

Navigating mpox in 2024

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Outline

- What is mpox?
- How does it spread?
- What happened in 2022?
- What's been going on since 2022?
- Why is there a new Public Health Emergency of International Concern?

mpox (formerly monkeypox) and mpox virus

MONKEYPOX

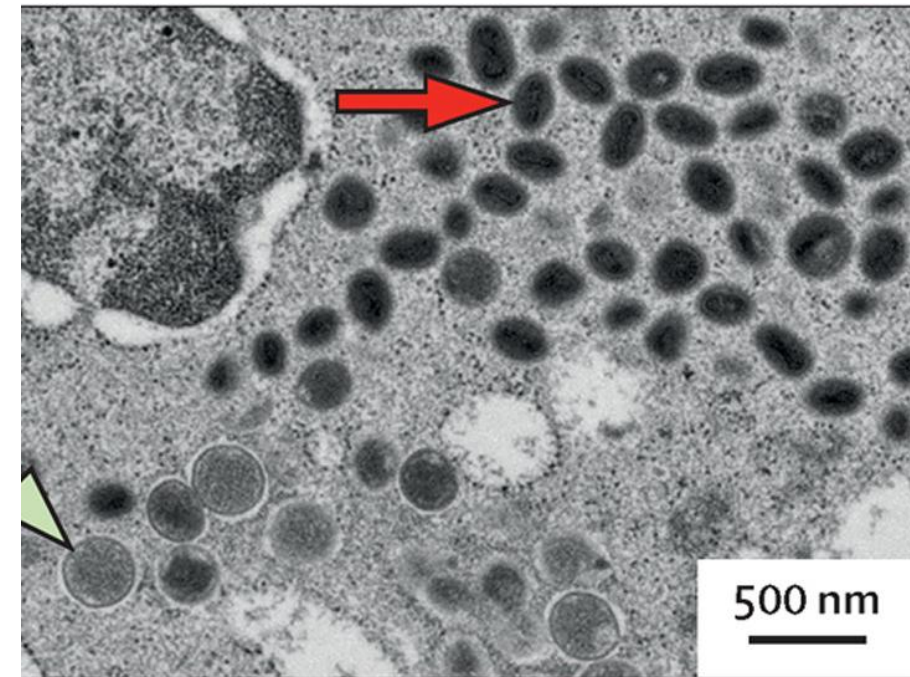
VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: NHS England High Consequence Infectious Diseases Network



CS328947-EK



Mpox virology

- DNA virus like smallpox, herpesvirus (not like COVID-19 and HIV, which are RNA viruses)
- Acute infection (not lifelong like HIV)
- Initial flu like illness (fever, aches) common (but not always) and then skin lesions (as few as one, as many as hundreds)
 - Lesions can be on penis, in mouth, in rectum
- Most severe illness in children and people with compromised immune systems

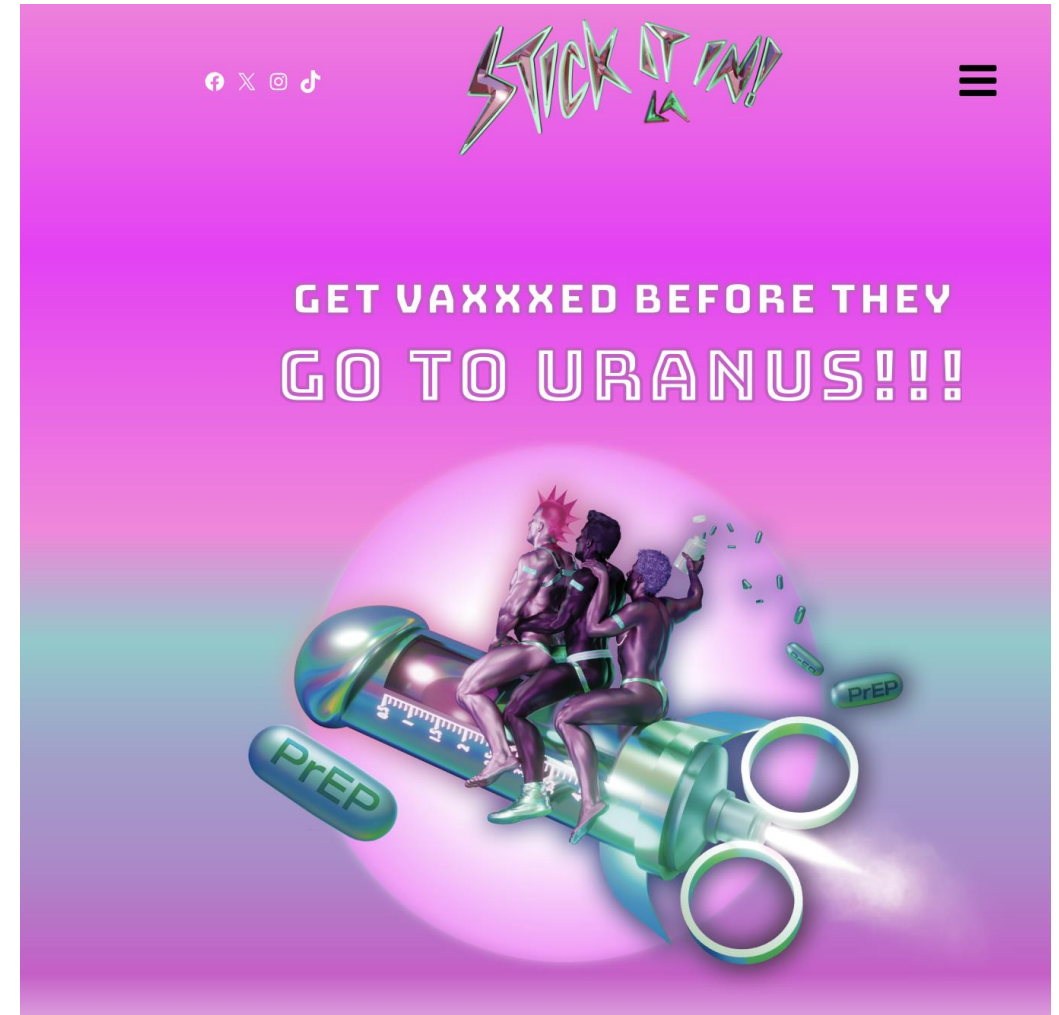
Mpox virology

- Even “mild” illness can be very painful

epidemic. My friend described the crushing pain of the lesions inside his rectum as making every waking moment feel like he was “shitting glass.” The pain and fever made sleep near impossible.

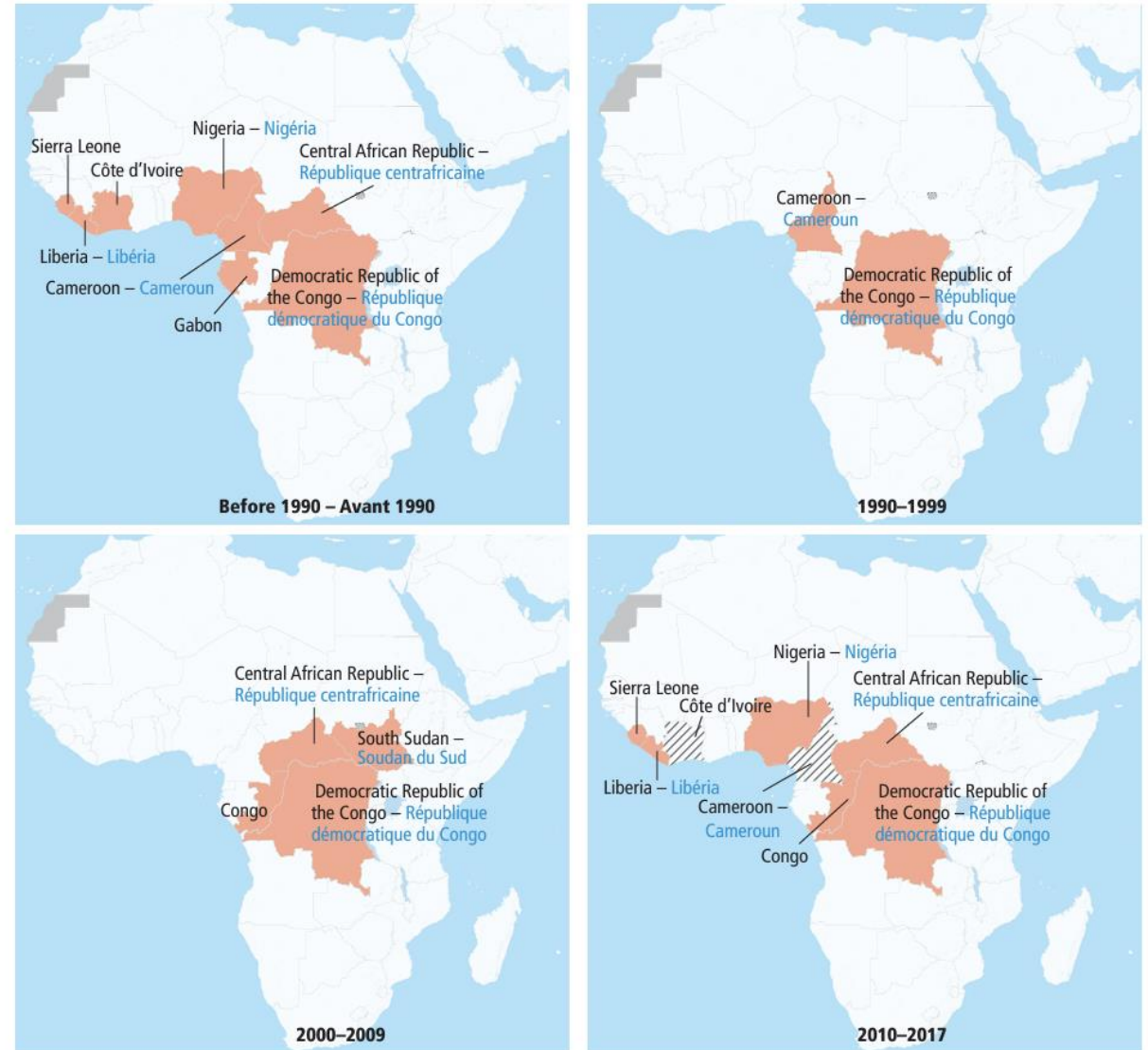
Mpox in 2022 – gay sex and queer sexual networks

