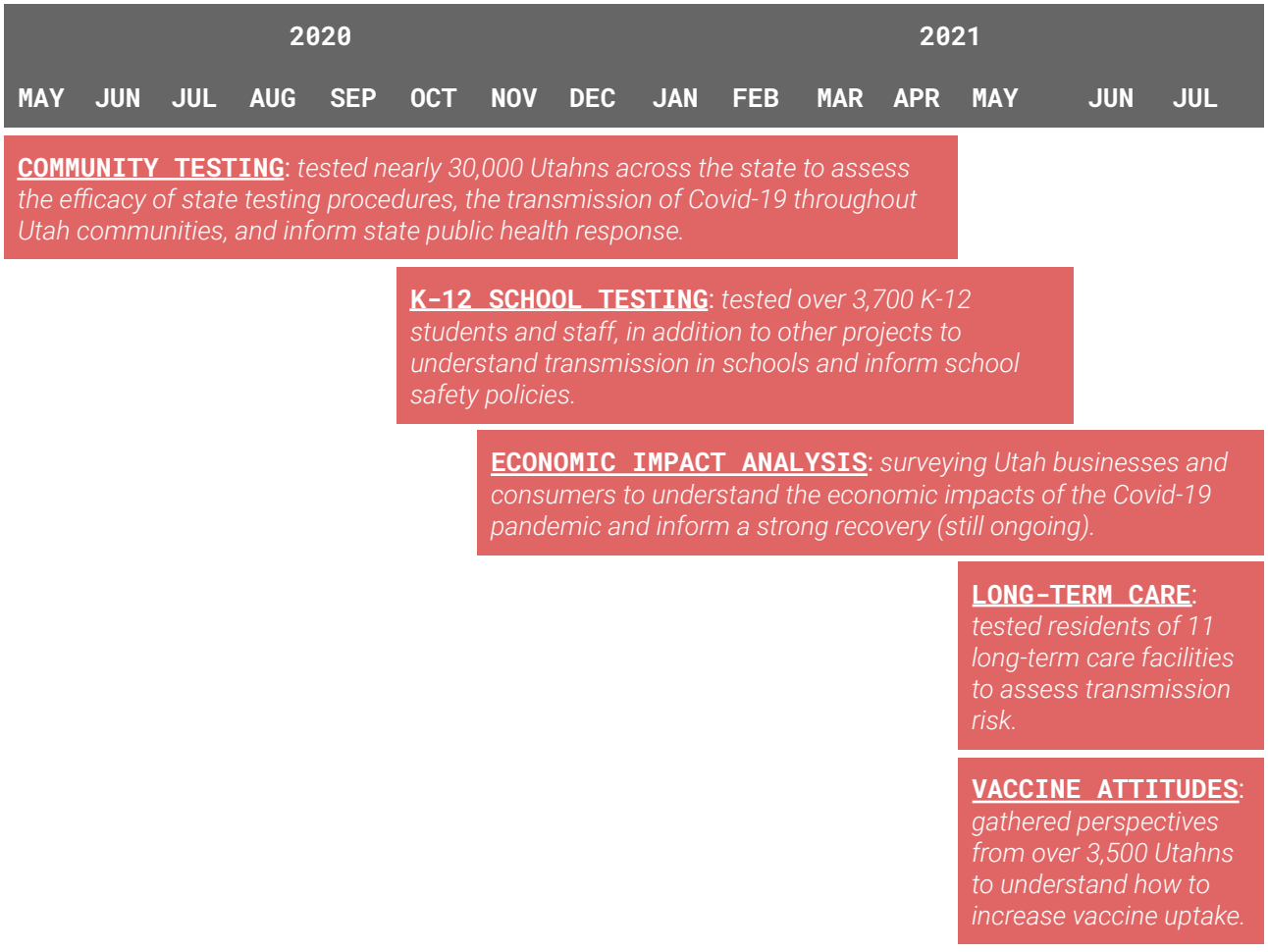
HERO Project Summary

published October 28, 2021

Executive Summary

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 was to collect and utilize high-quality local data to inform decision-makers seeking to guide Utah's residents and economy through a safe return to normalcy. This report summarizes the HERO Project's work, all of which can be found in the project's previous reporting.

