local governments spent 0.41%. In the 1940s, spending fell below 0.20% at all levels of government. By 1958, the second year of the Asian Flu, public health expenditures had returned to pre-war levels. That year, the federal government spent 0.23% of GDP on healthcare, state governments spent 0.37%, and local governments spent 0.35%. The enactment of Medicare and Medicaid in 1965 led to massive federal investment in the U.S. public health system, and overall spending skyrocketed during the next few decades.[58] As shown in Figure 6, U.S. public health spending increased exponentially after 1970. The COVID-19 pandemic resulted in unprecedented levels of federal spending on public health. In 2019, federal expenditures totaled only $13.3 billion. In 2020, federal investment in public health skyrocketed to $135.8 billion, largely due to hospital expenditures. The following year, federal spending decreased to $78.8 billion, but remained above pre-pandemic levels.[59]

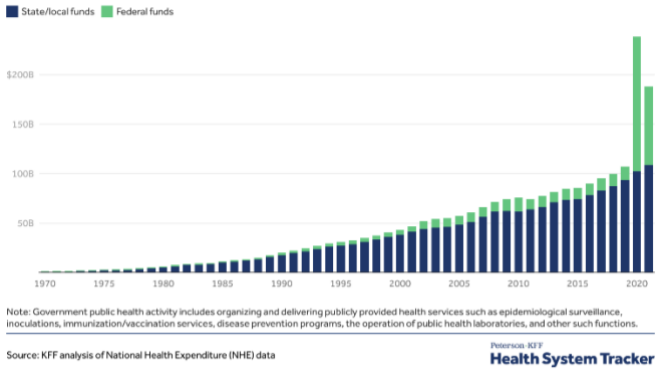


Figure 6: U.S. Public Health Expenditures in Billions of USD, 1970 to 2021

Another key point of study in pandemic trends were the rates of vaccination over time. USAFacts collected data on COVID-19 vaccination rates from the Centers for Disease Control and Prevention (CDC) from March 2021 to May 2023. USAFacts used March 2021 as a starting point because that was when the vaccine was first made available to most adults. Figure 7 shows that the percentage of U.S. adults who received a COVID-19 vaccine increased at a steady rate until the beginning of 2022, at which point vaccination rates stagnated. On

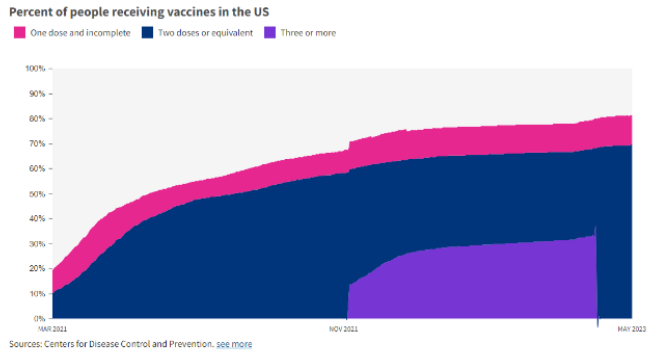


Figure 7: COVID-19 Vaccination Rates, March 2021 - May 2023

September 12, 2021, during the Delta variant wave, 63% of Americans had received one dose, and 54% had been fully vaccinated with two doses. By January 24, 2022, at the height of the deadly Omicron wave, 76% had received

one dose, 63% had been fully vaccinated, and 25% had received a booster shot. The vaccination rates plateaued after May 2021. As of May 10, 2023, 81% of Americans had received one dose and 70% were fully vaccinated with booster shots.[60]

The vaccination rate during the 1968 Hong Kong Flu displayed similar trends to COVID-19 vaccination rates. In 2020, Barbara J. Jester compiled available data for the 1968-1969 Hong Kong Flu pandemic, which is detailed in Figure 8. The number of Hong Kong Flu cases peaked in December 1968. The pandemic's peak came at the same time that manufacturers made 15 million doses of vaccine available to Americans. The number of available vaccine

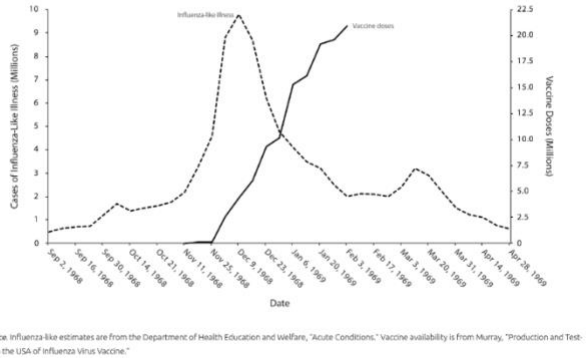


Figure 8: Hong Kong Case Rates and Vaccine Availability, September 1968 to April 1969

doses overtook the number of cases by mid-January 1969, but Jester pointed out that the vaccine was "too little and too late" and questioned its effectiveness.[61] However, the speedy development of the 1968 Flu vaccine was an improvement from the previous pandemic. In 1957, manufacturers made the first batch of Asian Flu vaccine available 94 days after the government established the requirements; in 1968, the manufacturers took only 66 days.[62] During COVID-19, the federal government understood the necessity for the rapid production and distribution of the vaccine, and implemented Operation Warp Speed (OWS). According to the Government Accountability Office (GAO), OWS shortened the timeline for the development of a completely new disease vaccine from 10 years or longer to 10 months.[63]

It is clear that COVID-19 pandemic followed a similar trajectory as the 1957-1958 Asian Flu pandemic and 1968-1969 Hong Kong Flu pandemic, in terms of both mortality rates and vaccination rates. On the other hand, COVID-19 was an outlier in public health history with respect to the immense amount of public health spending, especially by the federal government. COVID-19 was far deadlier than the 1957 and 1968 flu pandemics, and thus merited unprecedented federal action. President Biden's Build Back Better Act provided for increased federal funding for public health. The bill, originally introduced in 2021, included $16.16 billion for public health infrastructure, and $3 billion for pandemic preparedness.[64] Even though the final Act included less funding, COVID-19 was a major inflection point in U.S. public health spending.

Analogue #1: *The Spanish Flu Pandemic, 1918-1920*

In 1918, an illness that initially seemed to be old-fashioned "grippe" quickly became a global pandemic. In the United States, the flu wreaked havoc on the deeply unprepared public health system. Over the next few years, the H1N1 strain of influenza killed an estimated 50 to 100 million people worldwide.[65] The disease was referred to as the "Spanish Flu," though it originated in Fort Riley, Kansas. The pandemic coincided with World War I and the U.S. government was intensely focused on total victory against Germany. At the same time, wartime conditions exacerbated the spread of the flu. There were four different waves of the Spanish Flu, each of which was the result of a mutation of the original 1918 virus. The second wave, which lasted from September to November 1918, hit the U.S. the hardest. The federal government offered limited guidance and assistance to state and local governments, who in turn took on the burden for the pandemic response. The lack of any prior preparations, scant knowledge about the nature of influenza, and shortages of doctors and nurses, resulted in the inability of the U.S. public health system to effectively handle the devastation of the Spanish Flu pandemic.

Figure 9: The First Wave of Spanish Flu, January - August 1918

The Spanish Flu swept through the world in four different waves. Figures 9, 10, and 11 map the path of the Spanish Flu across the globe during the first, second, and third waves, respectively. The red point in Figure 9 indicated China as a possible origin of the virus, but most

historians now agree that the pandemic began in Kansas.[66] The first known outbreak of the disease occurred in Haskell County, Kansas, in January 1918. The virus then infected Camp Funston in Fort Riley.[67] Influenza attacked Europe for the first time in spring 1918. The French, British, and German armies all experienced mild outbreaks, but restricted reports of the disease to avoid hurting morale. The Spanish government, on the other hand, did not censor the press. For this reason, when the virus reached Spain in May 1918 it became known as the "Spanish Influenza." By summer, the Spanish Flu had reached pandemic proportions. The virus infected almost all of Europe, as well as Asia and Africa. The first wave ended in August 1918, when the disease abruptly disappeared.[68] The second wave began at the Navy Commonwealth Pier in Boston, Massachusetts in late August. The Boston outbreak was followed by an explosion of cases at the nearby Camp Devens, which became swamped with sick soldiers and dead bodies. The situation at the camp became dire as they ran out of people and resources to treat patients. In September, the flu reached New Orleans, the Philadelphia Navy Yard, Puget Sound, the Great Lakes Naval Training Station, Newport Naval Base, and Chelsea Naval Hospital.[69] Once again, the Spanish Flu spread across the globe in a matter of months. The third wave began in November 1918, only weeks after the end of the second wave, and lasted through the end of 1919.[70] The fourth and final wave came and went in 1920, but influenza never disappeared. The disease continued to circulate the country throughout the next several decades, but was less virulent due to successive mutations and herd immunity.[71]

Figure 10: The Second Wave of Spanish Flu, September - November 1918

The influenza virus caused a variety of different symptoms, as well as concerning complications such as epistaxis, cyanosis, and acute respiratory distress syndrome (ARDS). Some of the more prevalent symptoms, such as fever, chills, vomiting, and headache, led doctors to misdiagnose the disease. Influenza also caused emphysema, earache, loss of smell, and renal failure. Flu patients who suffered intense cyanosis, the blueish discoloration of the skin due to lack of oxygen, were treated as terminal. Some patients experienced epistaxis, or hemorrhaging from the nose and mouth, which also terrified doctors. The Spanish Flu disproportionately killed men and women between the ages of 20 and 34.[72] As shown in Figure 12, the total number of flu deaths as a percentage of the country's population was 0.52%. The United Kingdom, France, and Brazil saw similar mortality rates.[73] In many patients, influenza caused viral and bacterial pneumonia. Viral pneumonia sometimes resulted in acute respiratory distress syndrome (ARDS), the burning of lung tissue. As one expert on the history of Spanish Flu has written, with ARDS, "there is no way of stopping the process of disintegration in the lung once it begins. The only care is supportive, keeping the victim alive until he or she can

Figure 11: The Third Wave of Spanish Flu, November 1918 - Late 1919

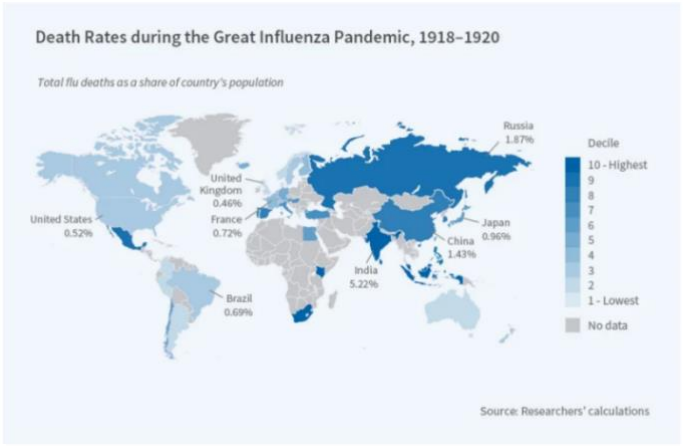


Figure 12: Spanish Flu Death Rates, 1918 - 1920

recover." ARDS often caused death from lung failure or exhaustion.[74]

The federal government's ineffectual response to the Spanish Flu pandemic was characterized by a lack of leadership and insufficient preparations. President

Figure 13: U.S. Surgeon General Rupert Blue

Woodrow Wilson focused the country's energies on World War I, and entirely ignored the pandemic. Wilson had declared war on Germany and the Central Powers in April 1917. Shortly thereafter, the President signed into law the Espionage Act and the Sedition Act, and created several new agencies to aid the war effort, such as the War Industries Board, the National War Labor Board, the Railroad Administration, the Fuel Administration, and the Food Administration.[75] By the summer of 1918, Wilson "had injected the government into American life in ways unlike any other in the nation's history." The Spanish Flu did not engender the same massive federal response. Even during the deadly second wave in the fall of 1918, Wilson made no public mention of the disease. The Spanish Flu was not a priority, and the administration offered neither leadership nor assistance.[76] Later, in April 1919, Wilson was infected with the flu, and suffered a debilitating stroke as a result of the disease.[77] Wilson's intense focus on the war effort meant that Surgeon General Rupert Blue, depicted in Figure 13, was in charge of the pandemic response.[78] He initially made no attempt to organize the U.S. Public Health Service or mitigate the spread of the disease. The Public Health Service did not publish any formal warning of the disease until September 1918, after the serious outbreak at Camp Devens. Congress eventually appropriated $1,000,000 for the Public Health Service, though Blue considered the amount inadequate. Subsequently, the American Red Cross put together its own team of "Home Defense Nurses" to go into homes and treat influenza victims. The Red Cross and the Public Health Service closely coordinated their efforts to provide doctors, nurses, and medical supplies to areas in need of help. Red Cross nurses provided care that gave "a victim of the disease the best possible chance to survive."[79] While the federal government, through the Public Health Service and the Red Cross, served an important role in the fight against the Spanish Flu, the individual states and locales bore the brunt of the pandemic response.

The public health reports related to the Spanish Flu provided insight into the knowledge and limitations of medical and public health professionals. In October 1918, the U.S. Public Health Service published an informational leaflet about influenza. Rupert Blue oversaw the publication, which was released by state-level health officials. The leaflet revealed the medical community's limited understanding of influenza and uncertainty about how to slow the spread of the disease. Blue attributed the cause of influenza to the bacteria known as Pfeiffer's bacillus. Further, he made misleading claims about the disease. Blue stated that "the proportion of deaths in the present epidemic has generally been low …" as of October, and that deaths were usually the result of pneumonia. Blue recommended mask-wearing for nurses, but not for the general public. Instead, he instructed people to "keep the face so turned as not to inhale directly the air breathed out by another person."[80] *The American Journal of Medical Sciences* released a report on "The Relation of the Bacillus Influenza to the Recent Epidemic" in November 1918. The author, Guthrie McConnell, was the laboratory chief at Camp Devens in Massachusetts. McConnell reasoned that the bacteria were secondary invaders. He suggested that a filterable virus was a potential cause of the disease, but offered no definitive proof.[81] In September 1919, the U.S. Public Health Service issued a revised leaflet, which mentioned that some European scientists believed a filterable virus was the cause of influenza.[82] The misguided belief that a bacteria caused influenza hindered the production of an effective influenza vaccine until 1938.