- 93.3% of US 2022 cases in men
- 94% of these report sexual contact with men
- 31% of cases in Black people, 30% in Hispanic/Latinx people, 28% in white people
- Any skin contact (including sex) can transmit, or shared bedding, towels, toys



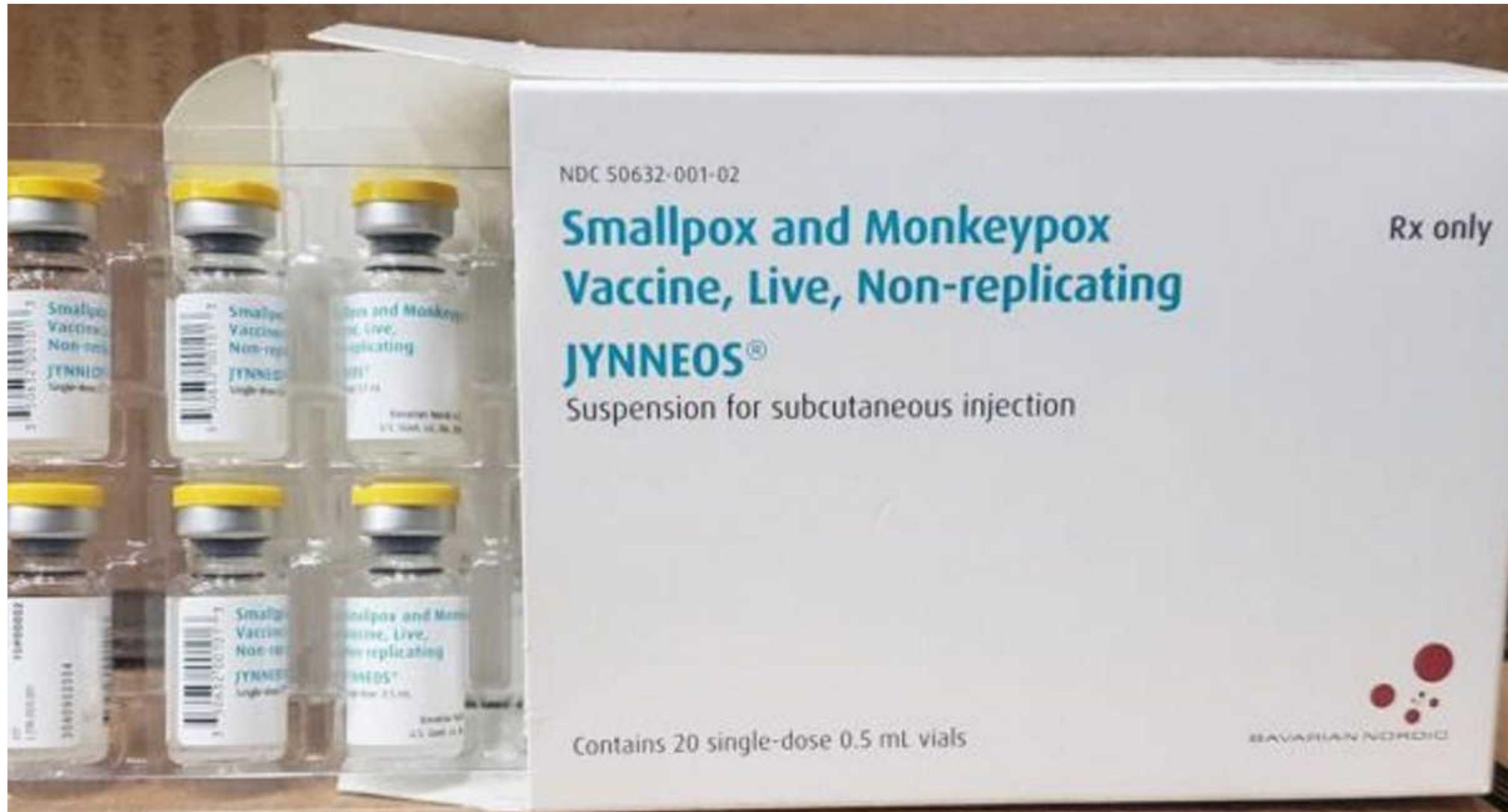
mpox before 2022

Map 1 African countries reporting human monkeypox cases, 1970–2017
Carte 1 Pays africains ayant notifié des cas humains d'orthopoxvirose simienne, 1970-2017

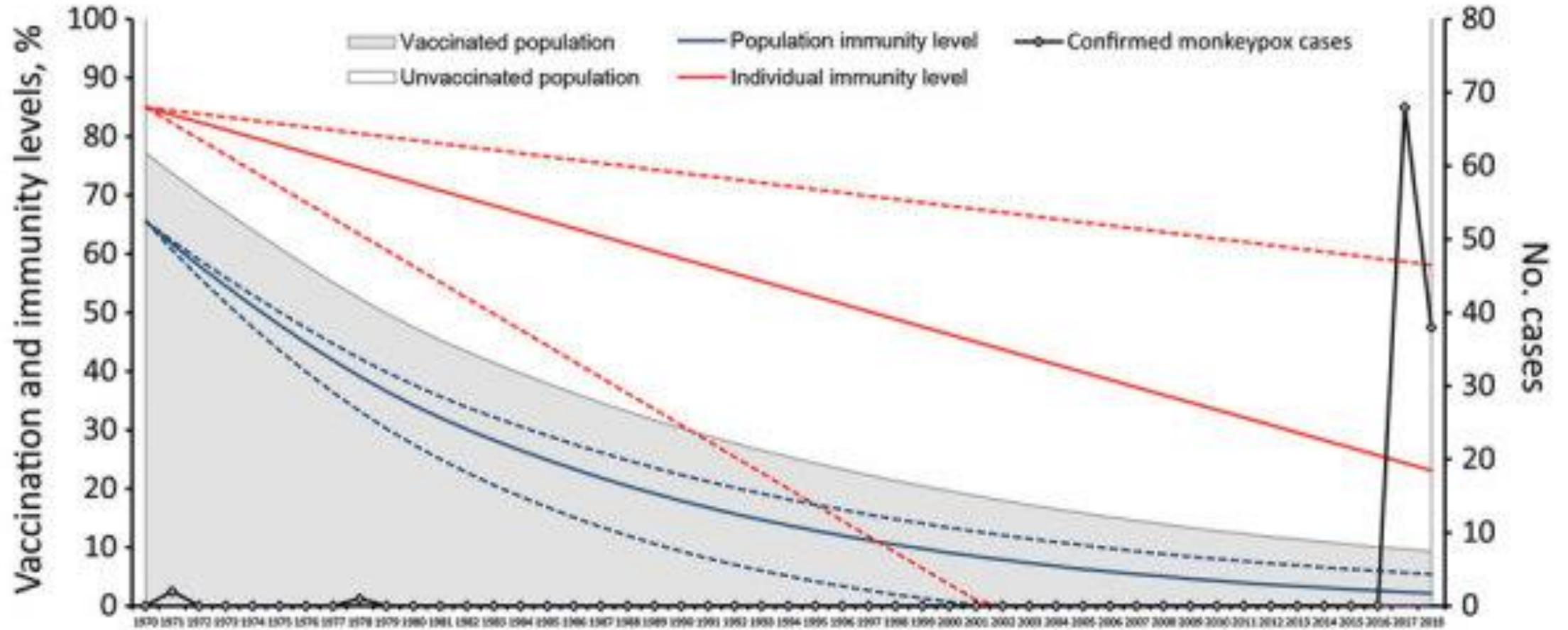


-  Countries reporting human monkeypox cases – Pays ayant notifié des cas d'orthopoxvirose simienne chez l'homme
-  Countries reporting monkeypox in animals – Pays ayant notifié des cas d'orthopoxvirose simienne chez l'animal
-  Not applicable – Sans objet