HERO Project Timeline



Vaccines remain a critical tool in Utah's return to normalcy. As trusted information sources, doctors can effectively communicate vaccine efficacy, safety, and importance in reducing the most harmful impacts of Covid-19. Doctors should provide clear and consistent messaging, and disseminate information widely to different communities - proactively seeking out engagement opportunities. As decision-makers in Utah seek to confront the ongoing pandemic, the Delta variant, and to increase vaccination among Utahns, this conclusion to the HERO Project's work can provide important guidance to support an ongoing recovery of public health and economic vitality within the Beehive State.

COMMUNITY TESTING

Since the HERO Project began in May 2020, the team conducted approximately 37,000 tests on nearly 30,000 individuals across the state, testing both for active infection and antibody presence—an indicator of infection in the past and, presumably, immunity in the present and future. Salt Lake County—chosen in part for the county's ability to inform understanding of the rate of spread in Utah's most urban areas, which have a diverse population–was a frequent site of testing, with five rounds taking place between May 2020 and April 2021.

Key Findings

Active and Previous Infection Showed Demographic Disparities

Within Salt Lake County, certain demographic groups tested positive at higher rates than others: Hispanic residents at higher rates than non-Hispanic, and 18-25 year-olds at higher rates than any other age group.

Prevalence of Antibodies Increased Over Time

Since the beginning of the pandemic, rates of cumulative infection have been expectedly increasing, implying that the percentage of the population with some immunity to Covid-19 is increasing as well. As vaccines continue to be distributed, this immunity will continue to expand at a faster rate.

Utah's Testing Procedures Detected a Relatively High Percentage of Active Cases

During the course of community testing, the HERO Project found that the detection fraction was relatively high compared with other states, even during peak surge periods. This rate fluctuated substantially in different geographies and time periods but converged to approximately 60% in the last several months of testing. However, the detection fraction was substantially lower for children under 12 years of age, meaning that a greater number of cases were likely missed among youth.

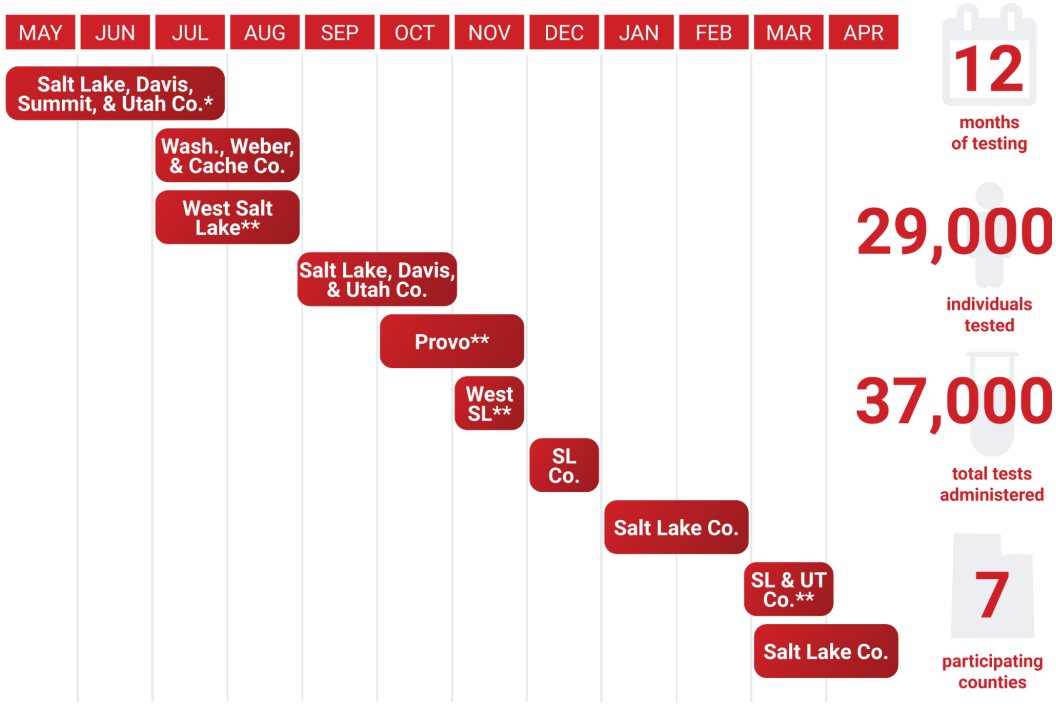
Utah Getting Closer to Herd Immunity by Project End, but Still Distant

To achieve a target range for herd immunity and some sense of normalcy, Utah should aim for between 75-90% of the population immune to Covid-19. Currently, the state has not reached this threshold, meaning that continued precautionary practices and a strong vaccination program are still essential in controlling the spread.

