SUPPLEMENTARY TABLE. Dates used for imputing* missing symptom onset dates for mpox cases

Date Type	No. (%) of cases in full dataset with non-missing[†] symptom onset date and date type[§] (N = 30,026)[¶]	No. (%) of cases in study by earliest date available (N = 281)**	Median lag time,[††] days (IQR)
Symptom onset date	24,167 (80)	222 (79)[§§]	–
Diagnosis date	7,348 (24)	33 (12)	6 (3–10)
Date first reported to PHD	10,485 (35)	9 (3)	8 (5–11)
First positive mpox test date	17,706 (59)	8 (3)	7 (5–11)
Rash onset date	13,456 (45)	3 (1)	0 (0–2)
Case investigation start date	11,231 (37)	2 (1)	9 (7–13)
CDC case report date	24,089 (80)	2 (1)	12 (9–18)
Hospital admission date	2,269 (8)	2 (1)	5 (3–8)

Abbreviations: PHD = public health department.

* Missing symptom onset dates were imputed by subtracting median lag times (i.e., time, in days, between symptom onset and other dates) from the earliest date available for each case. Median lag times were calculated using the full case dataset downloaded on June 8, 2023.

[†] Implausible dates (i.e., dates before the start of the outbreak in the United States [4/15/2022] or after the date of data download) were changed to missing.

[§] Median lag times for each date type were calculated from cases with non-missing information for the date type and symptom onset date. Negative lag times were excluded from calculations.
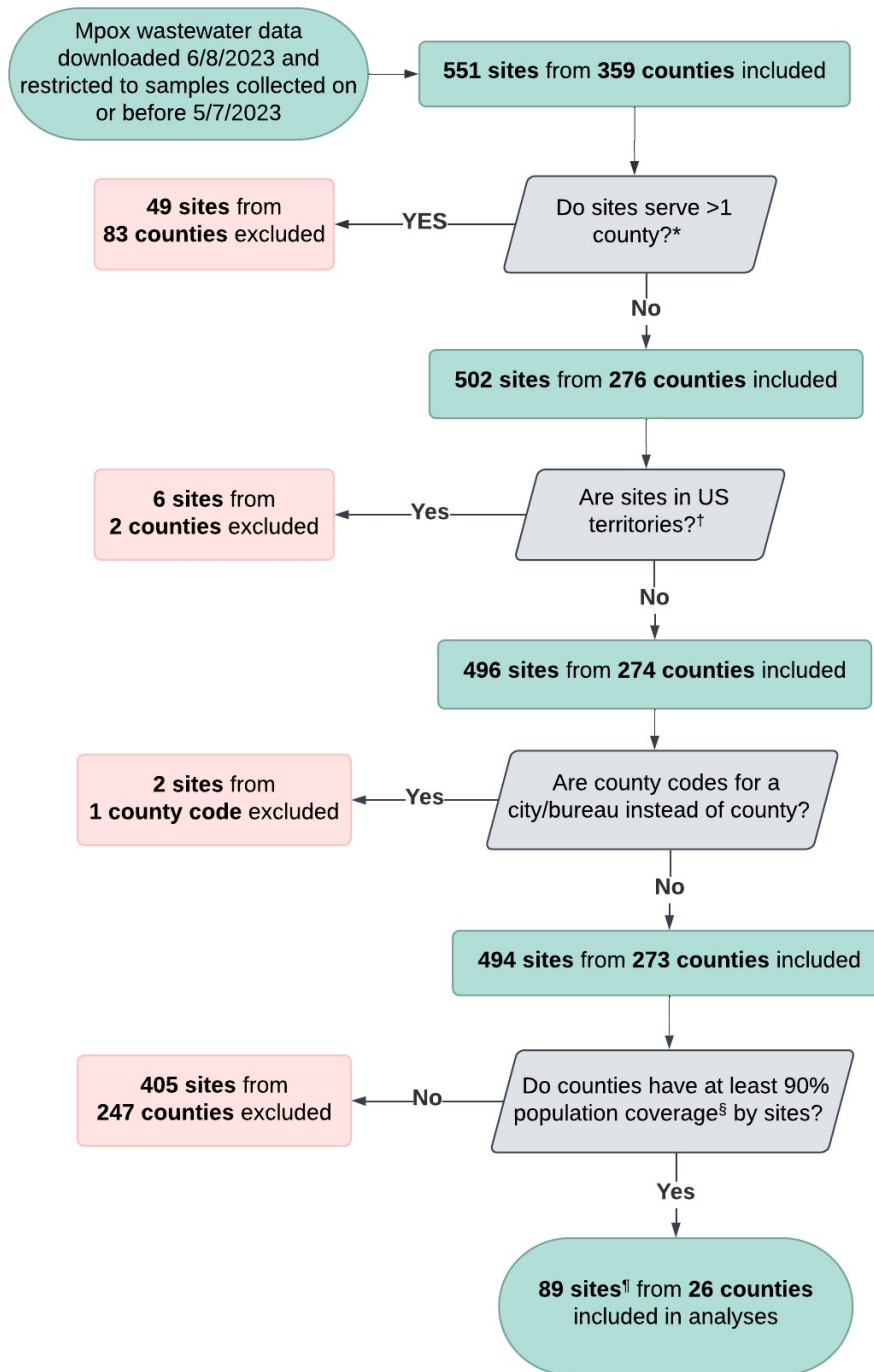
[¶] Cases with >1 observation (n = 560, 2%) were excluded from median lag time calculations. All cases included in the study had only one observation.