mpox (and smallpox) vaccination



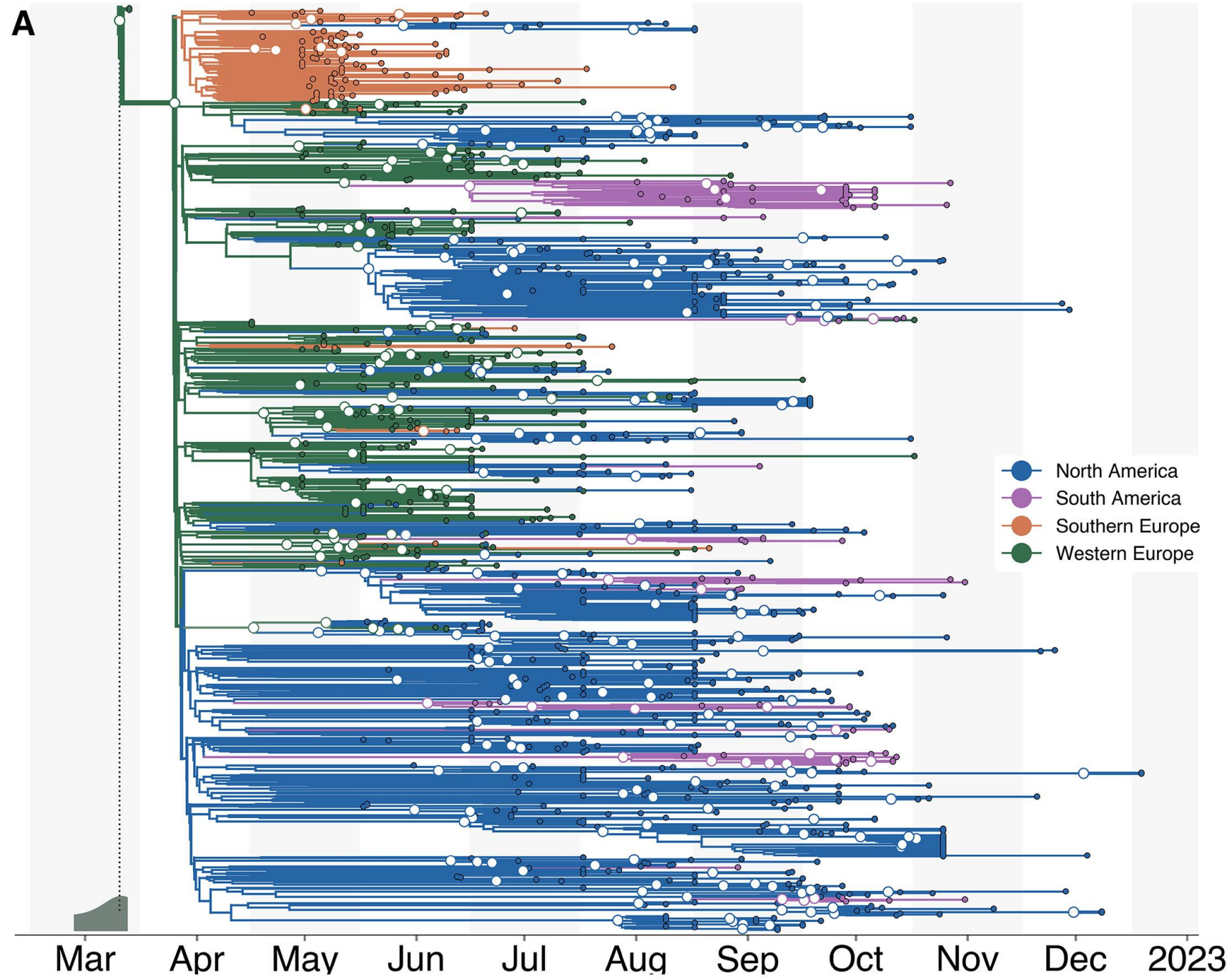
mpox before 2022



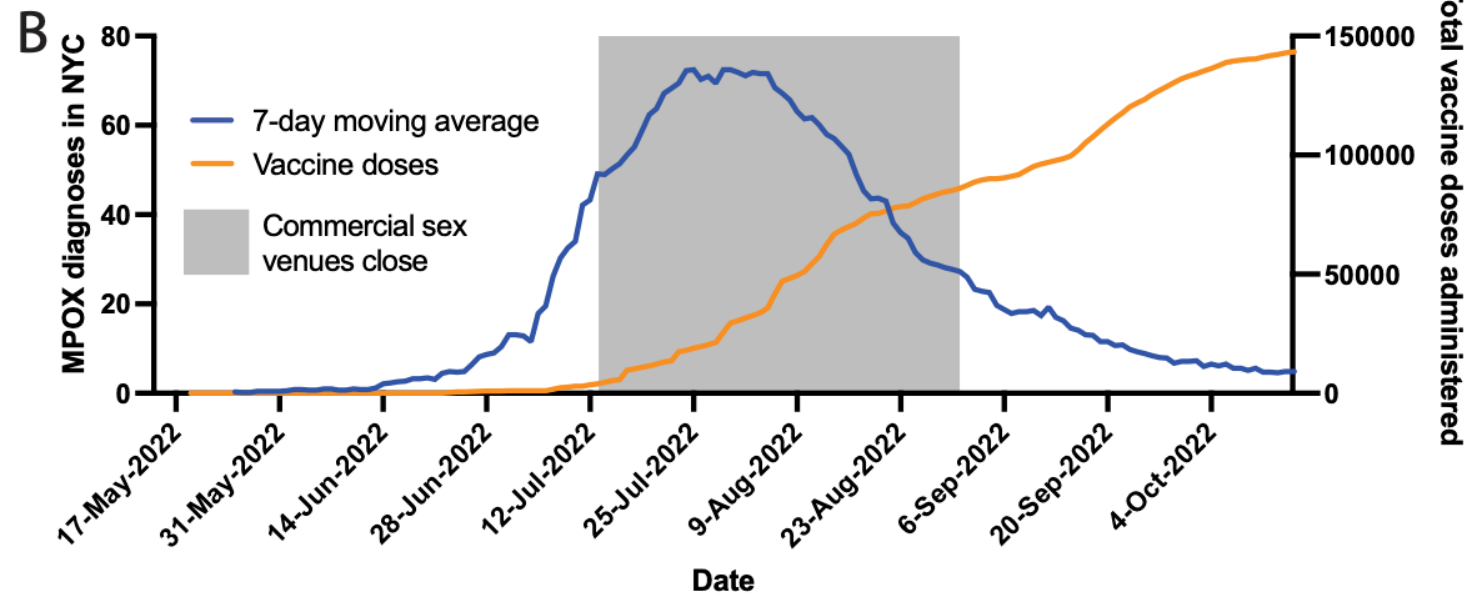
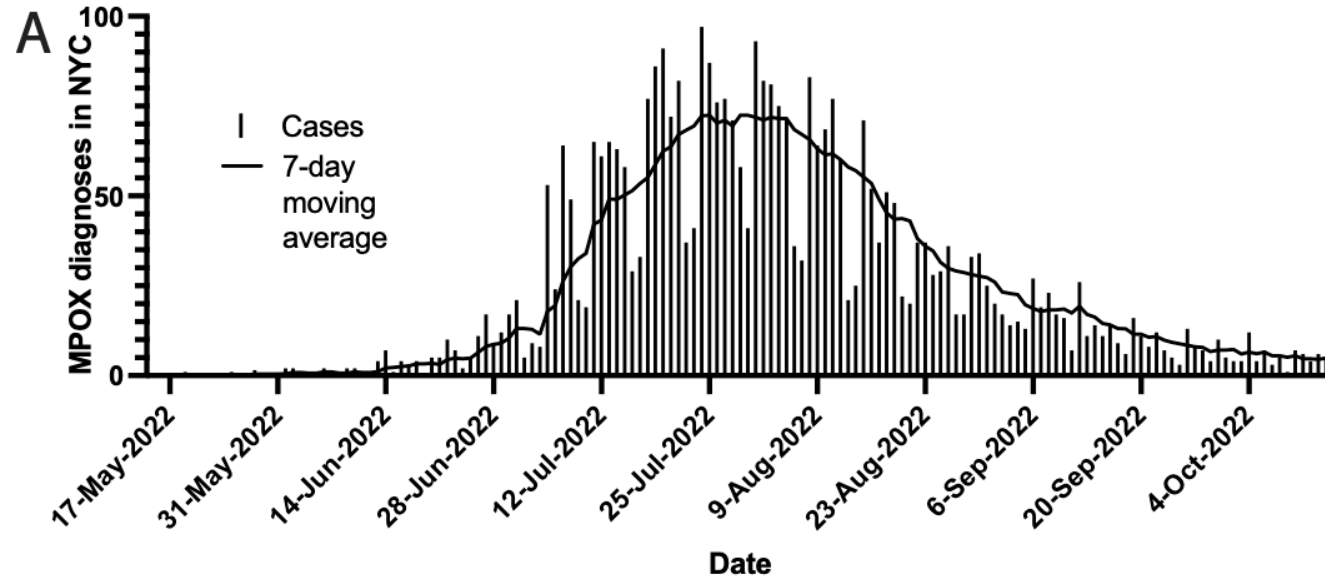
Mpox in 2022