HERO Reports: Community Testing Project

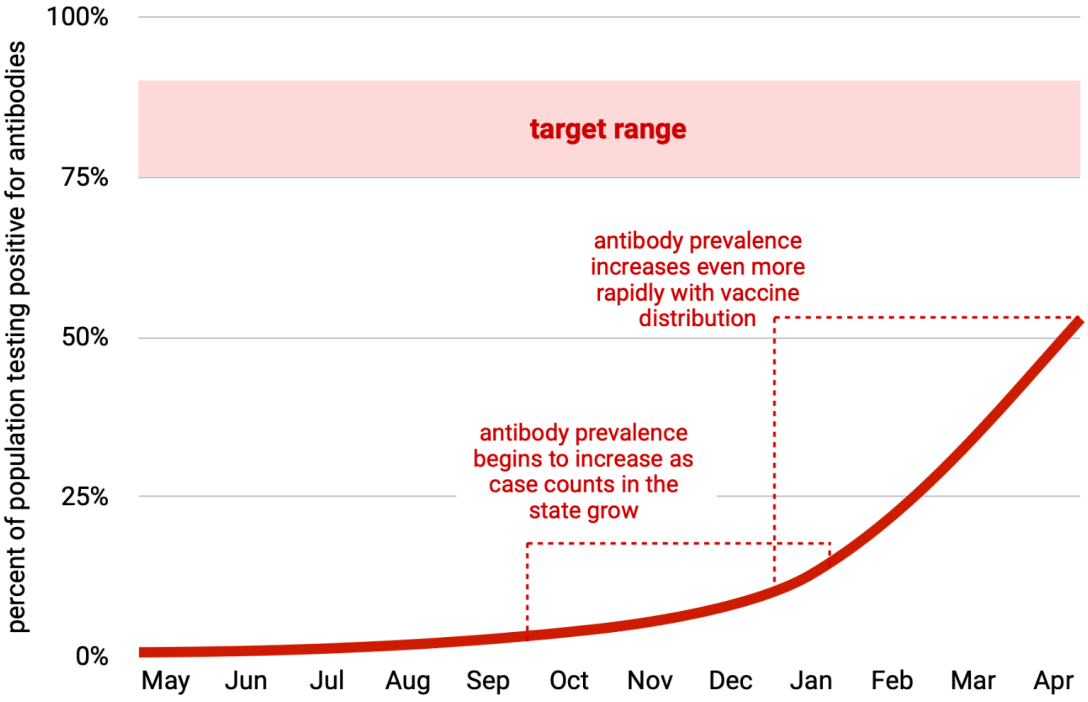
Community Testing Update (released March 31, 2021)
Hotspot Testing in SL County and Utah County (released March 31, 2021)
Salt Lake County (released April 29, 2021)
HERO Project's statewide community-based testing between May 2020 and April 2021 (released May 14, 2021)

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)

Estimated total antibody positivity among tested respondents*



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

SCHOOL TESTING

The HERO Project conducted testing for over 3,700 participants in schools between October 2020 and May 2021. The primary goal of school-based testing was to provide convenient access to Covid-19 testing to students, faculty, and staff to enhance safety in school communities by reducing transmission.

With increased testing, schools could better identify both symptomatic and asymptomatic cases, reducing school outbreaks that prevented in-person learning. Additionally, the HERO team sought to collaborate with other groups to better understand the epidemiology of Covid-19 in school settings.

Key Findings

Asymptomatic Infection Occured in All Populations

Positivity rates were substantially higher for symptomatic students compared to asymptomatic students. However, it was notable that the positivity rate among asymptomatic students was nearly 5% during November and December.