The U.S. Senate hearing about the "Suppression of Spanish Influenza" in September 1918 revealed the government's lack of preparedness. The Senate Committee on Appropriations called on Rupert Blue to

give a statement about House Joint Resolution 333, which asked for $1,000,000 to fund the U.S. Public Health Service's efforts to combat influenza. Blue proposed that the funds be used to quarantine infected individuals and educate the public about personal hygiene.[83] Lieutenant Commander J.R. Phelps of the U.S. Navy Medical Corps also gave testimony. Phelps stated that "nearly 4 percent of all those who have [contracted] influenza have died," a revelation that ran counter to the information in the leaflet. Blue revealed that the U.S. Public Health Service had "practically no funds" and the emergency epidemic fund did not cover influenza because the disease was not considered quarantinable at the time.[84] Ultimately, "… so few doctors worked for the PHS that Blue would later return $115,000 to the Treasury from the $1 million appropriation he had considered so insufficient."[85]


GAUZE FACE COVERINGS WORN AS PRECAUTION AGAINST INFLUENZA GERM

The Highly Contagious Nature of the Disease Has Obliged Hospitals to Take Every Precaution in Handling Cases. In Many Sections the Red Cross Chapters Are at Work on These Masks Which Are Designed to Be Used Not Only by Doctors and Nurses, but by Everyone Who Comes in Contact with the Patients.

©Int.Film Service

Figure 14: Providence Journal Advertisement about Masking, October 1918

Rhode Island was hit hard by the Spanish flu during the second wave. A selection of key *Providence Journal* newspaper articles from the fall of 1918 offered a glimpse into Rhode Island's experiences. According to a notice on September 10, 1918, titled "Spanish Influenza Spreads Among Sailors at Newport," the virus spread from the Boston Navy Yard to the Naval Training Station in Newport.[86] Two days later, the *Journal* published another notice, "Spanish Influenza in America Feared." The notice acknowledged that absolute quarantine was effective, but "impossible" because of the impact on commerce.[87] The U.S. government often regarded the needs and interests of businesses to be more important than public health. An article titled "Spanish Influenza May Only Be Familiar Grip," was published on September 21, 1918, which implied that Rhode Island suffered from a shortage of doctors.[88] Doctors and nurses were in short supply everywhere in the United States, and this meant that states and locales were often unable to effectively handle the epidemic. The *Journal* published an advertisement on October 3 related to masking, titled "Gauze Face Coverings Worn as Precaution Against Influenza Germ," which featured an image of two nurses wearing gauze masks. The caption said that masks were "designed to be used … by everyone who comes into contact with the patients" (Figure 14).[89] This public health guidance differed from Blue's leaflet, which did not recommend masking to the general public. In "Drastic Closing Urged as a Means of Checking Spread of Influenza," published on October 5, the newspaper reported that Blue wanted states and localities to close all public gathering places. However, he considered a nationwide closing order to be impossible.[90] This illustrates how the federal government abdicated its public health authority to the states.

North Carolina's response to the Spanish Flu served as a stark counterpoint to the federal response, or lack thereof. In North Carolina, the epidemic was considered a "blessing in disguise" because it prompted the state to address the inadequacies of its public health system and develop newer medical facilities and technology. Dr. Watson S. Rankin, the Secretary of the State Board of Health, coordinated the pandemic response. The federal government offered no assistance. Rankin, through the board of health, banned all public gatherings and imposed a quarantine on infected individuals. As North Carolina's public health system was relatively new and underdeveloped, Rankin lacked resources. He was also unable to effectively disseminate information about the flu. Relief organizations such as the North Carolina Council of Defense (NCCD) and the American Red Cross buttressed efforts to fight the flu. In the aftermath of the epidemic, the state built new hospitals, upgraded medical practices, and established new county health departments. Rankin and his allies pushed for the Rural Health Act at the federal level, which allocated $50,000 for rural sanitation improvements.[91] Rankin and North Carolinians took steps to bolster the state's public health system to prepare for future disease outbreaks, unlike Rupert Blue and the federal government.

Philadelphia was the hardest-hit city in the United States. The corruption and ineptitude of city officials, coupled with a shortage of doctors and nurses, proved to be a recipe for disaster. Philadelphia's government was dominated by a political machine headed by Edwin Vare. The mayor, Thomas B. Smith, was arrested on a conspiracy to murder charge in September 1918, which left a political vacuum. At the same time, the Spanish Flu reached the Philadelphia Navy Yard, and quickly spread to

the rest of the city. Dr. Wilmer Krusen, the Director of the Department of Public Health and Charities, initially disregarded the threat of influenza and made no emergency preparations. Krusen permitted the massive Fourth Liberty Loan Parade to take place on September 28, 1918, which proved to be a super-spreader event.[92] The number of influenza cases skyrocketed following the parade. The virus spread rapidly through the city, and overwhelmed hospitals, morgues, and workplaces. The Philadelphia Board of Health responded by closing schools, saloons, places of worship, and theaters, and restricted the size of public gatherings. The epidemic in Philadelphia was compounded by the severe shortage of doctors and nurses due to World War I. Out of desperation, the city recruited medical students and nuns to serve as nurses, but that still was not enough to adequately handle the crisis.[93] The Pennsylvania Council of National Defense also played a significant role in the epidemic response in Philadelphia. The council, which was funded by the state's wealthiest families, helped to recruit and pay physicians and nurses.[94] The epidemic finally abated by the end of October, and Krusen signaled a return to normalcy. In November, he reopened schools and places of worship and lifted the ban on public gatherings. By 1919, the epidemic was all but over, and other political problems took center stage. In the end, "The 1918 influenza epidemic became a small footnote to history, one rarely discussed in the conversation on World War I."[95]

Other major cities, such as San Diego, Seattle, Tucson, and San Antonio, had similar experiences with the Spanish Flu. San Diego implemented restrictive public health measures to combat the flu. The city imposed a quarantine, closed public buildings, developed a nasal spray, and mandated mask-wearing. San Diego's restrictive masking policies faced backlash from its denizens, for example, "some ridiculed the practice by cutting holes in their mask to smoke cigars or cigarettes." San Diego came into conflict with Los Angeles during the epidemic, which had less restrictive policies on masks and inter-city travel.[96] In Seattle, wartime conditions worsened the spread of the flu. However, a mobilized and patriotic public was ready and willing to take the necessary measures to combat the virus. Seattle public health officials restricted large gatherings, closed public buildings, and implemented a mandatory masking policy. Seattle developed its own heat-killed bacterial vaccine, which the mayor championed as "the means of wiping the disease out of America." Though most citizens cooperated with the city's efforts to contain the virus, some residents objected to its masking policy and compulsory vaccination law.[97] Unlike Seattle, Tucson faced strong local resistance to its quarantine and masking policies. Tucson city officials closed all schools, churches, and theaters, and implemented a mandatory masking order for all citizens. In response to intense opposition from businesses and the public, officials reopened all public gathering places, but kept the masking order. The city's leading health officer "informed the people of Tucson that when the masks came off too fast in a number of other cities … a second epidemic occurred." However, the masking order was highly unpopular because city police arrested any person who refused to wear a mask. A judge later ruled that the masking order was invalid, and Tucson eventually returned to normalcy.[98] San Antonio's approach to the epidemic was little different than San Diego, Seattle, or Tucson, however, its environment featured many natural health benefits. San Antonio had low humidity, moderate climate, medium altitude, and clean water, and "officials utilized the city's image as a health haven to avert panic" during the epidemic. The city also took concrete steps to slow the spread of influenza. The mayor closed schools, churches, and theaters, and banned all public gatherings. In addition, the Red Cross and some women's groups in San Antonio produced gauze masks and pneumonia jackets for local use, as well as for hospitals and troops overseas.[99] San Diego, Seattle, Tucson, San Antonio, and many other U.S. cities adopted a similar strategy to the influenza epidemic. These policies saved lives, but they also provoked strong pushback from their citizens.

In the aftermath of the pandemic, the federal government made few preparations for future disease outbreaks, but major advancements in medicine and law made a difference. In September 1919, just before the onslaught of the fourth wave, Rupert Blue urged communities to prepare for a possible recurrence of the flu. The fourth wave came and went, and in the next few years, influenza faded from public memory. Most people chose to forget the trauma of the Spanish Flu, and little was written about the pandemic in popular literature.[100] The country's leading scientists focused their energies on the quest to find the pathogen responsible for influenza. In 1931, Richard Shope discovered that a virus caused influenza, and concluded that *B. influenzae* (Pfeiffer's bacillus) was a secondary invader. Thomas Francis and Jonas Salk created the first inactivated influenza vaccine in 1938, which was made available to civilians in the 1940s.[101] These advancements in medical science enabled scientists to develop adequate vaccines during the 1957-1958 Asian Flu epidemic and the 1968-1969 Hong Kong Flu epidemic. President Franklin D. Roosevelt

signed the Public Health Service Act into law in 1944, which created the modern U.S. Public Health Service.[102] The new and revitalized U.S. Public Health Service played an important role in major disease outbreaks in the latter half of the twentieth century. The federal government did not enact any major public health preparedness policies until 2006, when President George W. Bush signed into law the Pandemic and All-Hazards Preparedness Act.[103] This was clearly not enough. In 2009, the relatively mild Swine Flu pandemic caught the U.S. government off guard, and killed between 150,000 and 575,000 worldwide.[104]

The United States was ill-equipped to deal with the Spanish Flu pandemic. In 1918, the federal government failed to make any emergency preparations for a major influenza outbreak. As a result, state and local governments were left to their own devices, and the response to the pandemic differed by locale. However, most health officials implemented quarantine and masking policies, which proved to be the most effective means of controlling the spread of the disease. The public often resisted these measures. The Spanish flu inflicted untold horrors on the nation, but when the disease disappeared, people were quick to forget. On the whole, the United States failed to learn its lessons from the blunders of the Spanish Flu, and history repeated itself in 1957, 1968, 2009, and 2020.

Analogue #2: The Asian Flu Pandemic, 1957-1958 and the Asian Flu Pandemic, 1968-1969

The three major influenza outbreaks of the twentieth century serve as strong analogues for the coronavirus pandemic. Historians have examined the Spanish Flu pandemic of 1918-1920 which caused millions of deaths worldwide and devastated the fledgling U.S. public health system. The lesser-known Asian Flu pandemic of 1957-1958 and Hong Kong Flu pandemic of 1968-1969 also offer valuable insights into pandemic preparedness. In the years following the Spanish Flu, global public health authorities engineered new disease surveillance systems to track the origin, spread, and impact of pandemic viruses. These systems enabled researchers to respond quickly and effectively to novel outbreaks, and produce a proper vaccine in short order. At the same time, new vaccine technologies and antiviral medications aided the pandemic response and new public health institutions established in the 1940s, such as the World Health Organization (WHO) and the Communicable Disease Center (CDC) played an outsized role in the crisis. The Asian Flu and Hong Kong Flu, though mild in nature and far less deadly, were the first pandemics in which these disease surveillance systems and other public health capabilities came into play.

The Asian Flu spread across the world in a matter of six months in 1957. The H2N2 strain of influenza earned the name "Asian Flu" because it originated in the Guizhou Province of China in late 1956. The virus spread to Singapore by February 1957, and reached Hong Kong by April 1957. The Asian Flu caused typical flu symptoms, such as general weakness, fever, chills, sore throat, cough, runny nose, and headache. In rare cases, the disease led to severe complications like pneumonia, bronchitis, heart failure, and seizures, but the mortality rate was low.[105] The World Health Organization (WHO) declared the Asian Flu to be a pandemic in June 1957, after the virus had spread to India, Australia, Indonesia, Western Europe, North America, Pakistan, and the Middle East. In July and August, the flu reached South America, New Zealand, the Pacific Islands, the Caribbean, and Africa. The United States reported the first outbreak of the Asian Flu at the Newport Naval Station in Rhode Island. The disease spread rapidly to other parts of the country via large public gatherings, such as a Presbyterian youth meeting in Grinnell, Iowa and the International Boy Scout Jamboree in Valley Forge, Pennsylvania.[106] Across the country, local officials closed schools, curtailed public gatherings, and restricted hospital visitation in order to contain the spread of Asian Flu. U.S. Surgeon General Leroy E. Burney created a Quarantine Service to monitor West Coast seaports and airports. The Quarantine Service officers opted not to quarantine travelers, and the virus continued to spread unabated.[107] At the same time, the American Medical Association (AMA) worked with medical personnel to develop preparedness plans at the national, state, and local levels.[108]

During the Asian Flu pandemic, the U.S. Public Health Service utilized mass media to educate the general public about the disease. In 1957, the Westinghouse Broadcasting Company released a film about Asian Flu, titled *The Silent Invader*. The film's narrator, Carl Ide, championed the nation's disease surveillance system, which allowed public health authorities to track Asian Flu. The film featured U.S. Surgeon General Leroy E. Burney, and three other public health experts. Burney informed the audience of the rapid spread of Asian Flu, the low mortality rate, and ongoing efforts to develop a vaccine. The other experts detailed the geographic spread of the disease, the safety and effectiveness of the vaccine, the symptoms of the disease, and treatment methods.[109] In a similar vein, the U.S. Public Health Service aired a series of television advertisements in 1957 that urged Americans to vaccinate themselves against Asian Flu. The

Service promoted vaccination as the best way to prevent the spread of the disease.[110] The U.S. government's Asian Flu information campaign revealed a significant improvement in scientific understanding and public health capabilities compared to the Spanish Flu.

