A Comparison of Florida and New York Health Policy Approaches to the 2022 Mpox Outbreak

by

Cynthia Alvarez

Bachelor of Science, Trinity University, 2018

Submitted to the Graduate Faculty of the

Department of Infectious Diseases and Microbiology

School of Public Health in partial fulfillment

of the requirements for the degree of

Master of Public Health

University of Pittsburgh

2023

UNIVERSITY OF PITTSBURGH

SCHOOL OF PUBLIC HEALTH

This essay is submitted

by

Cynthia Alvarez

on

April 24, 2023

and approved by

Essay Advisor: David Givens, Ph.D., MA, Instructor, Department of Infectious Diseases and Microbiology, School of Public Health, University of Pittsburgh

Essay Reader: Sarah Krier, Ph.D., MPH, Assistant Professor, Department of Infectious Diseases and Microbiology, School of Public Health, University of Pittsburgh

Essay Reader: Robert Coulter, Ph.D., MPH, Assistant Professor, Department of Behavioral and Community Health Sciences, School of Public Health, University of Pittsburgh

A Comparison of Florida and New York Health Policy Approaches to the 2022 Mpox Outbreak

Cynthia Alvarez, MPH

University of Pittsburgh, 2023

Abstract

The mpox outbreak of 2022 occurred amid the ongoing COVID-19 pandemic. The public health infrastructure across the country was already buckling, and a new outbreak of an emerging infectious disease would test the strength of our infrastructure yet again. Mpox cases climbed in the span of several months and disproportionately affected the lesbian, gay, bisexual, and transgender (LGBT+) population. New York and Florida were both states where cases increased rapidly, prompting an outbreak response plan which relied on measures left largely to individual states. This paper compares New York and Florida's use of their existing health policy to respond to the mpox outbreak to see how both states fared in controlling the outbreak. Ultimately, both states saw a decrease in mpox cases as the months progressed even with a difference in approaches. The decrease in cases was influenced by the distribution of vaccines from the federal government to states in need. However, multiple factors can influence case numbers, such as changes in the behavior of the public and the ease of transmission of the mpox virus. This type of comparative analysis is instructive because as the outbreak ends, public health officials can analyze areas in which to improve their response effort and decrease the spread of diseases in the future. This is a point of public health importance as emerging infectious diseases are poised to make a comeback in our globalized world.

Table of Contents

List of Figures

1.0 Introduction

Mpox, previously known as monkeypox, is a disease reminiscent of its more famous cousin: smallpox. Mpox can cause a characteristic rash and lesions on the body, similar to but milder than the characteristic rash seen in smallpox. Mpox was previously only seen in western and central Africa but is now appearing in non-endemic countries outside of Africa and leading to outbreaks in immunologically naïve populations who have never encountered this virus before (WHO, 2022). There is also the larger implication of mpox spreading to a larger global population completely unfamiliar with the burden of smallpox. Since the smallpox vaccine confers immunologic protection against mpox as well, the end of the smallpox vaccine campaigns in the 1970s means more people are vulnerable to mpox (Morbidity and Mortality Weekly Report [MMWR], 1997). The rise of this emerging infectious disease, in the midst of the COVID-19 pandemic caused by a novel infectious disease, was overwhelming to both communities and public health institutions.

The public health field in the days before smallpox eradication was very different from the public health field now. Early public health was focused on reducing the spread of infectious diseases such as tuberculosis and typhoid. Once public health officials began forming local and state health departments in the late 19th century, and these new health departments began improving sanitation and hygiene, the spread of many infectious diseases declined. Once vaccines were created and made widely available to the public for many of the most common pathogens such as polio, these diseases all but disappeared except for sporadic cases detected in the poor or rural populations in low-income countries (MMWR, 1999). After this point in history, much of

the attention and resources shifted to chronic illnesses, but infectious diseases are still serious threats to many populations. Some are novel, such as Human Immunodeficiency Virus (HIV), SARS-CoV, and SARS-CoV-2, while others are reappearing in new drug-resistant forms, such as tuberculosis. The public health field and institutions must now shift priorities again to address the comeback of infectious diseases and work to rebuild the necessary infrastructure (Sossai, Staiti, Cannas, and Grima, 2023). Health policy can be used to help rebuild the infrastructure needed to address future outbreaks of infectious diseases. Surveillance systems, vaccination programs, testing facilities, laboratory spaces, clinics, and funding for health departments are all important tools needed for emergency outbreak response plans and policy can help solidify this foundation.

In the early months of 2020, the existing U.S. public health infrastructure was brought to its knees with the emergence of the global COVID-19 pandemic. By the time the mpox outbreak was detected, the world was still dealing with the effects of the COVID-19 pandemic. One of the major impacts the COVID-19 pandemic had on the U.S. was on the stability of the healthcare system. All healthcare workers were living in the frontlines of the pandemic from the start treating patients with COVID-19 and being at high risk of exposure themselves. The explosion of COVID-19 cases meant most healthcare workers were overworked as hospital systems were overwhelmed. Healthcare workers experienced feelings of anxiety, fear, and depression which lead to burnout in the workforce (Koontalay, Suksatan, Prabsangob & Sadang, 2021). Another major impact of the pandemic was an increase in vaccine hesitancy. Concerns surrounding the safety and efficacy of the vaccine fueled misinformation and disinformation, especially on social media sites (Basch et al., 2021). The increase in vaccine hesitancy is an issue public health officials will have to contend with for the foreseeable future. The pandemic also led to a decrease in trust in public health officials like the Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug

Administration (FDA), and Dr. Anthony Fauci. In a poll conducted by the Kaiser Family Foundation, trust in the CDC decreased from 73% in December 2020 to 64% in April 2022. Trust in the FDA decreased from 70% in December 2020 to 62% in April 2022 and trust in Dr. Fauci decreased from 68% in December 2020 to 53% in April 2022 (Kaiser Family Foundation, 2023). Furthermore, the pandemic had negative effects on people's mental health, physical health, and financial situations. In another poll conducted by the Kaiser Family Foundation, 49% of poll respondents reported the COVID-19 pandemic had a negative impact on their mental health, 41% reported a negative impact on their physical health, and 41% reported a negative effect on their financial situation (Kaiser Family Foundation, 2022). Public health officials and agencies had an uphill battle when it came time to address the mpox outbreak after the impacts the COVID-19 pandemic had on basic infrastructure and public trust.

Public health agencies' powers and abilities are largely protected by government policies at the local, state, and federal levels. The ability of a public health body to respond to infectious disease outbreaks promptly is vital, and their powers are expanded during these specific times of public health emergencies. Local and state public health agencies can explore different solutions and pathways to success in controlling an outbreak based on the laws, policies, and regulations of their state and the federal government. However, legislation can also influence public health outcomes, especially if legislation is targeting a specific population or community. This is best exemplified by the rise of anti-LGBT+ legislation proposed by various states across the U.S. The increase in hostile anti-LGBT+ rhetoric can lead to further stigmatization of the LGBT+ community and measurably impact health outcomes (Kaiser Family Foundation, 2022).

With the 2022 mpox outbreak declared essentially over by the federal government after January 31, 2023, the response efforts from both the federal and state governments can be analyzed

to compare how we fared against the outbreak (HHS, 2023). While federal policies must be followed by every state, individual state policies allow for more specific outbreak response plans and variations. This paper aims to answer the question of how Florida and New York compared in their utilization of health policy to address the 2022 monkeypox outbreak in relation to reducing cases, increasing testing, and increasing vaccinations.

2.0 Mpox Virus Background

The mpox virus (MPV) is a virus that belongs to the *Orthopoxvirus* genus in the *Poxviridae* family. The virus is an enveloped double-stranded DNA virus with two distinct genetic clades, the central African/Congo Basin clade and the west African clade. MPV is considered a zoonotic virus because it is transmitted from animals to humans. It is also a relative of the variola virus, which was the causative agent of smallpox disease. Several animals can host MPV in the wild, mostly rodents and non-human primates, but there are no known reservoirs yet or knowledge on how the virus cycle is maintained in nature (World Health Organization [WHO], 2022).

MPV was first isolated in 1958 in Denmark after several laboratory monkeys showed signs of a pox-like illness. Preben Christian Alexander von Magnus was the virologist who discovered MPV and subsequently named the virus monkeypox, now known as mpox (Saied et al., 2022; WHO, 2022). The first identified human mpox case occurred in 1970 in the Democratic Republic of Congo where a 9-month-old child presented with smallpox-like symptoms in an area where smallpox was eliminated earlier in 1968. Most mpox cases in the last several decades are reported from central and west African countries, where MPV is endemic (WHO, 2022). There were past MPV outbreaks in areas outside of the endemic African region, including one in the U.S. in 2003. In that instance, infected pet prairie dogs led to an outbreak with 71 recorded human cases across several Midwestern states (WHO, 2022; MMWR, 2003).