Mitigation Policies and Strategies are Effective

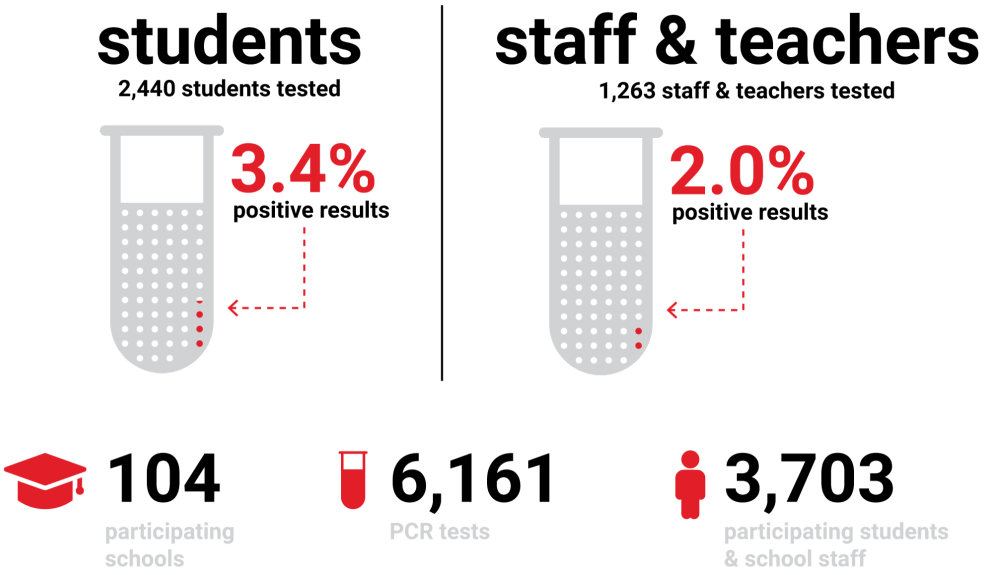
Schools that used prevention strategies (masking, spacing, and onsite testing) to limit the spread of Covid-19 were effective. The research contributed to the CDC's decision to revise school guidelines, emphasizing that three feet of separation can be safe when combined with other prevention strategies.

Testing and Monitoring Policies are Important

Schools who instituted a Test to Stay and Test to Play policy were effective at identifying and isolating Covid-19 cases.

2021 School Year Testing Results

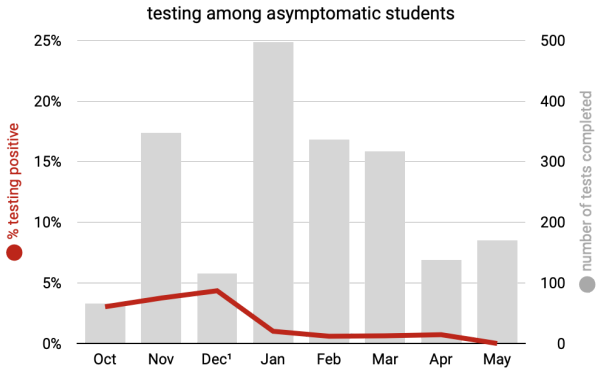
During the 2020-21 school year, students had a higher rate of positive tests than did staff and teachers, but both groups were relatively low.

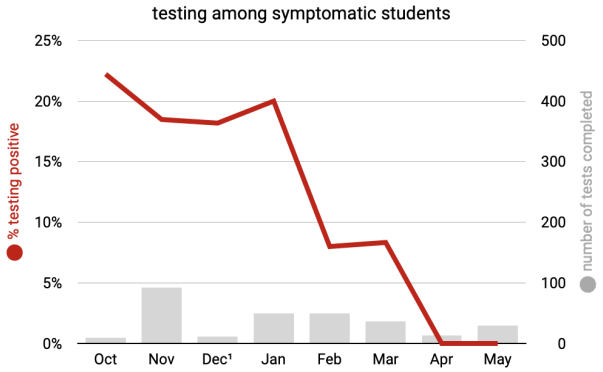


Rates of Infection Across Time

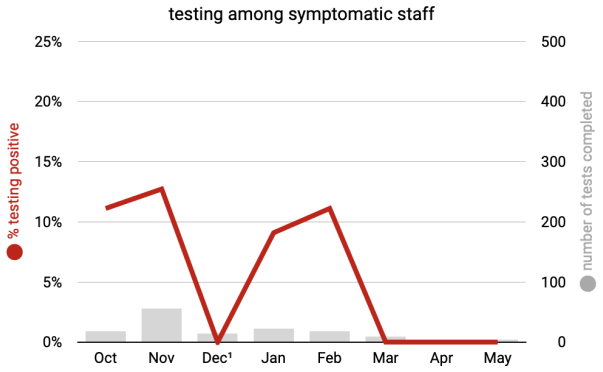
Intensive testing took place every month with the exception of December, due to the winter break limiting the amount of time students and staff were in school.