The U.S. government's successful public health response to the Asian Flu pandemic can largely be attributed to Maurice Hilleman's swift production of a vaccine and efficient distribution. The Asian Flu vaccination campaign was precipitated by major advancements in public health, including the establishment of the U.S. Communicable Disease Center (CDC) and the World Health Organization (WHO). In addition, the advent of new disease surveillance systems and a worldwide network of laboratories enabled researchers to study the H2N2 virus early in the pandemic.[111] Maurice Hilleman, depicted in Figure 15, was the chief of the Department of Respiratory Diseases at Walter Reed Army Medical Center, and led the initiative to develop a vaccine.[112] The microbiologist obtained a virus sample in May 1957, before the Asian Flu reached U.S. shores. Hilleman alerted officials to the coming pandemic, but his warnings fell on deaf ears. The government offered him little support even after the first outbreaks in June. Hilleman bypassed the bureaucracy, and collaborated directly with pharmaceutical companies to develop a vaccine in four months. He also worked with farming communities to preserve enough chicken eggs for millions of vaccines.[113] President Dwight D. Eisenhower ignored appeals from public health experts to mount a mass vaccination campaign. Eisenhower and the Republicans relied on "the invisible hand of private enterprise" to develop and distribute the vaccine.[114] Merck & Co. produced the first Asian Flu vaccine in June 1957, which was estimated to be 60 to 80 percent effective. Eisenhower initially decided not to be vaccinated but ultimately did get his shot in August 1957. By that point, over 1 million Americans had already received a dose of the vaccine. By November, 40 million Americans had been vaccinated against Asian Flu. The vaccination campaign was highly successful. In the United States, between 70,000 and 116,000 people died of Asian Flu, though public health experts estimated the death toll might have reached 1 million without the vaccine. A second wave came and went in 1958, and limited outbreaks occurred in 1963. By 1968, the Asian Flu strain was eradicated.[115]

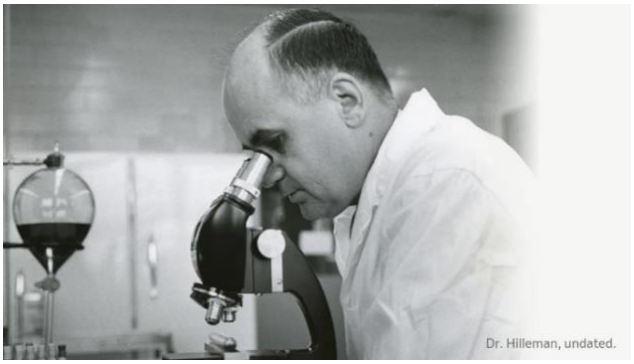


Figure 15: Dr. Maurice Hilleman

Throughout the Asian Flu pandemic, the *Providence Journal* published regular updates on the status of the disease in Rhode Island. In a notice titled "R.I. Medical Group Plans for Flu Fight," published on June 15, 1957, the newspaper reported that a group of 50 medical experts met at Charles V. Chapin Hospital to discuss efforts to recruit volunteer medical personnel for a possible epidemic.[116] These relatively early preparations for the Asian Flu epidemic were possible because of the aforementioned disease surveillance system. The first known cases of Asian Flu in the United States occurred among naval personnel in Newport. In an article on June 22, 1957, titled "U.S. Watching Flu Outbreak," the *Providence Journal* confirmed that the U.S. Public Health Service and state authorities were "keeping close tabs" on the outbreak in Newport. The newspaper reported that the government was "carrying on a 'crash program' to develop a specific vaccine to fight the virus."[117] On August 27, 1957, in a notice titled "3 Oxygen Tents Bought," the *Providence Journal* announced that the Charles V. Chapin Hospital had purchased three oxygen tents in preparation for an epidemic.[118] A few weeks later, on September 5, the newspaper detailed the meeting of the Rhode Island Advisory Committee on Asian Influenza to discuss the "need for training many persons in home care of the sick."[119] By October 1957, public health authorities had

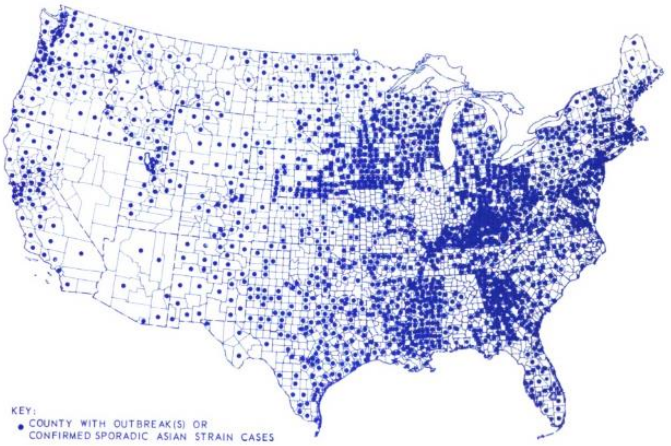


Figure 16: Geographic Spread of Asian Influenza by County - Through December 16, 1957

begun to inoculate Rhode Islanders against Asian Flu. On October 4, the *Providence Journal* published the article "R.I. Not Ready for Epidemic," in which the state health director argued that the selective inoculation of essential workers was too slow. At that point, only doctors, nurses, policemen, firemen, and a few other groups had received the vaccine.[120] The first civilian cases of Asian Flu in Rhode Island were reported in mid-October. An article titled "State's Flu Outbreak called 'Asian Strain'" on October 23, 1957, revealed that the disease quickly overwhelmed the state, and caused an increase in school absenteeism.[121] Overall, the state's response to the Asian Flu indicated that officials had applied the lessons from the 1918 Spanish Flu to ensure improved preparations for an outbreak.

In 1960, the International Conference on Asian Influenza published "The Epidemiology of Asian Influenza, 1957-1960: A Descriptive Brochure," which included a vast array of relevant data. The graphs and charts provided several key insights into the spread of the disease and influenza and pneumonia mortality rates. The conference included several maps to depict the geographic spread of the virus in the United States: Figure 16 portrayed county-level data through December 16, 1957. The number of respiratory illness cases peaked in October 1957, and the death toll peaked in November 1957. A second wave occurred in January, February, and March 1958. Figure 17, for example, shows that the 1952-1953 influenza season had higher death rates. Many of the graphs segregated influenza mortality data by age group. In the United States, the greatest number of deaths occurred among people aged 65 and over, followed by people aged 45 to 64.[122]

The "Hong Kong Flu" wreaked comparable death and devastation upon the world between 1968 and 1969. It first appeared as a surge of influenza-like illness in Hong Kong in July 1968. The National Influenza Center at the University of Hong Kong identified the virus as the H3N2 strain of influenza. The Hong Kong Flu reached Singapore, Taiwan, the Philippines, Vietnam, and Malaysia by August, and spread to Thailand, India, Australia, and Iran by September. The United States experienced the first reported cases of Hong Kong Flu in September, after a U.S. Marine brought the virus home from Vietnam. The first civilian outbreak occurred in Needles, California in October 1968. The nation's disease surveillance systems had expanded in the 1960s to include reports of school and workplace absenteeism, school closings, hospital admissions, and outpatient visits. By winter, the virus had reached all 50 states. As shown in Figure 18, the Hong Kong Flu peaked in the U.S. in December and January;

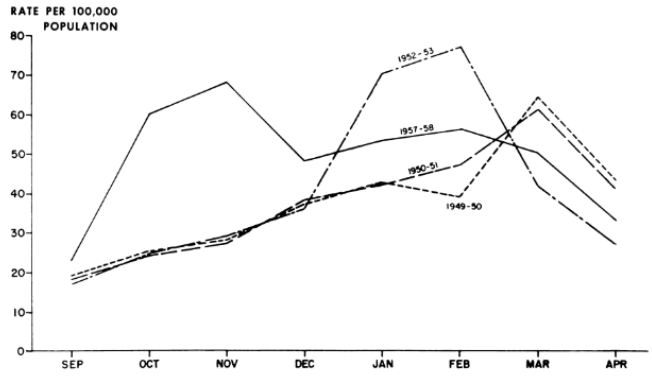
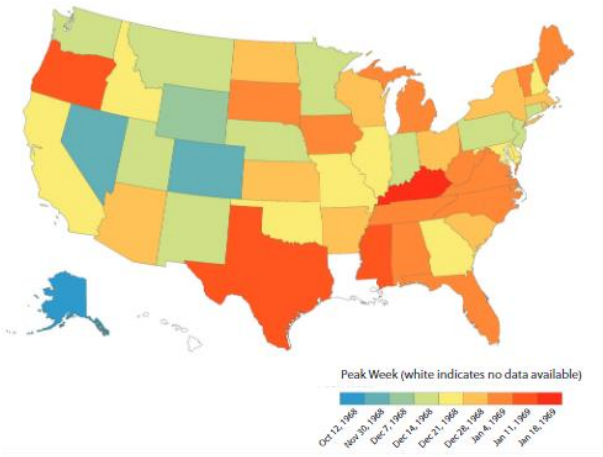


Figure 17: Mortality for Influenza and Pneumonia in the U.S. for Selected Years in the United States

Rhode Island experienced its peak during the week of December 28, 1968. Around the same time, President Lyndon B. Johnson was hospitalized with a possible case of the flu. A second, less severe wave of the disease spread across the world between 1969 and 1970. The Hong Kong Flu caused typical flu symptoms, such as fever, malaise, muscle pain, cough, headache, stuffy nose, and sore throat. The rarer, severe complications included anorexia, nausea, ocular pain, pneumonia, bronchiolitis, bronchitis, croup, myocarditis, and pericarditis. In sum,



State	Peak Week	State	Peak Week	State	Peak Week
AK	Oct 12, 1968	LA	...	OH	Dec 28, 1968
AL	Jan 4, 1969	MA	Dec 28, 1968	OK	Dec 21, 1968
AR	Dec 28, 1968	MD	Dec 21, 1968	OR	Jan 11, 1969
AZ	Dec 28, 1968	ME	Jan 4, 1969	PA	Dec 14, 1968
CA	Dec 21, 1968	MI	Jan 4, 1969	RI	Dec 28, 1968
CO	Nov 30, 1968	MN	Dec 14, 1968	SC	Dec 28, 1968
CT	Dec 14, 1968	MO	Dec 21, 1968	SD	Jan 4, 1969
DE	Dec 21, 1968	MS	Jan 11, 1969	TN	Jan 4, 1969
FL	Jan 4, 1969	MT	Dec 14, 1968	TX	Jan 11, 1969
GA	Dec 21, 1968	NC	Jan 4, 1969	UT	Dec 14, 1968
HI	...	ND	Dec 28, 1968	VA	Jan 4, 1969
IA	Jan 4, 1969	NE	Dec 14, 1968	VT	Jan 4, 1969
ID	Dec 21, 1968	NH	Dec 21, 1968	WA	Dec 14, 1968
IL	Dec 21, 1968	NJ	Dec 14, 1968	WI	Dec 28, 1968
IN	Dec 14, 1968	NM	Dec 14, 1968	WV	Jan 4, 1969
KS	Dec 28, 1968	NV	Nov 30, 1968	WY	Dec 7, 1968
KY	Jan 18, 1969	NY	Dec 28, 1968		

Source. National Center for Communicable Diseases. Influenza—Respiratory Diseases Surveillance. National Communicable Disease Center, June 30, 1969. Report No.: 85.