Zoonotic transmission of MPV occurs through direct contact with blood, bodily fluids, or lesions on animals infected with the virus. Individuals who live near forested areas throughout western and central Africa are more likely to be exposed to mpox-infected animals such as

Gambian pouch rats, squirrels, dormice, and several species of monkeys (WHO, 2022). Human-to-human transmission occurs through close or intimate contact with an infected individual's respiratory secretions, skin lesions, and contact with intimate areas such as the penis, vagina, and rectum. An individual infected with MPV can spread the virus to an uninfected individual through intimate contact such as vaginal, oral, and anal sex, touching the genitals, hugging, and kissing (CDC, 2022). Lengthy face-to-face contact in close proximity can also lead to the spread of the virus and puts household members of infected individuals and healthcare workers at higher risk of contracting the virus (WHO, 2022). An individual can be considered infectious from the time symptoms appear up until their rash is fully healed with a new layer of skin present. Risk of contracting the virus from contaminated objects and surfaces touched by an infected individual is low (CDC, 2022). MPV can also be spread from mother to fetus through the placenta during pregnancy or by close contact during birth (WHO, 2022).

Mpox typically has an incubation period of 6-13 days but can range from 5-21 days. There are two distinct periods in an MPV infection in humans, the invasion period and the skin eruption period. The invasion period is marked by the presence of a fever, lymph node swelling, headache, muscle and back pain, exhaustion, and respiratory symptoms. This period will last between 0-5 days. The skin eruption period will follow within 1-3 days after a fever presents and is characterized by an itchy rash that can appear as pimple or blister-like on the hands, feet, face, mouth, and genitalia. An infected individual may not experience any symptoms during the skin eruption period other than lesions. The case fatality ratio is estimated to be around 3-6% for mpox. There is a burgeoning concern the global population may become more susceptible to mpox infection due to the lack of immune protection from past smallpox vaccine campaigns and the subsequent global eradication of smallpox (CDC, 2022; WHO, 2022). Both MPV and the variola

virus are orthopoxviruses, and the smallpox vaccinia vaccine gives cross-protective antibodies against other orthopoxviruses (Jacobs et al., 2009). Since smallpox vaccines are no longer administered in the community, the population with cross-protective antibodies from vaccination has drastically decreased after the eradication of smallpox (MMWR, 1997).

Testing is recommended only when the characteristic rash is present or when a patient has been exposed to an individual diagnosed with mpox. Diagnostic tests are completed by swabbing lesions and using a real-time polymerase chain reaction (RT-PCR) to detect mpox viral DNA (WHO, 2022). The course of illness depends on the individual's immune system. For those with intact and healthy immune systems, pain management and supportive care can serve as adequate therapeutic options. Unfortunately, there are no current treatment options for mpox specifically. The most widely used therapeutic options during the 2022 outbreak included tecovirimat, cidofovir, and brincidofovir which were part of the U.S. stockpile of antivirals to treat smallpox but can be used for other orthopoxviruses. Each treatment option listed lacks sufficient data on the effectiveness of its use in treating mpox infection (CDC, 2023).

There is a vaccine for preventing mpox. The JYNNEOS vaccine contains attenuated vaccinia virus and is used to prevent the spread of both smallpox and mpox. The vaccine is a 2-dose regimen given 4 weeks apart and is normally administered subcutaneously but can be administered intradermally as well using a lower dose (NIH, 2022). A single dose of the vaccine can give partial protection against mpox, but two doses are highly recommended for full protection according to preliminary data on the effectiveness of the JYNNEOS vaccine collected by the CDC. Unfortunately, the period of immunity after a single or both doses of the vaccine is still unknown (CDC, 2023).

3.0 Timeline of the 2022 Mpox Outbreak

The first reported case that marked the onset of the 2022 mpox outbreak was in the United Kingdom from an individual who traveled from the United Kingdom to Nigeria (Figure 1). This individual developed a rash on April 29 while visiting Nigeria, left Nigeria on May 3, and returned to the United Kingdom on May 4. The individual traveled to a hospital that same day where they were subsequently diagnosed with mpox by an RT-PCR test from a sample taken from a lesion. The patient was immediately isolated upon receiving the mpox diagnosis. On May 13, two more laboratory-confirmed cases and a probable case were identified from the same household. Four more cases were confirmed in the United Kingdom on May 15, this time in men who have sex with men (MSM) who visited Sexual Health Services after developing a rash (WHO, 2022).

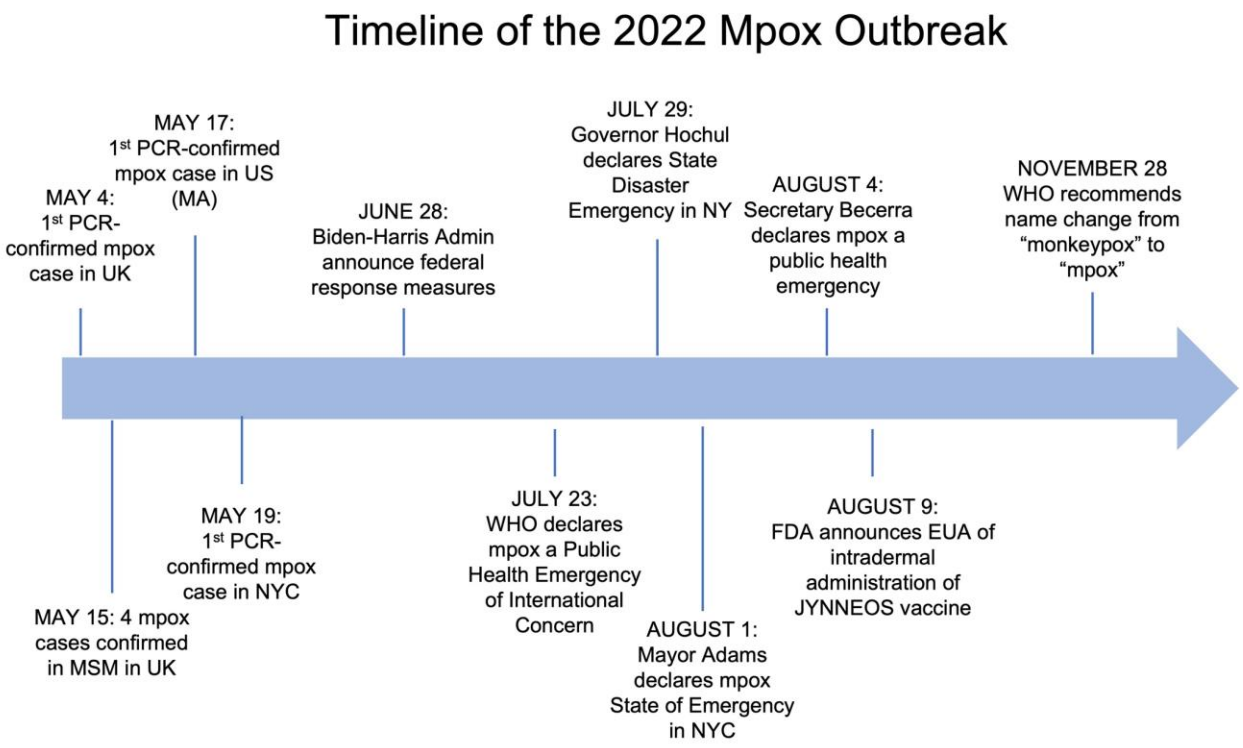

Figure 1. Timeline of the 2022 Mpox Outbreak. A snapshot of major events and announcements from agencies and government bodies in response to the 2022 mpox outbreak during the May 2022-December 2022 period.

The United States confirmed the first case of mpox in Massachusetts on May 17. On May 19, New York City recorded the first laboratory-confirmed case which marked the beginning of one of the worst regional mpox outbreaks with the highest number of cases in the country (NPR, 2022). Once the outbreak in the U.S. began, the U.S. Department of Health and Human Services (HHS) and the CDC began updating the case definition for mpox to catch and report more potential cases (CDC, 2022). By June 22, there were 3,413 laboratory-confirmed cases with one death reported from 50 countries and territories to the WHO. The reported cases did not have a history of recent travel to a country where mpox is endemic, suggesting the presence of human-to-human transmission (WHO, 2022). On June 23, the International Health Regulations Emergency

Committee met to discuss whether to advise the WHO Director-General to declare mpox a Public Health Emergency of International Concern. The committee ultimately decided to advise against this course of action but instead continue to closely observe the situation for a few more weeks and continue the response efforts while more information about the transmission of mpox was learned. In November of 2022, the WHO recommended changing the name from “monkeypox” to “mpox” to combat stigma and racism linked to the name of the disease (WHO, 2022).

As case counts were steadily increasing by late June, the Biden-Harris administration released a plan outlining the first phase of the federal mpox outbreak response to slow the spread of mpox across the country. This phase of the response plan consisted of two main tactics: increasing vaccine production and increasing testing capacities. The federal government's approach to increasing vaccine production was to push the manufacturer, Bavarian Nordic, to produce more of the JYNNEOS vaccine, have the government deliver vaccine doses to states experiencing high transmission rates, and specify equitable vaccine distribution for populations at risk of contracting the virus (The White House, 2022). All vaccines distributed by the federal government were free to everyone, with insurance companies and Medicaid/Medicare covering the administration fee (CDC, 2023). The federal government's approach to increasing diagnostic testing capacity was accomplished by permitting select commercial laboratories to process orthopox tests in addition to those in the existing Laboratory Response Network. The increase in laboratories available to process orthopox tests would make them more accessible to healthcare providers and decrease the amount of time between when symptoms begin and when test results arrive. Additional phases of the federal response plan focused on increasing JYNNEOS vaccine distribution to areas with the highest need (The White House, 2022).