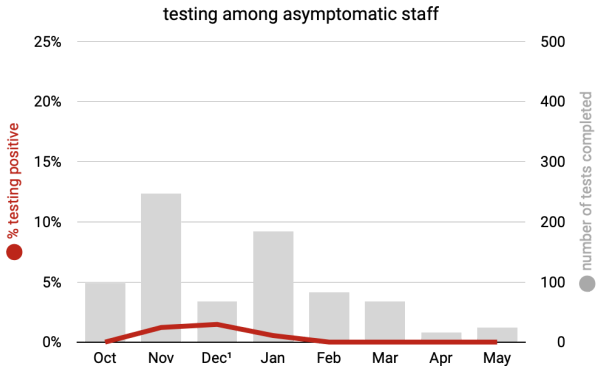
HERO Project K-12 testing results: Students





HERO Project K-12 testing results: Staff





Additional School-Based Projects and Findings

In addition to testing and tracking infection rates, the HERO Project conducted additional research projects. These studies helped develop evidence to assist schools in making more informed decisions, such as length of quarantine after exposure, physical spacing of students in classrooms, and statewide testing policies for participation in extracurricular activities and continuation of in-person learning. The HERO team was able to collaborate with local, state, and national partners for many of these projects.

Elementary School Transmission Study

The HERO Project collaborated with the CDC and a local school district to study the rate of in-school transmission during a period of high community transmission in Utah. The study found that with adherence to prevention strategies such as universal masking, in-school transmission was lower than 1%.

This research contributed to the CDC's decision to revise guidelines, now emphasizing that three feet of separation can be safe when combined with other prevention strategies. A follow-up study emphasized the value of on-site school-based testing as a strategy to help reach underserved populations.

Risk of Learning Models Study
A fall 2020 analysis in collaboration with UDOH and Salt Lake County Health Department compared Covid risk across five Salt Lake County school districts (four with in-person instruction and one with online-only). Elementary and middle school students residing in districts with in-person learning had the same infection risk as those in a district with remote learning. However, high school students in the districts using in-person learning had a 60% higher risk than those residing in a remote-instruction district.

Length of Quarantine After Exposure
HERO researchers compared the risk of infection with different quarantine approaches, timeframes, and testing requirements. They found a 7-day quarantine with a negative test result vs. a 14-day quarantine were comparable. This supported safety of earlier return policies after in-school exposures.

High School Students Survey
In a study conducted by the HERO project, over 1,500 students were surveyed (approximately 6% of the total student body). Approximately 40% of students had to quarantine at least once, highlighting the substantial burden that high school students faced during the 2020-21 school year.

Analysis of Covid-19 Testing Policy
Along with state and national partners, the HERO team completed an evaluation of two statewide testing policies for schools: Test to Stay and Test to Play. The study found that these two strategies preserved over 100,000 student days of in-person instruction and allowed student-athletes to compete in 95% of the more than 11,000 scheduled winter events. This analysis demonstrated that implementation of school-based testing strategies was feasible, sustainable, and effective in identifying and isolating cases.

HERO Reports: School Testing Project

Utah K-12 schools (released March 23, 2021)
Utah K-12 School Update (released April 15, 2021)
Utah K-12 School Update (released May 18, 2021)
Utah K-12 School Update (released June 16, 2021)
Utah HERO K-12 Summary Report (released June 29, 2021)

HERO Publications: School Testing Project

Low SARS-CoV-2 Transmission in Elementary Schools - Salt Lake County, Utah, December 3, 2020-January 31, 2021. Hershow RB, Wu K, Lewis NM, Milne AT, Currie D, Smith AR, Lloyd S, Orleans B, Young EL, Freeman B, Schwartz N, Bryant B, Espinosa C, Nakazawa Y, Garza E, Almendares O, Abara WE, Ehlman DC, Waters K, Hill M, Risk I, Oakeson K, Tate JE, Kirking HL, Dunn A, Vallabhaneni S, Hersh AL, Chu VT.MMWR Morb Mortal Wkly Rep. 2021 Mar 26;70(12):442-448. doi: 10.15585/mmwr.mm7012e3.PMID: 33764967 Free PMC article.

Factors Associated with Participation in Elementary School-Based SARS-CoV-2 Testing - Salt Lake County, Utah, December 2020-January 2021. Lewis NM, Hershow RB, Chu VT, Wu K, Milne AT, LaCross N, Hill M, Risk I, Hersh AL, Kirking HL, Tate JE, Vallabhaneni S, Dunn AC. MMWR Morb Mortal Wkly Rep. 2021 Apr 16;70(15):557-559. doi: 10.15585/mmwr.mm7015e1. PMID: 33857064 Free PMC article.