Mpox in 2022

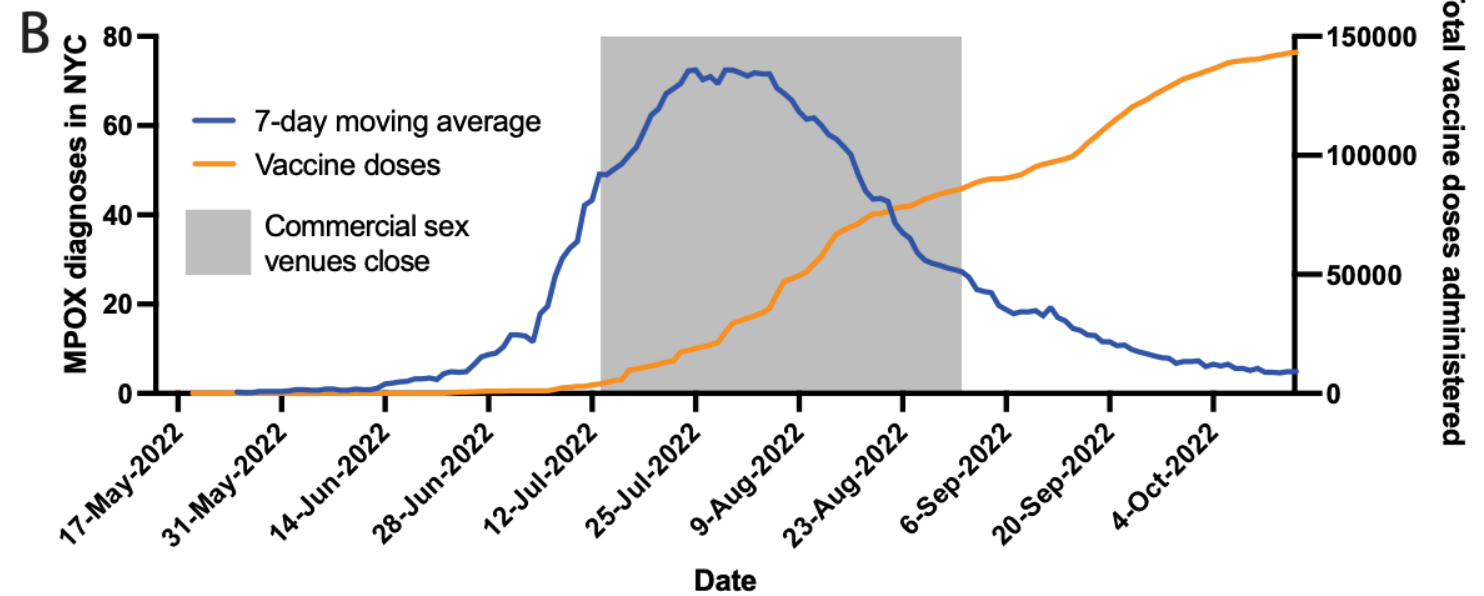


Mpox in 2022 – NYC



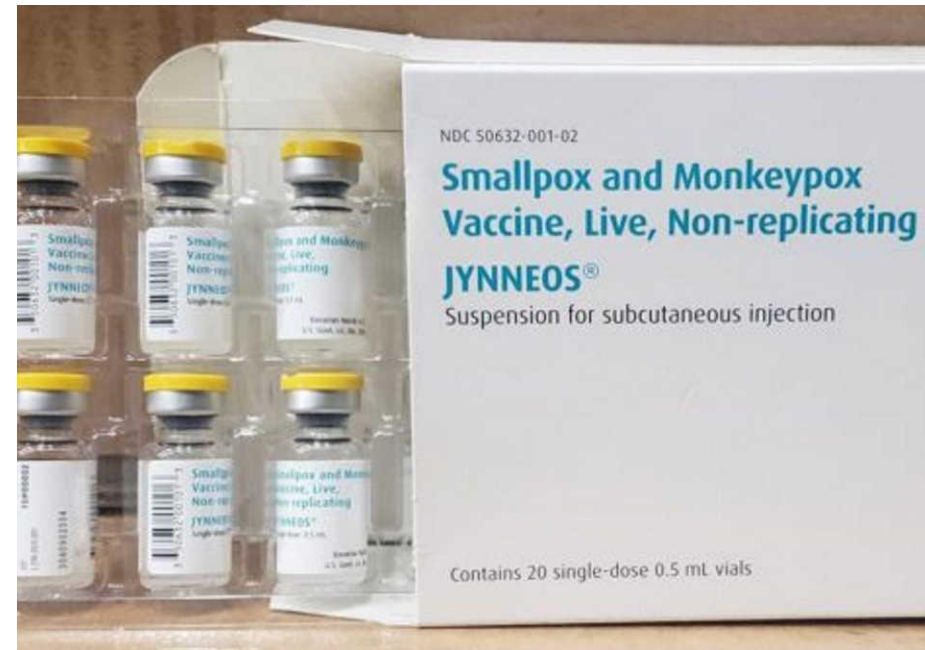
What “stopped” mpox in 2022?

- Behavioral changes
- Acquired immunity
 - (especially in people who have a lot of sex)
- Vaccination

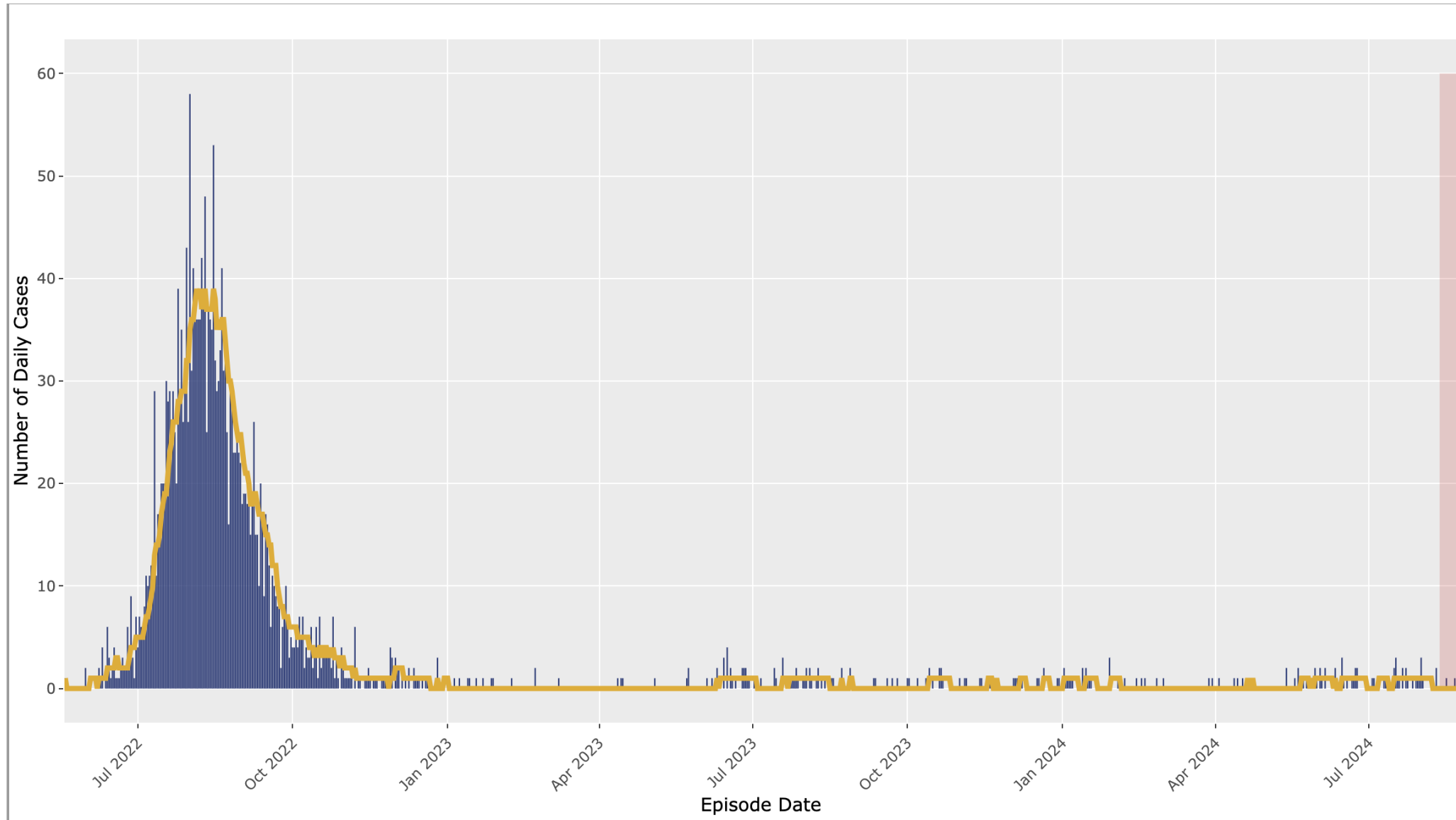


Jynneos vaccination

- 3rd Generation Smallpox vaccine
- Shown effective for mpox in animals prior to 2022
- Shown highly effective against mpox after 2022 (up to 90%)
- Two doses around a month apart