The WHO declared the ongoing mpox outbreak a Public Health Emergency of International Concern on July 23 (WHO, 2022). At this same point in time, the 7-day average number of mpox cases in the U.S. was 337 new cases per seven days (CDC, 2023). On August 4, the U.S. Secretary of HHS Xavier Becerra declared mpox a public health emergency (HHS, 2022). By August 6, the 7-day average number of cases in the US was at a peak of 460 new cases per seven days with the average decreasing after this point (CDC, 2023). To keep up with the spread of mpox and increasing vaccine demand, the FDA announced the emergency use authorization of an intradermal injection method of the JYNNEOS vaccine by healthcare providers on August 9. The FDA justified the new emergency use authorization using Secretary Becerra's public health emergency declaration from five days earlier. Since intradermal injections can be done with lower doses of the vaccine, a healthcare provider can get up to five times the number of doses using this method. An intradermal injection of the JYNNEOS vaccine can elicit the same immunologic response as a subcutaneous injection which influenced the decision of the FDA to allow providers to pursue this injection method in order to stretch the vaccine supply (FDA, 2022). The Biden-Harris Administration included vaccine information, resources, and training for healthcare professionals on intradermal injections of the vaccine as part of the federal response plan to mpox and disseminated this information through the CDC (The White House, 2022).

The CDC released an issue of the Morbidity and Mortality Weekly Report detailing the epidemiologic and clinical characteristics of U.S. mpox cases during the period of May 17 – July 22. There were 2,891 total mpox cases reported to the CDC from 43 states, Puerto Rico, and the District of Columbia during this time period, but only 1,195 had case report forms with epidemiologic and demographic information. Of the 1,195 cases, 99% were in cisgender and transgender men and 94% of cases reported male-to-male sexual or close intimate contact during

a three-week period before experiencing symptoms (Philpott et al., 2022). In 1,007 case reports with information on signs and symptoms, 100% of cases reported experiencing a rash with the most frequently reported rash location being the genital region. There were 1,054 case reports with race/ethnicity information included. Of those cases, 41% were non-Hispanic White, 28% were Hispanic, and 26% were Black (Philpott et al., 2022). The data from the May 17 – July 22 period reflect that MSM are disproportionately affected by the mpox outbreak and that racial/ethnic minorities account for more than half of the documented cases (Philpott et al., 2022). The states with the most reported mpox cases were California with 5,749 total cases, New York with 4,240 total cases, Texas with 2,926 total cases, Florida with 2,888 total cases, and Georgia with 1,993 total cases reported as of February 1, 2023 (CDC, 2023).

4.0 New York and Florida Health Policy Evaluation Criteria

Organized state-mediated responses to outbreaks of infectious diseases within communities are a vital line of defense against current and future pandemics. States governments have the power to prevent the further spread of outbreaks if they can mount a strong response in a short amount of time. Many state governments accomplish this through the enactment of policies, regulations, and guidelines. If a state has an organized and centralized response that successfully disseminates standardized information down to local sites, it could be more successful in controlling an outbreak compared to states with a disorganized, decentralized, or nonexistent outbreak response.

New York and Florida are both populous states and contain metropolitan areas with high population densities. Both states experienced a high number of mpox cases, with New York reporting a total of 21.36 cases per 100,000 and Florida reporting 13.2 cases per 100,000 as of March 1, 2023 (CDC, 2023). Both New York and Florida are home to popular cities and locations for LGBT+ communities, which was the community most affected by the transmission of mpox. In New York state, an estimated 7.9% of the adult population identifies as gay, lesbian, bisexual, or other sexual orientations according to data from the 2019-2020 Behavioral Risk Factor Surveillance System (BRFSS) Sexual Orientation and Gender Identity Module (New York State Department of Health [NYSDOH], 2022). The U.S. Census Bureau lists the percentage of LGBT adults over the age of 18 in New York state as 8.2% using data from the Household Pulse Survey taken between July 21 – September 13, 2021. The same survey from the U.S. Census Bureau lists the LGBT population over the age of 18 in Florida as 7.6% (U.S. Census Bureau, 2021). There is

no data reported on the LGBT+ population in Florida through the BRFSS because Florida does not participate in the Sexual Orientation and Gender Identity Module.

Both Florida and New York are also states who experienced a high number of COVID-19 cases and garnered much attention for their responses to the COVID-19 pandemic. Florida and New York had different political leaderships during the COVID-19 pandemic, which influenced the policy decisions the states implemented to decrease the spread of COVID-19 in their communities. While Texas did report more mpox cases than Florida, both New York and Florida received national attention from the way their governments handled the COVID-19 pandemic and represented the different response approaches taken. During the early days of the COVID-19 pandemic, New York took decisive action with mask mandates and stay-at-home orders, while the federal government was sluggish in acknowledging the scale of the pandemic and taking appropriate measures. Additionally, Governor Cuomo did daily news briefings where he discussed the latest statistics and actions the state was taking to battle the COVID-19 pandemic in New York (Lopez, 2020). On the other hand, Florida garnered national attention when Governor DeSantis banned indoor mask mandates, COVID-19 vaccine requirements, and lifted the stay-at-home orders early compared to other states which lead to a spike in COVID-19 cases across Florida (Rupar, 2021). When mpox appeared in 2022, it presented as another challenge to decrease the spread of an infectious disease. State government leadership had to respond yet again, and again chose different approaches to their health policies.

While many variables influence health outcomes and mpox case trends, health policies are one of the first lines of defense in outbreak situations. Public health bodies refer to national, state, and local health policies when making decisions on how to respond to outbreaks. This paper compares New York and Florida state health policies on whether they were effective in addressing

the issue for which the policy was specifically created. The measures of efficacy include reducing mpox cases within the state, increasing access to mpox diagnostic testing, and increasing access to mpox vaccines. The focus will be on any policies or regulations enacted during the period from May 2022 through December 2022, as this was the height of the mpox outbreak and therefore the height of the state response.

4.1 New York State Response to the 2022 Mpox Outbreak

New York state recorded its first mpox case on May 19 in New York City through an RT-PCR diagnostic test. As more mpox cases emerged, local health departments began diverting attention and resources to the burgeoning outbreak. As cases increased well into July, New York state began taking larger steps to contain the outbreak as much as possible and communicated with the federal government for supplies. The New York State Department of Health (NYSDOH) created a website specifically to post the latest information about mpox and included downloadable educational materials in multiple languages. In addition to the website, the state created location-based SMS texts to disseminate mpox information directly to New Yorkers. State residents could text "MONKEYPOX" and their zip code to a state-supported number and receive information on cases, transmission, symptoms to look out for, and testing or vaccine availability closest to them (NYSDOH, 2022). The Department of Health was also actively trying to expand testing across the state by using private laboratories to manage the large number of cases the state was experiencing and approving new testing applications. The Department of Health and Governor Hochul coordinated with the White House to receive more than 60,000 vaccine doses for the communities

most at risk of contracting the virus which was by then known to be the LGBT+ population (New York State, 2022).

By late July, there were 1,383 total confirmed and probable cases in the state of New York with most occurring among MSM (CDC, 2022). Many of the cases were reported from New York City. As of July 31, there were 123 cumulative confirmed and probable cases of mpox reported throughout the rest of the state (NYSDOH, 2023). This, in addition to the growing number of cases in New York City, was enough for the New York State Commissioner of Health to declare mpox an Imminent Threat to Public Health to the New York population. The Commissioner's declaration came a few days after the WHO declared mpox a Public Health Emergency of International Concern. The Imminent Threat to Public Health declaration is supported by the New York State Public Health Law § 621 which allows local health departments to access additional reimbursement from the state for activities related to the prevention and response efforts to contain the community spread of mpox. The prevention and response activities can include contact tracing, case investigation, vaccine administration for people exposed to or at risk of exposure to mpox, and education and community outreach purposes. The time period explicitly covered by the state Commissioner of Health's declaration was June 1, 2022 - December 31, 2022.

Shortly after the New York Commissioner's Imminent Threat to Public Health declaration for mpox, Governor Hochul issued an executive order declaring a disaster in the state of New York over the spread of mpox (New York State, 2022). Generally, a state of emergency or disaster in states bestows extra executive powers on that state's government to address the disaster. The executive order issued allowed Governor Hochul to implement the State Comprehensive Emergency Management Plan, where State agencies must assist local governments in addressing the disaster to protect the public. A declaration of a disaster state also gives the Governor the power

to temporarily suspend or modify laws during a disaster state. Governor Hochul used this power to modify existing Public Health Law to allow EMS personnel, midwives, physicians, pharmacists, and nurse practitioners to administer monkeypox vaccines in an effort to increase access. Governor Hochul also included a modification in the Public Health Law to require the expanded list of healthcare professionals to report all vaccination data to the state Department of Health (Exec. Order No. 20, 2022). The additional funding now accessible through the declaration of a disaster state also gave local health departments extra support as many were responding to the outbreak through multiple approaches such as contact tracing, education and outreach, and investigating cases (NYSDOH, 2022).