Figure 18: Peak Week of Pandemic Influenza Activity, United States, A(H3N2) Pandemic

the disease caused an estimated 100,000 deaths in the United States. The Hong Kong Flu was the first pandemic in which antiviral medications, such as amantadine, were widely used. Furthermore, vaccine manufacturers utilized the Aichi strain of the virus from Japan to produce a monovalent pandemic influenza vaccine, which became available in January 1969. The vaccine was "too little and too late" for many Americans. In the aftermath, two different scientific studies resolved that the vaccine did not provide adequate protection.[123]

As with the Asian Flu, the *Providence Journal* was a major source of information about the Hong Kong Flu for Rhode Islanders in 1968 and 1969. In the fall, the newspaper issued warnings that predicted a major epidemic in the winter. In a notice published on November 17, 1968, titled "New Vaccine for Asian Flu to be Ready by End of Nov.," the *Providence Journal* announced that the federal government planned to release the first shots to elderly and chronically ill individuals by the end of the month.[124] On November 20, in a notice titled "'Real Epidemic' of Flu Forecast," U.S. Surgeon General William H. Stewart emphasized the preservation of existing flu vaccines for high-risk groups, such as the elderly and those with chronic illnesses.[125] Despite the mild nature of the Hong Kong Flu, these reports suggested that the U.S. public health authorities made preparations for an epidemic that were comparable to the Asian Flu response. The Hong Kong Flu finally reached epidemic proportions in Rhode Island by December. In a December 20 notice titled "R.I. Institutions Take Measures As Flu Spreads," the *Providence Journal* announced that the state closed schools and restricted visitors at hospitals in order to slow the spread of the disease.[126] The state saw a small increase in school absenteeism due to the flu and mumps in Bristol and Barrington following the end of Christmas vacation, according to a notice titled "Absenteeism at Schools Up Slightly," published on January 3, 1969.[127] On January 18, in a notice titled "Hong Kong Flu Reported Waning," the *Providence Journal* notified readers that "if you were a victim this year, chances are you will be immune to the disease next winter." This signaled the decline of the epidemic.[128]

The World Health Organization (WHO) published two public health reports on the Hong Kong Flu in 1969. The first report titled "Origin and Progress of the 1968-69 Hong Kong Influenza Epidemic" explained that the disease first appeared in Hong Kong in July 1968, and then spread throughout Asia and the rest of the world. According to the report, the 1968 epidemic mirrored the "speed and pattern of spread" of the 1957 epidemic. It affirmed that the first American outbreak of Hong Kong Flu occurred in October 1968 in California. By Christmas, all U.S. states reported outbreaks of the disease. The authors championed the WHO influenza program, which "isolated, identified, and distributed [the Hong Kong strain] to vaccine producers with all possible speed."[129] This report was testament to the efficacy of new technological advancements that allowed public health officials to track and record the progress of epidemic diseases. In turn, these disease surveillance programs enabled the speedy development of vaccines. Another WHO report, titled "Production and Testing in the USA of Influenza Virus Vaccine Made from the Hong Kong Flu Variant in 1968-69," indicated an improvement in vaccine production and distribution since the 1957 epidemic. The author, Roderick Murray, provided statistics about the 1957 and 1968 influenza vaccines. In 1957, vaccine manufacturers released the first batch of vaccines 94 days after the government established the requirements, and the first 5 million doses were available after 120 days. In 1968, the manufacturers took only 66 days to produce the first batch, and only 87 days to release the first 5 million doses.[130]

In the aftermath of the Hong Kong Flu pandemic, scientists and public health professionals re-imagined disease surveillance systems. All signs pointed to China as the source of many pandemic influenza viruses. In 1970, Wai-Kwan Chang, a medical officer at the Hong Kong Government Virus Unit, opined that both the Asian Flu pandemic of 1957 and the Hong Kong Flu pandemic of 1968 originated in mainland China. This was not a revolutionary idea; in 1891, James Cantlie had identified China as the source of the Russian Flu pandemic of 1889. Some researchers also believed that the Spanish Flu pandemic of 1918 began in China. Kennedy Shortridge, an Australian microbiologist, came to Hong Kong to study animal influenza viruses in the 1970s, especially among wild birds. Shortridge described southern China as an "influenza epicentre" because its rural farming areas were the "ideal place for events such as interchange of viruses between host species." Henceforth, the disease surveillance systems shifted their focus to China as the most likely starting point for the next pandemic.[131]

The Asian Flu and Hong Kong Flu pandemics provided the first test of strengthened U.S. and global public health capabilities. All in all, new disease surveillance systems and vaccine technologies were the most important components of the pandemic response. However, these developments were not the end-all and be-all of pandemic preparedness. The United States continued to bolster its public health system in the twenty-first

century. The Pandemic and All-Hazards Preparedness Act of 2006 established a National Response Plan for "Category 5" pandemics. Nonetheless, the U.S. government was still ill-prepared to deal with the mild Swine Flu pandemic of 2009.[132] Then, in 2020, the COVID-19 pandemic destroyed any confidence in the United States' ability to withstand a true "Category 5" pandemic. The Swine Flu and COVID-19 pandemics proved that the U.S. public health system is still woefully unprepared for a major disease outbreak. Federal and state planners must try to avoid history repeating itself.

Applied Historical Analysis

The COVID-19 pandemic has faded away, but U.S. policymakers still have the time and the prerogative to prepare for the next pandemic and avoid the failures of the past. There are many diseases, including bubonic plague, yellow fever, smallpox, cholera, and HIV/AIDS, that have profoundly altered the practice of medicine and the politics of public health. In the twentieth century, no bacteria or virus has had a greater effect on society than influenza. Most notably, the Spanish Flu devastated the fledgling U.S. public health system, and killed 2.5% of the world's population between 1918 and 1919.[133] U.S. public health law was not yet fully developed at that time, but progressed and expanded in the years after the Spanish Flu. A series of court cases, beginning with *Jacobson v. Massachusetts* in 1905, established the constitutionality of compulsory vaccination laws.[134] Under the Commerce Clause, Congress was implicitly empowered to regulate public health.[135] Congress passed several laws, such as the Public Health Service Act of 1944, the Defense Production Act of 1950, and the Pandemic and All-Hazards Preparedness Act of 2006, which created the basis for modern public health law.[136] Federal laws played a role in the Asian Flu, Hong Kong Flu, Swine Flu, and COVID-19 pandemics. Ultimately, the Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968 offer significant insights and perspectives on public health and pandemic preparedness.

The analysis of trends in pandemic wave behavior, vaccine production, inoculation rates, and federal public health funding illustrated continuity and change over time. The Asian Flu, the Hong Kong Flu, and COVID-19 all exhibited wave behavior. For all three pandemics, mortality rates peaked in the fall and winter. The U.S. experienced the highest death toll between October and March during the Asian Flu pandemic, and the Hong Kong Flu pandemic peaked in October and November.[137] The highest number of coronavirus deaths in the U.S. occurred in January 2021, and the deadliest periods of the pandemic – the second and fourth waves – took place between November and March.[138] U.S. public health expenditures also demonstrated continuity, as federal public health funding increased exponentially from 1970 to the present.[139] The most substantial increases in public health expenditures occurred in response to non-pandemic inflection points, such as the Great Depression, World War II, and the implementation of Medicaid and Medicare.[140] COVID-19 was an outlier in U.S. history because of the unprecedented amount of emergency funding directed at combatting the pandemic in 2020.[141] There were also similar trends in vaccination rates during the Hong Kong Flu and COVID-19. The rate of vaccination steadily increased through the deadliest periods of the pandemics, and then stagnated as the disease faded away. In January 1969, the number of available vaccine doses surpassed the death toll, and manufacturers phased out production.[142] Beginning in May 2023, COVID-19 vaccination rates slowed down.[143] By then, the fourth and final wave of the pandemic had passed, and life was set to return to normal. However, vaccine manufacturers took longer to produce the coronavirus vaccine than the Asian Flu and Hong Kong Flu vaccines because of bureaucratic red tape.[144]

Aside from their physiology, there were several common elements across Spanish Flu, Asian Flu, and Hong Kong Flu. During the Spanish Flu and Asian Flu pandemics, states and locales encountered difficulties with medical surge capacities. The Spanish Flu devastated Philadelphia in the fall of 1918 because of a severe shortage of doctors and nurses. The city called in medical students and nuns to help treat the sick and dying.[145] In 1957, Rhode Island officials made plans to recruit and train volunteer medical personnel to respond to the Asian Flu outbreak.[146] The spread of Spanish Flu and Asian Flu were worsened by super-spreader events, such as the Fourth Liberty Loan Parade in Philadelphia in 1918, and the International Boy Scout Jamboree in Valley Forge in 1957.[147] During all three pandemics, states and locales implemented quarantine procedures to combat the spread of the disease. For example, during the Spanish Flu pandemic, many Western cities closed public buildings and restricted large gatherings.[148] The Surgeon General created a Quarantine Service to monitor Asian Flu on the West Coast, but it was ineffective.[149] Rhode Island closed schools and restricted hospital visitors amidst a surge of Hong Kong Flu cases.[150]

The Asian Flu and Hong Kong Flu pandemics differed from the Spanish Flu pandemic in several important ways. The Spanish Flu was far deadlier than the Asian Flu or

Hong Kong Flu. The Spanish Flu death toll was estimated to be as high as 100 million, whereas the Asian Flu and Hong Kong Flu each killed around 1 million.[151] Furthermore, the worst excesses of the Spanish Flu were averted in 1957 and 1968 because of vaccine technologies and disease surveillance systems, which allowed U.S. public health officials to track the origin and progress of influenza, and quickly isolate the strain responsible for the epidemic. Virus samples were then studied by laboratories around the world.[152] Maurice Hilleman, the chief of the Department of Respiratory Diseases at Walter Reed Army Medical Center, was able to kick start production of an Asian Flu vaccine in 1957 because he received a sample early in the pandemic.[153] The Hong Kong Flu vaccine was developed via similar processes in 1968, though it was not as effective as the 1957 vaccine.[154] In the end, Asian Flu and Hong Kong Flu were mild, and did not have the same social, economic, and political effects as the Spanish Flu.

The Spanish Flu, Asian Flu, and Hong Kong Flu are perfect analogues for COVID-19 and current policy debates, though there were stronger similarities between Spanish Flu and COVID-19. Interestingly, the U.S. president caught the disease in three of these four pandemics: Woodrow Wilson became very sick with the Spanish Flu and nearly died, Lyndon B. Johnson caught the Hong Kong Flu, and Donald Trump contracted COVID-19. In the case of Wilson and Trump, these cases were emblematic of a failure of leadership during times of crisis.[155] Wilson completely ignored the Spanish Flu, and concentrated U.S. efforts solely on World War I.[156] Trump repeatedly downplayed the impact of COVID-19, and publicly refused to wear a mask until July 2020 – four months into the pandemic (Figure 19).[157] There were also problems with medical equipment during these pandemics. For instance, Rhode Island purchased three oxygen tents in August 1957, in preparation for an Asian Flu outbreak.[158] During the coronavirus pandemic, both Presidents Trump and Joe Biden invoked the Defense Production Act to increase production of PPE supplies, such as masks, as well as ventilators, tests, and vaccines.[159]

The localized responses to both Spanish Flu and COVID-19 were hampered by insufficient medical surge capacities, and places like Philadelphia and Camp Devens were overwhelmed with dead bodies.[160] New York City funeral homes were unable to handle the mass influx of dead COVID-19 victims during the height of the coronavirus pandemic. Between 2020 and 2021, the city buried over 3,000 bodies in the Potter's Field on Hart Island public burial ground. This was a last resort for

Figure 19: President Donald Trump Wearing His Mask in July 2020

corpses that languished in refrigerated trucks, without a proper burial place.[161] Spanish Flu and COVID-19 both provoked unprecedented levels of funding. In 1918, Surgeon General Rupert Blue received $1,000,000 from Congress to fight the pandemic.[162] The federal government doled out $135.8 billion to fight the coronavirus pandemic in 2020, and $78.8 billion in 2021.[163]

The most significant similarity between Asian Flu, Hong Kong Flu, and COVID-19 was the role of disease surveillance systems. The U.S. public health system had more knowledge of COVID-19 in 2020 than Spanish Flu in 1918 precisely because of these systems. Yet, there were also several differences between COVID-19 and its analogues. COVID-19 was a strain of coronavirus, SARS-CoV-2, whereas the three analogues were caused by different strains of influenza. There was no proper vaccine developed during Spanish Flu because scientists wrongfully believed that the disease was caused by bacteria.[164] Asian Flu and Hong Kong Flu were milder pandemics than Spanish Flu and the coronavirus, and because of this, there were no policies or recommendations about masking or social distancing in either 1957 or 1968. The other major point of comparison between Asian Flu, Hong Kong Flu, and COVID-19 was the selective inoculation of high-risk populations. In 1957 and 1968, the government prioritized the vaccination of those people that were hit hard by the pandemic – elderly and chronically ill individuals as well as essential workers.[165] Similarly, Operation Warp Speed (OWS) provided for the release of the coronavirus vaccine in phases. In phase 1, which began in December 2020, the vaccine was made available to healthcare professionals, the elderly, residents of long-term care facilities, essential workers, and immunocompromised people.[166] On the other hand, Spanish Flu primarily affected younger populations in 1918.[167] The coronavirus pandemic also featured

heightened politicization of the masking issue, and debates about mask-wearing were more pronounced than in the previous pandemics. Republican politicians fought against mask mandates. As a result, public opinion on masks was split along partisan, racial, and gender lines. The intense controversy over masks had a direct impact on the course of the pandemic.[168] San Diego and Tucson experienced some resistance to their quarantine and masking policies in 1918, but nothing comparable to the politicization of masks in 2020.[169]

The insights gleaned from the history of the Spanish Flu, Asian Flu, and Hong Kong Flu offer new perspectives on policy issues surrounding pandemic preparedness and response. The most significant insight was the ineffectiveness of federal preparations for future pandemics. In his Senate testimony in 1918, Rupert Blue explained that the nation's emergency epidemic fund covered almost every epidemic disease aside from influenza. This left the U.S. Public Health Service without funds to fight the disease. Similar ineffectiveness characterized the years preceding the outbreak of COVID-19. Congress enacted the Pandemic and All-Hazards Preparedness Act (PAHPA) in 2006, prior to the Swine Flu and COVID-19 pandemics and ushered in greater intragovernmental coordination on public health. Congress passed the law in response to contemporary concerns about Avian Flu.[170] PAHPA had little effect, as the United States was still ill-equipped to deal with Swine Flu in 2009. Congress reauthorized PAHPA in 2019, in response to the reemergence of Ebola and Zika virus. PAHPA allocated $250 million to "address threats like pandemic influenza."[171] Yet the United States appeared unprepared to deal with COVID-19, which reached U.S. shores less than a year later. PAHPA paled in comparison to the massive need for emergency funding in 2020. Congress passed the CARES Act, which authorized $135.8 billion to combat the coronavirus pandemic.[172] This comparison presents a new perspective on pandemic planning. Overall, government initiatives to prepare for future pandemics have proved largely ineffective, and PAHPA served as an interesting case study. The same pandemic analogues also offer insights into the decentralization of U.S. public health policy, which left states to grapple with the pandemic on their own. North Carolina, Philadelphia, San Diego, Seattle, Tucson, and San Antonio were useful in-depth case studies of state responses to the Spanish Flu in 1918. Rhode Island's experiences with Spanish Flu, Asian Flu, and Hong Kong Flu were detailed in the *Providence Journal* reports. In the Commonwealth Fund's assessment of state responses to COVID-19, Rhode Island ranked at 29, whereas nearby Massachusetts ranked 8, and Alabama ranked as the worst at 51. As with Spanish Flu, there was little coordination between states during the pandemic.[173] Another crucial insight was the importance of disease surveillance systems to the U.S. response to the Asian Flu and Hong Kong Flu pandemics. Significantly, in 2023, President Biden cancelled DEEP VZN, a U.S.-funded disease surveillance program that studied rare viruses. His administration cited worries about potential laboratory accidents.[174] While the potentially disastrous effects of this cancellation cannot be known, disease surveillance systems were important in 1957 and 1968. In addition, the recent discovery of viruses with pandemic potential suggested that DEEP VZN is a necessary component of pandemic planning.[175]

The applied historical analysis of Spanish Flu, Asian Flu, and Hong Kong Flu creates a new lens through which lawmakers can view pandemic preparedness and response. The most pressing policy issues of the COVID-19 pandemic were found in the history of the three influenza pandemics, suggesting strong historical parallels and continuities. For example, there was resistance to mask mandates during both Spanish Flu and coronavirus. Undoubtedly, Spanish Flu was the best historical analogue for COVID-19, even though these two pandemics were over one hundred years apart. Ultimately, the most meaningful insights from both analogues – the inadequacy of previous preparations, the decentralization of public health policy, and the significance of disease surveillance – provide the basis for post-coronavirus pandemic planning and public health policy.

