Supplementary Materials S5: Figures on US Epidemic Dynamics

Regression Models for COVID-19 Epidemic Dynamics with Incomplete Data

Corbin Quick, Rounak Dey, and Xihong Lin

October 17, 2021

A New England

Connecticut

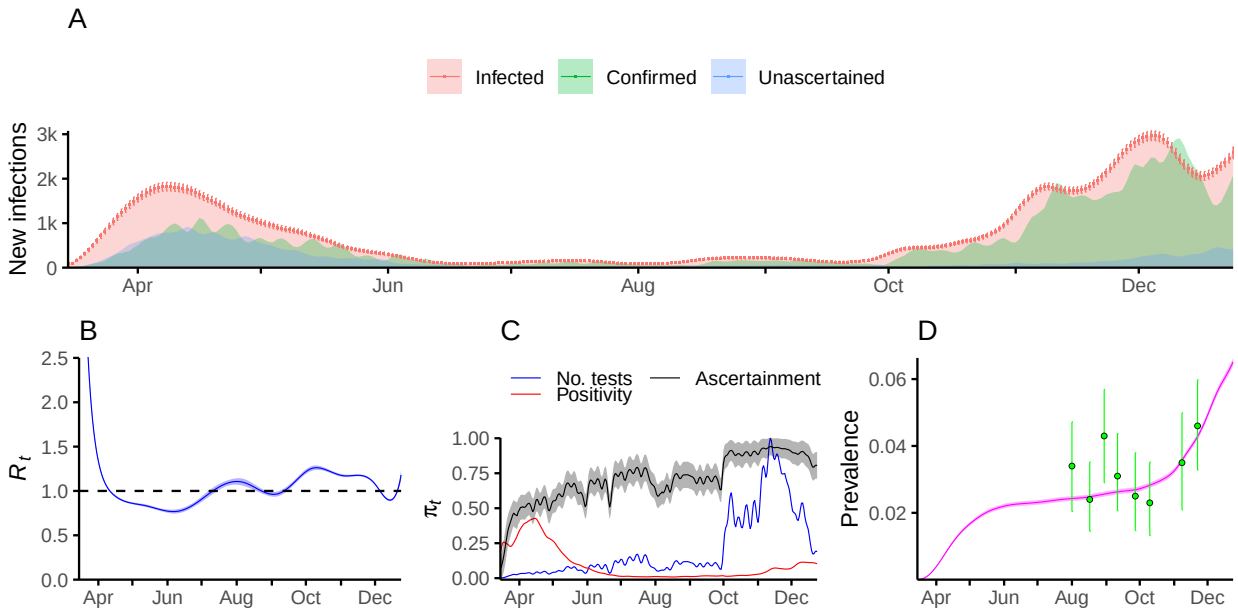

Figure 1: MERMAID analysis of COVID-19 epidemic dynamics in Connecticut, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Massachusetts

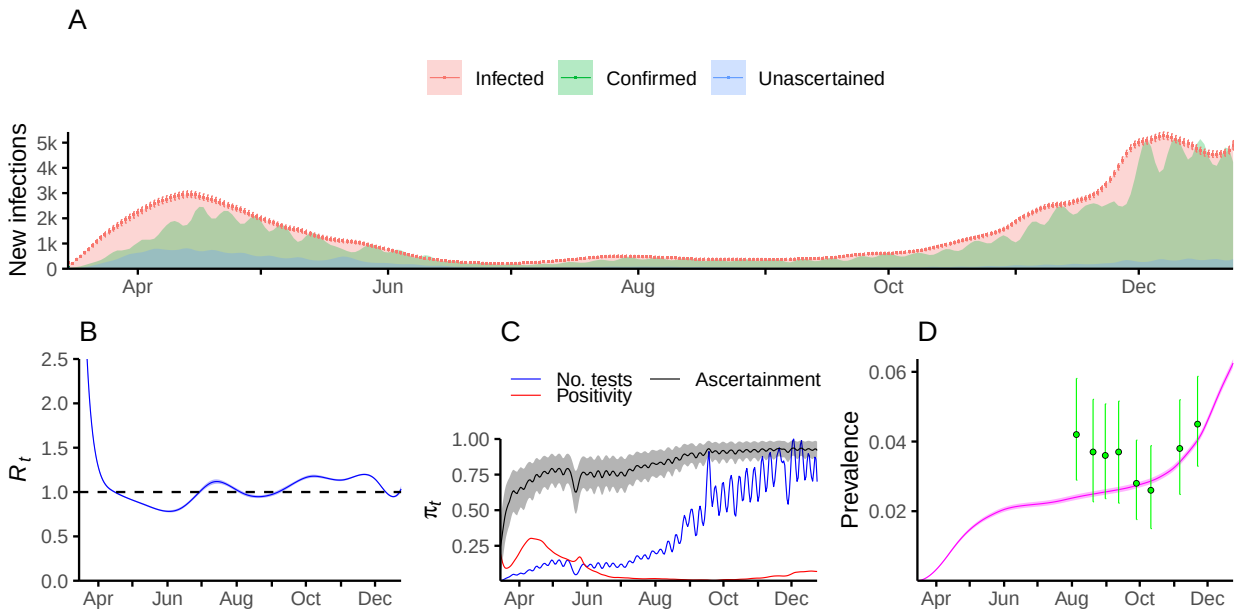

Figure 2: MERMAID analysis of COVID-19 epidemic dynamics in Massachusetts, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Maine

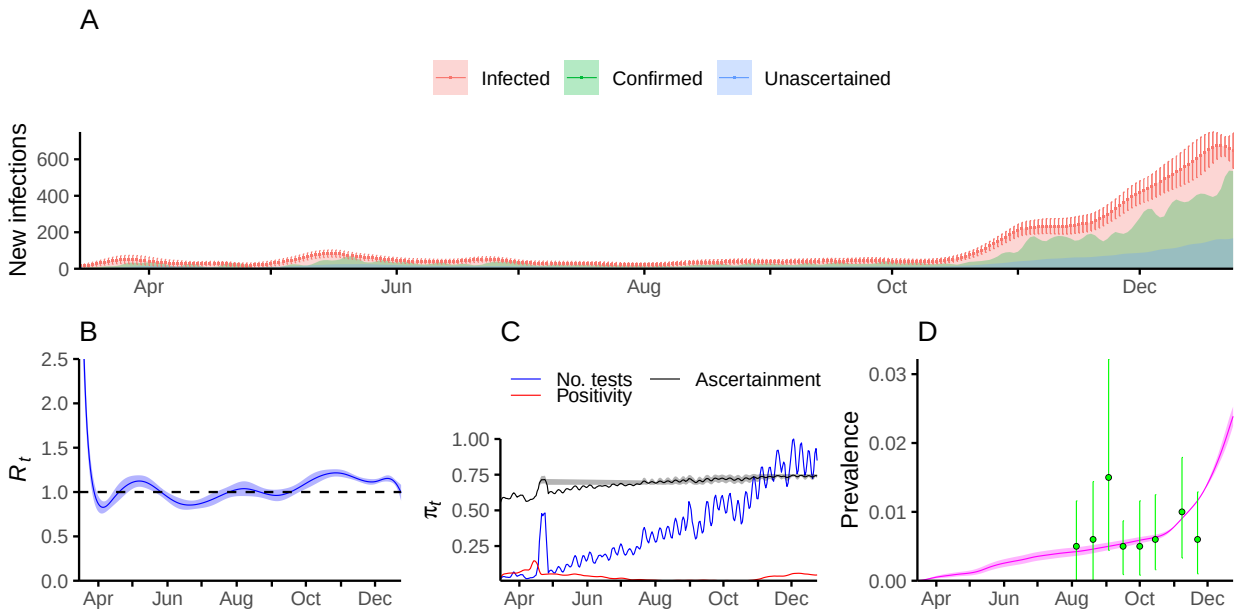

Figure 3: MERMAID analysis of COVID-19 epidemic dynamics in Maine, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

New Hampshire

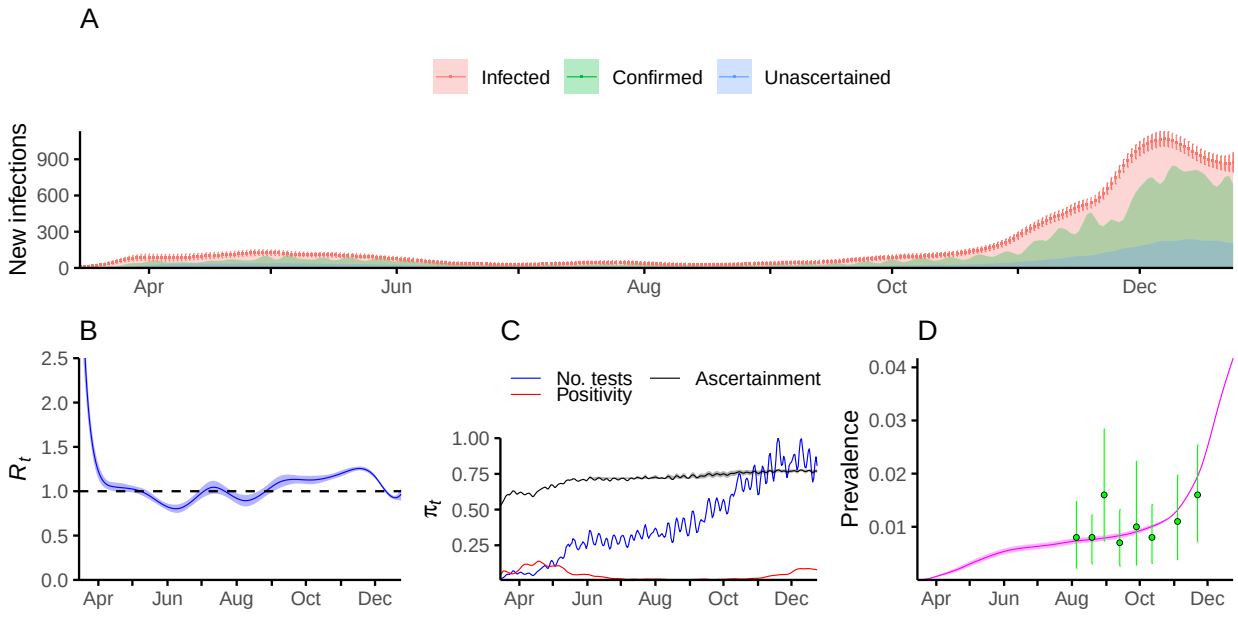

Figure 4: MERMAID analysis of COVID-19 epidemic dynamics in New Hampshire, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Rhode Island

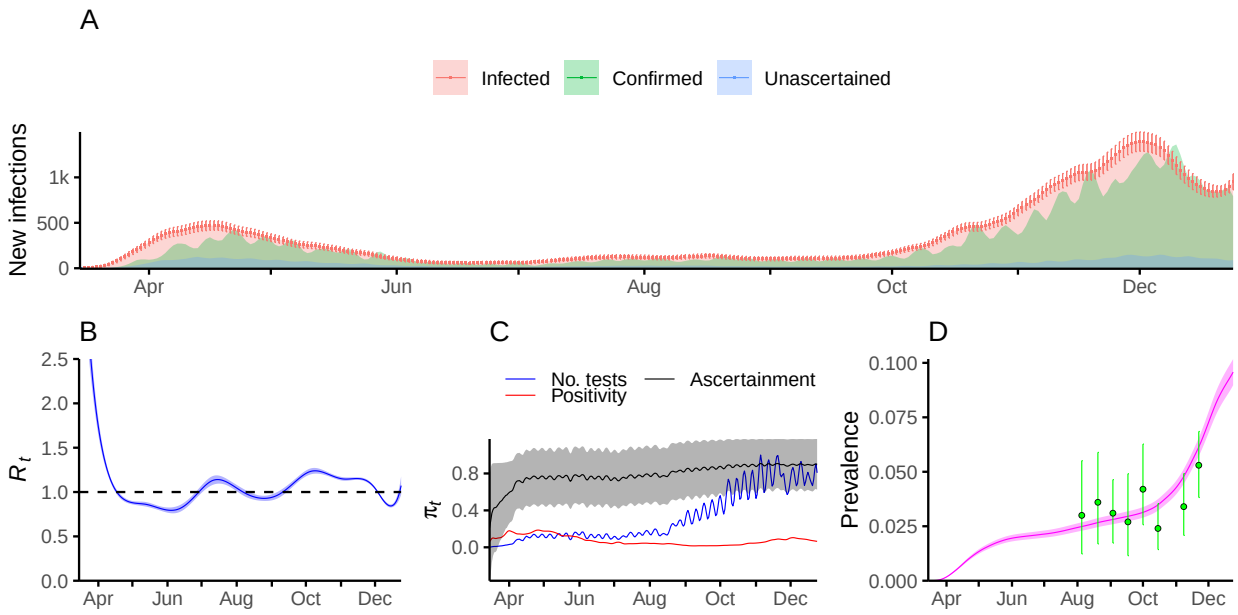

Figure 5: MERMAID analysis of COVID-19 epidemic dynamics in Rhode Island, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

B Middle Atlantic

New Jersey

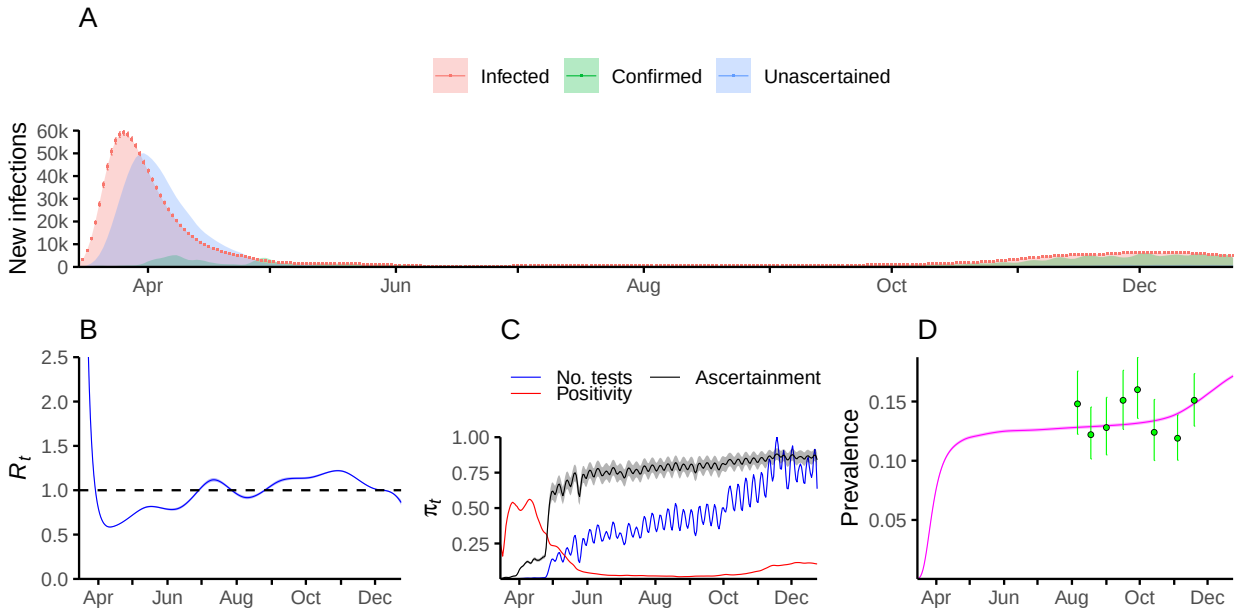

Figure 6: MERMAID analysis of COVID-19 epidemic dynamics in New Jersey, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