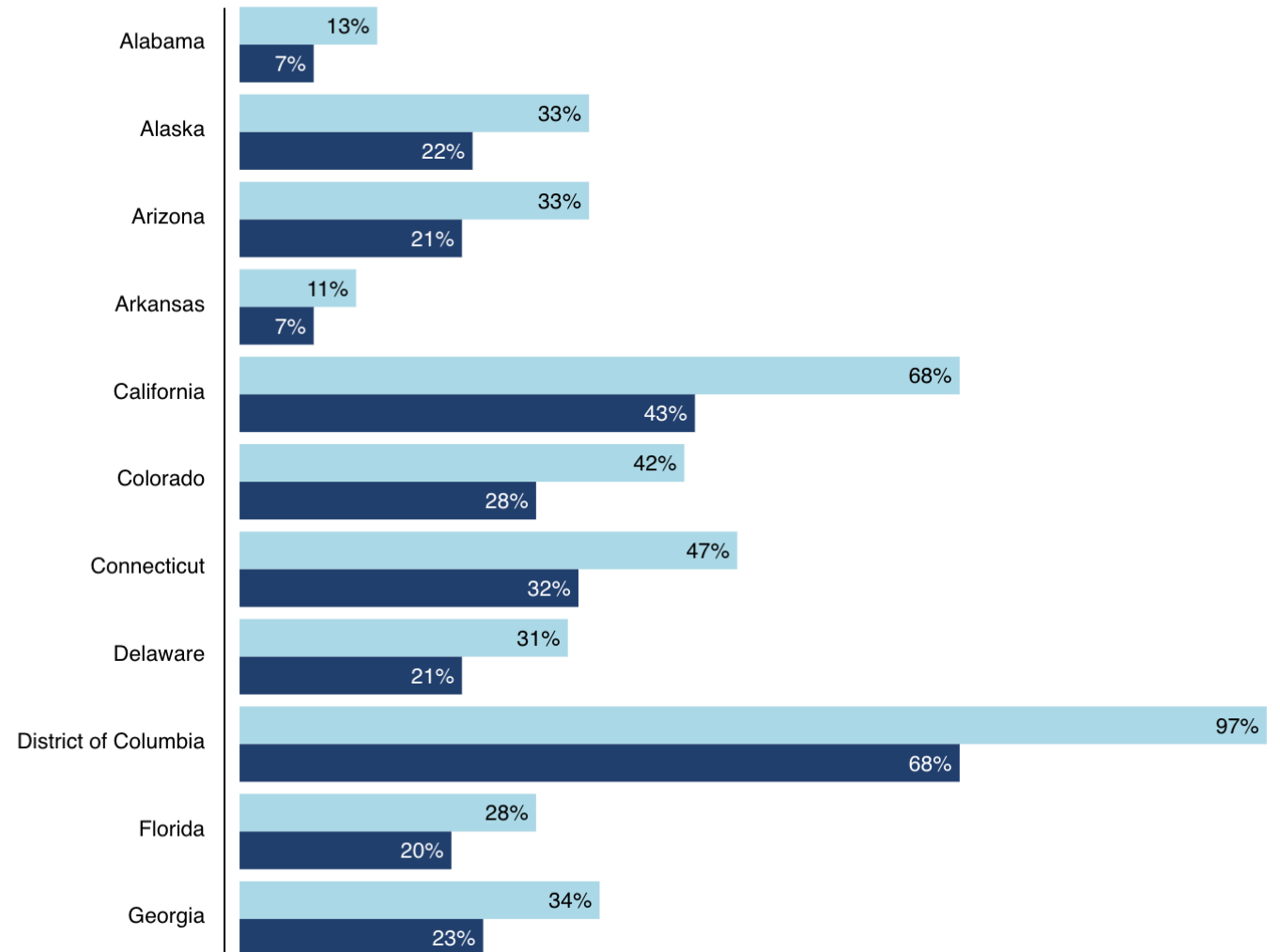
Mpox in the US since 2022: Low but not gone



Mpox in the US since 2022: Vaccine coverage

- Still less than 50% in CA

Mpox Vaccine Coverage by Jurisdiction for Population at Risk for Mpox



Who should get vaccinated?

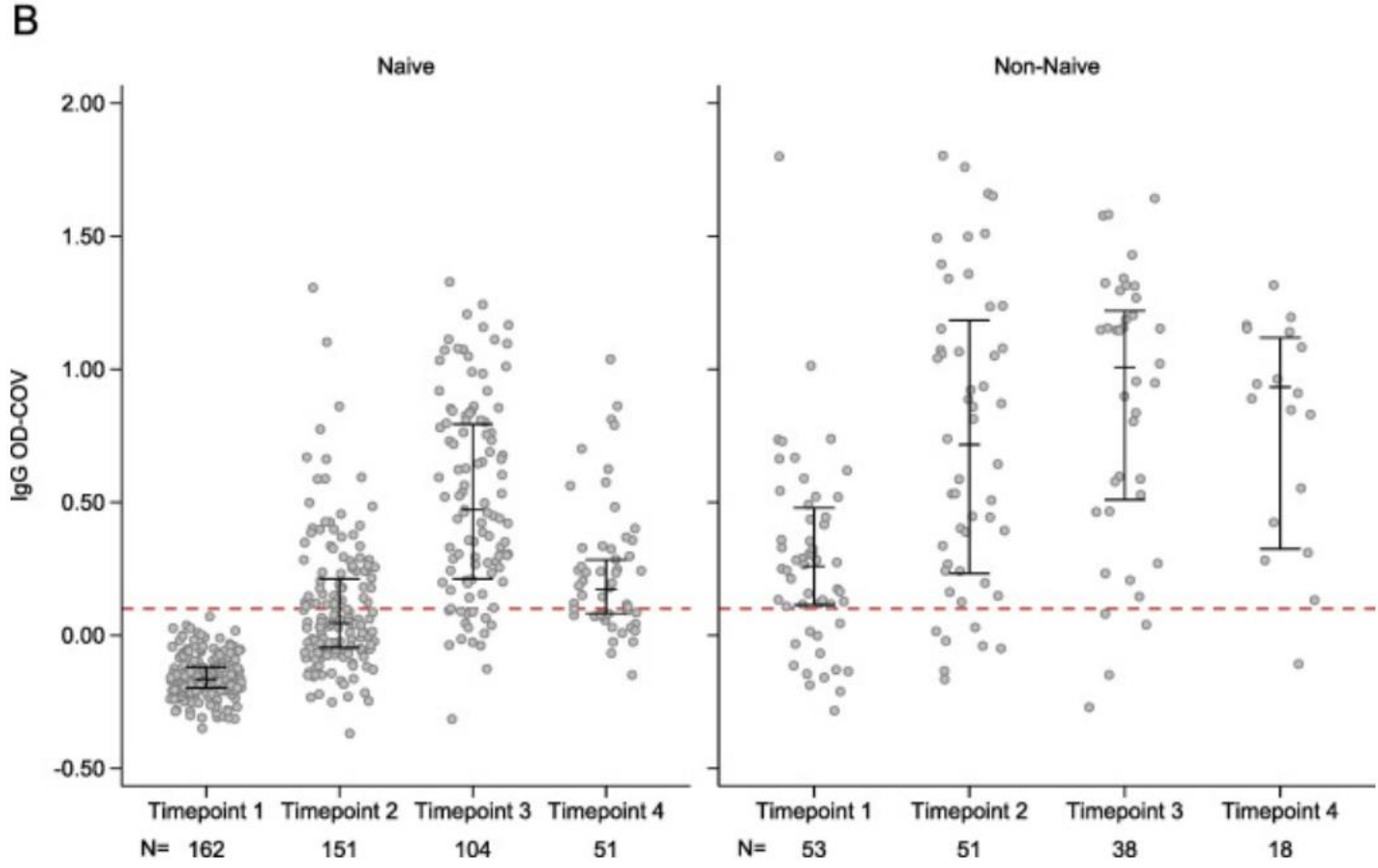
Defining the Numerator and Denominator

The denominator (MSM++) is the population recommended to receive the vaccine, which is estimated using 2021 data for MSM with HIV pre-exposure prophylaxis (PrEP) indications and 2020 data for HIV prevalence among MSM from [CDC AtlasPlus](#). The numerator for the vaccination coverage calculation is the number of people vaccinated. Fully vaccinated is defined as people 13 years of age and older who have received two JYNNEOS vaccine doses on different days, regardless of the time interval, and who have been vaccinated with their second dose for at least 14 days. This mpox vaccine administration data are collected by jurisdictional Immunization Information Systems (IIS) and reported to the CDC [Immunization Data Lake](#).