** The number of cases included in the main analysis (assuming persons with mpox shed virus from the date of symptom onset until 25 days later) is shown in table.

[††] Median lag time is the median time, in days, between symptom onset and the date type.

[§§] Symptom onset date was changed to rash onset date if rash onset was earlier (n = 4 cases).

SUPPLEMENTARY FIGURE 1. Decision tree for selecting wastewater sampling sites and counties for inclusion in study

Mpox wastewater data downloaded 6/8/2023 and restricted to samples collected on or before 5/7/2023

551 sites from **359 counties** included

Do sites serve >1 county?*
— YES → **49 sites** from **83 counties** excluded
— No ↓

502 sites from **276 counties** included

Are sites in US territories?†
— Yes → **6 sites** from **2 counties** excluded
— No ↓

496 sites from **274 counties** included

Are county codes for a city/bureau instead of county?
— Yes → **2 sites** from **1 county code** excluded
— No ↓

494 sites from **273 counties** included

Do counties have at least 90% population coverage§ by sites?
— No → **405 sites** from **247 counties** excluded
— Yes ↓

89 sites¶ from **26 counties** included in analyses

Abbreviations: sites = wastewater sampling sites

* Some sites serve >1 county. Because it was not possible to determine the proportion of population served for each county, these sites were excluded.
† United States Census Bureau 2022 annual population estimates were not available for United States territories; these sites were excluded.

§ Percent population coverage by site was calculated for each county by summing the population served for all sites serving a county and dividing by U.S. Census Bureau 2022 annual population estimates or State Department of Public Health 2021 county population estimates (if U.S. Census Bureau estimates by county were not available for a state). There were 35 duplicate sites sampling for two sources; duplicate sites were counted as two separate sites but population served estimates were only counted once. Upstream sites (e.g., manholes) with sampling sites downstream were excluded from population served estimates.

¶ Seven duplicate sites were included in the analyses; 82 of the included sites were unique.