New York

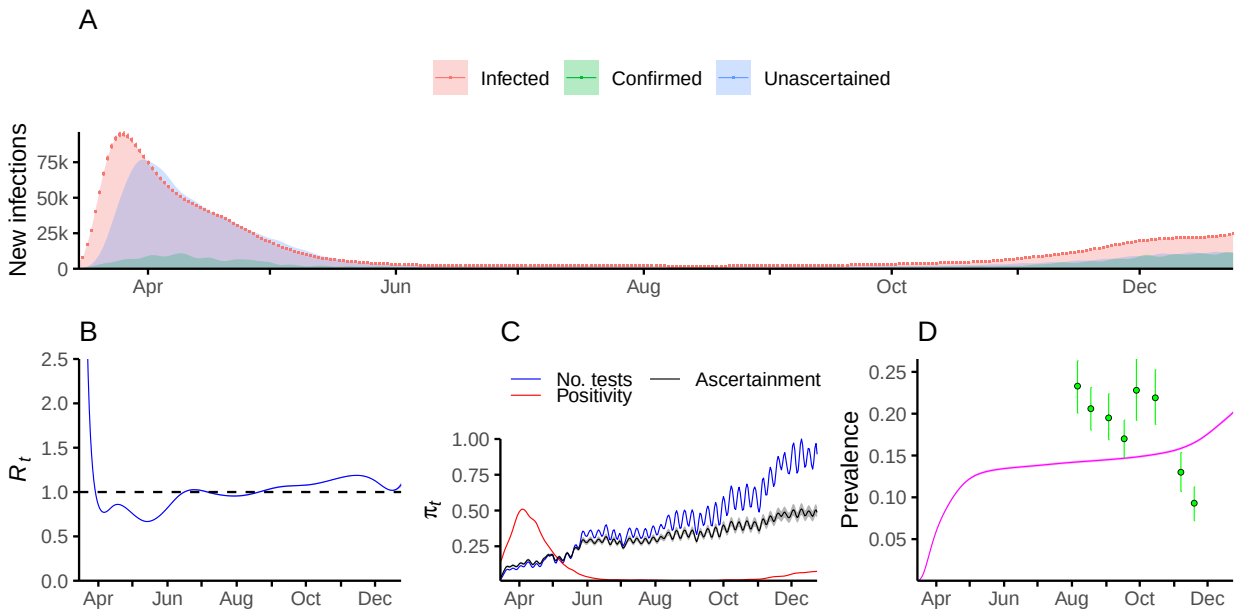

Figure 7: MERMAID analysis of COVID-19 epidemic dynamics in New York, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Pennsylvania

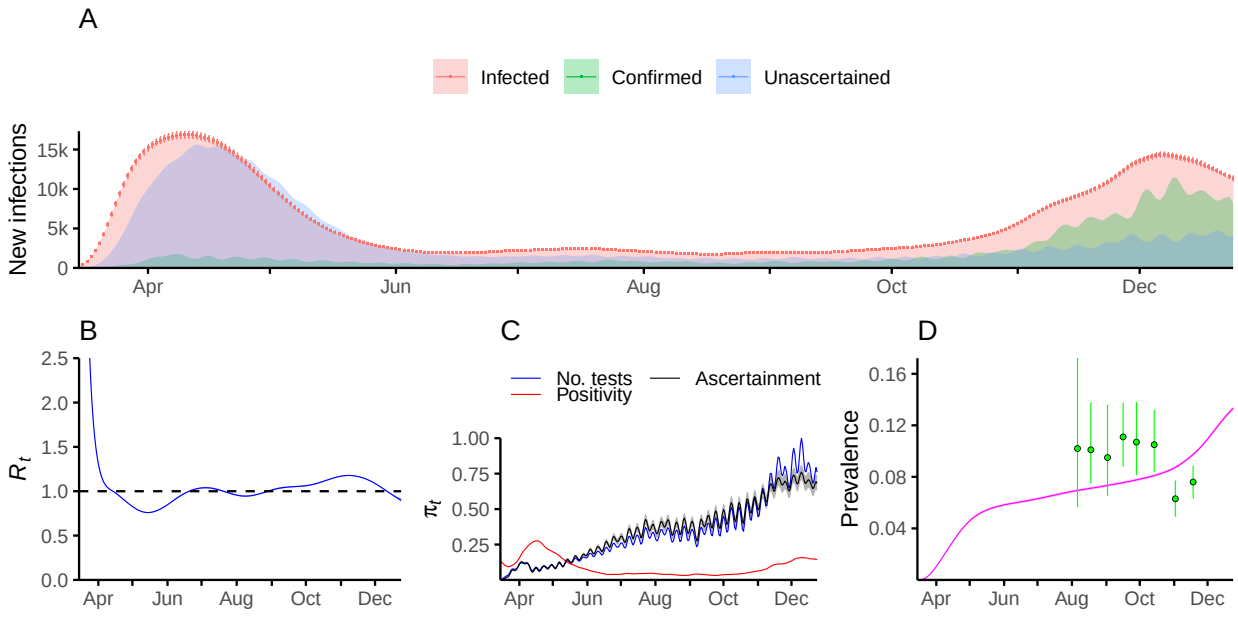

Figure 8: MERMAID analysis of COVID-19 epidemic dynamics in Pennsylvania, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

C South Atlantic

Delaware

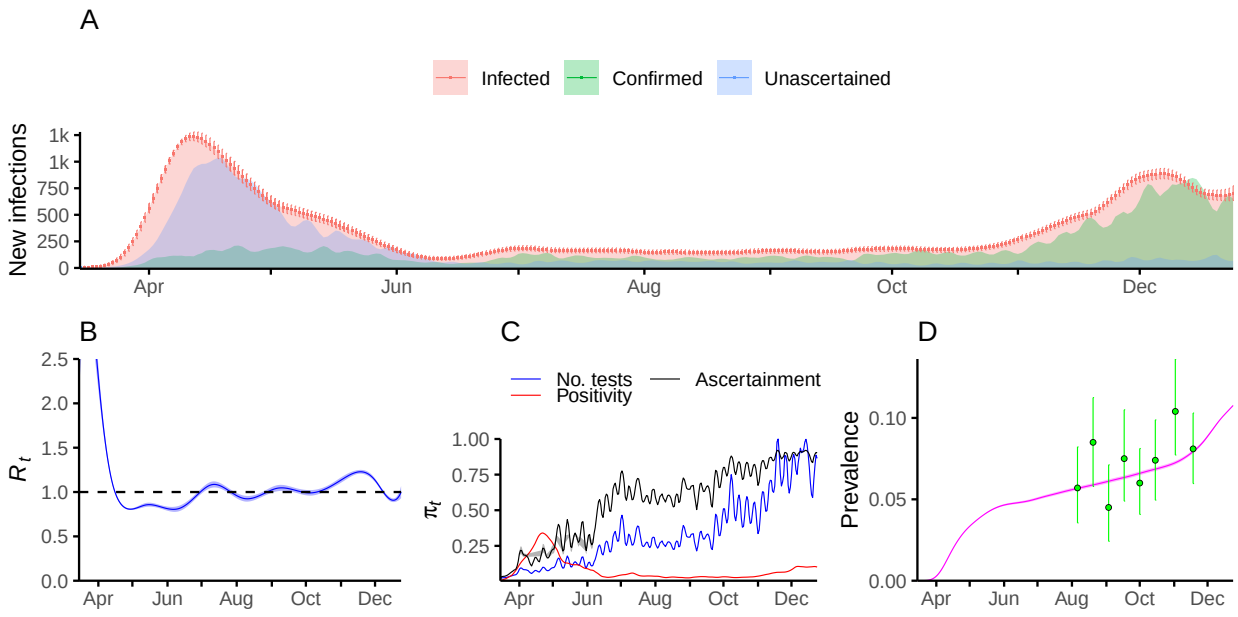

Figure 9: MERMAID analysis of COVID-19 epidemic dynamics in Delaware, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Florida

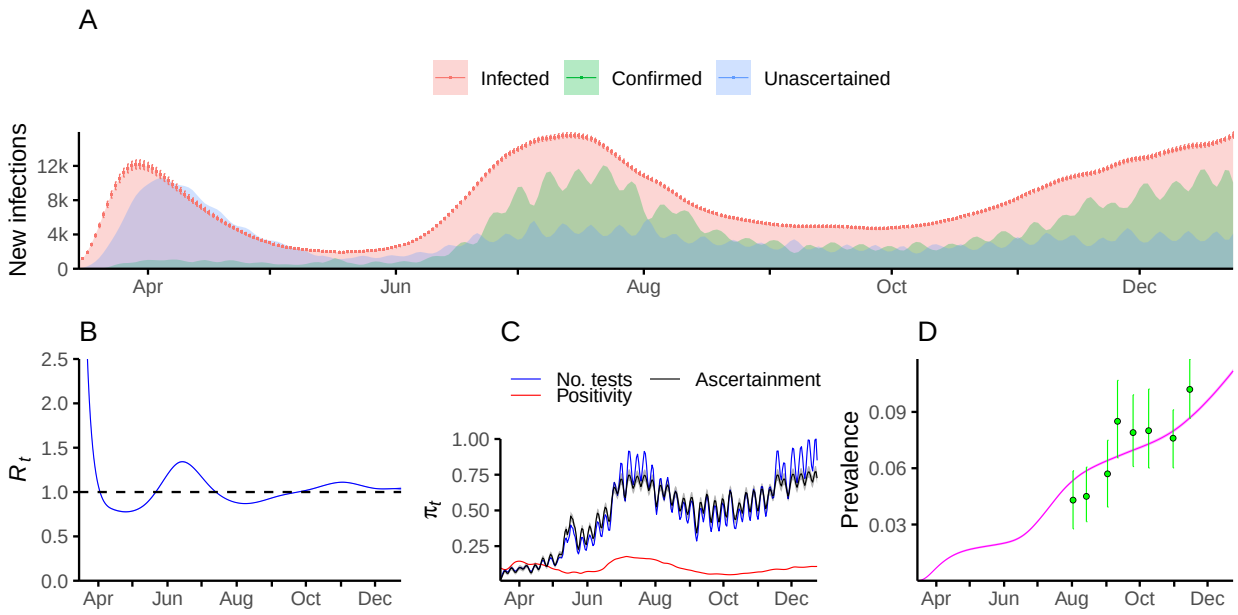

Figure 10: MERMAID analysis of COVID-19 epidemic dynamics in Florida, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Georgia

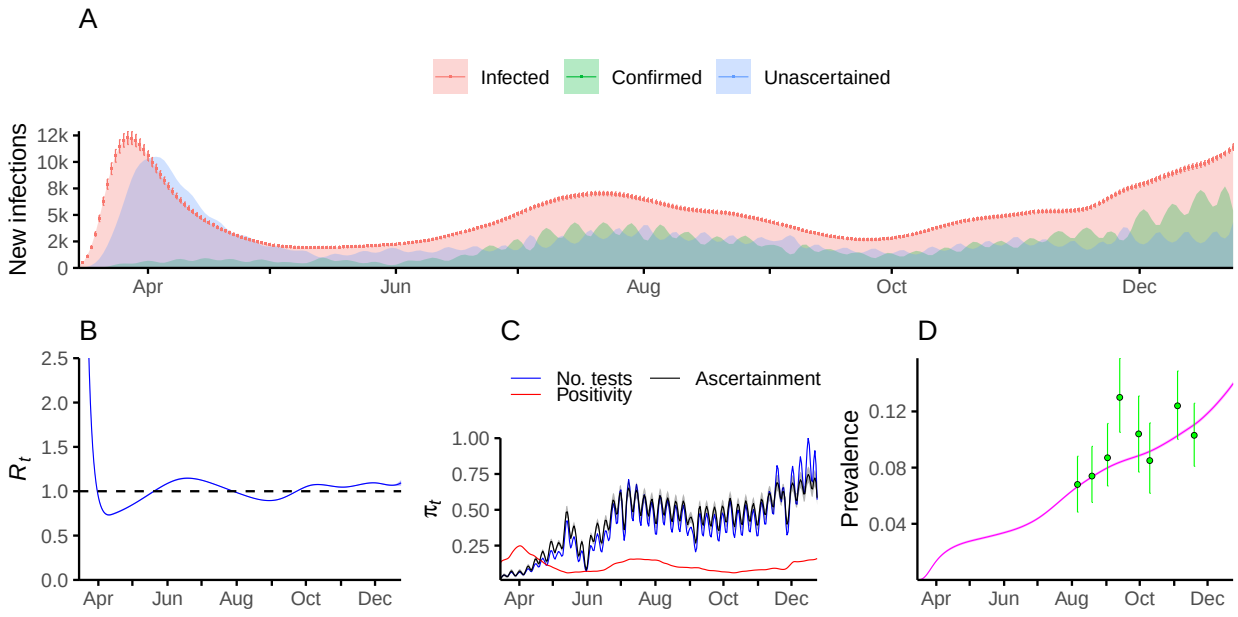

Figure 11: MERMAID analysis of COVID-19 epidemic dynamics in Georgia, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Maryland