Policy Options and Analysis

Policy Options Overview

The time to prepare for catastrophic disease outbreaks is right now. The lackluster state of U.S. pandemic preparedness programs and policies requires urgent and decisive action at both the federal and state levels. Since 2020, policy analysts have outlined areas of opportunity to learn and improve from blunders of the COVID-19 response. These insights can be directly translated into successful policy.[176] U.S. lawmakers must consider four different policy options: 1) the reauthorization of the Pandemic and All-Hazards Preparedness and Response Act, 2) the development of a Universal Influenza Vaccine, 3) the expansion and modernization of disease surveillance systems, and 4) the improvement and standardization of state pandemic preparedness plans. Taken together, and combined with historical insights, these policy options can ensure that

the U.S. is better prepared to respond to the next pandemic.

Option 1: Reauthorize the Pandemic and All-Hazards Preparedness and Response Act (PAHPA)

In July 2023, Senators Mitt Romney (R-UT) and Bob Casey (D-PA) introduced S. 2333, the bipartisan Pandemic and All-Hazards Preparedness and Response Act (PAHPA). The Senate Health, Education, Labor, and Pensions Committee then voted to move PAHPA to the floor for a vote.[177] In March 2022, prior to the Romney-Casey bill, Senators Patty Murray (D-WA) and Richard Burr (R-NC) introduced the PREVENT Pandemics Act. The Center for American Progress advocated for the passage of the legislation as part of broader increases in public health funding.[178] The Senate never held a vote on the PREVENT Pandemics Act, but some provisions were incorporated into a 2023 appropriations bill.[179] The ineffective emergency epidemic fund in 1918 and the original PAHPA of 2006 offer crucial insights into the consequences of inadequate preparations. The emergency epidemic fund did not cover influenza and the Public Health Service lacked the funds to combat the spread of Spanish Flu. The U.S. government derived little support from the original PAHPA during the Swine Flu or COVID-19 pandemics. These weak programs directly worsened these public health crises.

PAHPA is a comprehensive piece of legislation that tackles various public health issues. The bill includes a key provision that requires the federal government to set up a public health data website. PAHPA addresses federal planning since it provides $950 million for research to develop medical countermeasures for pandemic viruses. In regard to state and local readiness and response, the bill creates a pilot program to support state medical stockpiles and funds wastewater surveillance efforts. The bill also establishes a no-fault reporting system for government-funded laboratories.[180] This legislation is a significant improvement from the previous iterations of PAHPA because of the substantial increases in funding to address specific disease threats and the provisions regarding state preparedness. By contrast, the 2019 version of PAHPA only provided $250 million to address pandemic disease threats. However, the $950 million in the current legislation pales in comparison to the $135.8 billion in emergency funding from the CARES Act. The cost of pandemic preparedness programs "are but a tiny fraction of the astronomic costs of episodic, often chaotic responses to sudden, emergent crises."[181] Nonetheless, PAHPA is crucial to the ability of the U.S. to respond to the next pandemic. The history of the Spanish Flu and COVID-19 indicate that inadequate funding and preparations led the country to disaster. Therefore, Congress must pass PAHPA, and President Biden must sign it into law.

Option 2: Develop a Universal Influenza Vaccine (UIV)

Historically, pandemic influenza and seasonal influenza were the greatest threat to the U.S. public and its health system. The Spanish Flu caused 675,000 deaths in the U.S., largely because there was no proper influenza vaccine available. The impact of seasonal influenza also cannot be underestimated; the 2017-2018 influenza season killed 61,000 people in the U.S.[182] Since the 1930s, scientists have developed different influenza vaccines to protect against the various strains of seasonal and pandemic influenza. In 1957, Maurice Hilleman led the heroic effort to develop a safe and effective H2N2 vaccine, despite the lack of government funding and support. The H3N2 vaccine in 1968 was less effective, and became virtually useless after the country passed the peak of the pandemic. In recent years, U.S. policymakers recognized the uncertainty of flu vaccines. Senator Ed Markey (D-MA) and Representative Rosa DeLauro (D-CT) introduced the Flu Vaccine Act in 2019, which funded research on the Universal Influenza Vaccine (UIV). Congress never brought the legislation to the floor for a vote.[183]

There are many different strains of influenza in circulation, as a result of small mutations referred to as antigenic drift. In rare instances, antigenic drift can lead to dramatically different viruses that jump from animals to humans and cause deadly pandemics. The seasonal influenza vaccine protects against the most prevalent Influenza A and Influenza B viruses each flu season, and is between 10% and 60% effective. Vaccine development is possible because the Global Influenza Surveillance and Response System predicts which strains will be prevalent six months ahead of time. The UIV encompasses both seasonal and pandemic Influenza A viruses, and is 75% effective.[184] Though a UIV can reduce influenza deaths and bring the virus under control, lawmakers are not actively considering this policy solution. Moreover, Congress is unlikely to pass the Flu Vaccine Act and invest in UIV development.

Option 3: Expand and Modernize Disease Surveillance Systems

In September 2023, President Biden cancelled U.S. funding for DEEP VZN, a disease surveillance program that sought to collect and catalogue over 12,000 rare viruses. There were real concerns about spillover, but the President's action was a major setback for pandemic

preparedness.[185] Disease surveillance systems were crucial to the U.S. responses to the Asian Flu pandemic of 1957 and the Hong Kong Flu pandemic of 1968, and the country's ability to track the spread of those diseases. Disease surveillance technologies were not available in 1918, and public health officials were unable to understand the epidemiology of Spanish Flu. Several organizations have recommended the modernization and expansion of disease surveillance systems: two policy solutions that go hand-in-hand. The Brookings Institution cited the successes of Singapore, Taiwan, and South Korea, which have effective disease outbreak early alert systems.[186]

U.S. lawmakers and public health officials can take various avenues to expand and strengthen disease surveillance systems. The United States currently relies on multiple disease surveillance systems. An integrated CDC disease surveillance system will "strengthen surveillance efforts for other novel pathogens before they begin to spread widely." The CDC can draw inspiration from an existing influenza program, and examine virological data, outpatient illness surveillance, mortality surveillance, hospitalization data, and summaries of geographic spread.[187] The U.S. can also expand the Laboratory Response Network in order to improve responses to "biological and chemical terrorism, emerging infectious diseases, and other public health emergencies." By the same token, Congress can pass the Climate Change Health Protection and Promotion Act (2021) to provide for forecasting and modeling of environmental and infectious disease threats. The proponents of this policy option also advocate for expansion of wastewater surveillance efforts and increased research and development of medical countermeasures.[188] The proposed Pandemic and All-Hazards Preparedness Act (PAHPA) addresses both issues, as well as public health data availability.[189] An upgraded disease surveillance system will enable the U.S. government to respond to emerging pandemics and epidemics more quickly and effectively.

Option 4: Improve and Standardize State Pandemic Preparedness Plans

The decentralization of public health policy was a major factor in past pandemics. The U.S. federal system renders the central government responsible for pandemic planning, but states bear the brunt of the pandemic response. During Spanish Flu, Asian Flu, Hong Kong Flu, and COVID-19, the individual states implemented quarantine orders, masking mandates, and school closures, with varying degrees of success. For example, in 1918, both Seattle and Tucson implemented mandatory masking policies. The residents of Seattle cooperated with their mandate, for the most part, and the city fared well during the pandemic. Tucson officials faced resistance from businesses, and rescinded the mandate. The lack of coordination across cities and states also contributed to the disastrous pandemic responses in 1957, 1968, 2009, and 2020. In the 2000s, the Congressional Research Service (CRS) published two reports that acknowledged the importance of state pandemic preparedness. The CRS clarified that "In the United States, public health authority rests principally with the states as an exercise of their *police powers*."[190] The CRS also conducted an evaluation of state pandemic preparedness plans in 2007 according to specified criteria.[191]

There is opportunity for both federal and state action on this issue. Currently, there is no clear and meaningful coordination between the federal government and the states on pandemic preparedness and response. The federal government provides nearly half of public health funding for state and local governments, via the Hospital Preparedness Program (HPP) and similar initiatives.[192] Congress can additionally create "incentives to encourage states and localities to follow evidence-based guidelines for disease mitigation," but this is very unlikely.[193] Better coordination will aid in the standardization of state pandemic preparedness policy, and ensure greater alignment between states. Therefore, Rhode Island must take steps to bolster its pandemic preparedness plans. The state can take inspiration from recommendations for federal policy. The Rhode Island General Assembly can develop its own "long-term, evidence-based pandemic preparedness strategy, drawing on recent lessons learned," that is independent of federal initiatives. Rhode Island can also fight misinformation about diseases. Finally, the state can "require hospitals and other health facilities to develop a comprehensive disaster response strategy," to ensure that hospitals will be well-staffed and well-equipped in the event of an emergency.[194]

Recommendations

The above policy options draw on historical experiences and illuminate new perspectives on pandemic planning. The disastrous COVID-19 response parallels the ordeals of Spanish Flu, Asian Flu, and Hong Kong Flu. The U.S. government's ineffective attempts to mitigate these pandemics reveal that the central issue is inadequate preparations, not the lack of preparations.[195] Furthermore, the history of Asian Flu and Hong Kong Flu clarify the significance of disease surveillance systems.[196]

The decentralization of U.S. public health policy provides for minimal coordination between the states. U.S. policymakers can improve and strengthen pandemic preparedness and response at the federal and state level in four significant ways.

First, Congress must pass the Pandemic and All-Hazards Preparedness and Response Act (PAHPA). The bill allocates funding for medical countermeasures, state medical stockpiles, wastewater surveillance, and public health data availability.[197] PAHPA is the most feasible option because the legislation has already passed out of committee and is scheduled for a vote.[198] Second, the development of a Universal Influenza Vaccine is in progress, as of September 2023. A new UIV candidate, FluMos-v2, is undergoing a Phase 1 trial at the National Institutes of Health (NIH). FluMos-v2 protects against six different strains of the flu.[199] The U.S. must promote and invest in UIV research at the NIH and other organizations. A functional UIV will reduce the severity of both pandemic and seasonal influenza.[200] Third, Congress and the CDC must integrate existing disease surveillance systems, enhance pandemic forecasting, and upgrade data collection. The revitalization of disease surveillance will require comprehensive action. The benefits certainly outweigh the costs.[201] Fourth, the federal government must generate incentives for states to standardize their pandemic preparedness plans and improve interstate coordination. Above all, states must strengthen medical surge capacities for a worst-case scenario.[202] The horrific events in Philadelphia during Spanish Flu and New York City during COVID-19 bear out the importance of medical surge capacities during a crisis.[203] Rhode Island must strengthen its own public health system, because history suggests that state planning is the most crucial ingredient in the recipe of pandemic preparedness.

The question is when, not if, the next pandemic will occur, and both the federal government and the states must be ready. Americans want to forget the horrors of COVID-19, just as their forebears buried the memory of Spanish Flu. However, the memories of Spanish Flu, Asian Flu, Hong Kong Flu, and COVID-19 are key to new policy perspectives. The historical examination of past pandemics offers a new approach to national and state pandemic preparedness and response. U.S. and Rhode Island lawmakers must take urgent action on the above policy options, or face the deadly consequences of an unmitigable pandemic.

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Appendix A – Literature Review

The outbreak of COVID-19 spurred the publication of a wealth of policy literature that addressed the United States' preparedness for future pandemics. The global nature of the pandemic meant that most of the policy papers focused on international and national level policy with some literature aimed at the state level and virtually none aimed at the local level. The available literature on national and state pandemic preparedness yielded a variety of policy options to better situate Rhode Island's public health system for the next pandemic.