One day after Governor Hochul declares a disaster state, the Mayor and Commissioner of the Department of Health and Mental Hygiene of New York City declared the spread of mpox a public health emergency through an executive order (City of New York, 2022; Exec. Order No. 158, 2022). Similar to the COVID-19 pandemic, New York City was once again an area of high transmission and had a large population at risk of contracting the virus. Mayor Adams' emergency declaration allowed the New York City Department of Health and Mental Hygiene (NYCDOHMH) Commissioner the power to disseminate emergency orders under the city's health code to address the spread of mpox and keep the population safe (NPR, 2022). The executive order also gave Mayor Adams the power to suspend city laws or enact rules to protect the health of city residents. Mayor Adams continued to extend the emergency declaration but did not declare any changes or additions to existing city laws or rules besides directing all agencies to do everything in their power to protect the health of the public (Exec. Order No. 158, 2022). In addition to the effect the emergency declaration had on local health policy, it also affected public sentiments. According to Manhattan Borough President Mark Levine, the emergency declaration signaled to

New Yorkers that their local government viewed the mpox outbreak as a serious threat and would do everything in its power to respond (Rosenberg, 2022).

The New York State Health Department released Health Alert Notices for providers in the state with details on mpox. The providers included healthcare providers in several different fields as well as local health departments, sexual health providers, community-based organizations, and college health centers. The first notice on May 22 highlighted how mpox cases seen in New York City were not linked to recent travel to countries where mpox is endemic and brought attention to the unusual symptoms seen in the first few cases such as a rash in the genital area. The first notice also included information on reporting suspected cases of mpox to health departments, specimen collection and testing locations, and guidelines for infection control (NYSDOH, 2022). The second Health Alert Notice for providers was released on June 17 and alerted local health organizations to the mpox outbreak in the area. There was also information on the disproportionate number of cases in MSM, an expansion of symptoms to watch out for, an expansion on specimen collection and testing information, an expansion of the infection control guidelines for providers, and the new inclusion of how to treat mpox medical waste (NYSDOH, 2022). The third and final Health Alert Notice for providers included a reminder reiterating that mpox is not exclusive to MSM and how providers should test any patient that presents with a rash like that seen in mpox. There was also further information on testing locations with the inclusion of private laboratories, vaccines, more updates to infection control, updates to the treatment of mpox medical waste, and mpox treatment options (NYSDOH, 2022).

In October of 2022, the New York State Commissioner of Health utilized the power granted to them by the Imminent Threat to Public Health declaration and added mpox to the list of sexually transmitted diseases which local health departments must provide services to treat under New York

State Public Health Law. Other sexually transmitted diseases on this list include Human Papilloma Virus, Genital Herpes Simplex, and HIV. Under this change to the Public Health Law, sexual health clinics under the purview of local health departments are required to diagnose, treat, and offer preventative services to those diagnosed with mpox or who are at risk of exposure to mpox. Furthermore, minors could consent to these same services without parental authorization under the rule change (Public Health Law. §225(4), 2304, 2305, and 2311, 2022).

Most of the major steps New York state took to respond to the mpox outbreak occurred in the first few months. Mpox cases continued to rise across the state until mid-August when case numbers began decreasing. In New York City, the 7-day average number of new cases was 26 cases as of September 1 (Figure 2). This was a decrease from a peak 7-day average of 73 new cases on July 26 (NYCDOHMH, 2022). Across the rest of New York, the 7-day average number of new cases was 3.4 as of September 1, which was also a decrease from the peak 7-day average of 6.3 on August 13 (NYSDOH, 2022). It was not until the New York state government received multiple shipments of the JYNNEOS vaccine from the federal government to distribute across the state that mpox cases began to decline. The first vaccine allotment from the federal government was announced on July 7 and allotments continued through late August (NYSDOH, 2022). As more people gained access to the vaccine, case numbers decreased as the months progressed.

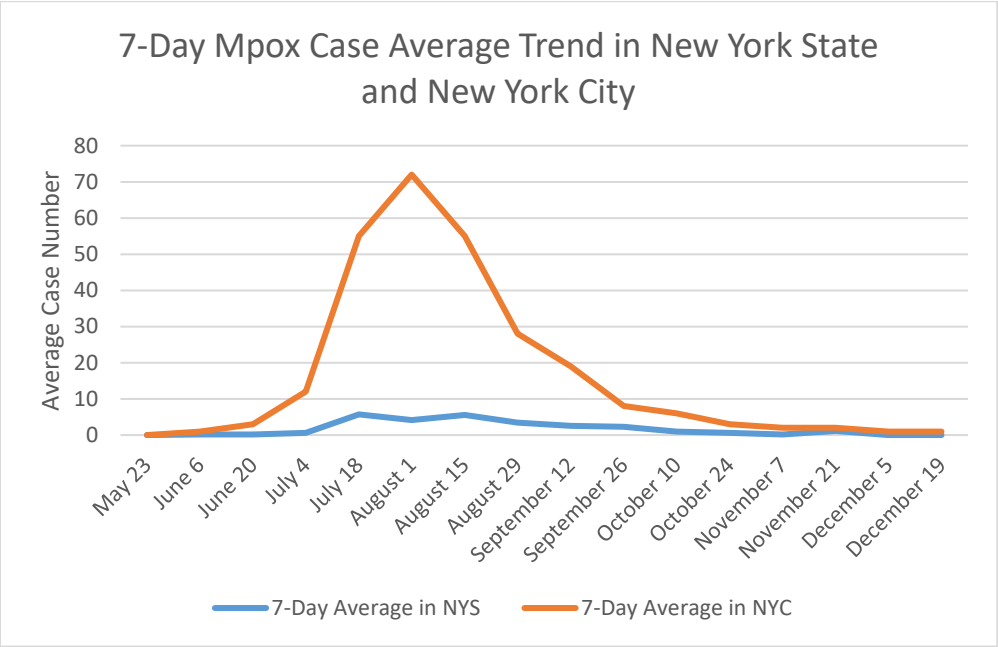

Figure 2. The 7-day case average mpox case trend in New York State and New York City. New York City had a higher 7-day average of confirmed and probably mpox cases reported to the NYCDOHMH during the outbreak compared to cases throughout the rest of New York State. The 7-day average is the average number of cases reported per day in the last 7 days. Data was collected from the NYSDOH and the NYCDOHMH.

In a 2022 data summary of the mpox outbreak, New York City reported 3,821 cumulative confirmed and probable mpox cases as of January 15, 2023. Of the reported cases, 93.8% were in cisgender men, 63.9% identified as LGBQ+, 34.7% were Hispanic/Latino, 27.5% were Black/African American, and 22.4% were White (NYCDOHMH, 2023). Due to Governor Hochul's Executive Order, all providers were required to report vaccination data to the New York State Immunization Information System as well. New York City reported a cumulative total of 154,557 vaccine doses administered as of January 15, 2023. There were 102,183 first doses administered and 52,374 second doses administered. Cisgender men received 74.2% of all first doses administered but only 56% of cisgender men completed the two-dose series. White

individuals received 47.1% of all first doses administered with 55% of this group completing the two-dose series. Hispanic/Latino individuals received 24.1% of all first doses with 47% of this group completing the two-dose series. Black/African American individuals received 13.2% of all first doses and 48% of this group completed the two-dose series (New York City Citywide Immunization Registry, 2023; NYCDOHMH, 2023).

Excluding New York City, there were a total of 375 confirmed and probable mpox cases reported throughout New York state through December 2022. There were no counties throughout the rest of the state with more than 100 mpox cases. Of the New York state cases, 95% were cisgender men, 43% identified as lesbian or gay, and 9% identified as bisexual. In addition, 32% of reported cases were Hispanic/Latino, 19% were non-Hispanic Black/African American, and 28% were non-Hispanic White (NYSDOH, 2022). New York state reported a total of 16, 716 first vaccine doses as of December 18, 2022, with 89.8% of doses in cisgender males. Lastly, 62.4% of the first vaccine doses were administered to non-Hispanic White individuals, 14.2% to Hispanic individuals, and 8.6% to non-Hispanic Black individuals. The New York State Health Department did not include data on second vaccine doses (New York State Immunization Information System, 2022).

4.2 Florida Response to the 2022 Mpox Outbreak

On May 23, the Florida Department of Health (FDOH) reported the first presumed case of mpox in Florida located in Broward County, which is home to Fort Lauderdale. The FDOH stated the case was related to international travel and that the department would continue investigating

any others who may have been exposed. (FDOH, 2022). By August 1, Florida had a total of 376 confirmed or probable cases of mpox. By August 11, the total number of confirmed or probable cases of mpox in Florida was 1,085 cases (FDOH, 2023). Due to the jump in mpox cases, local organizations called on Governor DeSantis to declare a state of emergency to utilize the powers such declarations give to respond to the mpox outbreak (Tampa Bay Times, 2022). A state of emergency in Florida can only be declared by the Governor through a proclamation or an executive order and is outlined in Florida Statutes § 252.36. The declaration would bestow the Governor with the power to initiate the state emergency mitigation plan and authorize the distribution and use of any supplies and materials needed. Additionally, the Governor has the power to use all available resources under the state government to respond to the emergency, provide extra funding to agencies critical to the response effort, and suspend statutes and regulations that could delay the response effort (FLA STAT. § 252.36, 2022). Governor DeSantis opted not to declare a state of emergency in Florida over mpox, instead saying that the growing fears over mpox were exaggerated, that any declaration of a state of emergency was an abuse of power, and critiquing states like New York and California for declaring their own state of emergency over the outbreak. A spokesperson from the FDOH insisted that Florida could successfully address the mpox outbreak without the Governor declaring a state of emergency (Sarkissian, 2022).