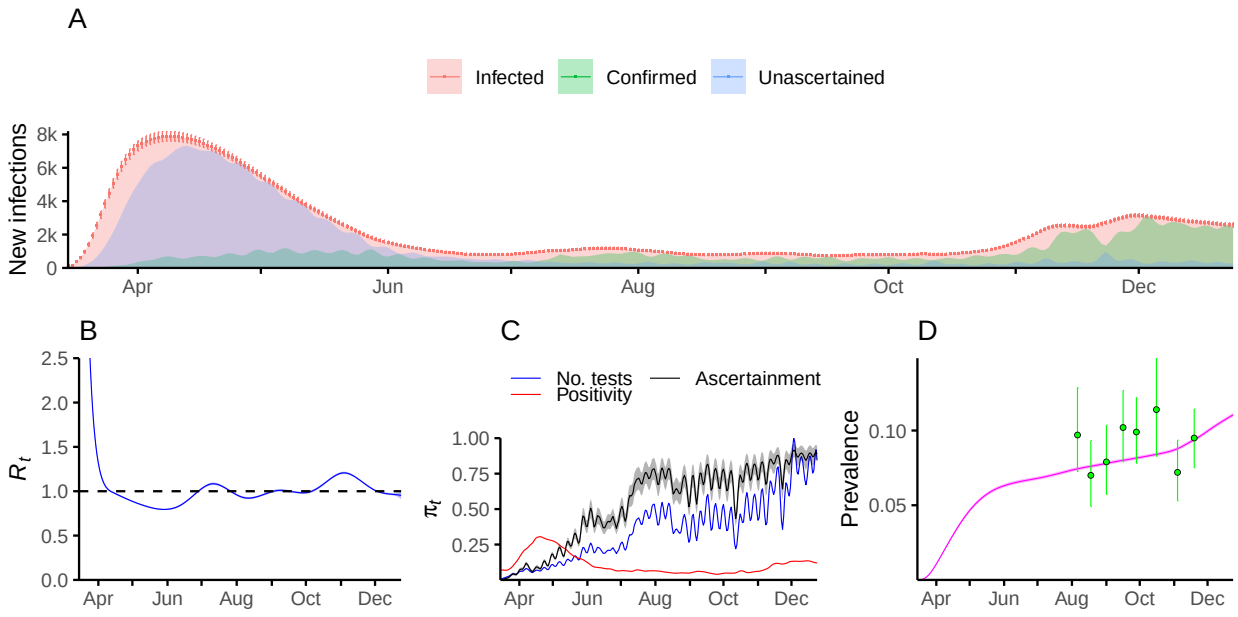

Figure 12: MERMAID analysis of COVID-19 epidemic dynamics in Maryland, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

North Carolina

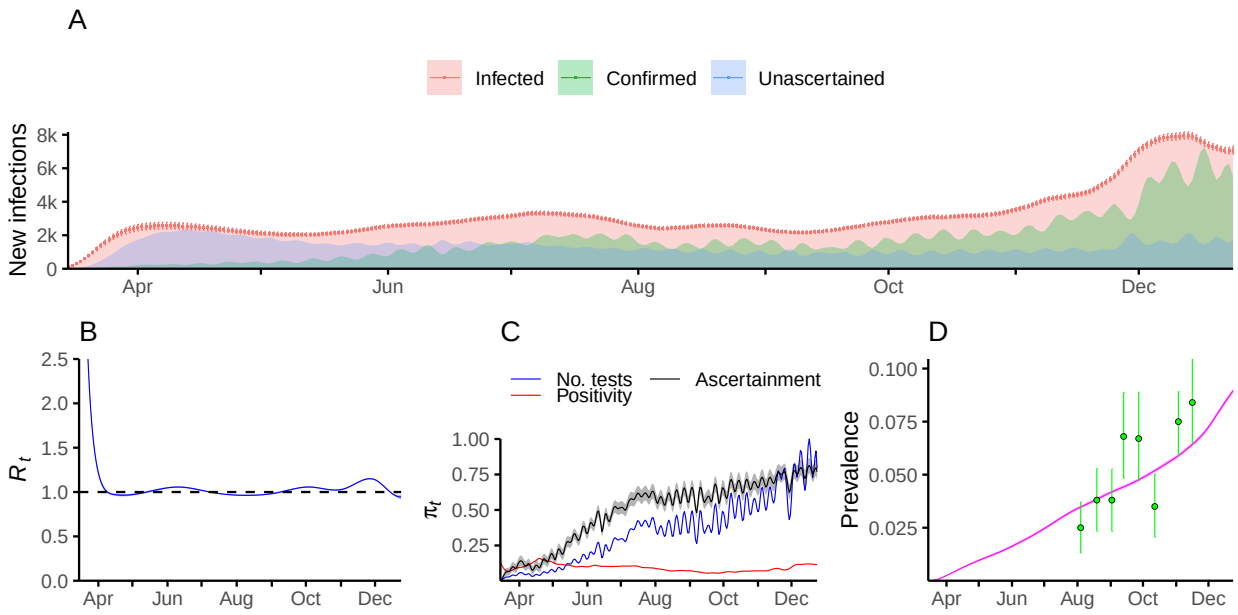

Figure 13: MERMAID analysis of COVID-19 epidemic dynamics in North Carolina, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

South Carolina

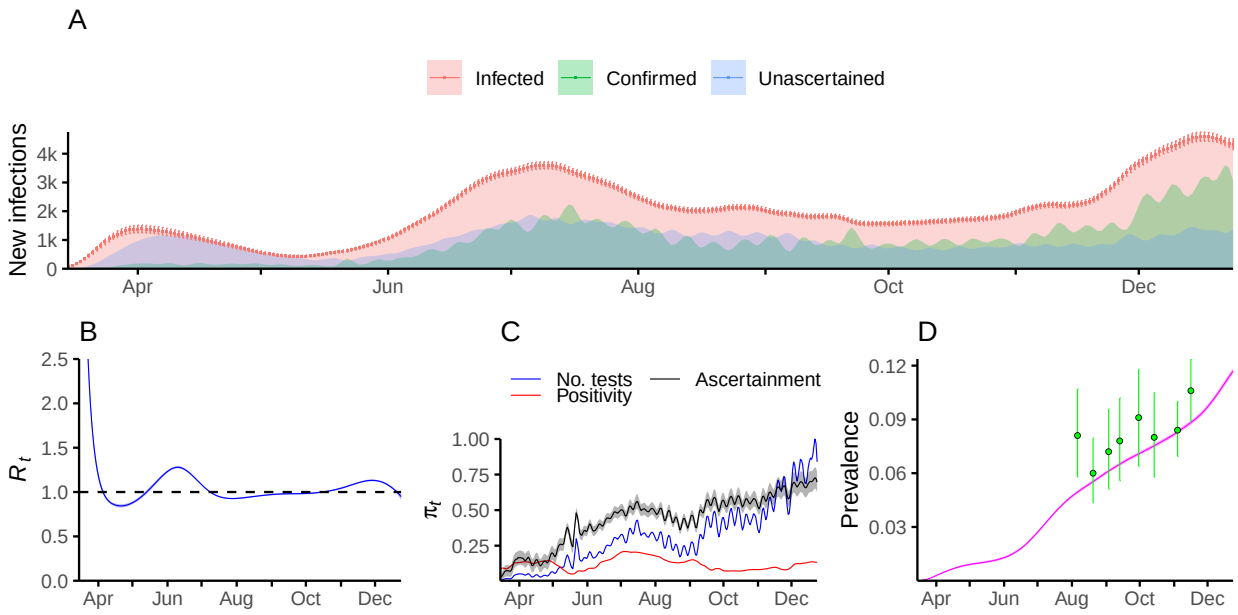

Figure 14: MERMAID analysis of COVID-19 epidemic dynamics in South Carolina, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Virginia

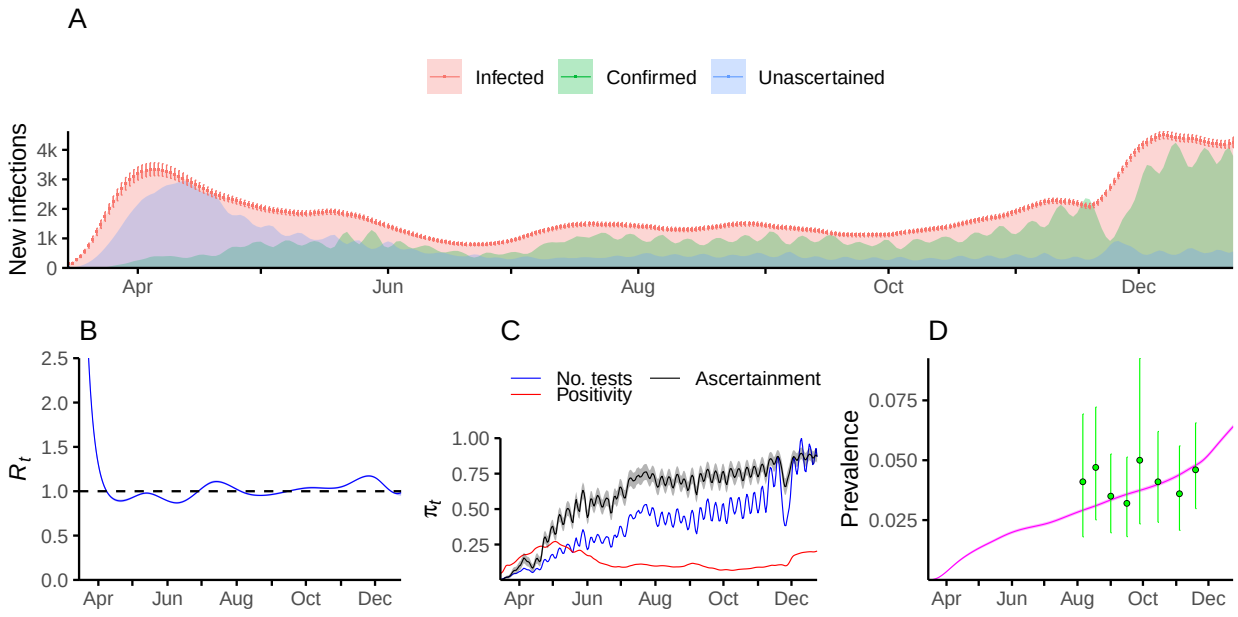

Figure 15: MERMAID analysis of COVID-19 epidemic dynamics in Virginia, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

West Virginia

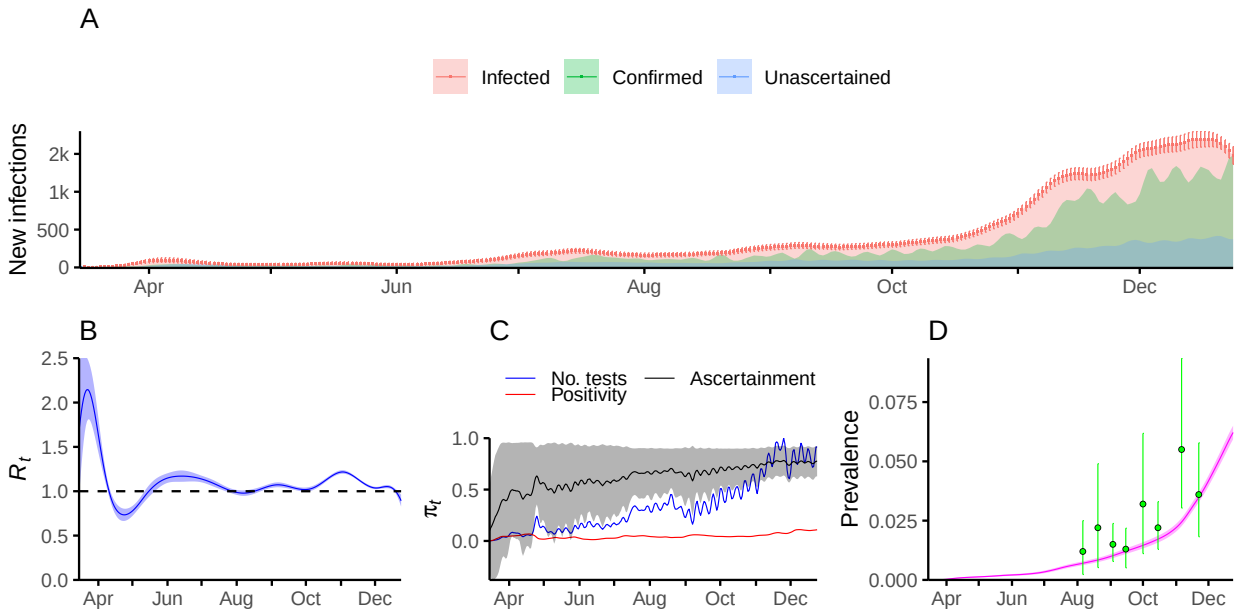

Figure 16: MERMAID analysis of COVID-19 epidemic dynamics in West Virginia, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

D East South Central

Alabama

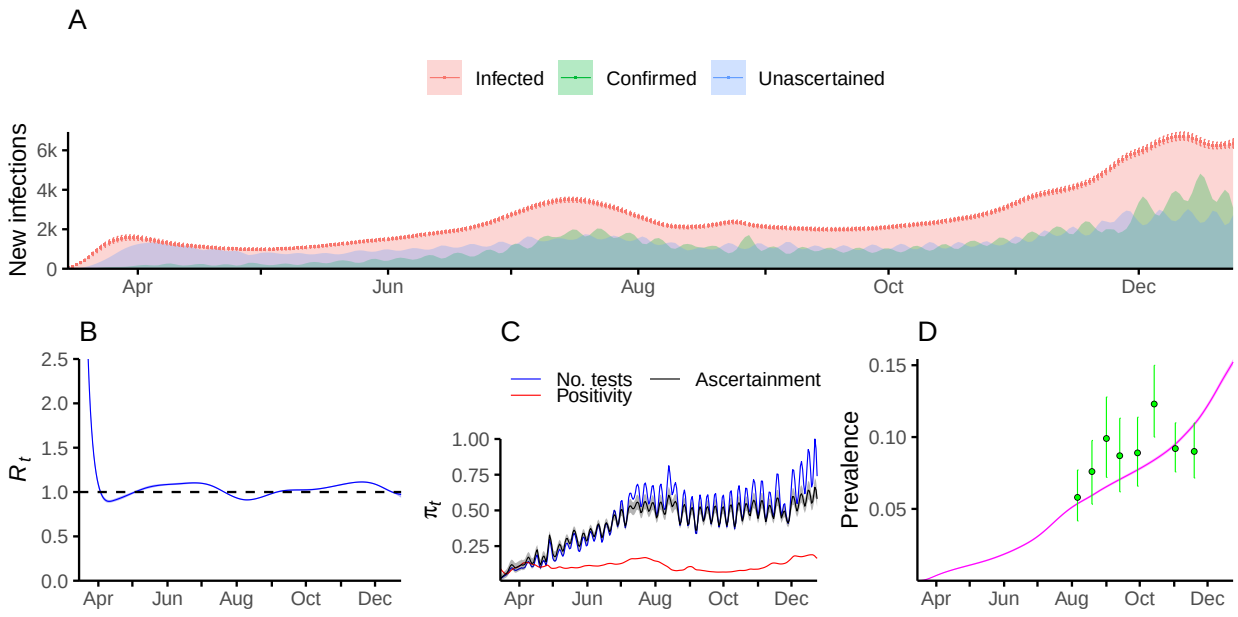

Figure 17: MERMAID analysis of COVID-19 epidemic dynamics in Alabama, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Kentucky