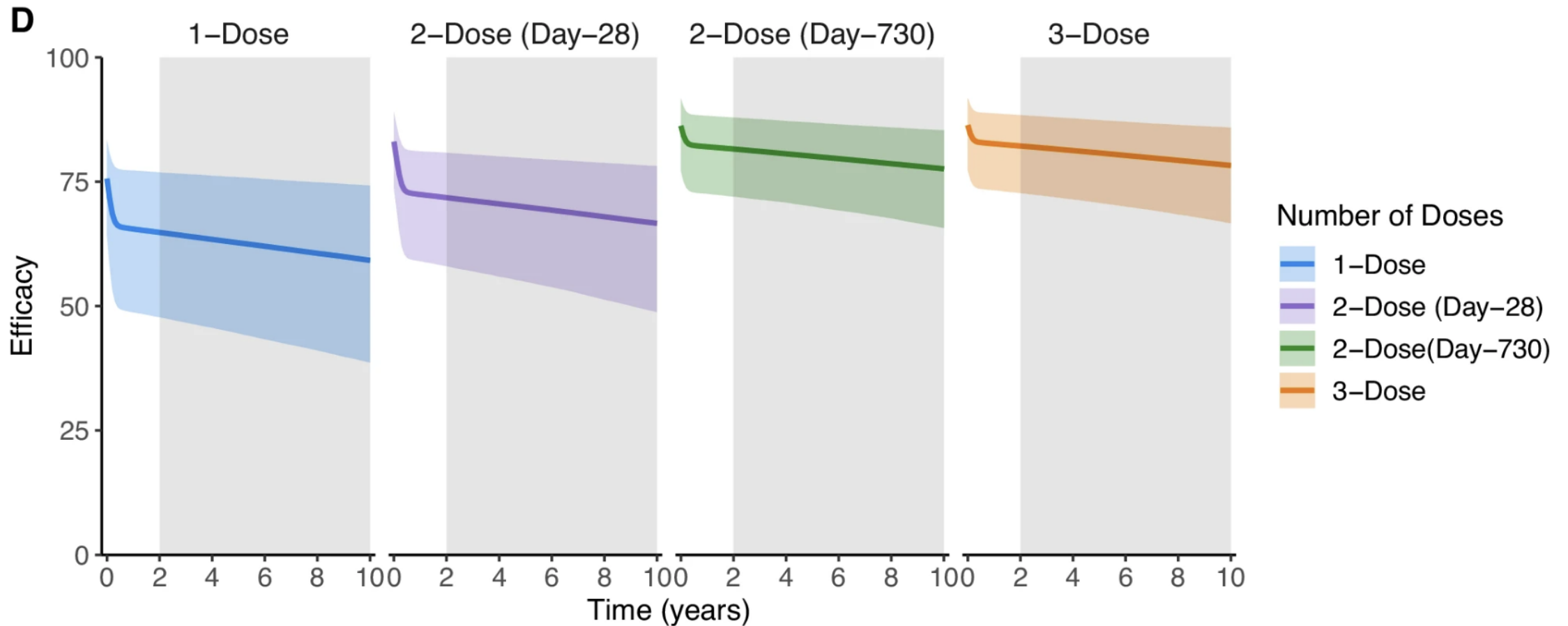
The denominator is the population recommended to receive the vaccine, which is estimated using 2021 data for MSM with HIV pre-exposure prophylaxis (PrEP) indications and 2020 data for HIV prevalence among MSM from [CDC AtlasPlus](#).

These estimates are increased by 25% to account for additional vaccine eligible people not captured by these data sources, such as MSM who are at increased risk for mpox but do not have indications for PrEP, cis-female or transgender partners of MSM, close contacts of persons with known or suspected mpox, and persons at risk for occupational exposure to orthopoxviruses.

Vaccine waning?



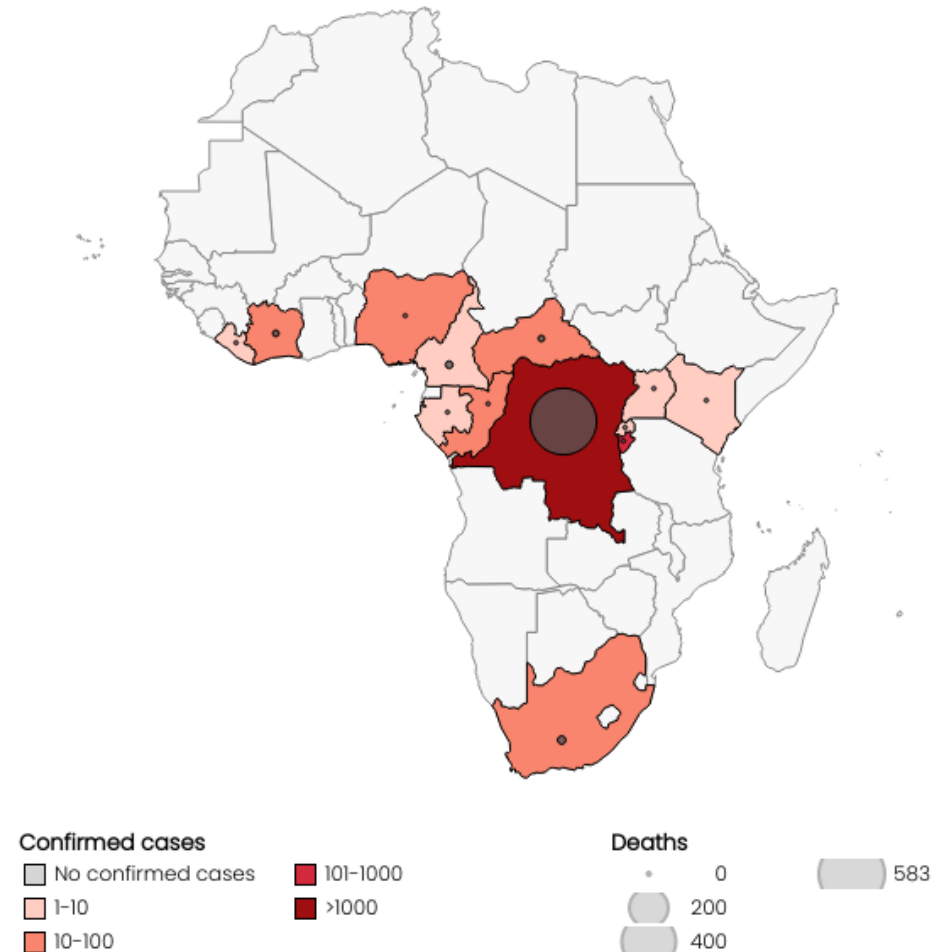
Vaccine waning? Boosters?



2024 mpox Public Health Emergency of International Concern (PHEIC) by the WHO

Chart 1: Countries in Africa with confirmed mpox cases and deaths

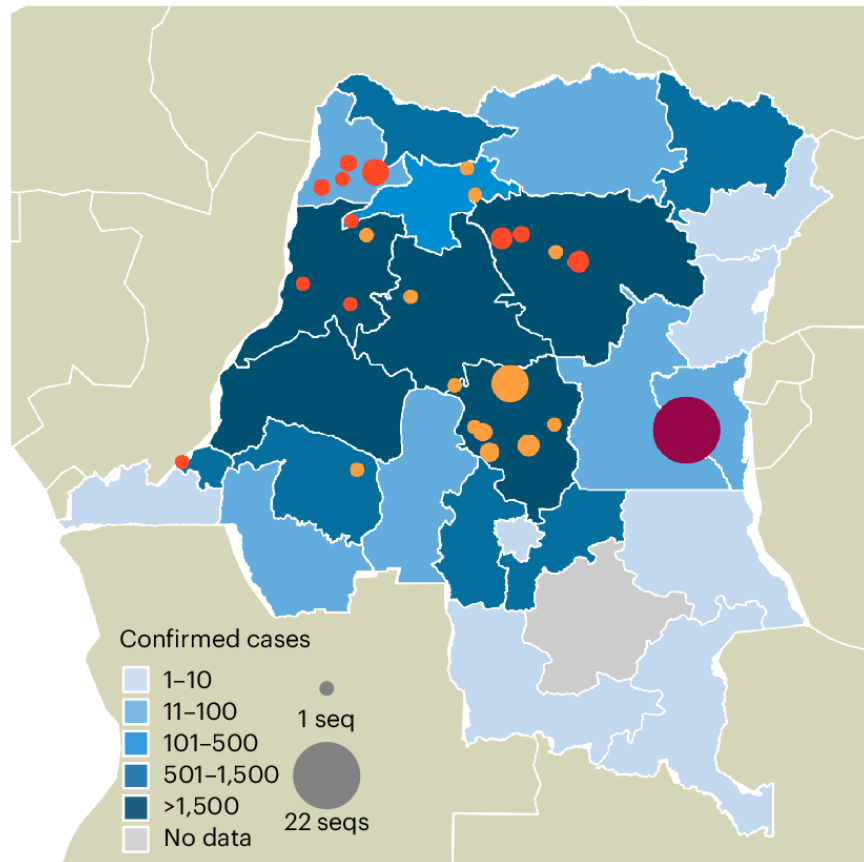
- 2022 global mpox cases: 99,518
- 2024 DRC mpox cases: 18,076
 - >600 deaths



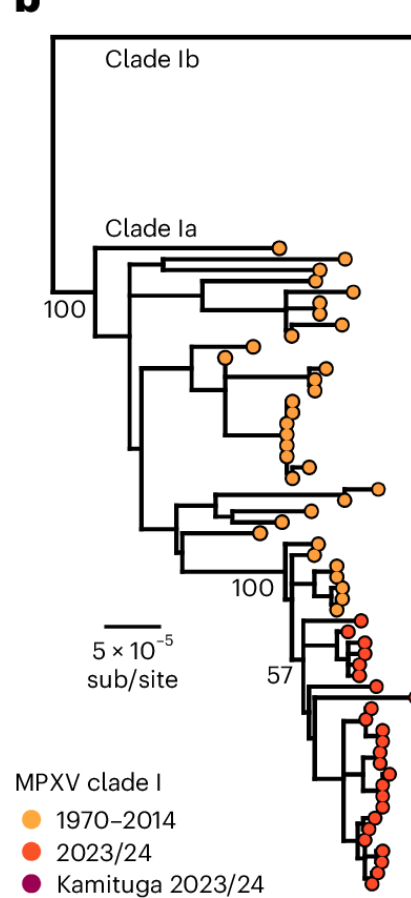
Source: Data from Africa CDC

Clade IIb (global) vs Clade I (DRC 2024)