The FDOH has a page on the website dedicated to mpox information. The information included a summary of potential symptoms, transmission pathways, prevention and treatment options, and information for healthcare providers specifically. The health provider section had resources on several topics including the phone number for the disease reporting hotline, guidance on specimen collection, infection control measures in the home and hospital settings, vaccination and treatment guidelines, monitoring and risk assessment, and clinical recognition of suspected

mpox cases (FDOH, 2023). These multiple guidelines included on the FDOH mpox page were all per the CDC or linked directly to the CDC pages, not directly from the FDOH.

Without an expansive state government response plan, most of the responsibility fell on individual counties. The total number of confirmed and probable mpox cases in Florida from May 2022 to December 2022 was 2,861 cases. The counties with the most cases were Miami-Dade with 897 total cases, Broward with 706 total cases, Orange with 299 total cases, and Hillsborough with 229 total cases during the same time period. The rest of the Florida counties had less than 200 total confirmed and probable cases reported (FDOH, 2022). The FDOH did not publish weekly data or case trends seen during the outbreak in Florida, only total monthly confirmed and probable cases.

The core of Florida's county response to the mpox outbreak was providing vaccine appointments for those at high risk of mpox infection using doses distributed by the federal government. Miami-Dade County dedicated a page for mpox on the county website where officials listed information signs and symptoms to watch out for as well as information on vaccinations and a vaccine appointment scheduler. Miami-Dade County partnered with Nomi Health, a "direct healthcare company", for the distribution of JYNNEOS vaccines to individuals considered to be at high risk for contracting the virus (Nomi Health, n.d.; Miami-Dade County, n.d.). On August 9, Miami-Dade County Mayor Daniella Levine Cava had a news release stating the County's intent to combat the increasing number of mpox cases by offering limited doses of the JYNNEOS vaccine for individuals considered high risk while also trying to secure more vaccine doses to meet the demand. The county defined those at high risk as laboratory and healthcare professionals, MSM with HIV and CD4+ cells count below 200 cells per mL, close contacts of individuals with mpox, MSM with a history of sexually transmitted diseases, and all MSM with HIV with a potential exposure to mpox (Miami-Dade County, 2022).

Broward County did not have any mpox news or updates on the website, but the website for the City of Fort Lauderdale did post mpox updates. The updates contained information on the location to receive vaccinations by appointment from the FDOH in Broward County, but there was only a single location listed. Any other information included on their mpox page was information on symptoms, transmission, and prevention (City of Fort Lauderdale, 2022). The Orange County and the City of Orlando websites had no news, updates, or pages available for mpox. The FDOH in Orange County stated they had the responsibility of responding to the outbreak, and they did so through case investigations and vaccinations using doses from the federal government. The County health department page also highlighted that anyone is at risk of mpox infection, but specified MSM are at the highest risk (FDOH Orange County, 2022). Similar to Orange County, the Hillsborough County website and City of Tampa website, which lies within Hillsborough County, had no news, updates, or pages available for mpox. The FDOH in Hillsborough County page had information and guidance on vaccinations including who is eligible for a vaccine and offered a link for vaccination appointments. The page also had accurate information on what an individual should do if experiencing symptoms of mpox and offered at-home remedies such as taking pain relievers or oatmeal baths to relieve their skin (FDOH Hillsborough County, 2022).

As Florida received more JYNNEOS vaccine doses from the federal government, local health departments were able to expand the eligibility criteria for individuals looking to receive the vaccine (Ogozalek, 2022). Florida had to ration the first allotments of vaccine delivered by the federal government, only administering the first dose to the public until more vaccine units arrived (Sarkissian, 2022). However, as the state received more vaccine units through August and September, more of the public was able to receive the vaccine and mpox cases decreased across the state (Ogozalek, 2022). The FDOH did not report any data on the demographics of mpox cases

or of those who received the vaccine. As of December 2022, Florida recorded 2,861 total confirmed and probable mpox cases (FDOH, 2023).

Health policy is not the only type of policy that can influence the health and well-being of the public, any general legislation can influence the health and well-being of a community. In March 2022, Governor DeSantis signed HB 1551, the Parental Rights in Education bill, into law. HB 1551 is also informally known as the "Don't Say Gay" bill (Diaz, 2022). A study done by the Center for Countering Digital Hate in partnership with the Human Rights Campaign found that after HB 1557 was passed, hate speech against the LGBT+ community increased in social media posts. In addition to the increase in hateful speech on social media platforms, bills of this nature can influence violence against members of the LBGT+ community. Anti-LGBT+ legislation negatively impacts the mental health of LGBT+ youth since these bills specifically target them. Furthermore, the passage of HB 1551 into law in Florida signals to other policymakers that anti-LGBT+ legislation is possible in their governments as well and contributes to the spread of anti-LGBT+ sentiments across the country (Center for Countering Digital Hate, 2022).

The increase in negative views and hate speech against the LGBT+ community creates a hostile environment for members of this community. An environment that cultivates hostility and stigma against the LGBT+ community can influence whether an individual seeks care if they experience mpox symptoms, warn any close contacts of potential spread of mpox, or attempt to receive the vaccine (Kaiser Family Foundation, 2022; Treisman, R., 2022). This is especially true when lesions are likely to appear in the anal/genital regions when most of the public conversation around mpox was focused on how MSM are disproportionately affected. The potential stigma of experiencing mpox symptoms and then being linked to the LGBT+ community can influence case reporting and lead to an undercount in mpox cases reported to the state and to federal surveillance

databases (Kaiser Family Foundation, 2022). Furthermore, the stigmatization and misinformation around mpox as a disease that only impacts the LGBT+ population ensure non-LGBT+ individuals would be less inclined or delay in seeking medical diagnosis and therefore exacerbate the undercount of cases (Dsouza et al., 2023). The culmination of the misinformation, stigma, and hateful rhetoric against the LGBT+ community negatively effects case reporting which then masks the true extent of the outbreak in the state of Florida. Without knowing the true extent of the outbreak and the burden of the disease, it is more difficult to execute a proper state-level response plan.

5.0 Conclusion

The 2022 mpox outbreak came at a time when the U.S. was still grappling with COVID-19, the spread of new SARS-CoV-2 variants, and the overall fallout from experiencing a major pandemic. The mpox outbreak was an opportunity for the U.S. to learn from mistakes made during the COVID-19 pandemic and temper the outbreak before it became completely uncontrollable. There were multiple features of the mpox outbreak that should have made quelling the outbreak easier. Mpox is not a novel disease; it is a virus that was first identified in the late 1950s. It is an emerging infectious disease, but not novel nor deadly if treated properly. Mpox is also not as easily transmissible as a respiratory disease (such as COVID-19), instead requiring prolonged direct contact with a symptomatic individual; this meant the spread of mpox through communities was slower. There was also an existing vaccine that could be used to protect against orthopoxviruses like mpox instead of waiting for scientists to create a new vaccine. Mpox diagnostic tests are completed by PCR from a lesion swab sample, much of the population should be familiar with swab samples and the necessary resources for PCR tests after their extensive use during the COVID-19 pandemic. Thus, the materials to respond to the mpox outbreak already existed, the problem was in the timely distribution of information and resources.

The public has expressed sentiments of disappointment and concern with the response to the outbreak from the federal government. In a survey conducted by the Pew Research Center, 34% of U.S. adults who identify as gay or bisexual believe the country has done an “excellent” or “good job” controlling the mpox outbreak while 49% believe the government has done a “fair” or “poor” job (Pasquini, G. and Funk, C., 2022). In the same survey, 74% of gay or bisexual men

believe the mpox outbreak is “at least a minor threat” to their own personal health and 66% of gay or bisexual men said they would “definitely” or “probably” receive the mpox vaccine (Pasquini, G. and Funk, C., 2022). The public wanted the receive the vaccine, but the problem lay in the distribution and lack of access to the vaccine.

New York City was one of the hardest-hit regions of the mpox outbreak in the U.S. Governor Hochul of New York used her executive power to declare a state of disaster and trigger the state emergency response plans to expand public health authority. New York responded early to the mpox outbreak with the resources available to them at the time. New York had culturally competent messaging and education for vulnerable populations around mpox signs and symptoms, transmission, and prevention strategies. The New York mpox response plan was primarily led by the NYSDOH, which collected case report information and vaccination records from local healthcare providers. The NYSDOH pushed to expand and make mpox testing more accessible across the state for those in need. Governor Hochul communicated and coordinated vaccine shipments from the federal government to New York to meet the demand for vaccines by the local communities, especially in New York City. Local leadership also utilized their executive powers, with Mayor Adams declaring a public health emergency to ensure the NYCDOHMH had adequate resources at hand to respond to the demands of the mpox outbreak.