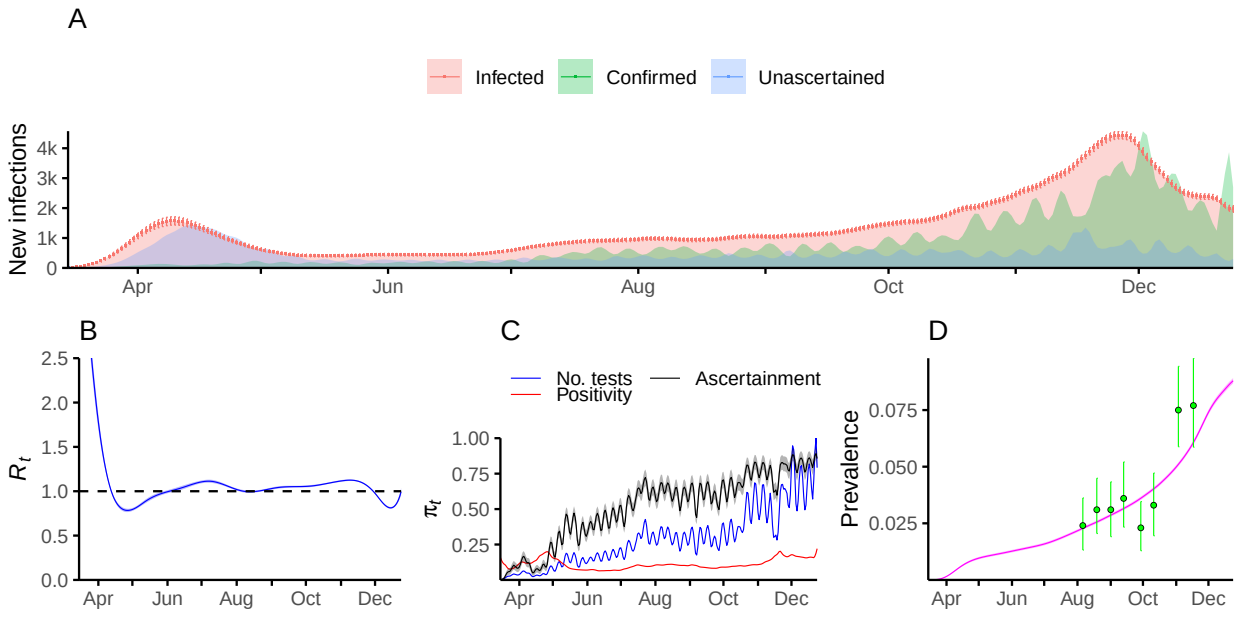

Figure 18: MERMAID analysis of COVID-19 epidemic dynamics in Kentucky, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Mississippi

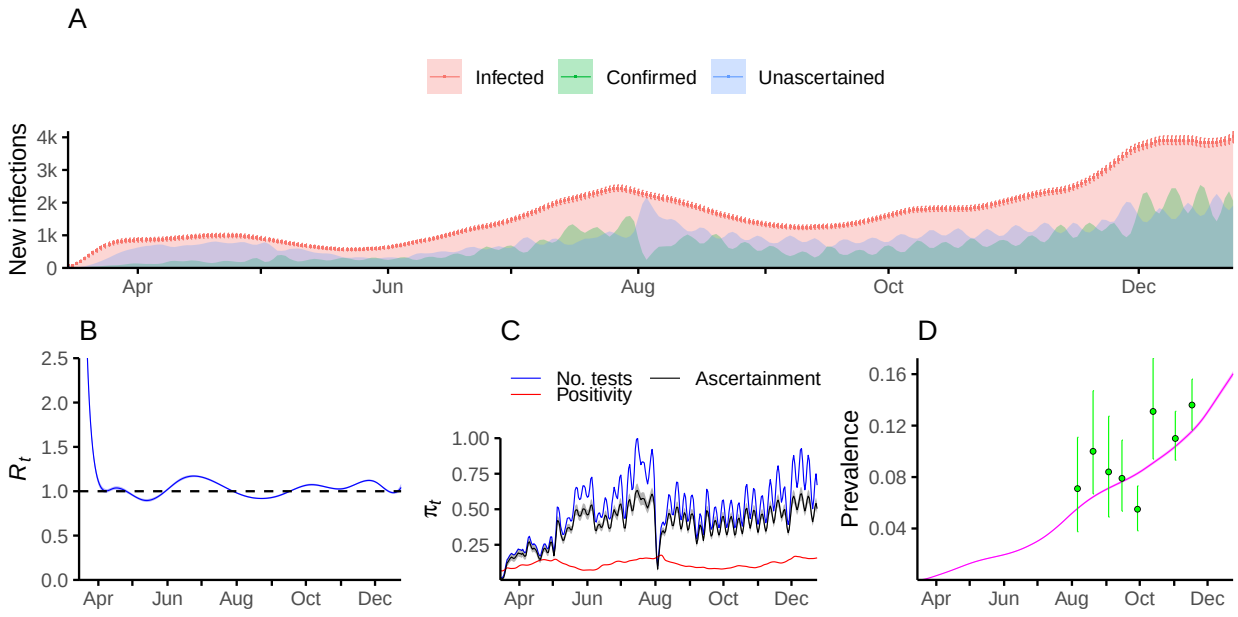

Figure 19: MERMAID analysis of COVID-19 epidemic dynamics in Mississippi, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Tennessee

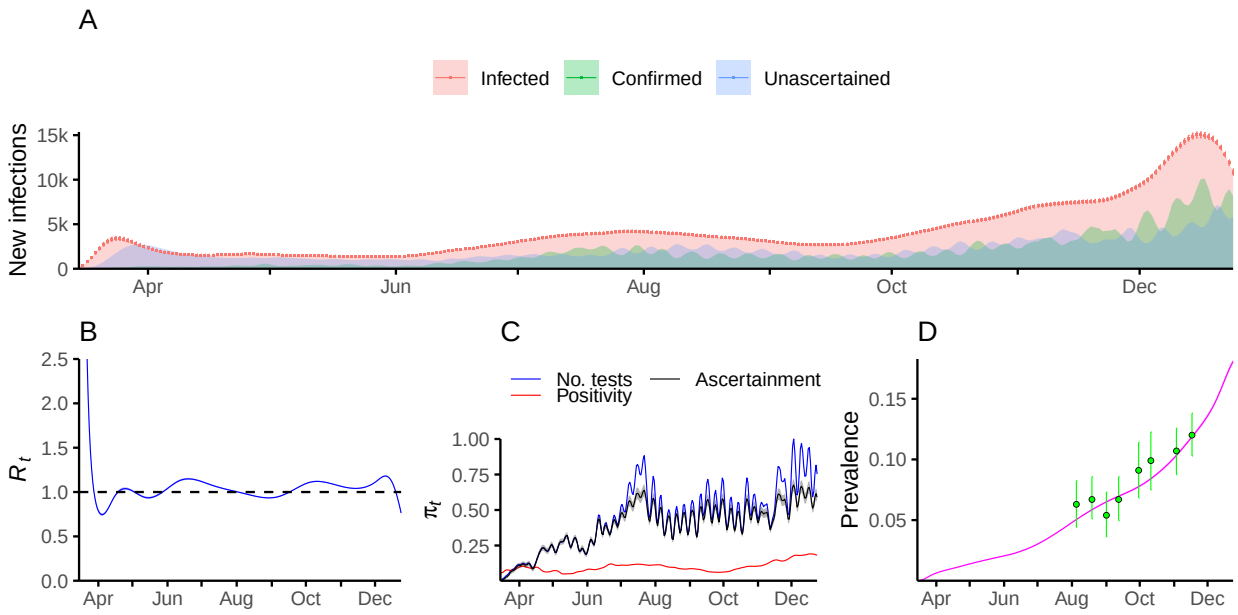

Figure 20: MERMAID analysis of COVID-19 epidemic dynamics in Tennessee, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

E West South Central

Arkansas

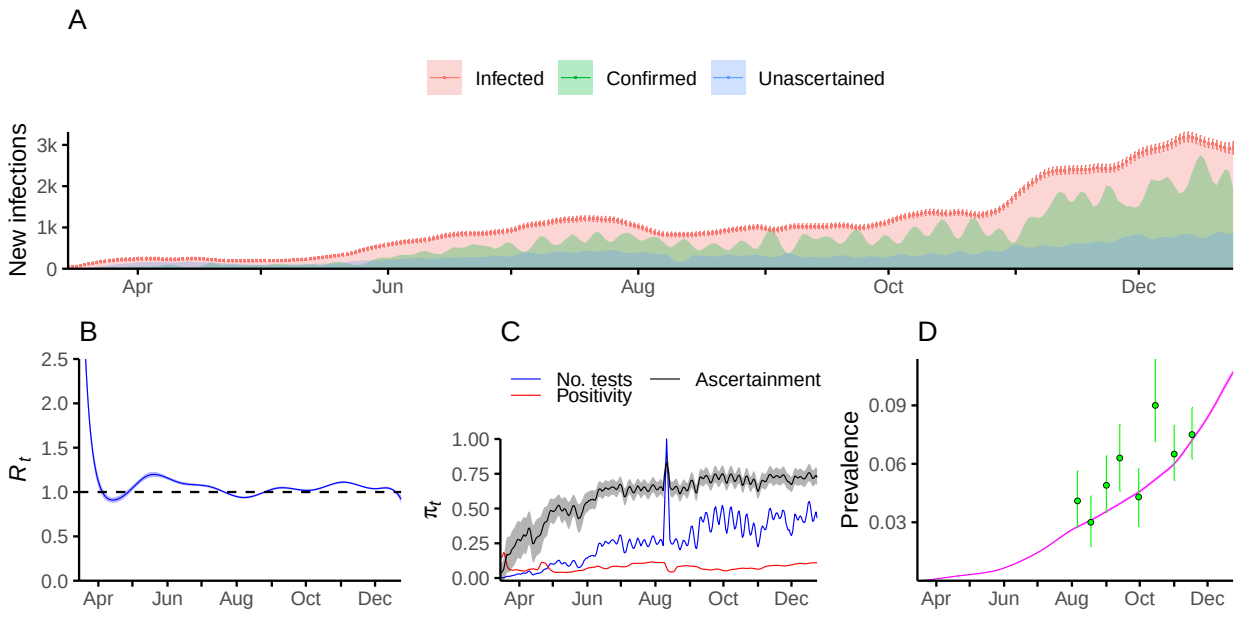

Figure 21: MERMAID analysis of COVID-19 epidemic dynamics in Arkansas, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Louisiana

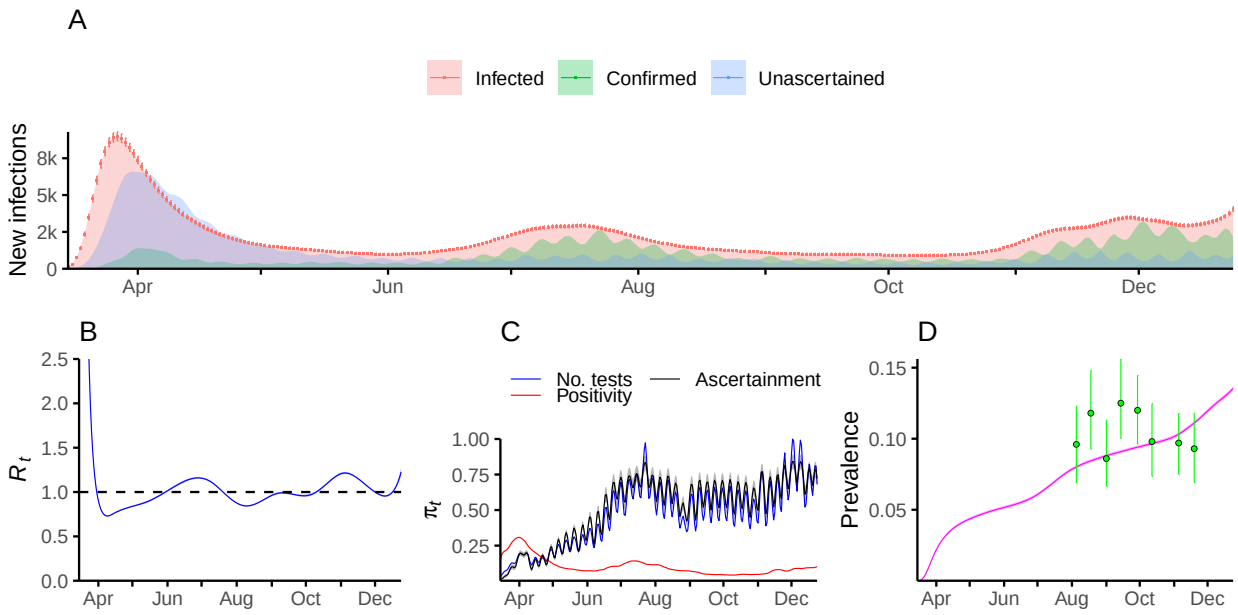

Figure 22: MERMAID analysis of COVID-19 epidemic dynamics in Louisiana, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Oklahoma

