HERO Community Testing: Summary Report

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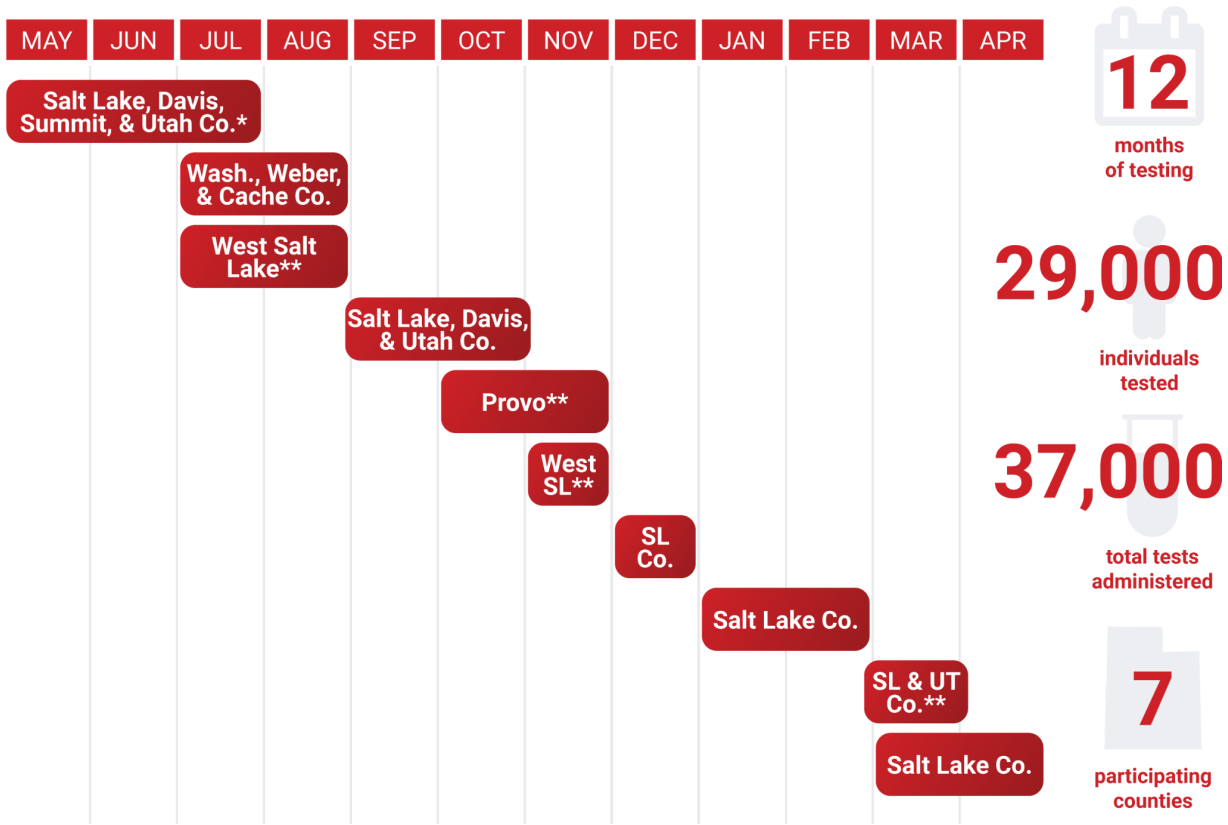
The Utah Health and Economic Recovery Outreach (HERO) Project began in May 2020 as a collaborative statewide testing and analysis project to understand the community-based spread of Covid-19. The goal of the HERO Project is to collect and analyze high-quality data on community behaviors, antibody prevalence, infection in schools, economic activity, and attitudes about vaccination, all to help inform decision-makers seeking to guide Utah's citizens and economy through the pandemic and aid a safe return to normalcy. Beginning in March 2021, the project team is publishing regular update reports on each of these topics of interest. This report summarizes previous reporting on the **HERO Project's statewide community-based testing** between May 2020 and April 2021.

Background

Community testing has served as the core of the HERO Project's work between May 2020 and April 2021. The team has run several rounds of testing and analysis throughout these 12 months and published findings throughout the process. Community testing included testing for antibodies due to Covid-19 infection, antibodies demonstrating vaccine response, surveys of behavior, and testing for current or recent infection.

Overview of HERO Project community testing (2020 - 2021)



* "Co." = abbreviation for county/counties
** location selected for high rates of Covid-19 transmission in certain hotspot(s)