Florida had less state government involvement in their response plan to the mpox outbreak. Governor DeSantis declined to declare a state of disaster in Florida over mpox transmission and high case numbers and instead opted to leave the response plan to the FDOH. The FDOH focused on securing vaccine doses from the federal government to meet the vaccine demands in communities but left most of the execution up to the counties or cities themselves. The public health response seen across Florida counties and cities to the mpox outbreak was largely focused

on distributing vaccine doses. Some Florida counties had accurate information and messaging around mpox signs and symptoms, transmission, and prevention while other counties offered no information at all. However, due to the increase in the stigma surrounding the LGBT+ population in Florida, there is a real risk the case numbers reported do not accurately reflect the true number of cases in the state.

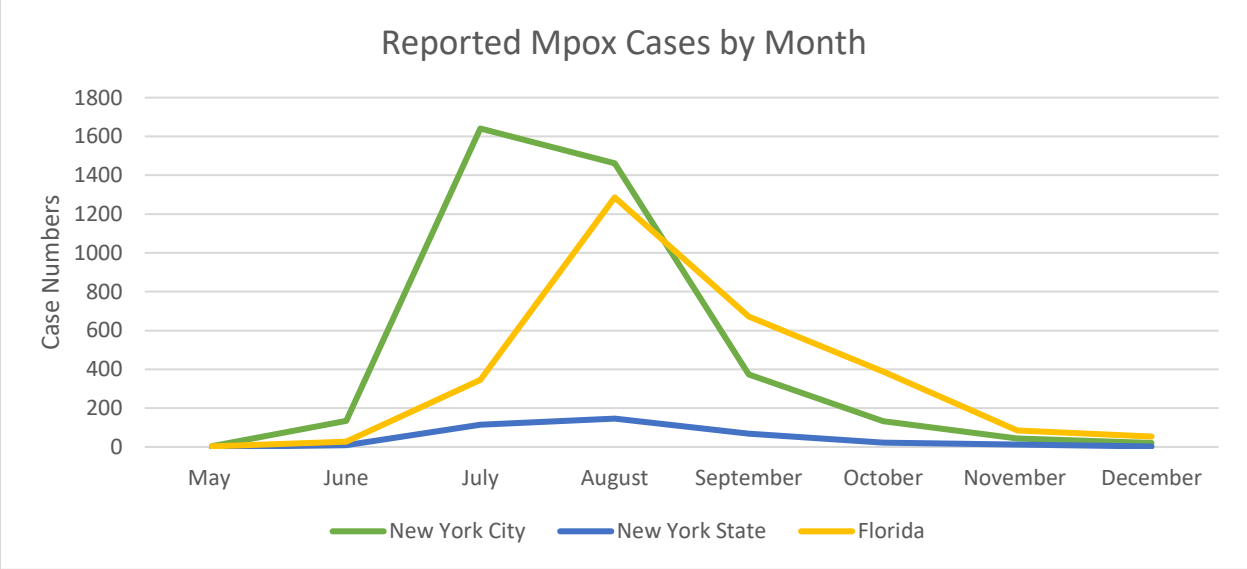

Figure 3. A comparison of the number of mpox cases by month for New York City, New York State, and Florida. Cases numbers include confirmed and probable mpox cases reported to the respective state/city departments of health per month during the period of May 2022 – December 2022. Data was collected from the NYCDOHMH, NYSDOH, and FDOH.

New York City had more confirmed and probably mpox cases reported during the period of May 2022 to December 2022 compared to the rest of New York State and Florida (Figure 3). However, Florida had more confirmed and probable mpox cases reported than New York State, excluding New York City. Cases in New York City, New York State, and Florida decreased as the

JYNNEOS vaccines became more widely available. During the month of August, New York City had an incidence rate of 17.27 cases per 100,000 people (Figure 4). In the month of August, New York State had an incidence rate of 1.29 cases per 100,000 people. Florida had an incidence rate of 5.9 cases per 100,000 people in the month of August. Mpox incidence rates for New York City, New York State, and Florida decreased after August. By October, the incidence rate in New York City was 1.56 cases per 100,000 people which was a 90.97% decrease in the incidence of mpox from August. New York State had an incidence rate of 0.19 cases per 100,000 people in October which was an 84.94% decrease in the incidence rate of mpox from August. Florida had an incidence rate of 1.78 cases per 100,000 people in October which was a 69.83% decrease in the incidence rate of mpox from August.

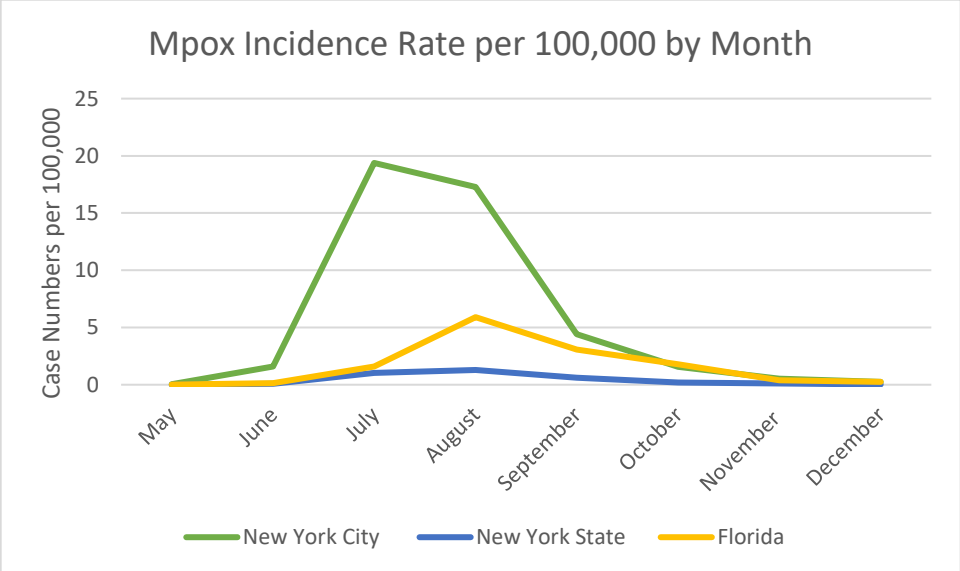

Figure 4. Mpox incidence rate per 100,000 people by month. The incidence rates of mpox cases per 100,000 people for New York City, New York State, and Florida for confirmed and probable mpox cases reported to the respective state/city departments of health per month during the period of May 2022 to December 2022. Data was collected from the NYCDOHMH, NYSDOH, and FDOH.

Governor Hochul's executive order declaration of a disaster in the state of New York was issued in the last days of July which increased available resources and expanded the powers of public health agencies in the state. Mayor Adams of New York City issued his executive order declaration of a public health emergency on August 1, which also provided extra resources and power to public health agencies in the city. U.S. Secretary of HHS Becerra declared mpox a public health emergency in the nation and on August 9, the FDA issued the emergency use authorization for the intradermal injection method of the JYNNEOS vaccine which allowed healthcare providers to administer more doses with their existing supply. Furthermore, the first wave of vaccines was sent by the federal government during the month of July with subsequent waves following in the weeks after, and a focus on providing doses to New York City in particular (The White House, 2022; NYSDOH, 2022). The actions taken by the New York state and local governments lead to a decrease in the number of cases recorded in the later months of the outbreak. The actions taken by the federal government and federal agencies lead to a decrease in cases seen in both Florida and New York, despite the difference in approaches to the outbreak response effort.

By October 1, the 7-day average number of new mpox cases in the U.S. was 106 cases. By December 1, the 7-day average was 21 new cases. By March 15, 2023, the 7-day average number of mpox cases in the U.S. was 1 new case (CDC, 2023). The national public health emergency declaration expired on January 31 due to the continuous decline of mpox cases across the country. HHS declined to renew the emergency declaration but instead stated the agency and the Biden-Harris administration would continue to monitor cases and focus on distributing vaccines to disproportionately affected populations. (HHS, 2022). On February 1, 2023, New York City declared the mpox outbreak in the city was officially over due to low mpox transmission for two months. New York City alone had more than 155,000 vaccine doses administered which was more

vaccine doses than 49 other U.S. states. Florida administered close to 92,000 doses. The only other state in the U.S. to administer more vaccine doses was California with more than 289,000 doses administered (NYCDOHMH, 2023).

There are other factors that influenced the mpox outbreak and eventual containment outside of health policies which can further complicate this comparative discussion. One factor was behavior changes from MSM to prevent possible mpox transmission. The American Men's Internet Survey sent during the period from August 5 – 15, 2022 captured 824 MSM participants. Of these survey participants, 18.6% had received at least one vaccine dose, 48% reported reducing their number of sexual partners, 50% reduced their one-time sexual encounters, and 50% of participants reported reducing their sexual encounters with partners they met on dating apps or sex venues. Public health communications from local, state, and federal health agencies focused on harm reduction strategies to prevent mpox transmission in the MSM population and were successful in influencing their behaviors (Delaney et al., 2022).