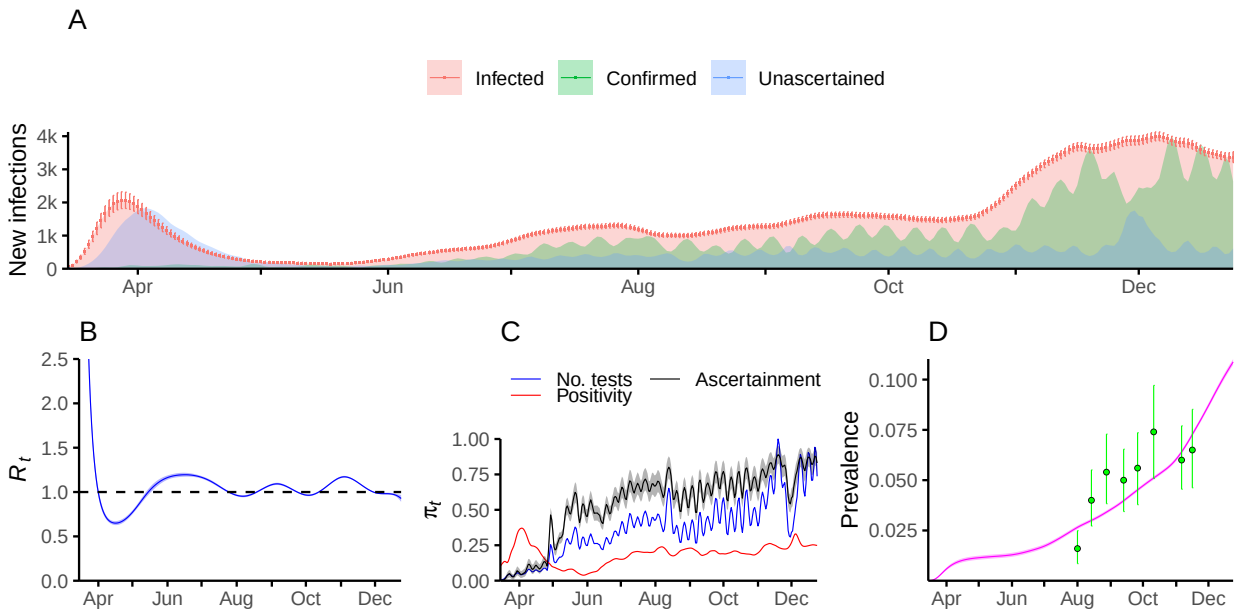

Figure 23: MERMAID analysis of COVID-19 epidemic dynamics in Oklahoma, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Texas

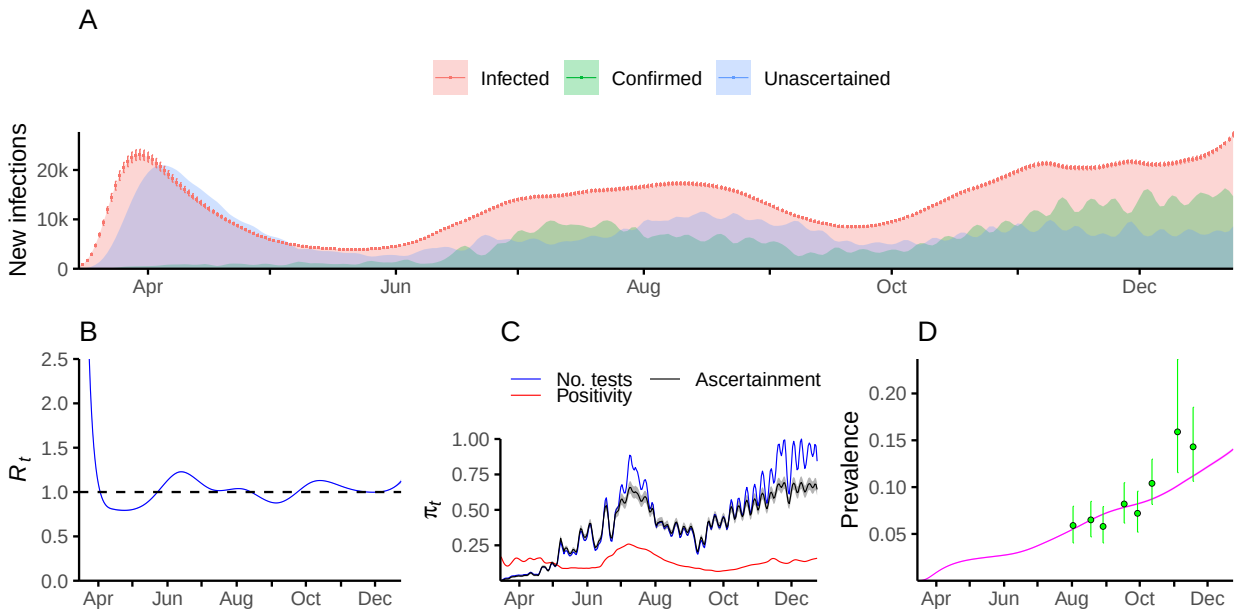

Figure 24: MERMAID analysis of COVID-19 epidemic dynamics in Texas, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

F East North Central

Illinois

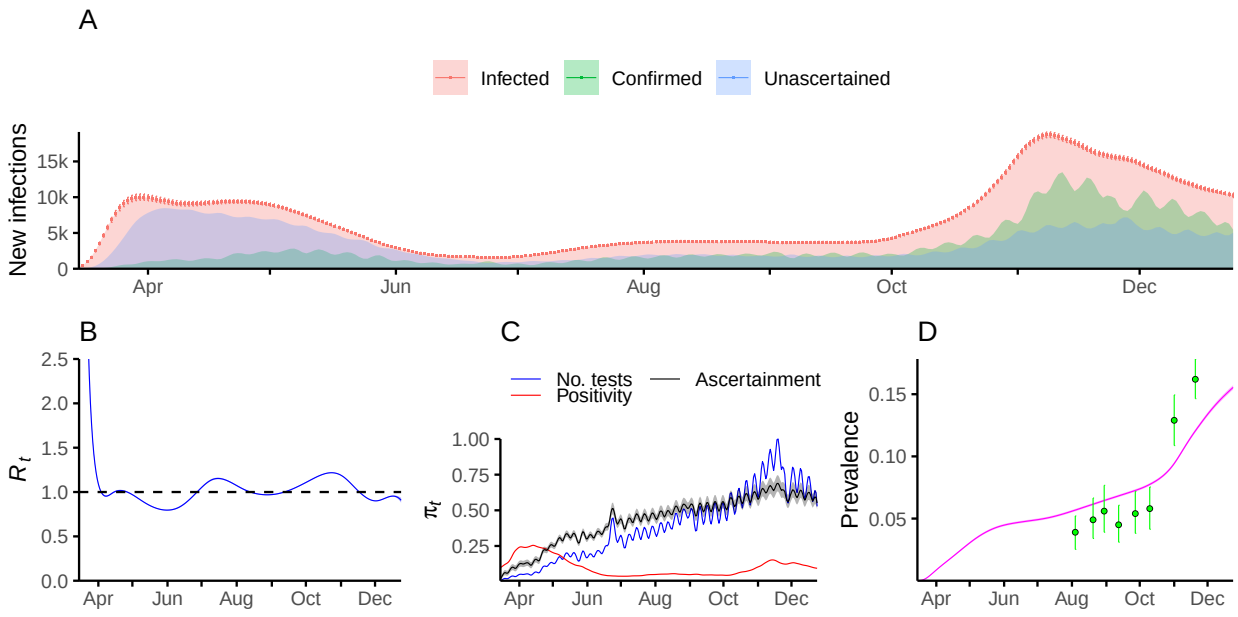

Figure 25: MERMAID analysis of COVID-19 epidemic dynamics in Illinois, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Indiana

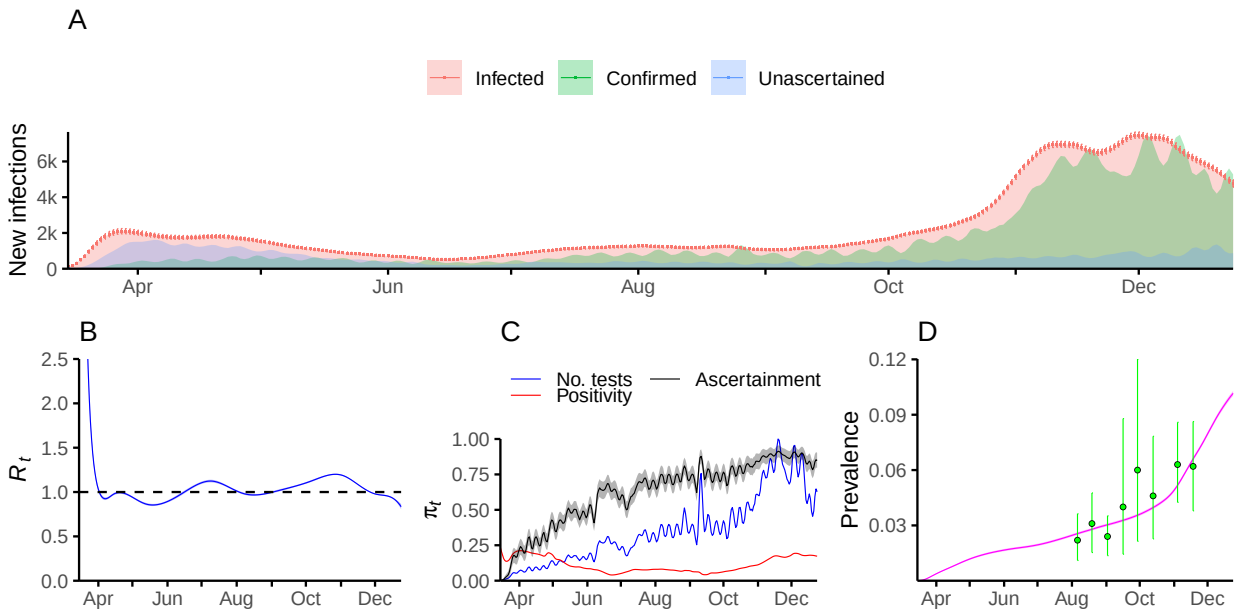

Figure 26: MERMAID analysis of COVID-19 epidemic dynamics in Indiana, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Michigan

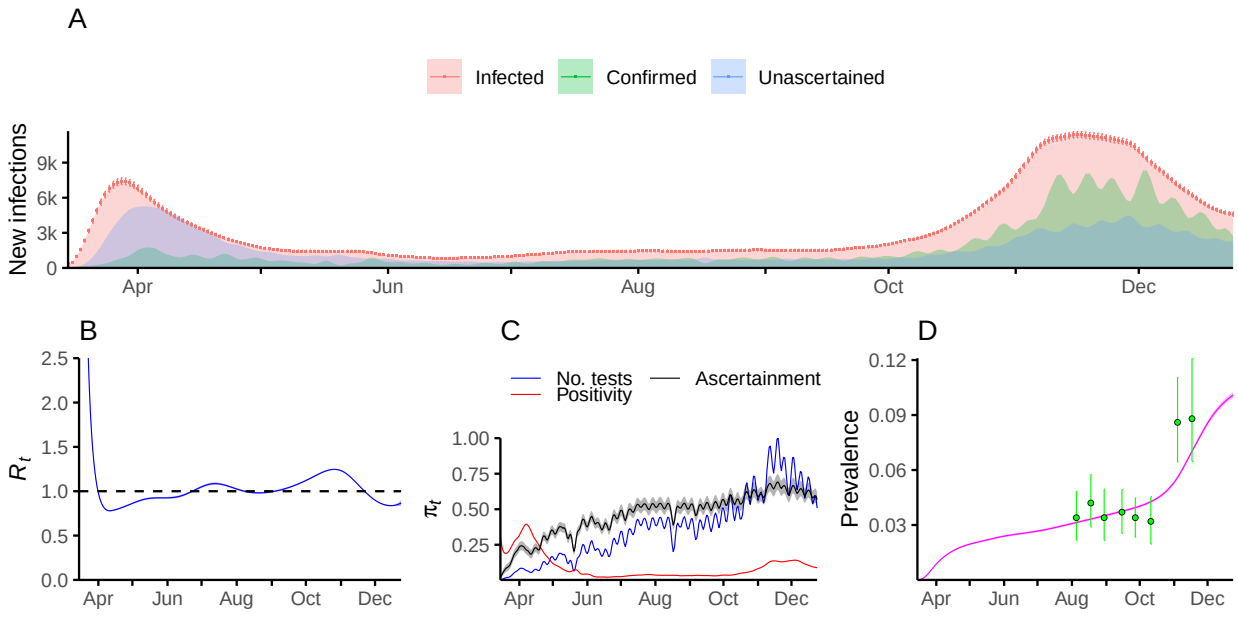

Figure 27: MERMAID analysis of COVID-19 epidemic dynamics in Michigan, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Ohio

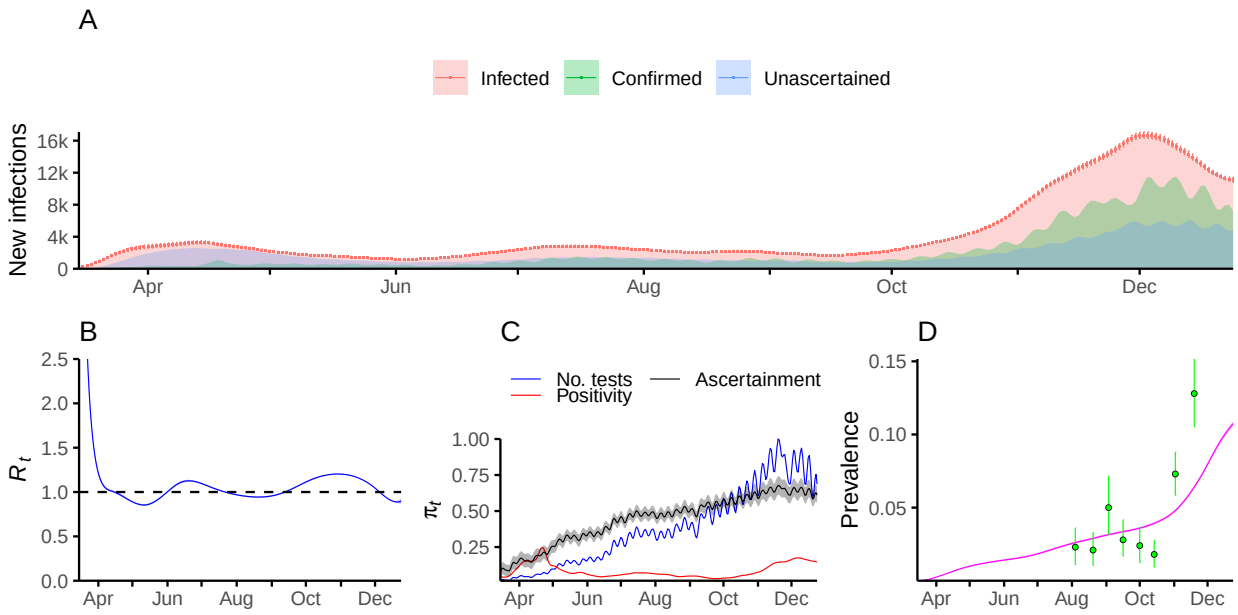

Figure 28: MERMAID analysis of COVID-19 epidemic dynamics in Ohio, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Wisconsin