COVID-19 Testing to Sustain In-Person Instruction and Extracurricular Activities in High Schools - Utah, November 2020-March 2021. Lanier WA, Babitz KD, Collingwood A, Graul MF, Dickson S, Cunningham L, Dunn AC, MacKellar D, Hersh AL. MMWR Morb Mortal Wkly Rep. 2021 May 28;70(21):785-791. doi: 10.15585/mmwr.mm7021e2. PMID: 34043614 Free PMC article

VACCINE HESITANCY PROJECT

During the early summer of 2021, the HERO Project conducted three simultaneous efforts to gain insight into how Utahns perceived the Covid-19 vaccines and what had prevented people from being vaccinated, with the ultimate goal of understanding how to increase vaccine uptake in the state:

- **focus groups**: Commissioned by the HERO Project, the University of Utah Department of Internal Medicine's Qualitative Research Core conducted 26 focus groups with 180 Utahns from 13 specific populations of interest:
    - Health Care: providers, nurses, staff of long-term care facilities
    - Education: educators, high school students
    - Other: rural, young adults, political affiliation: Republican, women, Hispanic, Asian, Pacific Islander, Black/African American
- **door-to-door surveying**: Utilizing the CASPER methodology, the HERO team conducted rapid surveying of 1,018 residents of Davis, Salt Lake, Tooele, and Utah counties.
- **web-based survey**: The HERO team surveyed 2,399 Utahns (through a sampling method intended to provide insight to specific populations while maintaining randomness) living across the Wasatch Front in a web-based qualitative study utilizing a long-form survey questionnaire.

Overall, the HERO team gathered data on the perspectives of over 3,500 Utahns with a wide variety of perspectives, identities, and experiences. They were able to address three main questions:

- How do we increase Covid-19 vaccination uptake in Utah?
- Why aren't people getting vaccinated?
- What are the potential information sources that can be utilized?

Key Findings

Major Barriers to Getting the Vaccine

Among hesitant participants, major barriers to getting the vaccine included: future side effects, quick development of vaccines, fertility and pregnancy concerns. Many felt they did not have enough information on vaccines to feel safe. Additionally, there was low concern about contracting Covid-19 or getting seriously ill among unvaccinated people

Trust Sources of Information

The most trusted sources of information varied across groups and methods, but doctors were generally the most commonly-mentioned trusted source for information about the vaccine. This was particularly true in the quantitative web-based survey.