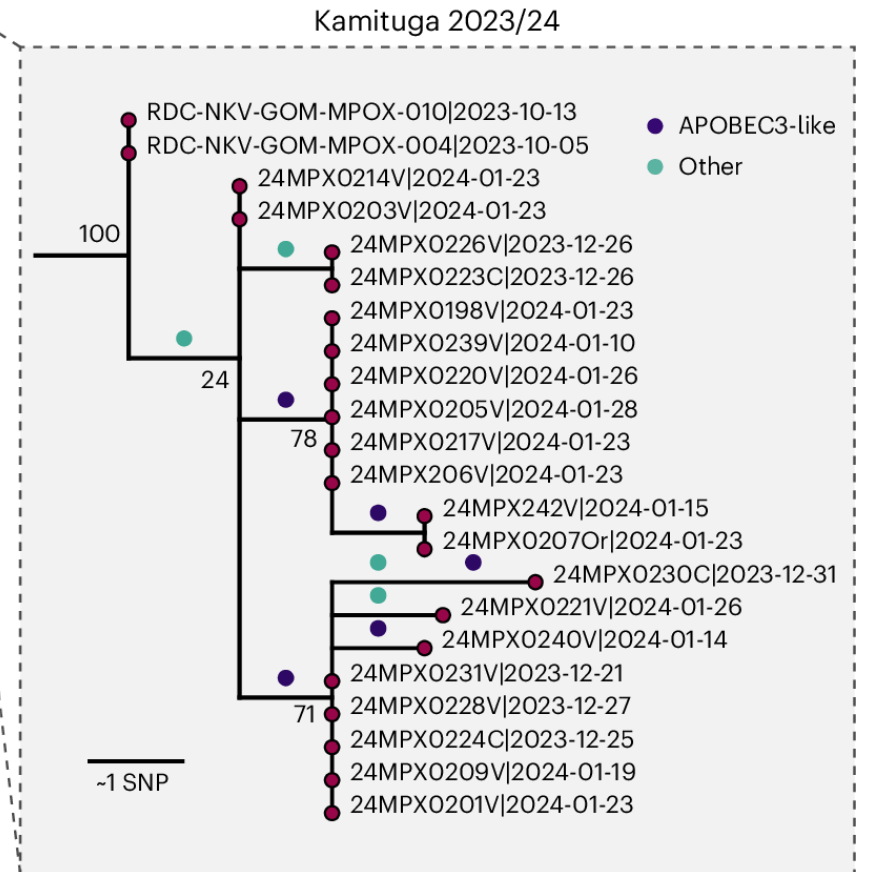
a



b



c



Clade IIb (global) vs Clade I (DRC 2024)

Epidemiology

- Global Clade IIb: 95% of transmission is via sexual contact
 - Additional by healthcare, household contact like childcare
- Clade I in Central Africa: Sexual transmission, both with sex workers and men who have sex with men, but **mostly not sexual**
 - Transmission via shared contact surfaces in tight living quarters, child care, heavily displaced populations due to war and famine

Clade I severity (up to 5% mortality????)

PALM Trial in DRC (mostly enrolled children):

“However, the study’s **1.7% overall mortality among enrollees**, regardless of whether they received the drug or not, was much **lower than the mpox mortality of 3.6% or higher reported among all cases in the DRC**. This shows that better outcomes among people with mpox can be achieved when they are hospitalized and provided high-quality supportive care.”

Clade I Surveillance?

A. Single nt mismatch with CDC-recommended generic reverse primer

GCTATCACATAATCTGGAAGCGTA		G2R_G_Reverse_Primer	
194834	.....A.....	194857	mpox_2L
194834	.....A.....	194857	mpox_9L
194834	.....A.....	194857	mpox_1L
194834	.....A.....	194857	mpox_3L
194834	.....A.....	194857	mpox_70
194834	.....A.....	194857	mpox_4L

B. Absence of target sequence for CDC-recommended Clade-I-specific real-time PCR

TTGCTTTCTGTATCCAGGTAGACA		C3L_Forward_Primer	
19782	-----	19805	mpox_2L
19782	-----	19805	mpox_9L
19782	-----	19805	mpox_1L
19782	-----	19805	mpox_3L
19782	-----	19805	mpox_70
19782	-----	19805	mpox_4L

ATCAATGTATTAAACGGAGATGCC		C3L_Reverse_Primer	
19706	-----	19729	mpox_2L
19706	-----	19729	mpox_9L
19706	-----	19729	mpox_1L
19706	-----	19729	mpox_3L
19706	-----	19729	mpox_70
19706	-----	19729	mpox_4L

TCCGGTACCGGTACATTTAGCATATATGGG		C3L_Probe	
19743	-----	19772	mpox_2L
19743	-----	19772	mpox_9L
19743	-----	19772	mpox_1L
19743	-----	19772	mpox_3L
19743	-----	19772	mpox_70
19743	-----	19772	mpox_4L

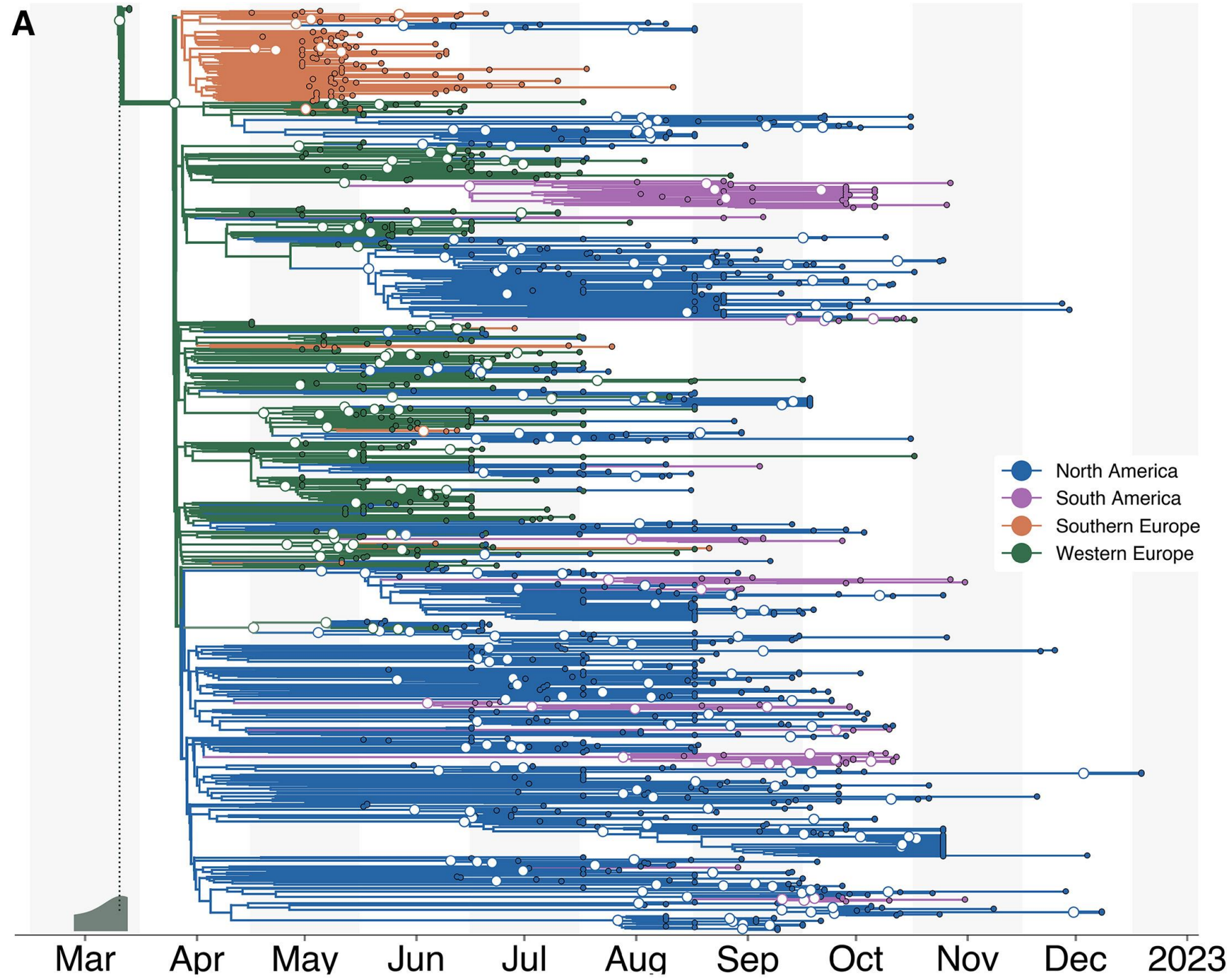
Clade I Surveillance? Travel history

Description of the situation

On 15 August 2024, the Swedish authorities notified WHO of a confirmed case of mpox due to clade Ib MPXV in an individual aged between 30-40 years.