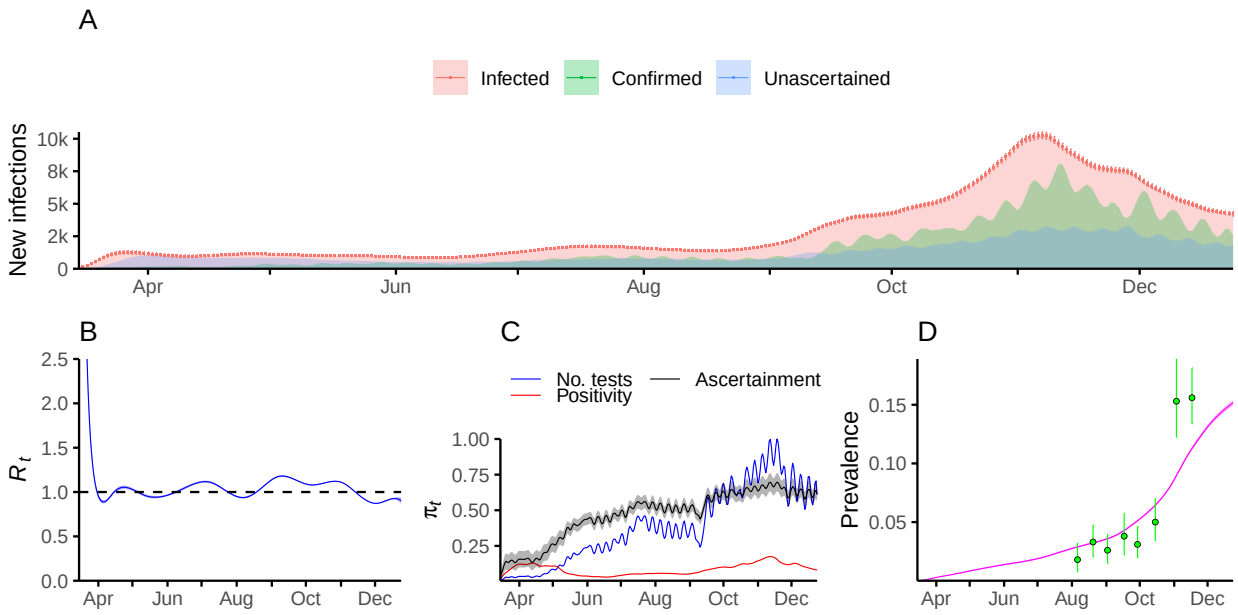

Figure 29: MERMAID analysis of COVID-19 epidemic dynamics in Wisconsin, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

G West North Central

Iowa

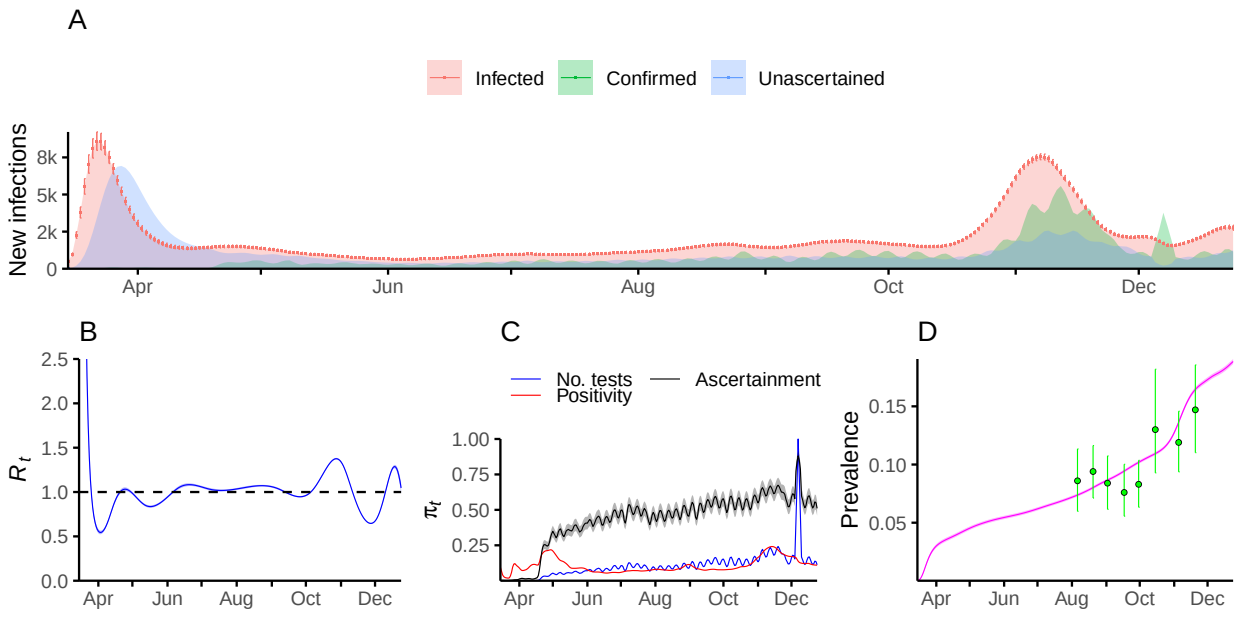

Figure 30: MERMAID analysis of COVID-19 epidemic dynamics in Iowa, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Kansas

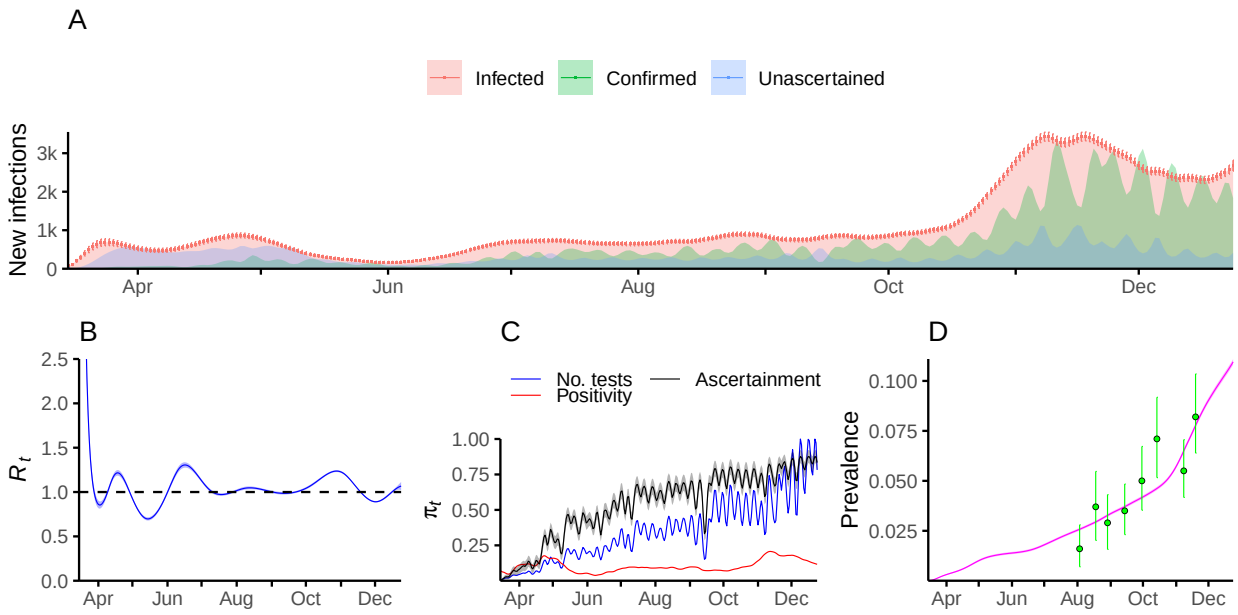

Figure 31: MERMAID analysis of COVID-19 epidemic dynamics in Kansas, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Minnesota

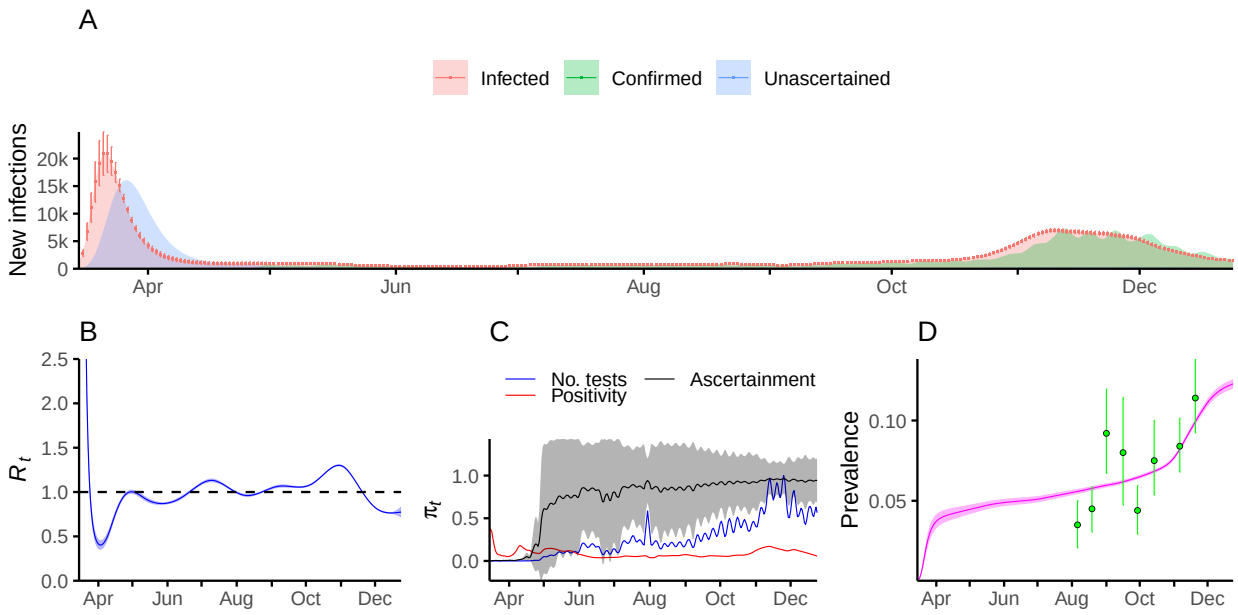

Figure 32: MERMAID analysis of COVID-19 epidemic dynamics in Minnesota, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Missouri

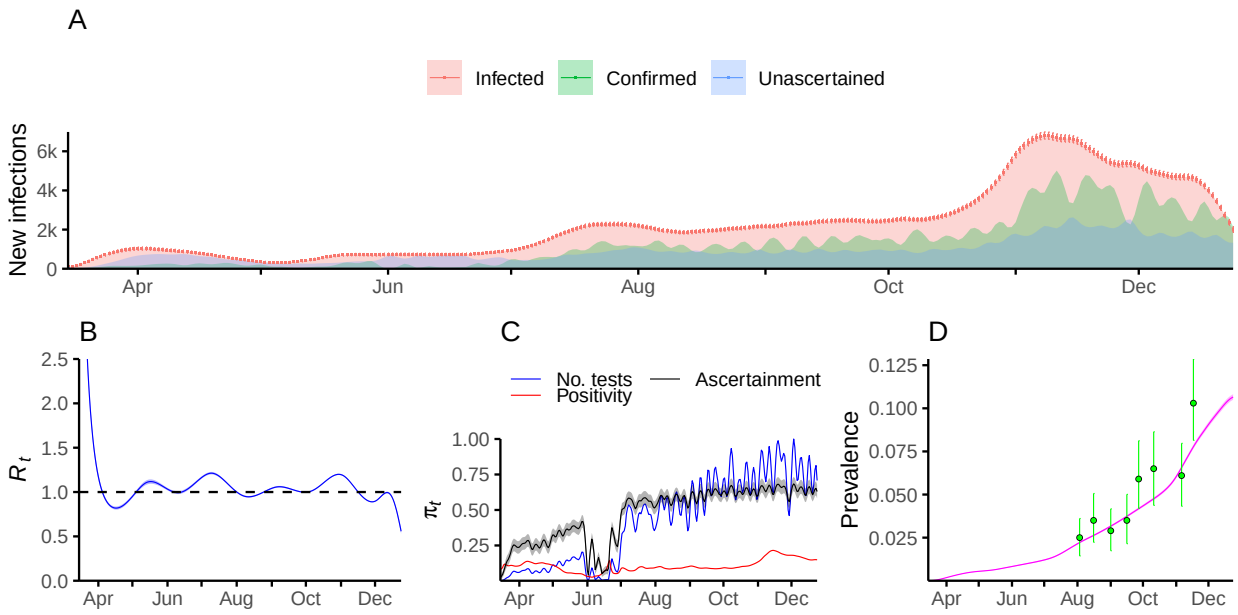

Figure 33: MERMAID analysis of COVID-19 epidemic dynamics in Missouri, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Nebraska