Another factor that may have influenced the trajectory and duration of the mpox outbreak was transmission. There is no evidence showing asymptomatic individuals could spread MPV to others. MPV needs direct and prolonged contact with a mucosal surface to infect an individual (CDC, 2023). These factors of transmission contribute to a slower spread of MPV compared to more easily transmitted viruses like SARS-CoV-2. Additionally, there was confusion around possible transmission routes early in the outbreak since the spread through sexual contact was new to the 2022 outbreak (CDC, 2023). The confusion and lack of knowledge lead to a lag in response time from public health authorities as they had to wait to gather the latest information before formulating and implementing a response plan.

There are several limitations that impact the comparative analysis of this paper. One of which is the lack of academic literature on the 2022 mpox outbreak, specifically on relevant health policies. Considering the outbreak occurred relatively recently, academic literature analyzing federal and state responses does not yet exist. Most of the information and data used in this comparative analysis came directly from health departments or national and local online news sources. All health department websites specified dates pages were created or "last reviewed/updated" dates in 2022 or 2023 to ensure the information included was up to date. A second limitation is the comparison of only two states. It is not possible to glean how well the U.S. fared in the 2022 mpox outbreak when only analyzing the responses from two states, especially when outbreak responses can vary from state to state. Another limitation is the underreporting of mpox cases. Underreporting is likely in both New York and Florida as there are people who will not or cannot seek treatment, but underreporting is a larger risk in Florida with the increase in anti-LGBT+ sentiments, rhetoric, and legislation. The increase in hostility and stigma toward the LGBT+ community pushes individuals away from seeking assistance and can create a population of mpox cases appearing under the radar of public health agencies. Lastly, the change in risk behaviors in the LGBT+ community to prevent mpox exposure is another limitation in the comparative analysis. Changing specific risk behaviors can lead to a reduction in the number of mpox cases recorded as individuals are able to avoid exposure. The decrease in possible mpox cases is then unrelated to the effect of health policies used by New York and Florida in their outbreak response efforts.

Once vaccines became more widely and readily available, mpox cases began to plummet. The outbreak spanned a period of nine months, beginning in May of 2022 and ending in January of 2023. We had the necessary resources to tackle the outbreak but were slow with the distribution,

affecting public sentiment. A centralized response from a state government can effectively control an outbreak by distributing the most up-to-date information to the population, increasing access to vaccines, and reassuring the community that protecting their health is a top priority. A decentralized response appeared similarly effective in reducing cases during the outbreak but had a real risk of undercounting cases and not knowing the true burden of the disease. While there less focus on the distribution of information to the population, vaccine access was still a priority with the responsibility landing upon individual counties and their local health departments. The 2022 mpox outbreak may be over for now, but the next emerging infectious disease outbreak is around the corner and could be much harder to contain. The public will watch closely how the federal, state, and local governments choose to respond to future outbreaks moving forward.

Bibliography

Basch, C. H., Meleo-Erwin, Z., Fera, J., Jaime, C., & Basch, C. E. (2021). A global pandemic in the time of viral memes: COVID-19 vaccine misinformation and disinformation on TikTok. *Human vaccines & immunotherapeutics*, *17*(8), 2373–2377. https://doi.org/10.1080/21645515.2021.1894896

Center for Countering Digital Hate. (2022, August 10). Center for Countering Digital Hate. Retrieved from https://counterhate.com/wp-content/uploads/2022/08/CCDH-HRC-Digital-Hate-Report-2022-single-pages.pdf

Centers for Disease Control and Prevention. Achievements in public health, 1900–1999: Control of infectious diseases. 1999; 48 (29); 621–629.

Centers for Disease Control and Prevention. (2023, February 2). *How it spreads*. Centers for Disease Control and Prevention. Retrieved February 25, 2023, from https://www.cdc.gov/poxvirus/monkeypox/if-sick/transmission.html

Centers for Disease Control and Prevention (CDC) (1997). Human monkeypox--Kasai Oriental, Zaire, 1996-1997. *MMWR. Morbidity and mortality weekly report*, *46*(14), 304–307.

Centers for Disease Control and Prevention. (2022, December 8). *Preliminary JYNNEOS vaccine effectiveness estimates against medically attended MPOX disease in the U.S., August 15, 2022 – October 29, 2022*. Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/poxvirus/mpox/cases-data/JYNNEOS-vaccine-effectiveness.html

Centers for Disease Control and Prevention. (2023, February 2). *Science brief: Detection and transmission of Mpox virus (formerly monkeypox) virus during the 2022 clade IIb outbreak*. Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/poxvirus/mpox/about/science-behind-transmission.html#print

Centers for Disease Control and Prevention. (2023, February 2). *Signs and symptoms*. Centers for Disease Control and Prevention. Retrieved February 25, 2023, from https://www.cdc.gov/poxvirus/monkeypox/symptoms/index.html

Centers for Disease Control and Prevention. (2023, March 3). *Treatment information for healthcare professionals*. Centers for Disease Control and Prevention. Retrieved March 11, 2023, from https://www.cdc.gov/poxvirus/mpox/clinicians/treatment.html

Centers for Disease Control and Prevention (CDC) (2003). Update: multistate outbreak of monkeypox--Illinois, Indiana, Kansas, Missouri, Ohio, and Wisconsin, 2003. *MMWR. Morbidity and mortality weekly report*, *52*(27), 642–646.

Centers for Disease Control and Prevention. (2023, January 31). *Vaccines*. Centers for Disease Control and Prevention. Retrieved March 11, 2023, from https://www.cdc.gov/poxvirus/mpox/vaccines/index.html

City of Fort Lauderdale Florida. (2022, July 26). *City of Fort Lauderdale, FL*. City News. Retrieved from https://www.fortlauderdale.gov/Home/Components/News/News/6366/16?arch=1&npage=2

City of New York. (2022, August 1). Mayor Adams declares Monkeypox State of emergency in New York City. The official website of the City of New York. Retrieved March 14, 2023, from https://www.nyc.gov/office-of-the-mayor/news/557-22/mayor-adams-declares-monkeypox-state-emergency-new-york-city

City of New York. (2023, February 1). *New York City declares end to Mpox outbreak after nation-leading response*. New York City Declares End to Mpox Outbreak After Nation-Leading Response - NYC Health. Retrieved from https://www.nyc.gov/site/doh/about/press/pr2023/nyc-declares-end-to-mpox-outbreak.page

Delaney, K. P., Sanchez, T., Hannah, M., Edwards, O. W., Carpino, T., Agnew-Brune, C., Renfro, K., Kachur, R., Carnes, N., DiNenno, E. A., Lansky, A., Ethier, K., Sullivan, P., Baral, S., & Oster, A. M. (2022). Strategies Adopted by Gay, Bisexual, and Other Men Who Have Sex with Men to Prevent Monkeypox virus Transmission - United States, August 2022. *MMWR. Morbidity and mortality weekly report*, *71*(35), 1126–1130. https://doi.org/10.15585/mmwr.mm7135e1

Dawson, L., Moss, K., Michaud, J., & Kates, J. (2022, August 24). *Key questions about the current U.S. Monkeypox outbreak*. Kaiser Family Foundation. Retrieved from https://www.kff.org/other/issue-brief/key-questions-about-the-current-u-s-monkeypox-outbreak/

Diaz, J. (2022, March 28). *Florida's governor signs controversial law opponents dubbed 'Don't Say Gay'*. NPR. Retrieved from https://text.npr.org/2022/03/28/1089221657/dont-say-gay-florida-desantis

FDA. (2022, August 9). *Monkeypox update: FDA authorizes emergency use of JYNNEOS vaccine to increase vaccine supply*. U.S. Food and Drug Administration. Retrieved March 15, 2023, from https://www.fda.gov/news-events/press-announcements/monkeypox-update-fda-authorizes-emergency-use-jynneos-vaccine-increase-vaccine-supply

Emergency Exec. Order No. 158 Declaration of Local State of Emergency, (2022). https://www.nyc.gov/assets/home/downloads/pdf/executive-orders/2022/eeo-158.pdf

Exe. Order No. 20 (2022). https://www.governor.ny.gov/executive-order/no-20-declaring-disaster-state-new-york

Florida Department of Health. (n.d.). *FLHealthCHARTS*. FLHealthCHARTS.gov: Home. Retrieved from https://www.flhealthcharts.gov/charts/Default.aspx

Florida Department of Health. (2023, January 3). Mpox (formerly called Monkeypox). Retrieved from https://www.floridahealth.gov/diseases-and-conditions/monkeypox/index.html

Florida Department of Health in Hillsborough. (2022, August 5). *If you have Monkeypox*. If you have Monkeypox | Florida Department of Health in Hillsborough. Retrieved from https://hillsborough.floridahealth.gov/programs-and-services/emergency-preparedness-and-response/monkeypox-resources/have-monkeypox.html

Florida Department of Health in Hillsborough. (2022, August 29). *Monkeypox Vaccine Page*. Monkeypox Vaccine Page | Florida Department of Health in Hillsborough. Retrieved from https://hillsborough.floridahealth.gov/programs-and-services/emergency-preparedness-and-response/monkeypox-resources/monkeypox-vaccine.html