SUPPLEMENTARY FIGURE 2. Sensitivity, positive predictive value, and negative predictive value* of wastewater surveillance[†] for detecting persons shedding monkeypox virus[§] in a county on a given day[¶] for different assumed shedding durations** — United States, August 2022–May 2023
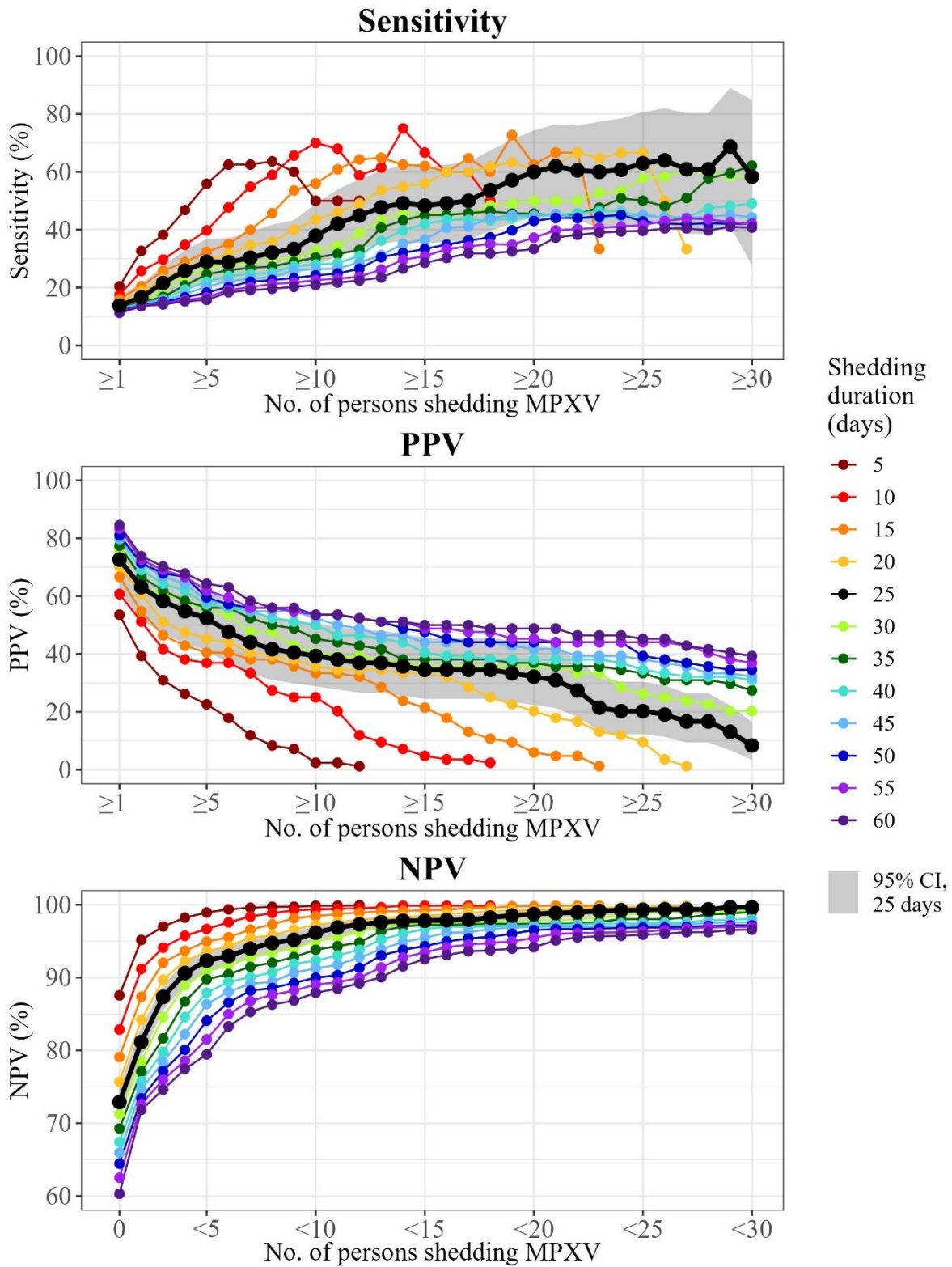
Abbreviations: MPXV = monkeypox virus, NPV = negative predictive value; PPV = positive predictive value; CI = confidence interval.

* Sensitivity is the probability that MPXV was detected in wastewater when N persons with mpox were shedding virus. PPV is the probability that one or more persons with mpox were shedding virus when MPXV was detected in wastewater. NPV is the probability that 0 persons with mpox were shedding virus when MPXV was not detected in wastewater. Probabilities for N persons with mpox shedding virus when MPXV was and was not detected in wastewater are also shown.

† Wastewater results were combined for all sites serving a county—if at least 1 site serving a county detected MPXV in wastewater on a given sample collection day, that day was considered a "detection" for that county, and otherwise a "non-detection".

§ Persons with reported mpox were assumed to shed MPXV in their county of residence from the day of symptom onset until 25 days later. The number of persons with mpox shedding virus were summed to determine the number of persons with mpox shedding virus on each day in a given county.

¶ Wastewater results for a given sample collection day were compared to the numbers of cases shedding virus on that day in a given county.

** The assumed shedding duration was varied from 5 to 60 days in 5-day increments. Main results (assuming a shedding duration of 25 days) are shown with 95% confidence intervals. Confidence intervals were calculated using exact binomial tests.