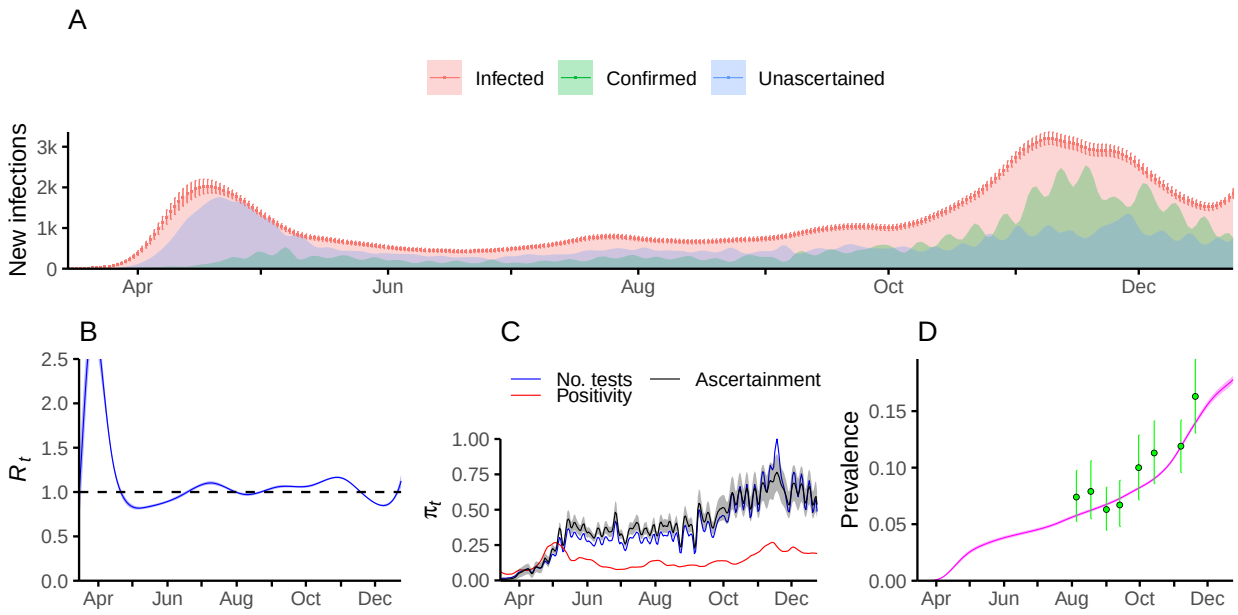

Figure 34: MERMAID analysis of COVID-19 epidemic dynamics in Nebraska, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

H Mountain

Arizona

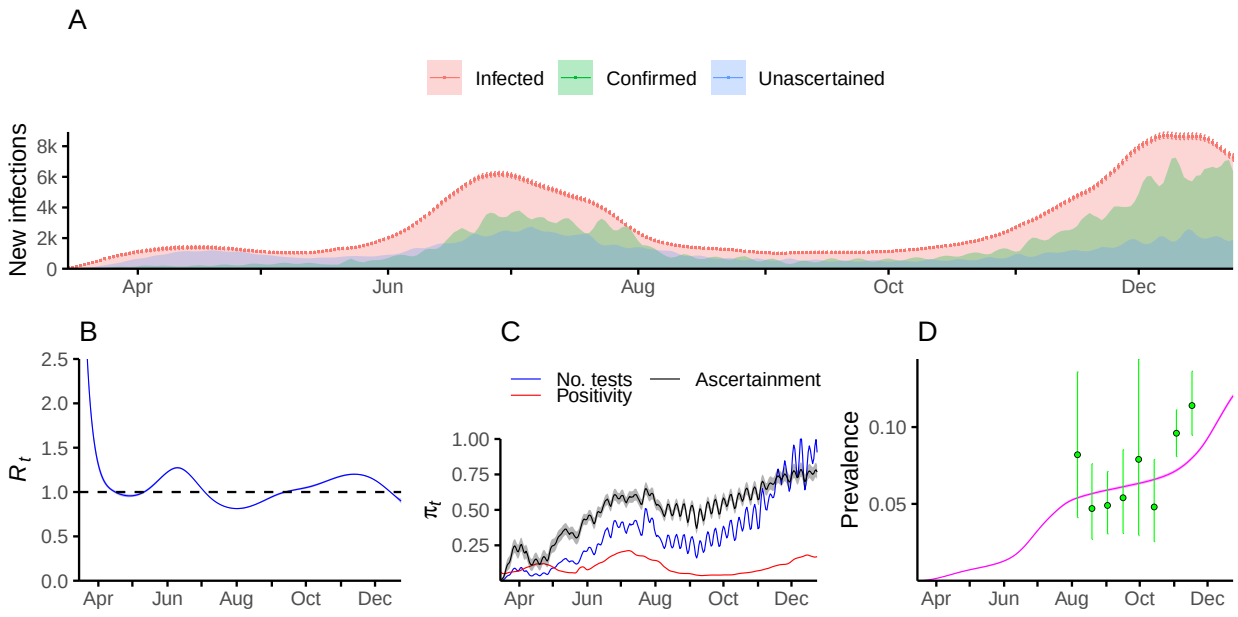

Figure 35: MERMAID analysis of COVID-19 epidemic dynamics in Arizona, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Colorado

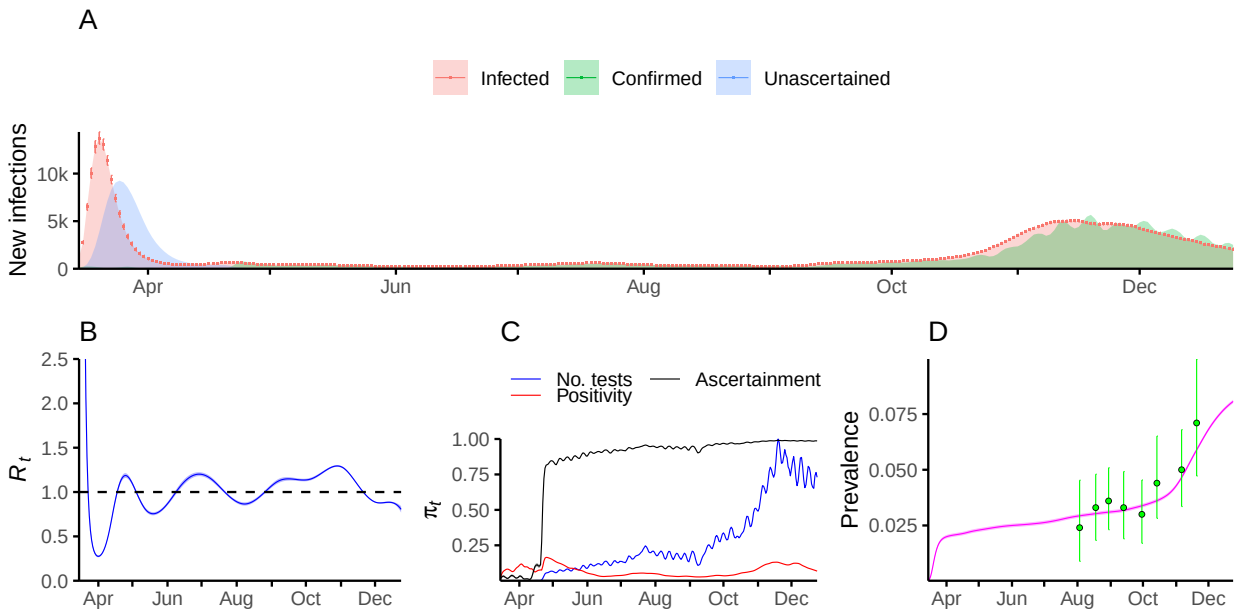

Figure 36: MERMAID analysis of COVID-19 epidemic dynamics in Colorado, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Idaho

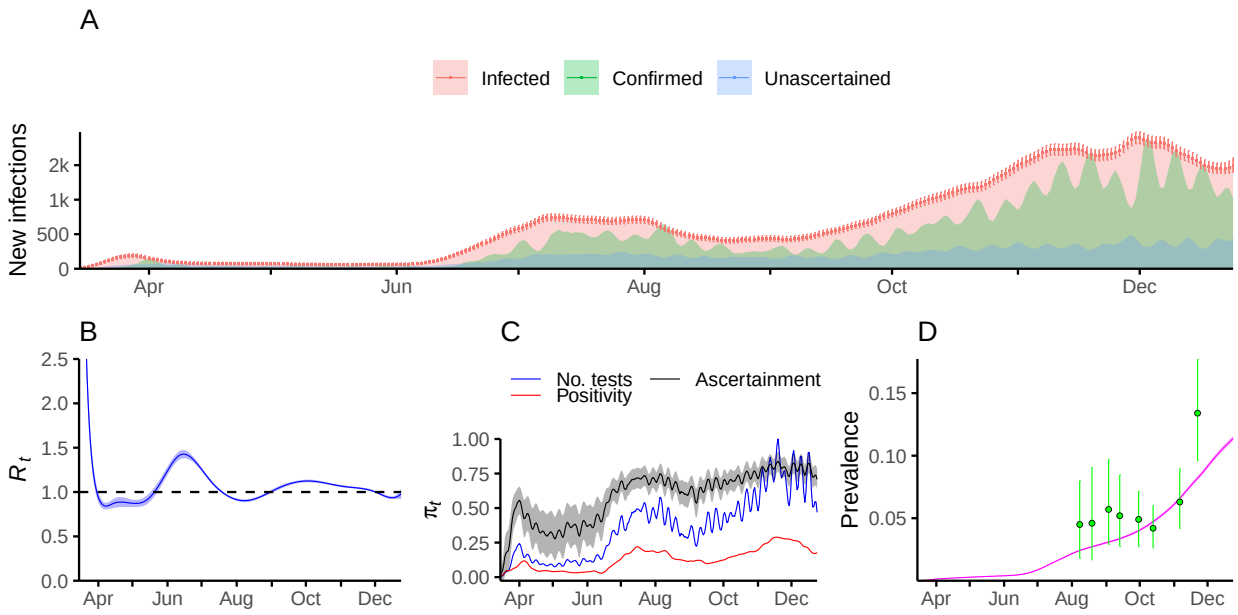

Figure 37: MERMAID analysis of COVID-19 epidemic dynamics in Idaho, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

New Mexico

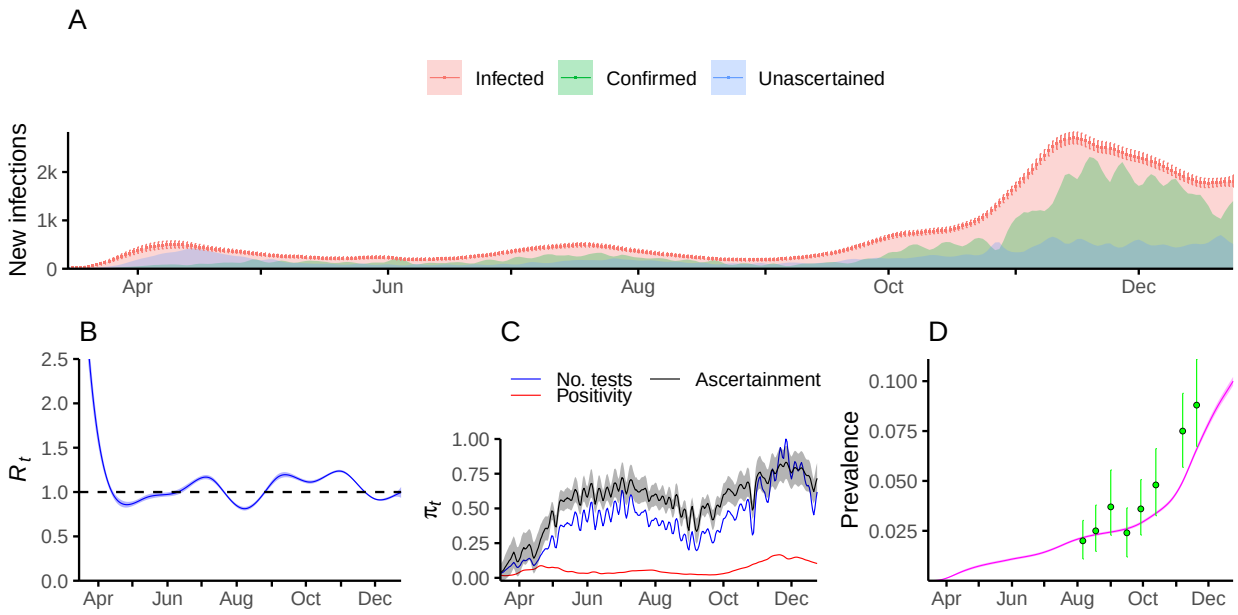

Figure 38: MERMAID analysis of COVID-19 epidemic dynamics in New Mexico, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Nevada

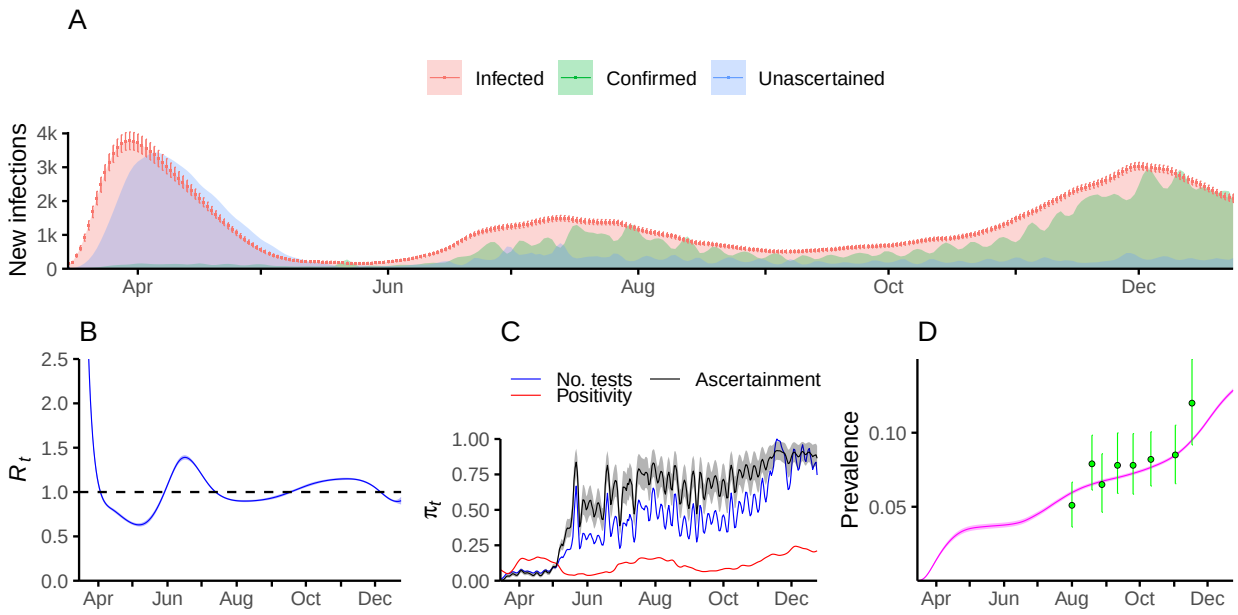

Figure 39: MERMAID analysis of COVID-19 epidemic dynamics in Nevada, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Utah