Florida Department of Health in Orange County. (2022, August 2). *The Florida Department of Health in Orange County is responding to the nationwide monkeypox outbreak*. Florida Department of Health in Orange. Retrieved from https://orange.floridahealth.gov/newsroom/2022/08/Nationwide-MonkeyPox-Outbreak.html

Florida Statutes Title XVII. Military Affairs and Related Matters § 252.36. Emergency management powers of the Governor

Jacobs, B. L., Langland, J. O., Kibler, K. V., Denzler, K. L., White, S. D., Holechek, S. A., Wong, S., Huynh, T., & Baskin, C. R. (2009). Vaccinia virus vaccines: past, present and future. *Antiviral research*, *84*(1), 1–13. https://doi.org/10.1016/j.antiviral.2009.06.006

Kirzinger, A., Presiado, M., Valdes, I., Hamel, L., & Brodie, M. (2023, March 7). *The COVID-19 pandemic: Insights from three years of KFF polling*. KFF. Retrieved from https://www.kff.org/coronavirus-covid-19/poll-finding/the-covid-19-pandemic-insights-from-three-years-of-kff-polling/

Koontalay, A., Suksatan, W., Prabsangob, K., & Sadang, J. M. (2021). Healthcare Workers' Burdens During the COVID-19 Pandemic: A Qualitative Systematic Review. *Journal of multidisciplinary healthcare*, *14*, 3015–3025. https://doi.org/10.2147/JMDH.S330041

Lopez, G. (2020, September 2). *How New York gov. Andrew Cuomo failed, then succeeded, on covid-19*. Vox. Retrieved April 17, 2023, from https://www.vox.com/future-perfect/21401242/andrew-cuomo-coronavirus-covid-pandemic-new-york

Miami-Dade County. (2022, August 9). *Miami-Dade County mayor Daniella Levine cava announces monkeypox vaccination efforts*. Miami-Dade County. Retrieved from https://www.miamidade.gov/releases/2022-08-09-mayor-monkeypox-newsites.asp

New York Consolidated Laws, Executive Law - EXC § 28. State declaration of disaster emergency

New York Consolidated Laws, Public Health Law - PBH § 621. State aid; public health emergencies

New York State. (2023, July 25). *Governor Hochul announces continued expansion of monkeypox testing capacity with approval of Quest Diagnostics' new PCR testing application*. Governor Kathy Hochul. Retrieved March 14, 2023, from https://www.governor.ny.gov/news/governor-hochul-announces-continued-expansion-monkeypox-testing-capacity-approval-quest

New York State. (2022, August 3). *Governor Hochul announces latest monkeypox vaccine distribution following phase 3 federal allotment of doses for New York State and New York City*. Governor Kathy Hochul. Retrieved from https://www.governor.ny.gov/news/governor-hochul-announces-latest-monkeypox-vaccine-distribution-following-phase-3-federal

New York State Department of Health. (2022, August 22). *Department of Health Announces Latest Monkeypox Vaccine Distribution* https://www.health.ny.gov/press/releases/2022/2022-08-22_monkeypox_vaccine_distribution.htm

New York State Department of Health. (2022, July 7). *Department of Health Updates New Yorkers On Monkeypox Response Strategy*. State Department of Health Updates New Yorkers On Monkeypox Response Strategy. Retrieved from https://www.health.ny.gov/press/releases/2022/2022-07-07_monkeypox_response_strategy.htm

New York State Department of Health. (2022, June 6). *Sexual Orientation and Gender Identity: Demographics and Health Indicators New York State Adults, 2019-2020*. New York State Department of Health. Retrieved from https://www.health.ny.gov/statistics/brfss/reports/

NPR. (2022, July 31). *New York City declares monkeypox a public health emergency*. NPR. Retrieved March 10, 2023, from https://www.npr.org/2022/07/30/1114747427/nyc-monkeypox-public-health-emergency

Ogozalek, S. (2022, September 20). *Monkeypox cases slow in Florida as vaccine supply improves*. Tampa Bay Times. Retrieved from https://www.tampabay.com/news/health/2022/09/20/monkeypox-cases-slow-florida-vaccine-supply-improves/

Pasquini, G., & Funk, C. (2022, September 22). *Gay or bisexual men express concern about Monkeypox, are critical of government's response*. Pew Research Center. Retrieved from https://www.pewresearch.org/fact-tank/2022/09/22/gay-or-bisexual-men-express-concern-about-monkeypox-are-critical-of-governments-response/

Philpott, D., Hughes, C. M., Alroy, K. A., Kerins, J. L., Pavlick, J., Asbel, L., Crawley, A., Newman, A. P., Spencer, H., Feldpausch, A., Cogswell, K., Davis, K. R., Chen, J.,

Henderson, T., Murphy, K., Barnes, M., Hopkins, B., Fill, M. A., Mangla, A. T., Perella, D., … CDC Multinational Monkeypox Response Team (2022). Epidemiologic and Clinical Characteristics of Monkeypox Cases - United States, May 17-July 22, 2022. *MMWR. Morbidity and mortality weekly report*, *71*(32), 1018–1022. https://doi.org/10.15585/mmwr.mm7132e3

Rosenberg, G. (2022, August 1). *Adams declares Monkeypox State of emergency in New York*. POLITICO. Retrieved March 14, 2023, from https://www.politico.com/news/2022/08/01/new-york-monkeypox-state-of-emergency-00048947

Rupar, A. (2021, August 13). *How Ron DeSantis's covid response became the model of what not to do*. Vox. Retrieved April 17, 2023, from https://www.vox.com/2021/8/13/22622168/ron-desantis-florida-covid-response-failures

Saied, A. A., Dhawan, M., Metwally, A. A., Fahrni, M. L., Choudhary, P., & Choudhary, O. P. (2022). Disease History, Pathogenesis, Diagnostics, and Therapeutics for Human Monkeypox Disease: A Comprehensive Review. *Vaccines*, *10*(12), 2091. https://doi.org/10.3390/vaccines10122091

Sarkissian, A. (2022, August 9). *Florida rations limited supply of monkeypox vaccines as infections go up*. POLITICO. Retrieved from https://www.politico.com/news/2022/08/09/florida-monkeypox-vaccine-desantis-00050707

Sossai, P., Staiti, D., Cannas, M., & Grima, P. (2023). Smallpox and monkeypox: Looking back and looking ahead. *Cleveland Clinic journal of medicine*, *90*(3), 141–144. https://doi.org/10.3949/ccjm.90a.22067

Treisman, R. (2022, July 26). *As monkeypox spreads, know the difference between warning and stigmatizing people*. NPR. Retrieved from https://www.npr.org/2022/07/26/1113713684/monkeypox-stigma-gay-community

U.S. Department of Health and Human Services. (2022, August 4). *Determination that a public health emergency exists*. Administration for Strategic Preparedness & Response. Retrieved from https://aspr.hhs.gov/legal/PHE/Pages/monkeypox-4Aug22.aspx

U.S. Department of Health and Human Services. (2022, December 1). *Mpox (formerly Monkeypox) vaccines*. National Institute of Allergy and Infectious Diseases. Retrieved from https://www.niaid.nih.gov/diseases-conditions/mpox-vaccines

U.S. Department of Health and Human Services. (2022, December 2). *Statement from HHS secretary Becerra on mpox*. Department of Health and Human Services . Retrieved from https://www.hhs.gov/about/news/2022/12/02/statement-from-hhs-secretary-becerra-on-mpox.html

The United States Government. (2022, June 28). *FACT SHEET: Biden-Harris Administration's Monkeypox Outbreak Response* https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/28/fact-sheet-biden-harris-administrations-monkeypox-outbreak-response/

The United States Government. (2022, August 9). *Fact sheet: Biden administration announces key actions and implementation plan to increase vaccine supply*. The White House. Retrieved from https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-biden-administration-announces-key-actions-and-implementation-plan-to-increase-vaccine-supply/

World Health Organization. (2022, May 23). *Laboratory testing for the Monkeypox virus: Interim guidance*. World Health Organization. Retrieved March 11, 2023, from https://www.who.int/publications/i/item/WHO-MPX-laboratory-2022.1

World Health Organization. (2022, May 19). *Monkeypox*. World Health Organization. Retrieved February 25, 2023, from https://www.who.int/news-room/fact-sheets/detail/monkeypox

World Health Organization. (2022, May 16). *Monkeypox - United Kingdom of Great Britain and Northern Ireland*. World Health Organization. Retrieved February 25, 2023, from https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON381

World Health Organization. (2022, May 29). *Multi-country monkeypox outbreak in non-endemic countries: Update*. World Health Organization. Retrieved February 26, 2023, from https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON388

World Health Organization. (2022, July 23). *Who director-general declares the ongoing monkeypox outbreak a public health emergency of international concern*. World Health Organization. Retrieved from https://www.who.int/europe/news/item/23-07-2022-who-director-general-declares-the-ongoing-monkeypox-outbreak-a-public-health-event-of-international-concern

World Health Organization. (2022, November 28). *WHO recommends new name for Monkeypox disease*. World Health Organization. Retrieved March 15, 2023, from https://www.who.int/news/item/28-11-2022-who-recommends-new-name-for-monkeypox-disease