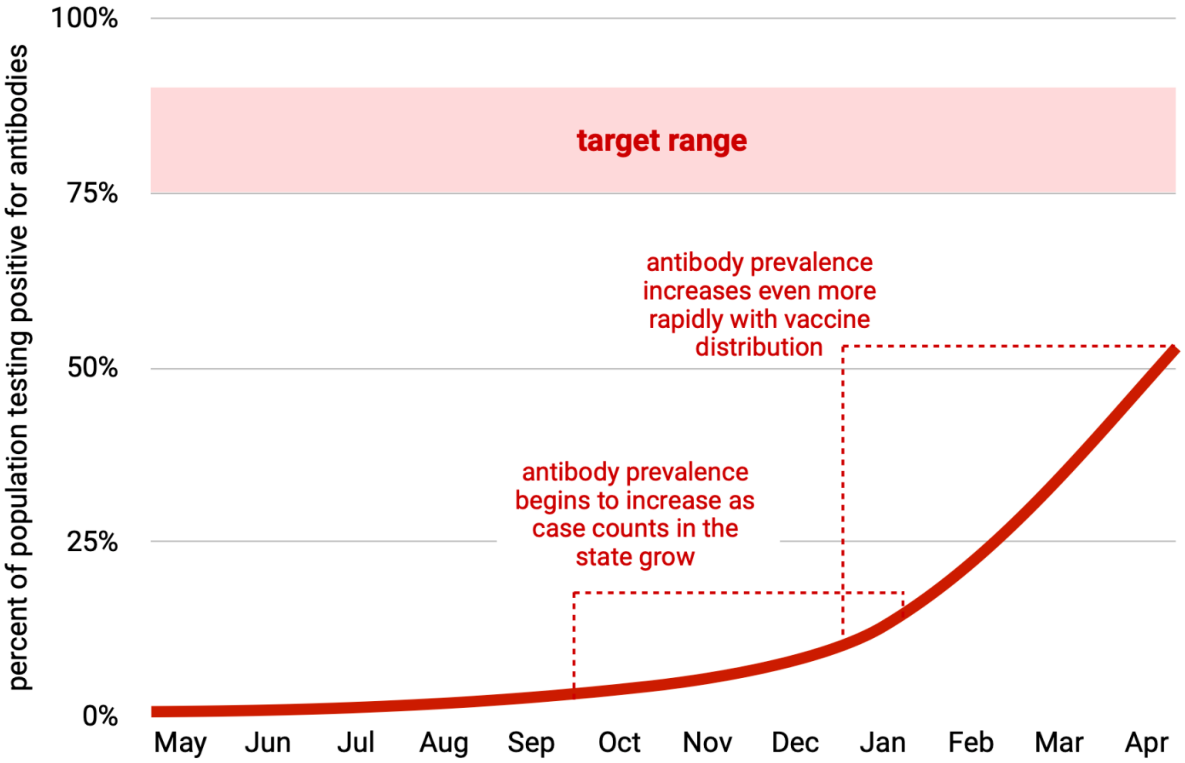
Testing Results

Antibody Positivity

Antibody testing measures an immune system response caused either by prior Covid-19 infection or vaccination. The presence of antibodies is associated with at least partial immunity to future infection for several months or longer. The prevalence of positive antibody tests has risen in most groups and settings throughout the pandemic, reflecting an increase in total infections. However, over time, antibody tests begin to miss the presence of antibodies in a small proportion of people, making the measurement complex.

As displayed below, antibody prevalence began to increase in fall 2020 in parallel with Utah's case count. The total prevalence of antibodies grew more rapidly in winter and spring as vaccines became more widely available. Tracking antibody prevalence tracks the progress towards herd immunity, or the range at which transmission will cease or fall to very low levels (estimated at 75-90% immune).

Estimated total antibody positivity among tested respondents*



* Derived from HERO Project testing using the EuroImmun test, these results are specifically representative of the testing periods and locations shown in the timeline above.

Detection Fraction

Detection fraction is an estimate of how well clinical testing and reporting of cases capture the true total number of cases as estimated by antibody prevalence. Essentially, this is a measure of the effectiveness of state testing procedures at capturing cases within the community. At the beginning of the pandemic, the detection fraction was fairly low: testing and reporting captured 40% of the true number of infections. In other words, for every 1 case detected by testing and reporting, about 1.5 cases were undetected. This rate fluctuated substantially in different geographies and time periods but converged to approximately 60% in the last several months of testing. This means that for every case detected, less than one was missed. However, as noted in a previous report, the detection fraction was substantially lower for children younger than 12 years of age, meaning that a greater number of cases are missed among youth.

Overall, the detection fraction for Utah indicates that a substantially higher proportion of cases were detected through surveillance in the state than occurred in the rest of the US, as reporting from the Centers for Disease Control and Prevention suggests that nationwide, testing efforts may have only detected 1 of every 4 actual cases.

Next Steps

In the twelve months since May 2020, the HERO Project has been conducting testing and analysis to better understand transmission of the Covid-19 virus in communities throughout Utah. The HERO team has conducted nearly 40,000 tests on nearly 30,000 individuals, assisted policymakers in well-informed decision making, and developed a deep understanding of the simultaneous effectiveness of Utah's response thus far *and* the need for continued protective measures like vaccination and mask-wearing. Moving forward, the HERO Project will be transitioning to focus on vaccine uptake, circumstances and implications in Utah's long-term care facilities, and continuing testing in K-12 schools. These efforts reflect the HERO Project's dedication to meeting the shifting needs of Utah's public health and economic contexts, and to continue informing policymakers and the general public as the state enters the next phase of recovery.

Acknowledgments

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