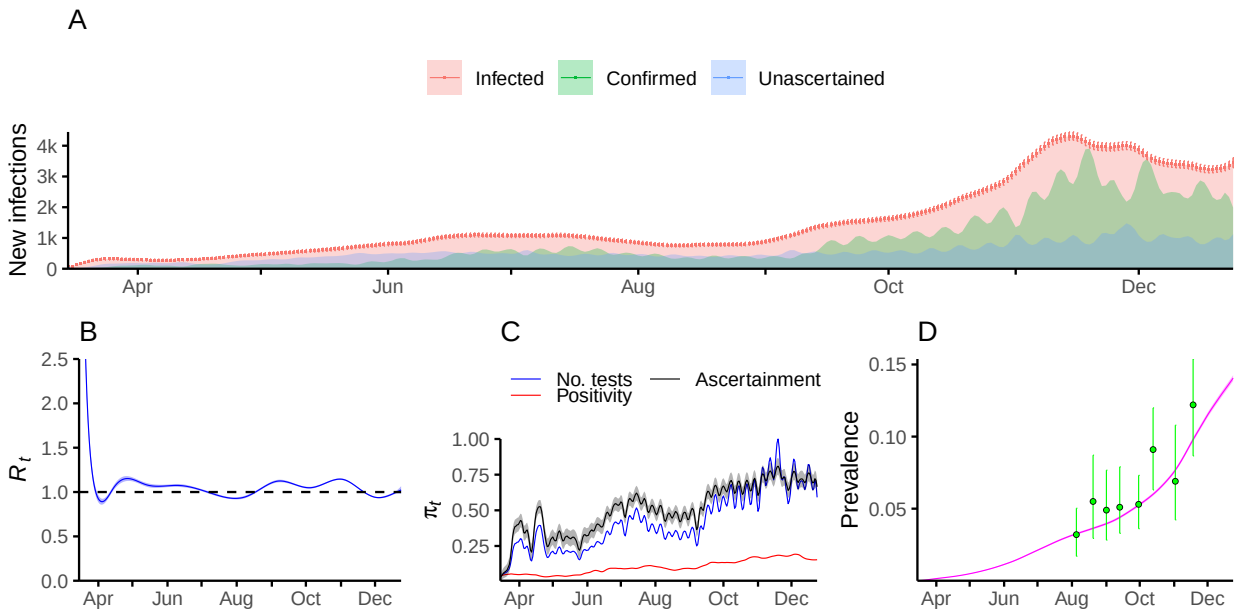

Figure 40: MERMAID analysis of COVID-19 epidemic dynamics in Utah, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

I Pacific

California

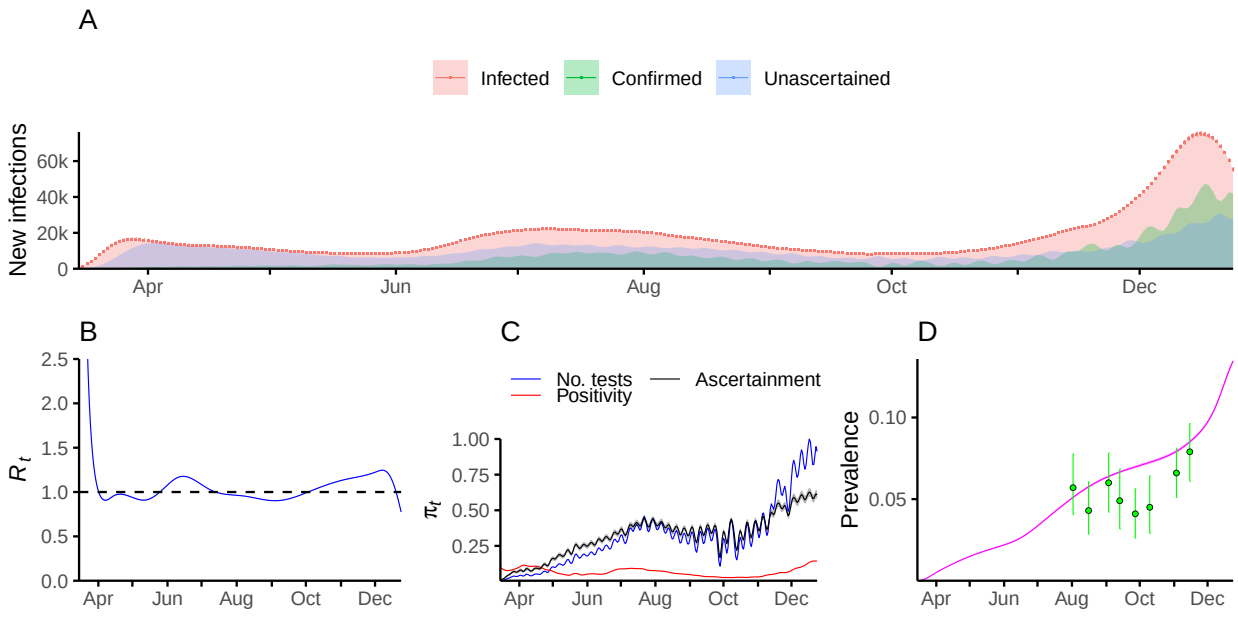

Figure 41: MERMAID analysis of COVID-19 epidemic dynamics in California, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Oregon

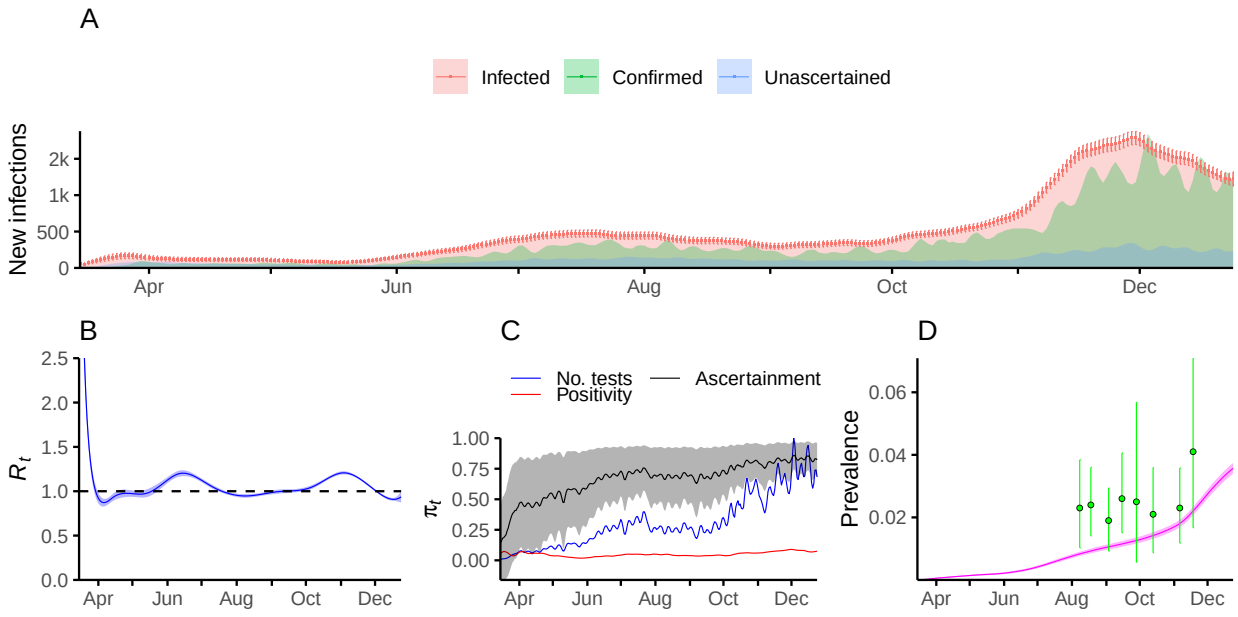

Figure 42: MERMAID analysis of COVID-19 epidemic dynamics in Oregon, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

Washington

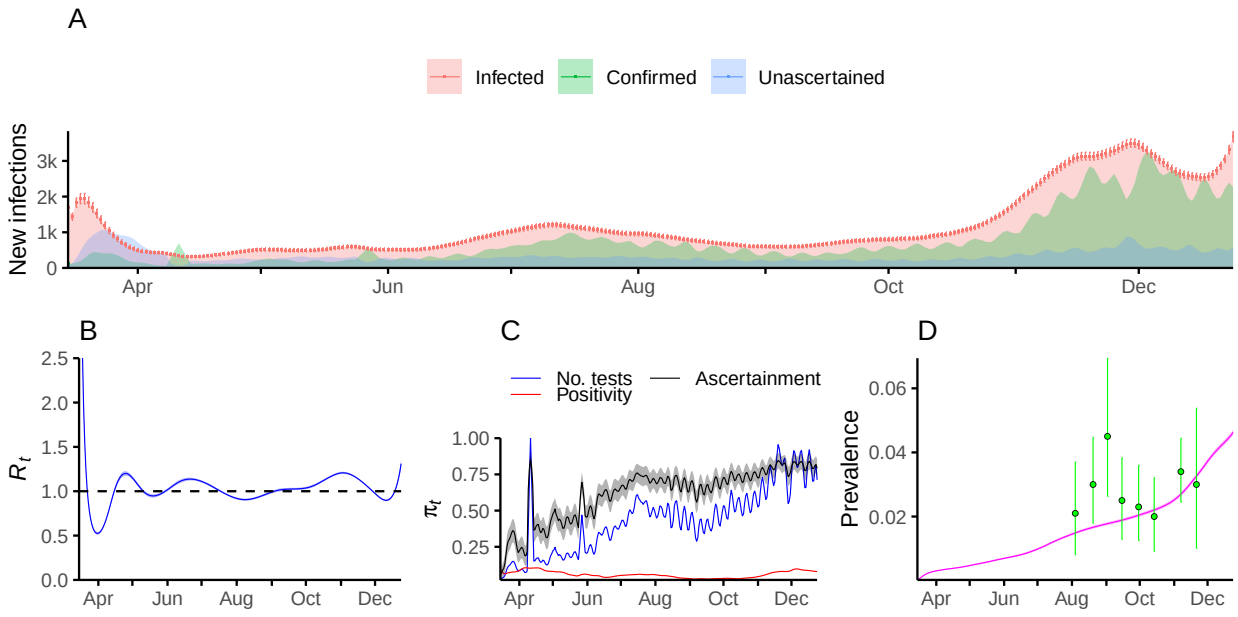

Figure 43: MERMAID analysis of COVID-19 epidemic dynamics in Washington, Mar.-Dec. 2020. Panel A: Estimated total infections (red), estimated unascertained cases (blue), and confirmed cases (green) over time. Panel B: Estimated effective reproductive number over time. Panel C: Estimated ascertainment probability (black), percentage of positive PCR tests (red), and total number of PCR tests scaled by its maximum value (blue) over time. Panel D: Estimated cumulative prevalence over time (magenta). Seroprevalence estimates and 95% confidence intervals reported from the CDC are shown in green.

J Whole US Forest Plot

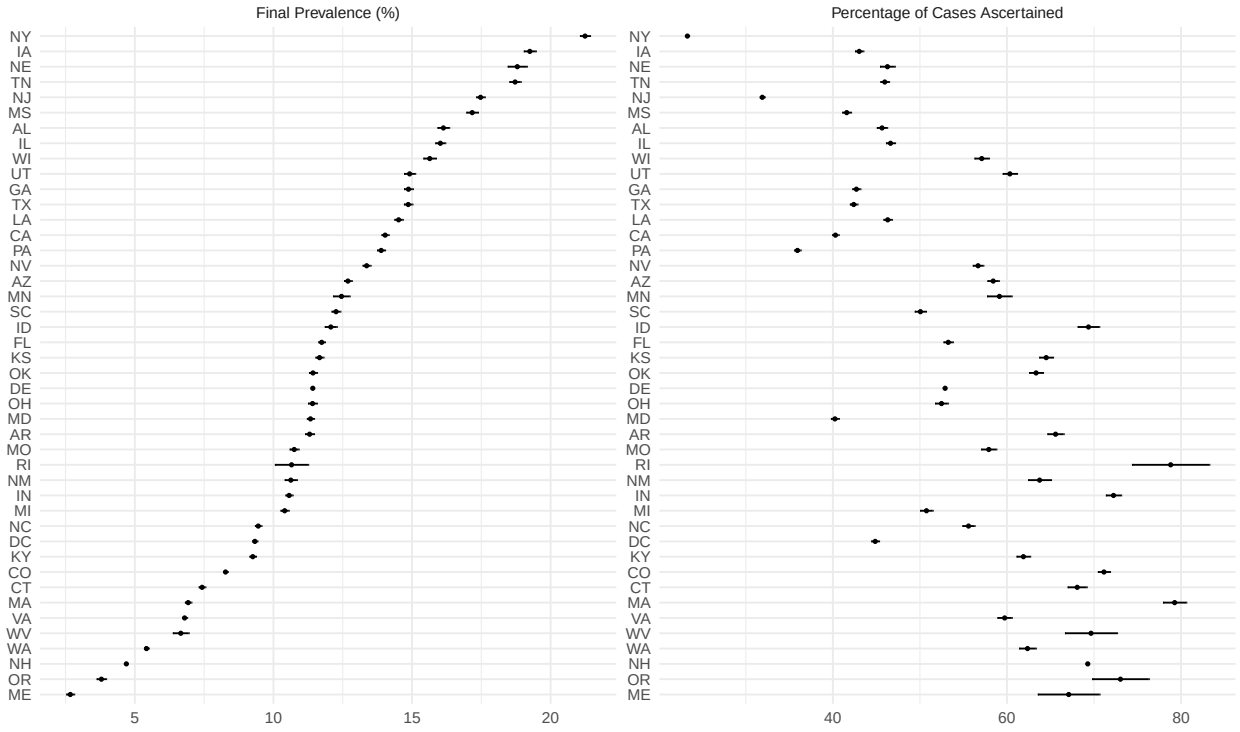

Figure 44: Forest plots of final estimated COVID-19 prevalence and percentage of infections ascertained (right) from MERMAID across the 44 US states in the year 2020. The percentage of infections ascertained was calculated by dividing the total number of confirmed infections by the total number of predicted infections, and its standard error was calculated using the delta method.