The policy literature that addressed national pandemic preparedness and planning presented a variety of policy solutions that can be applied to the state level. Some of the literature targeted specific aspects of public health policy, such as vaccinations. Madison Hayes advocated for a Universal Influenza Vaccine (UIV) in her policy paper titled *What Can the United States Do to Prevent Another Pandemic? Commit to Modernizing Influenza Vaccines*. Hayes was a global health policy consultant at the moderate Center for Strategic and International Studies. Her report was relevant because, historically, pandemic influenza has been a major threat to U.S. public health.[1] Other policy papers were more comprehensive. The Bipartisan Policy Center, another centrist think tank, published a policy paper written by its Future of Healthcare Initiative leaders titled *Positioning America's Health System for the Next Pandemic*. The authors outlined ten overarching and detailed recommendations. The most novel recommendations included creating a National Board for Pandemic Preparedness, establishing an integrated infectious diseases surveillance system, and increasing funding for the Prevention and Public Health Fund.[2] In the aptly titled policy paper *How Investing in Public Health Will Strengthen America's Health*, Marquisha Johns and Jill Rosenthal, directors of the liberal Center for American Progress, argued that the U.S. public health system suffered from decades of chronic disinvestment. According to them, about $4.5 billion in public health funding was necessary to prepare the U.S. for future disease outbreaks. Johns and Rosenthal also laid out several concrete policy solutions, including the recently proposed PREVENT Pandemics Act.[3]

Other national-level policy papers discussed broader lessons rather than specific policies. Dennis J. Snower, a nonresident senior fellow at the Brookings Institution, authored the policy paper titled *Awakening in the Post Pandemic World*. Snower's work was mostly geared towards international policymakers, but he pointed out that the financial cost of pandemic prevention and protection programs were far less than the costs of "episodic, often chaotic responses."[4] *Preparing for the Next Pandemic: Early Lessons from COVID-19*, also published by Brookings, was written by Daniel Disparte, the chairman of Risk Cooperative. In the report, he outlined seven areas of opportunity for the U.S. to improve its response to future pandemics.[5] In the same vein as Johns and Rosenthal, reporters Michael Ollove and Christine Vestal published their policy paper *Public Health Systems Still Aren't Ready for the Next Pandemic* with The Pew Charitable Trusts, an avowedly nonpartisan think tank. Though there were no specific recommendations, Ollove and Vestal argued that the blunders of the COVID-19 vaccine rollout pointed to larger deficiencies in the U.S. public health system, which was woefully underfunded at all levels of government. The increased funding during the pandemic followed a pattern of temporary, disaster-related funding that disappeared after the threat subsided.[6]

Though somewhat limited, the policy literature on state-level pandemic preparedness and planning provides valuable insight for Rhode Island policymakers. The outbreak of the H5N1 Avian Flu epidemic in Asia in 1997 provoked a renewed interest in pandemic prevention. Sarah A. Lister, a specialist in public health and epidemiology, published several reports for the nonpartisan Congressional Research Service in the early 2000s. Her report *Pandemic Influenza: Domestic Preparedness Efforts* focused on major issues within pandemic policy planning at the national level. However, Lister also discussed state pandemic preparedness plans and clarified that "In the United States, public health authority rests principally with the states as an exercise of their *police powers*."[7] Lister co-authored another report with Holly Stockdale, an analyst in public health financing, titled *Pandemic Influenza: An Analysis of State Preparedness and Response Plans*. Lister and Stockdale evaluated state pandemic plans according to eight general criteria, including surveillance activities, vaccine management, disease control activities, and healthcare services. They acknowledged that their evaluation may have underestimated some state plans and attributed the variability among state plans to the decentralization of public health. The authors did not offer any specific

recommendations, but they suggested exercises and drills as a method of testing state plans.[8] In June 2022, the Commonwealth Fund, a liberal think tank, released its *2022 Scorecard on State Health System Performance*, an annual ranking of state public health systems. David C. Radley, Jesse C. Baumgartner, and Sara R. Collins, senior researchers at the fund, authored the report, which evaluated states according to five broad criteria. Rhode Island's public health record was mixed. The Ocean State was second best in access and affordability of care, but at the same time ranked in the middle on COVID-19 response and health outcomes. The authors' COVID-specific policy recommendations entailed developing state pandemic preparedness strategies, fighting misinformation, and requiring hospitals to develop disaster response strategies. Other recommendations included making the Medicaid "continuous eligibility" permanent without the need to apply for a federal waiver.[9] The Commonwealth Fund released its *2023 Scorecard on State Health System Performance* in June 2023, which ranked Rhode Island as the fourth best state for health system performance. At the same time, the Ocean State fell to third best in access and affordability of care. Radley, Baumgartner, Collins, and Laurie C. Zephyrin focused their report on reproductive care and women's health, and omitted COVID-specific measures. This was because of the Supreme Court's overturning of *Roe v. Wade*. Since then, reproductive rights have overtaken pandemic response in importance. Further, the authors did not offer any COVID-specific policy recommendations.[10] Finally, the nonpartisan online encyclopedia Ballotpedia published the article *Healthcare Policy in Rhode Island.* The article presented a variety of relevant data on federal and state spending on public and private insurance, and health insurance competitiveness. According to their evaluations, Rhode Island ranked 15th in the nation for the overall health of its citizens. Though the page was outdated, the article outlined the strengths and weaknesses of Rhode Island's healthcare system, which is the first line of defense against a pandemic outbreak.[11]

Scientists have concluded that a future pandemic is inevitable, therefore, Rhode Island lawmakers must consider the best possible policy options and improve the state's pandemic prevention plan. For the most part, individual states possess the power to legislate in matters of public health. Rhode Island can build up its pandemic preparedness through sustained public health funding and other means as outlined in the relevant policy literature.

ENDNOTES

[1] Madison Hayes, *What Can the United States Do to Prevent Another Pandemic? Commit to Modernizing Influenza Vaccines* (Washington DC: Center for Strategic and International Studies, 2020), accessed March 16, 2023, URL.

[2] Thomas Armooh, et al., *Positioning America's Public Health System for the Next Pandemic* (Washington DC: Bipartisan Policy Center, 2021), accessed February 22, 2023, URL.

[3] Marquisha Johns and Jill Rosenthal, *How Investing in Public Health Will Strengthen America's Health* (Washington DC: Center for American Progress, 2022), accessed March 15, 2023, URL.

[4] Dennis J. Snower, *Awakening in the Post Pandemic World* (Washington DC: Brookings Institution, 2020), accessed March 1, 2023, URL.

[5] Daniel Disparte, *Preparing for the Next Pandemic: Early Lessons from COVID-19* (Washington DC: Brookings Institution, 2021), accessed March 1, 2023, URL.

[6] Michael Ollove and Christine Vestal, *Public Health Systems Still Aren't Ready for the Next Pandemic* (Philadelphia: The Pew Charitable Trusts, 2021), accessed February 22, 2023, URL.

[7] Sarah A. Lister, *Pandemic Influenza: Domestic Preparedness Efforts* (Washington DC: Congressional Research Service, 2005), accessed March 1, 2023, URL.

[8] Sarah A. Lister and Holly Stockdale, *Pandemic Influenza: An Analysis of State Preparedness and Responses Plans*. (Washington DC: Congressional Research Service, 2007), accessed March 1, 2023, URL.

[9] David C. Radley, Jesse C. Baumgartner, and Sara R. Collins, *2022 Scorecard on State Health System Performance* (New York: The Commonwealth Fund, 2022), accessed March 16, 2023, URL.

[10] David C. Radley, Jesse C. Baumgartner, Sara R. Collins, and Laurie C. Zephyrin, *2023 Scorecard on State Health System Performance* (New York: The Commonwealth Fund, 2023), accessed September 21, 2023, URL.

[11] *Healthcare Policy in Rhode Island* (Middleton, WI: Ballotpedia, 2015), accessed March 1, 2023, URL.

Appendix B – Legal Framework

Federal

The COVID-19 pandemic is essentially over, and almost all quarantine, masking, and social-distancing regulations have been lifted. A successful vaccination campaign beginning in the spring of 2021 in addition to herd immunity from prior infections have enabled most Americans to return to pre-pandemic normalcy. However, there are still many other viruses, such as influenza, that have pandemic potential. It is not a matter of if, but when, the next pandemic occurs. Therefore, U.S. policymakers must consider the most effective actions to promote and improve pandemic preparedness and responses. To craft the best possible public health policy, they can examine past federal laws and court decisions for insight. They may also consider the reactions and responses to these laws and decisions in the media. The Commerce Clause of the U.S. Constitution, in addition to four federal laws including, the Public Health Service Act of 1944, the Defense Production Act of 1950, and the Pandemic and All-Hazards Preparedness Act of 2006, will be particularly instructive for legislators. In addition, the court rulings including *Jacobson v. Massachusetts* (1905), *Zucht v. King* (1922), *Brown v. Stone* (1979), *F.F. v. State of New York* (2019), and *Dr. T v. Alexander-Scott* (2021) will be helpful.

The Commerce Clause of the U.S. Constitution was one of the two central legal foundations of U.S. public health law. The Clause granted Congress the power to "regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes . . ."[1] Since interstate commerce was such a broad concept, it was construed to include public health. This clause gave the federal government the constitutional prerogative to prevent the spread of disease across state lines in the event of a serious outbreak. The Commerce Clause served as the basis for later federal laws, such as the Public Health Service Act of 1944, the Defense Production Act of 1950, and the Pandemic and All-Hazards Preparedness Act of 2006.

Jacobson v. Massachusetts, which was decided in 1905 by the U.S. Supreme Court, is one of the central foundations of U.S. public health law. The case involved a Massachusetts law that allowed boards of health in cities and towns to implement vaccine mandates and impose a $5 fine on adults 21 and older who violated the law. The city of Cambridge adopted a compulsory smallpox vaccination regulation. The plaintiff, Reverend Henning Jacobson, was found guilty and fined for refusing to comply with the mandate. He was held in custody by the court until his fine was paid. Supreme Court Justice John Marshall Harlan authored the majority opinion, in which he argued that the vaccination law was a legitimate exercise of the state's police powers. Harlan concluded that the Massachusetts law did not constitute a violation of Jacobson's Fourteenth Amendment Equal Protection rights. He noted that the Cambridge Board of Health's vaccine mandate was justified because a community had the power "to protect itself against an epidemic threatening the safety of all" such as smallpox, which was prevalent at the time.[2]

The *Jacobson* decision received virtually no coverage in the news at the time of its ruling, but it did appear in more recent articles during serious disease outbreaks. *Jacobson* received attention during the AIDS epidemic in the 1980s. In a September 1985 letter to the editor of *The New York Times* titled "The Law on the Side of Young AIDS Victims," Scott Burris cited the decision as relevant legal evidence. Burris' letter decried the unjust exclusion of children living with AIDS from their schools.[3] Irene Merker Rosenberg, a professor of law at the University of Houston, wrote a brief letter to the editor of *The New York Times* in March 1991 in favor of a compulsory measles vaccination, citing *Jacobson* as precedent. She argued that a state may require vaccinations and to permit any exemptions was a "political choice" and not a "constitutional requirement."[4] Interestingly, the *Jacobson* decision was mentioned in an October 2012 *Providence Journal* article by Stanley M. Aronson titled "Is There a Conflict Between Conscience and Survival?" that provided a brief history of compulsory vaccination.[5]

Another seminal Supreme Court decision was *Zucht v. King*, which was decided in 1922. In this ruling, the court upheld a city ordinance in San Antonio, Texas that required vaccination as a requisite for school attendance. The plaintiff, Rosalyn Zucht, was denied entrance into a private school because she refused to comply with the city's compulsory vaccination law. Zucht's lawyers charged that the city ordinance violated the Fourteenth Amendment. Justice Louis D. Brandeis, who delivered the opinion of the court, concluded that the city ordinance was consistent with the Fourteenth Amendment and dismissed her petition for a writ of error. He cited *Jacobson* as precedent.[6]

The *Zucht* ruling received increased coverage during the COVID-19 pandemic. In October 2021, Andrew Ujifusa published an article in *Education Week* titled "Schools Helped Defeat Polio and Diphtheria With Vaccine Efforts. Can They Do It With COVID?," in which he argued that schools were instrumental in boosting vaccination rates. Ujifusa demonstrated the ways in which teachers generated trust with parents and children, especially regarding the polio vaccine in the 1950s. He cited both *Jacobson* and *Zucht* as precedent.[7] In a *Houston Chronicle* article from December 2021 titled "President Biden's Federal Vaccine Mandate Was Blocked, But Getting Texas Companies to Comply Won't Be Easy," Ariana Garcia reported that a federal judge barred enforcement of a vaccine mandate for federal contractors. At the same time, Texas Governor Greg Abbott signed an executive order allowing for personal, religious, and medical exemptions to COVID-19 vaccination. Garcia interviewed law professor Randall Erben who stated that the ruling needed to be enforced by a district attorney with a blanket order from the Supreme Court. Erben also cited *Jacobson* and *Zucht*.[8]

In 1944, President Franklin D. Roosevelt signed into law the Public Health Service Act, which created the foundation for the U.S. Public Health Service. The Service was administered by the U.S. Surgeon General. The law established a commissioned Regular Public Health Service Corps and a Reserve Corps, which was subject to a call to active duty in the event of war or a national emergency.[9] The articulated goal of the Public Health Service was to develop more effective measures for the prevention, treatment, and control of diseases.[10] Section 311 and Section 361 were significant parts of the legislation. Section 311 stated that "The Surgeon General shall also assist states and their political subdivisions in the prevention and suppression of communicable diseases …"[11] This promoted the cooperation of the federal government and the states on matters of public health. Section 361 established the quarantine authority of the Surgeon General and the Public Health Service. The law empowered the Surgeon General to take all necessary action "to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the States or possessions, or from one State or possession into any other State or possession."[12] The law also gave the Surgeon General the authority to bar from entrance into the country those persons from foreign countries impacted by the spread of an infectious disease.[13] In time of war, the Surgeon General was authorized to detain infected individuals.[14] The Public Health Service Act was amended and revised many times, most recently by the Pandemic and All-Hazards Preparedness Act of 2006.