On 12 August, the individual travelled to Sweden from an outbreak-affected country in the African region with mild clinical symptoms of mpox. The travel itinerary included more than one transit and some longer stopovers. On 13 August, the traveller sought medical care in Sweden and samples were collected for laboratory confirmation and virus characterization. On 14 August, mpox was confirmed by polymerase chain reaction (PCR). On 15 August, findings from whole genome sequencing by the Public Health Agency of Sweden revealed clade Ib MPXV infection. The patient is currently isolated and receiving care in Sweden.

Mpox in 2022



Ongoing community surveillance

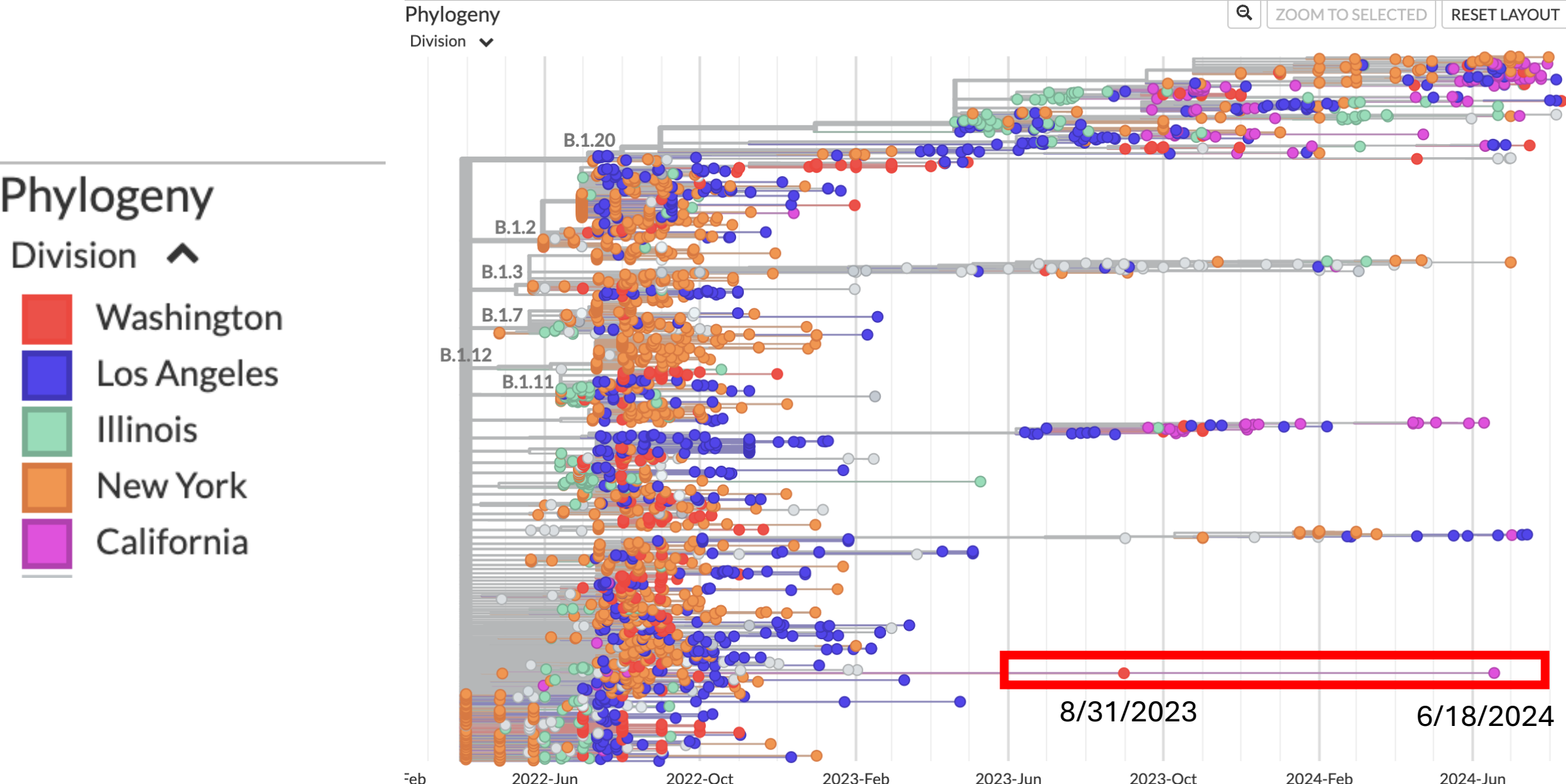
Phylogeny

Division ^

- Washington
- Los Angeles
- Illinois
- New York
- California



Ongoing community surveillance



Ongoing community surveillance

Phylogeny

Division ▼



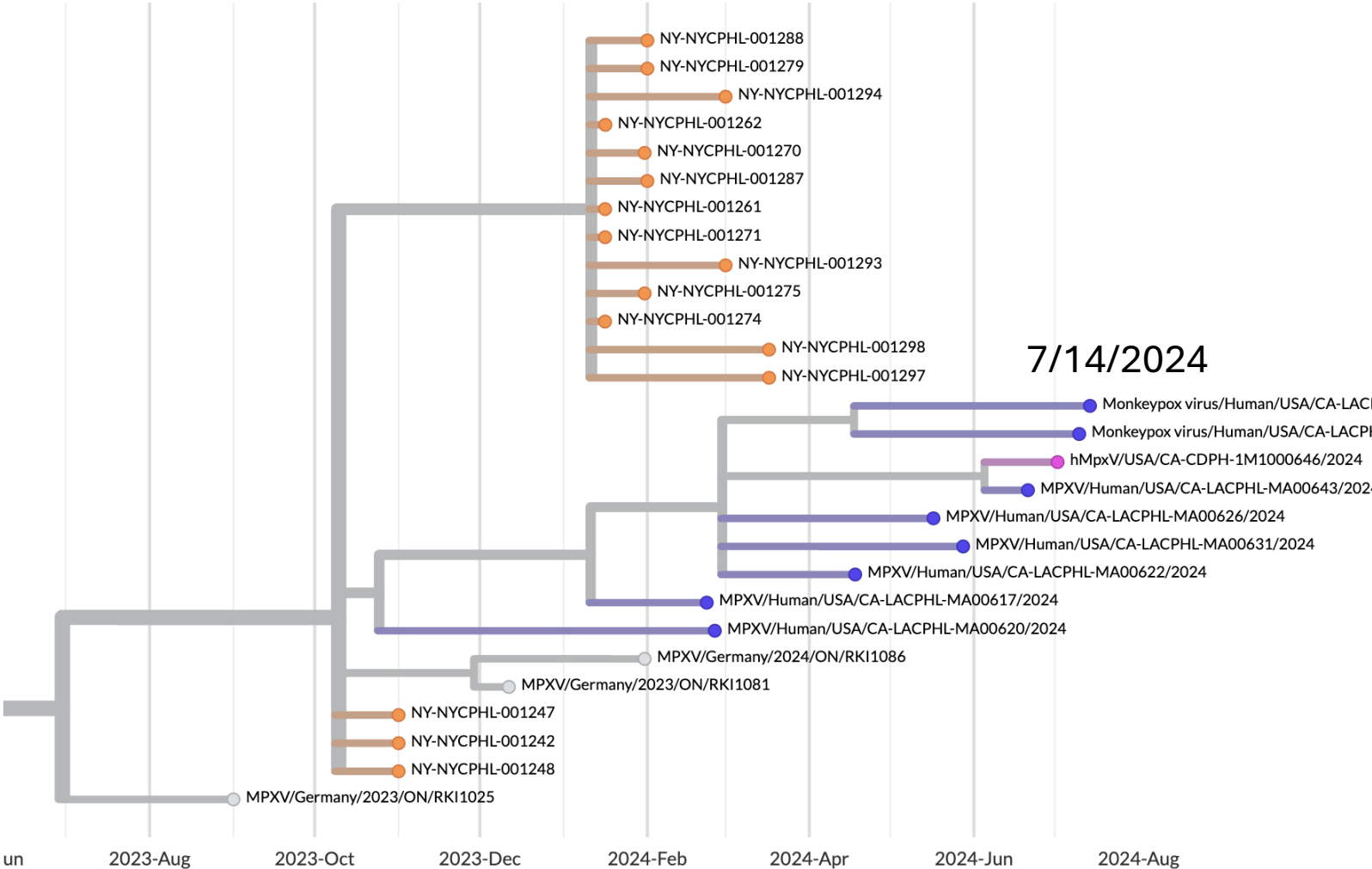
ZOOM TO SELECTED

RESET LAYOUT

Phylogeny

Division ▲

- Washington
- Los Angeles
- Illinois
- New York
- California



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Participating Research Sites FAQs

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Think you
might have
Mpox?

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<https://www.stomptpoxx.org/main>

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- How does it spread?
- What happened in 2022?
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- Previous phylogenetic (family tree) analysis:
<https://nextstrain.org/community/josmundson/mpox-2024?c=division>

Where are we now?

- Get fully vaccinated! **Two doses are better than one!**
 - **FREE VACCINES END SOON, get your first dose by Oct 1!!!!**
- Boosters? Stay tuned (not even doing studies yet)
- Talk to your partners, monitor for symptoms
 - Group sex and dark rooms might be likely spots for exposure
- Behavioral changes (?????)
- **Keep ears open for news about Clade I or changes in mpox patterns**