While the Public Health Service Act got little attention in the news at the time of its passage, the U.S. Public Health Service received widespread coverage. Naturally, the news cycles at the time of the Act were dominated by the events of World War II. Two brief notices mentioned actions taken under the authority of the law, one from *The New York Times* in July 1944, and one from the *Daily Boston Globe* in June 1945. The *Times* notice reported the establishment of a tuberculosis control division.[15] The *Globe* notice, "Public Health Service Put in Military Forces," announced that President Harry Truman had committed Public Health Service personnel to the U.S. military.[16] Over the next two decades, the Public Health Service became central to delivering statistics and figures about disease to the public. This was especially true during the last two years of World War II, when wartime conditions exacerbated the spread of illnesses. In a December 1943 article titled "Death Rate Rises for Fourth Week," the *Providence Journal* reported a 45 percent increase in death rates due to influenza. The statistics were sourced from the Census Bureau, but contradicted the Public Health Service's conclusion that the flu season was mild.[17]

The Public Health Service was also an important player during significant disease outbreaks, such as the 1955 polio epidemic. The *Providence Journal* provided constant updates on the safety and distribution of the Salk polio vaccine. In the article "PHS Report is Scored by Polio Foundation," issued in June, the *Journal* detailed the "strained relations" between the Public Health Service and the National Foundation for Infantile Paralysis. The foundation had financed the production of the Salk vaccine and its president was displeased with the PHS report on the difficulties with the vaccine rollout.[18] In a December 3 notice titled "Bay State Won't OK Salk Shots," the *Journal* reported that Massachusetts had decided to withhold approval of the vaccine until it was fully determined to be safe. Contradicting Massachusetts, the Public Health Service concluded that the vaccine was "safe and effective."[19] On December 22, a notice titled "135 Children Get New Salk Shots" announced that the Public Health Service had provided vaccines for free in Providence.[20]

In the public health sphere, the Defense Production Act of 1950 was another central piece of legislation. In 2021, President Joe Biden invoked the Act by Executive Order to exert federal control of personal protective equipment (PPE) supplies.[21] The stated goal of the Defense Production Act was to build up the United States' military and economic strength.[22] Under the law, the President was able to prioritize certain projects that were pertinent to the national defense and to prevent the hoarding of scarce materials.[23] The law granted the President the authority to requisition equipment, supplies, or other materials (1) if they were needed for the national defense (2) if such need was immediate and impending and (3) if all other means of obtaining the materials were exhausted.[24] The Act also enabled the President to make provisions for loans to private businesses to expand production capacity, develop technologies, and produce essential materials.[25] In addition, the Act allowed the President to make provisions to purchase metals, minerals, or other raw materials, and encourage the exploration, development, and mining of minerals and materials.[26] The law authorized the President to issue regulations and orders to establish price ceilings in order to combat inflation and to stabilize wages and salaries in those industries.[27] The Defense Production Act presented the President with a variety of other tools to promote public-private cooperation on wartime production. The law was amended various times since its original passage.

The Defense Production Act of 1950 received widespread attention in 2020 and 2021 because of the COVID-19 pandemic, including in the *Providence Journal*. Presidents Trump and Biden utilized the wartime law to exert federal control over production of PPE supplies and vaccines. Trump used the law as early as March 2020, according to a brief *Providence Journal* article "What is the Defense Production Act?" by Katie Landeck.[28] In another article titled "One-Sixth of the World's Population on Lockdown," Adam Geller and David Rising reported that President Trump invoked the Act to deter hoarding, but not for medical supplies. New York Governor Andrew Cuomo urged Trump to use the Act to force manufacturers to increase production of ventilators.[29] In April, in an article titled "Federal Stockpile Nearly Depleted," Nicholas Wu reported that 90 percent of the federal PPE stockpile had been distributed and used. Around the same time, Trump invoked the Defense Production Act again to force General Motors to produce 30,000 ventilators by August.[30] President Biden was quick to use the law in February 2021 to increase the manufacturing of vaccines and testing, according to a *Journal* article titled "Biden Decries Women's Job Losses, Closed Schools."[31] In another article titled "Biden Touts Safety After Touring Vaccine Plant," Courtney Subramanian reported that the Biden administration planned to distribute 13.5 million vaccine doses a week, a success that the President attributed to his use of the Defense Production Act.[32]

Compulsory vaccination was again the subject of judicial review in the late 1970s. The Supreme Court of Mississippi decided *Brown v. Stone* in 1979, which also addressed the constitutionality of compulsory vaccination for schoolchildren. Charles H. Brown sued the Houston School District on behalf of his son. He sought a religious exemption for his son to attend school without being vaccinated. However, Brown was a member of the Church of Christ, which was not one of the recognized religious groups. He instead sought a broader religious exemption. Justice P.J. Smith ruled against Brown. He wrote the majority opinion, concluding that the statute served an "overriding and compelling public interest." Indeed, Smith went further and ruled that the statute itself was unconstitutional because the religious exemption discriminated "against the great majority of children whose parents have no such religious convictions." It exposed them to the "hazard" of being in school with unvaccinated children. The ruling cited both *Jacobson* and *Zucht* as precedent.[33]

Brown v. Stone was mentioned in an article in January 2018 from *The Greenwood Commonwealth*, a local newspaper in Greenwood, Mississippi. In "Religious Exemptions for Shots Proposed," Larrison Campbell reported that Mississippi state legislators proposed two bills to allow a religious exemption to the state's vaccine requirement. Campbell noted that Mississippi had a 100% vaccine compliance rate. This was due to the state's strong compulsory vaccination law, which was the result of the *Brown* decision.[34]

President George W. Bush signed the Pandemic and All-Hazards Preparedness Act into law in 2006, which built upon the existing framework in the Public Health Service Act of 1944. The law authorized plans and processes to bolster the nation's public health capabilities and charged the Secretary of Health and Human Services with implementing the National Response Plan.[35] In addition, the Act established the Assistant Secretary for

Preparedness and Response, and this government official presided over a slew of programs, including the National Disaster Medical System and the Strategic National Stockpile.[36] The law required the Secretary to submit a National Health Security Strategy every four years which identified the process of achieving the six National Preparedness Goals outlined in Section 2802 subsection (b).[37] The law set benchmarks and standards to measure the nation's level of preparedness. The Act also required the Secretary to develop and disseminate criteria for state pandemic influenza plans.[38] In addition, the Secretary was responsible for developing a nationwide public health situational awareness system and to encourage states to develop plans of their own.[39] Further, the law tasked the Secretary with ensuring that the Commissioned Corps were trained and ready for deployment.[40] Another priority for the Secretary was enhancing medical surge capacities.[41] Finally, the Secretary was required to establish and maintain a Medical Reserve Corps specifically for public health emergencies.[42] The Pandemic and All-Hazards Preparedness Act was reauthorized in 2013 and 2019.

The Pandemic and All-Hazards Preparedness Act went virtually unnoticed in the news. An editorial published in March 2019, titled "Make America Measles-Free Again," was one of the only newspapers to mention of the law. The author noted that more federal funding was needed to promote childhood immunization against measles, but the "Pandemic and All-Hazards Preparedness Act, which includes funding to help states respond to public health emergencies, has lapsed and is awaiting authorization."[43] The Act was ultimately reauthorized for a second time later that year.

In 2019, the Supreme Court of New York addressed the subject of vaccination and religious freedom in *F.F. v. State of New York*. The public health law in question required children from the ages of two months to 18 years to be vaccinated against measles. The law provided for a medical and religious exemption. The state legislature repealed the religious exemption after a resurgence of measles in Brooklyn and Rockland County. The repeal was challenged by parents of children that were granted religious exemptions, and they argued that it violated the Free Exercise Clause of the First Amendment. The court resolved that the repeal was not "motivated by religious animus" and suggested that "parents attempted to falsify religious beliefs to achieve exempt status." The court reached the conclusion that the repeal did not violate the Free Exercise Clause. The Court cited *Zucht* as precedent.[44]

In 2021, the U.S. District Court for Rhode Island tackled a similar controversy over religious exemptions to vaccination against COVID-19. In *Dr. T v. Alexander-Scott*, the plaintiffs challenged an emergency regulation promulgated by the Rhode Island Department of Health (RIDOH) that required all healthcare workers to be vaccinated, with only a narrow medical exemption allowed. They alleged that the regulation violated the First Amendment, the Fourteenth Amendment, and Title VII of the Civil Rights Act of 1964. The plaintiffs sought a Temporary Restraining Order (TRO) to prevent RIDOH from prohibiting religious exemptions to the vaccine. U.S. District Judge Mary S. McElroy denied the TRO on the grounds that the regulation did not violate either Amendment, citing past court decisions such as *Jacobson* and *Zucht*. In addition, McElroy ruled that the regulation did not violate Title VII because "While the regulation may make it more difficult for employers to accommodate religious objections; it does not create a 'physical impossibility.'"[45] The *F.F.* and *Alexander-Scott* decisions went completely unnoticed in national and local news.

U.S. policymakers can use each of these court decisions and significant pieces of legislation as well as their news coverage to develop improved policy for pandemic preparedness and response. The failures and blunders of the federal and state governments' response to COVID-19 was undoubtedly tied to the lack of planning and funding. The Public Health Service Act and the Defense Production Act were especially important as they provided the federal government with the authority to act decisively during a public health emergency, whereas the Pandemic and All-Hazards Preparedness Act was specifically intended to strengthen and sustain the nation's public health system for future disease outbreaks. Moreover, the five court decisions highlighted here were used during the COVID-19 pandemic to support and uphold shelter-in-place orders, mask mandates, and vaccine mandates across the nation. In the midst of the pandemic, it was evident that the courts considered public health to be more important than medical or religious exemptions.

Rhode Island

During the COVID-19 pandemic, the individual state governments absorbed much of the responsibility for the

response. This was because the U.S. Constitution and federal law have primarily delegated public health authority to the states. Rhode Island policymakers must begin to take steps to bolster the state's pandemic preparedness and response. Rhode Island law concerning public health lays the foundation for future plans.

Title 23 of the Rhode Island Code, Health and Safety, contains most of the relevant laws and regulations about public health. Chapter 6 addresses the prevention and suppression of contagious diseases. This chapter establishes that cities and towns shall provide for annual vaccination of residents and requires that physicians submit a detailed record of vaccinations.[46] Chapter 6 also grants the Rhode Island Department of Health (RIDOH) the power to authorize local hospitals or camps for the treatment of sick people.[47] Chapter 8 proscribes the general procedures for quarantine, which were utilized during the COVID-19 pandemic to slow the spread of the disease. Provision 23-8-18 is perhaps the most significant section of this chapter because it permits the governor to "place under quarantine the whole state or that portion of the state that he or she may deem necessary"; in effect, put the state on lockdown.[48] Chapter 8 also establishes the director of health's authority to quarantine infected individuals.[49] In addition, the law invests RIDOH with the power to examine suspected cases of a contagious disease.[50] Chapter 9 deals with the quarantine of vessels entering Rhode Island ports.[51] This chapter prohibits the unauthorized departure of any persons from quarantined or infected vessels.[52] The code also mandates city or town councils to send a physician to examine a quarantined vessel and requires that city or town councils shall assign people to disinfect imported goods.[53] Chapter 11 provides the relevant laws on sexually transmitted diseases (STDs). Many of the provisions are similar in nature to those in previous chapters. [54] Chapter 76 codifies the Vaccine Shortage Prevention Act, which tasks the director of health with developing a plan in the case of a vaccine shortage.[55]

There are laws related to public health within Titles 27 and 40. Title 27 contains a provision related to insurance that stipulates that patients are exempt from copayments, coinsurance, or out-of-pocket deductibles for COVID-19 related services, including vaccines and testing.[56] Title 40 contains the Health Care for Families Act. The purpose of the law is to expand access to health care in Rhode Island.[57] The law also stipulates the eligibility requirements of people to access medical assistance under the RIte Care program.[58] The RIte Share program was established under the authority of Title XIX of the U.S. Social Security Act. RIte Share provides "premium assistance by paying all or a portion of the employee's cost for covering the eligible person and/or his or her family under such a RIte Share-approved ESI [Employer-Sponsored Insurance] plan..."[59] The Health Care for Families Act also mandates the state director of health to develop a pilot primary care program for uninsured residents.[60]

These provisions of the Rhode Island Code establish the framework for the state's public health law. The bulk of the law is located in Title 23 Health and Safety, but Title 27 includes relevant provisions regarding health insurance and Title 40 contains the Health Care for Families Act. With an in-depth understanding of these statutes, state and local policymakers can begin to develop a new plan to prepare for the next pandemic that expands existing law.

ENDNOTES

[1] U.S. Constitution, art. 1, sec. 8, cl. 3.

[2] Jacobson v. Massachusetts, 197 U.S. 11 (1905).

[3] Scott Burris, "The Law on the Side of Young AIDS Victims," *The New York Times*, September 23, 1985. URL.

[4] Irene Merker Rosenberg, "A State May Require Measles Vaccination," *The New York Times*, March 6, 1991. URL.

[5] Stanley M. Aronson, "Is There a Conflict Between Conscience and Survival?" *Providence Journal*, October 8, 2012. URL.

[6] Zucht v. King, 260 U.S. 174 (1922).

[7] Andrew Ujifusa, "Schools Helped Defeat Polio and Diphtheria With Vaccine Efforts. Can They Do It With COVID?" *Education Week*, October 20, 2021. URL.

[8] Ariana Garcia, "President Biden's Vaccine Mandate Was Blocked, But Getting Texas Companies to Comply Won't Be Easy," *The Houston Chronicle*, December 10, 2021. URL.

[9] Public Health Service Act of 1944, Pub. L. No. 78-410 § 203, 58 Stat. 683-684 (1944). URL.

[10] Public Health Service Act of 1944, Pub. L. No. 78-410 § 301, 58 Stat. 691-692 (1944).

[11] Public Health Service Act of 1944, Pub. L. No. 78-410 § 311, 58 Stat. 693 (1944).

[12] Public Health Service Act of 1944, Pub. L. No. 78-410 § 361, 58 Stat. 703 (1944).

[13] Public Health Service Act of 1944, Pub. L. No. 78-410 § 362, 58 Stat. 704 (1944).

[14] Public Health Service Act of 1944, Pub. L. No. 78-410 § 363, 58 Stat. 704 (1944).

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Appendix C – Historiographical Essay

In the aftermath of COVID-19, Rhode Island can improve its pandemic preparedness and response through a careful analysis of U.S. and Rhode Island history. Given the dearth of scholarship on Rhode Island's history of public health and epidemic disease, applied historians can gain insight from other national and local histories of pandemic diseases, including the Spanish Flu of 1918, the Asian Flu of 1957, and the Hong Kong Flu of 1968.

In the past fifty years, a number of historians have tackled epidemic disease. The most famous work on this topic is William H. McNeill's *Plagues and Peoples* (1976), a sweeping global history of infectious disease from ancient times to modernity. The sixth and final chapter, "The Ecological Impact of Medical Science and Organization Since 1700," was the most relevant to this study. McNeill traced the history of inoculation against smallpox beginning in the eighteenth century. McNeill also addressed the three cholera epidemics of the nineteenth century. This coincided with the experiments of John Snow, Louis Pasteur, and Robert Koch, which helped to advance germ theory. In addition, the centralization of public health, sanitation reforms, and the development of a cholera vaccine in 1893 virtually wiped out the disease. The history of influenza was relegated to a single page.[1] In the 1980s and 1990s, the AIDS crisis prompted further study of the history of infectious diseases. For example, Arien Mack's *In Time of Plague: The History and Social Consequence of Lethal Epidemic Disease* (1991) positioned AIDS within the broader context of the history of epidemic disease.[2] Ranger and Slack's *Epidemics and Ideas: Essays on the Historical Perception of Pestilence* (1992) explored the "intellectual repercussions" of epidemics in world history.[3] In the same vein, J.N. Hayes' *Burdens of Disease: Epidemics and Human Response in Western History* (2009) considered the ancient and modern concepts of disease as well as its social and cultural effects.[4] Other scholars have addressed specific disease events, such as cholera or typhus in the late nineteenth century.[5] COVID-19 inspired another re-examination of the history of epidemics. John Fabian Witt's *American Contagions* (2020) and Martin Halliwell's *American Health Crisis* (2021) were notable examples.[6]

The available historical scholarship on public health and epidemic disease in Rhode Island, though minimal, provides important background for modern policy issues. William McLoughlin's *Rhode Island: A History* (1986) failed to address the state's experiences with infectious diseases. [7] However, other historians have studied this subject in detail. History teacher Robert Tatge's article "A Quarantine Quandary: Ship Fever and Yellow Fever in Providence, Rhode Island, 1797" (1980) examined the impact of yellow fever on eighteenth-century maritime commerce in Providence. Tatge described how the city was worried about the effect on maritime commerce and city leaders decided not to suspend trade. Nevertheless, other ports quarantined Providence ships, which effectively halted commerce. In the aftermath, the Rhode Island General Assembly implemented new quarantine codes for ships.[8] In "Public Health and Preventive Medicine in Providence, 1913" (1970), graduate student Abby Cohen analyzed the Providence milk scandal of 1913 as a case study of the work of the public health movement. An investigation by the Housewives League of Providence led to the consolidation of the milk inspection department and the eventual enactment of a pasteurization law in 1925. Cohen connected this local scandal to broader themes of the era such as the growth of cities and issues with sanitation and disease as well as the application of scientific principles, such as germ theory, to public health.[9] In "Smallpox Vaccination: A Leap of Faith" (1979), doctoral candidate Joan Retsinas examined the arguments of early twentieth century anti-vaccinators and she considered these to be revolutionary views on public health. Though the anti-vaccinators saw the smallpox vaccine as "bestial torture" and government interference in public health, Retsinas argued that anti-vaccinators were not obstructionists who stood in the way of scientific progress. Rather, they were a group that took a "leap of faith" and embraced a new perspective on public health.[10] Freelance writer Cynthia Comery Ferguson's article "Public Need and Public Health: The Early Years of the Providence District Nursing Association" (2001) detailed the early history of the Providence District Nursing Association (PDNA) and their efforts to provide in-home care to needy persons. Ferguson focused on the history of the organization through its leading members, Eleanor Green, Ellen Kenny, and Mary Sewall Gardner. The organization was instrumental in combatting tuberculosis. Ferguson connected the PDNA's effort to broader trends, such as progressivism, the public health movement, germ theory, immigration, and urban expansion. Though insightful, her article is limited to 1900 to 1915, so it excluded the Spanish Flu years.[11] Similarly, in "Class Struggles in the Tubercular World: Nurses, Patients, and Physicians, 1903-1915" (1997), epidemiologist Jessica Robbins described the work of tuberculosis nurses in the broader United States. Tuberculosis patients were mostly working-class poor

people living in the cities. Thus, Robbins argued that "the social meaning of tuberculosis was inseparable from the issues of social class." In addition, she addressed the issues of gender and racism.[12]

The 1918-1919 Spanish Flu pandemic serves as the best historical analogue for the current policy debates surrounding COVID-19. This subject was buttressed by a great amount of historical literature. The most notable account of the Spanish Flu was John Barry's *The Great Influenza: The Epic Story of the Deadliest Plague in History* (2004). The narrative centered on the well-known scientists and public health professionals who led the effort to contain the spread of the virus and develop a vaccine. Barry also covered the government's response to the pandemic in great detail. President Wilson focused the country's energies on the war effort and publicly ignored the epidemic. Surgeon General Rupert Blue, the head of the U.S. Public Health Service, failed to prepare for the epidemic. The newspapers also downplayed the severity of the epidemic. In turn, states and localities were forced to mitigate the epidemic without federal assistance. Barry detailed the experience of Philadelphia, the city that was the hardest hit by the disease, throughout the book.[13] As there was little to no historical research on Rhode Island's experiences with the Spanish flu, the responses of other states and locales provide similar insights. In "To Mask or Not to Mask: A Note on the 1918 Spanish Influenza in Tucson" (1984), history professor Bradford Luckingham explored local resistance to quarantine and masking policies. Tucson city officials implemented a mandatory masking order for all citizens. However, the masking order was deeply unpopular because city police arrested any person who refused to wear a mask. A judge later ruled that the masking order was invalid, and Tucson eventually returned to normalcy.[14] Doctoral candidate Nancy Rockafellar examined Seattle's encounter with the flu in "'In Gauze We Trust': Public Health and Spanish Influenza on the Home Front, Seattle, 1918-1919" (1986). She argued that a patriotic and cooperative public took the necessary precautions to reduce the spread of the virus. Seattle public health officials restricted large gatherings, closed public buildings, and implemented a mandatory masking policy. Seattle also developed its own vaccine. However, the city faced some resistance to its masking policy and compulsory vaccination law.[15] In "The Spanish Influenza Epidemic in San Diego, 1918-1919" (1989), history professor Richard H. Peterson attributed the city's mild experience with the virus to its small size and distance from the war zone. Moreover, San Diego implemented restrictive measures to combat the flu, such as a quarantine and the closure of public buildings. The city also developed a nasal spray and encouraged mask-wearing. San Diego came into conflict with Los Angeles, which had less restrictive policies on masks and inter-city travel. Like Seattle, the city's restrictions faced backlash.[16] In "'A Blessing in Disguise': The Influenza Pandemic of 1918 and North Carolina's Medical and Public Health Communities" (1996), history professor David Cockrell argued that the flu exposed the weaknesses in North Carolina's public health system and motivated state officials to fund new medical facilities and technology. Cockrell noted the woeful lack of county health departments and the inability to disseminate information and warnings about the flu. He emphasized the importance of organizations such as the home relief groups, the state volunteer medical society, and the American Red Cross, that filled in the gaps in the effort to fight the flu. He also celebrated the heroism of individual doctors. In the aftermath of the epidemic, the state began to upgrade medical facilities, construct new hospitals, establish new local health departments, and provide funds for rural sanitation programs.[17] Ana Luisa Martinez-Catsam, a history professor, broadened the Southwestern perspective of the Spanish Flu in her article "Desolate Streets: The Spanish Influenza in San Antonio" (2013). Martinez-Catsam emphasized San Antonio's many natural health benefits, and described how "officials utilized the city's image as a health haven to avert panic" during the epidemic. The city also took concrete steps to slow the spread of influenza, such as the closure of schools, churches, and theaters, and restrictions on public gatherings.[18] Finally, historian Christina Stetler addressed the story of Philadelphia, the nation's hardest-hit city during the pandemic in "The 1918 Spanish Influenza: Three Months of Horror in Philadelphia" (2017). The rapid spread and deadly impact of the virus in Philadelphia was largely due to its shortage of doctors and nurses. Stetler emphasized the role of medical students and nuns in the city's response. The state closed public schools, stores, saloons, theaters, and places of worship to control the spread, meanwhile hospitals and morgues were filled to capacity. The influenza epidemic, which resulted in heavy human and financial losses, eventually receded, and became a "small footnote to history."[19] The scholarship discussed public health measures taken to reduce the spread of the flu and controversies over masks and vaccines that were reminiscent of COVID-19. However, the lack of public trust in public health institutions was not as virulent or severe then as it is now.

The Asian Flu of 1957 and the Hong Kong Flu of 1968 are also strong historical analogues for COVID-19.

However, there is limited historical scholarship on these pandemics as much of the available scholarship is the work of social scientists and public health scholars. In "Reviewing the History of Pandemic Influenza: Understanding Patterns of Emergence and Transmission" (2016), researchers Patrick R. Saunders-Hastings and Daniel Krewski covered the four major influenza pandemics. The authors' brief summary of the Asian Flu noted the significance of new global disease surveillance systems that tracked the progress of the disease, as well as the worldwide network of laboratories that isolated and studied the novel strain.[20] Max J. Skidmore briefly discussed the Asian Flu and President Eisenhower's reluctance to mount a mass vaccination campaign in *Presidents, Pandemics, and Politics* (2016).[21] In "Fifty Years of Influenza A(H3N2) Following the Pandemic of 1968" (2020), researchers Barbara J. Jester, Timothy M. Uyeki and Daniel B. Jernigan highlighted the expansion of existing disease surveillance systems, the speedy production of a vaccine, and the use of antiviral medications as tools in the fight against the virus. However, they acknowledged that the 1968 vaccine was "too little and too late" and later found to be inadequate. The researchers also discussed the long-term impact of the pandemic and its consequences for public health policy.[22] Robert Peckham published the article "Viral Surveillance and the 1968 Hong Kong Flu Pandemic" (2020), on the importance of disease surveillance systems during and after the Hong Kong Flu. He examined the global diffusion of the virus, debates about pandemic preparedness, and the work of researchers to shift the focus of disease surveillance systems to China. Peckham highlighted the work of Kennedy Shortridge, an Australian microbiologist who studied animal influenza viruses. Shortridge argued that southern China was an "influenza epicentre," as scientists believed that most of the major influenza outbreaks began in that country.[23] Stephanie Lundquist-Arora authored *The Asian Flu Pandemic of 1957* (2022), in which she covered the global history of the Asian Flu pandemic, though she primarily focused on the U.S. response. Lundquist-Arora celebrated microbiologist Maurice Hilleman's efforts to develop a vaccine and the success of the subsequent vaccination campaign. Hilleman bypassed the bureaucracy, and worked directly with pharmaceutical companies to produce a vaccine in four months.[24]

The HIV/AIDS crisis is a well-researched topic in the history of epidemic disease, though it lacks strong parallels with the Spanish Flu and COVID-19. Nevertheless, AIDS is worthy of discussion. Medical historian Howard Markel published "Journals of the Plague Years: Documenting the History of the AIDS Epidemic in the United States" (2001), a historiographical essay that contained a variety of journalistic, literary, and historical literature on the AIDS crisis. He argued that the literature on AIDS illustrated "how different types of storytellers have approached an illness that has shaped our era as starkly as bubonic plague shaped the Renaissance." Markel began with a critique of Randy Smith's early account, *And the Band Played On*. Markel's essay was a broad discussion of interdisciplinary scholarship, including dramatic accounts, memoirs, and historical analysis.[25] Another early example was *AIDS: The Burdens of History* (1988), a collection of essays assembled by Elizabeth Fee and Daniel Fox, which examined how the history of venereal diseases in the United States and Britain informed the public understanding of the AIDs epidemic.[26] Its companion volume *AIDS: The Making of a Chronic Disease* (1992) reconsidered historical analogies as obsolete because AIDS had become endemic. Instead, the authors argued that AIDS was "a long slow process more analogous to cancer than to cholera."[27] In *AIDS and Contemporary History* (1993), editors Virginia Berridge and Philip Strong compiled their own collection of essays based on the similar premise of "AIDS as history."[28] However, Markel championed *AIDS Doctors: Voices from the Epidemic* (2000) as the "best historical analysis of the AIDS epidemic."[29] Based on 76 oral interviews, the book told the story of doctors' personal experiences on the frontlines of the AIDS epidemic.[30]

This wide range of historical literature presents a great opportunity to study the historical understandings of epidemic diseases as well as their policy implications. Applied historians must examine both policy successes and failures to better inform Rhode Island public health policy. The Spanish Flu, the Asian Flu, and the Hong Kong Flu serve as particularly strong historical analogues, but insight can also be gleaned from Rhode Island's history of public health.

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