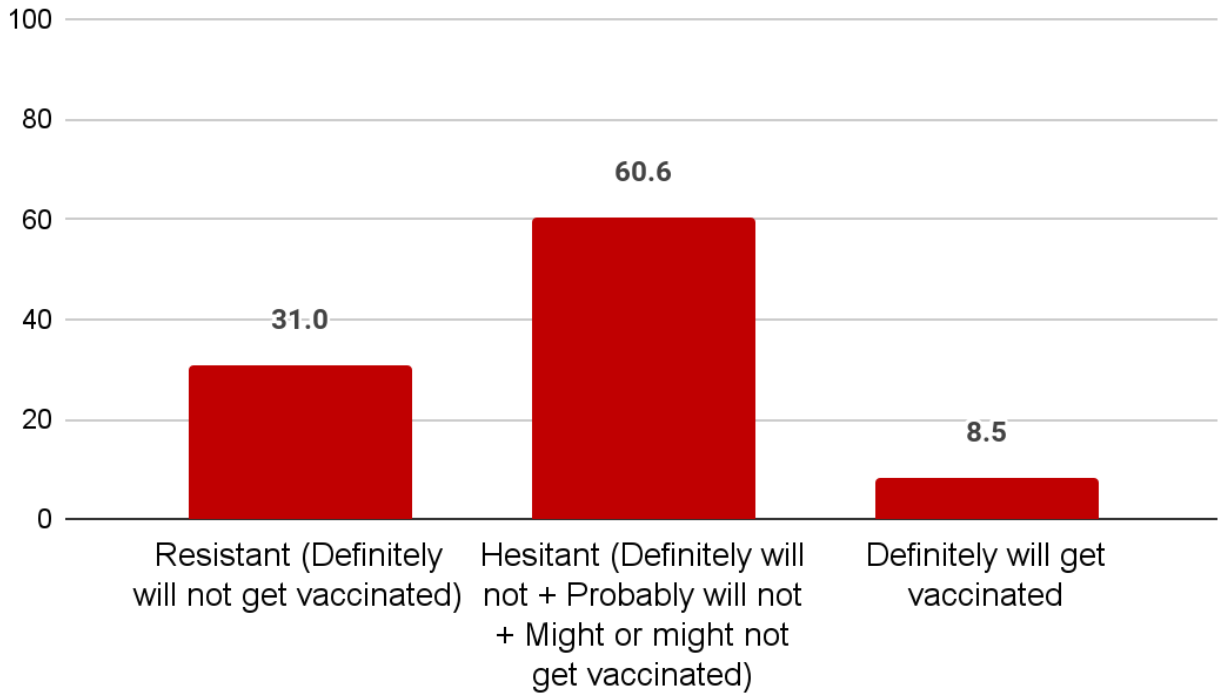
Vaccine Information

From the **CASPER survey**, participants were asked about increasing the vaccination uptake in their community, and among unvaccinated respondents the top suggestion was to provide more information on the vaccine.

Results from the **focus groups** revealed that among unvaccinated participants, many felt they did not have enough information to feel comfortable getting the vaccine and was not worth the risk. They were concerned about side effects, potential infertility, and complications with pregnancy. They felt the vaccine had come out too quickly and did not believe there had been enough research done. It was difficult to access accurate information without needing to look it up themself.

From the **web-based survey,** among unvaccinated respondents, 31% were resistant to getting vaccinated while 60% were hesitant.

Vaccine Attitudes: Potential to Increase Vaccination Uptake
(Percent of Respondents)
(from Web-based survey: n= 443)



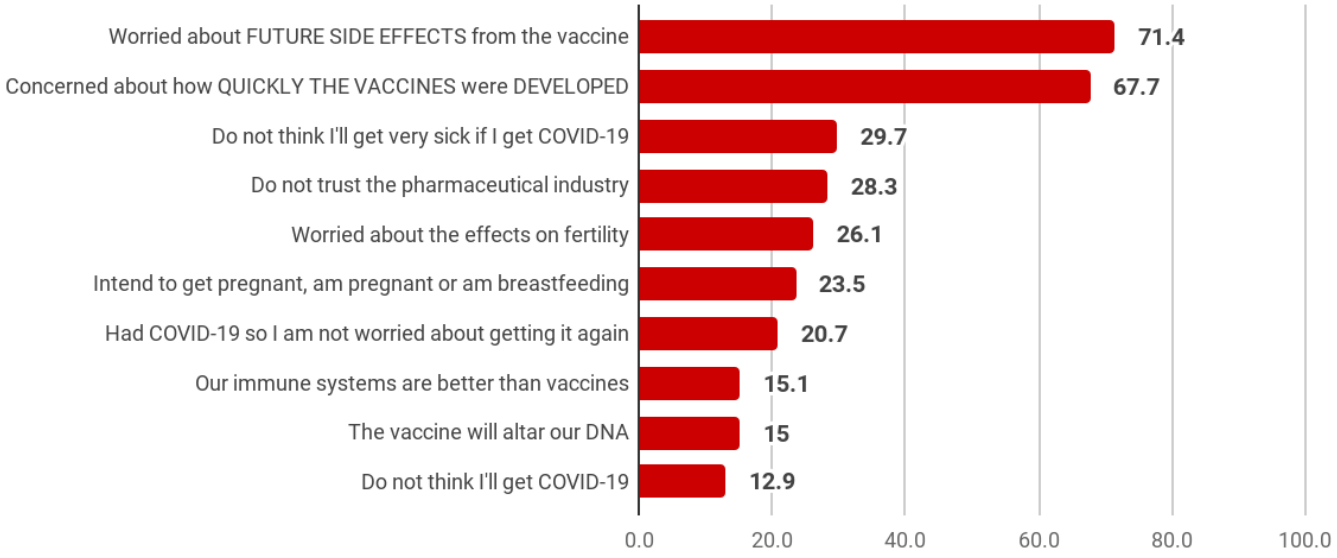
Influential Factors on Initial Vaccine Hesitancy

Participants who were initially hesitant to get the vaccine were influenced by:

- Conversations with doctors
- Conversations with knowledgeable relatives or friends, particularly those in medical field
- Doing their own research

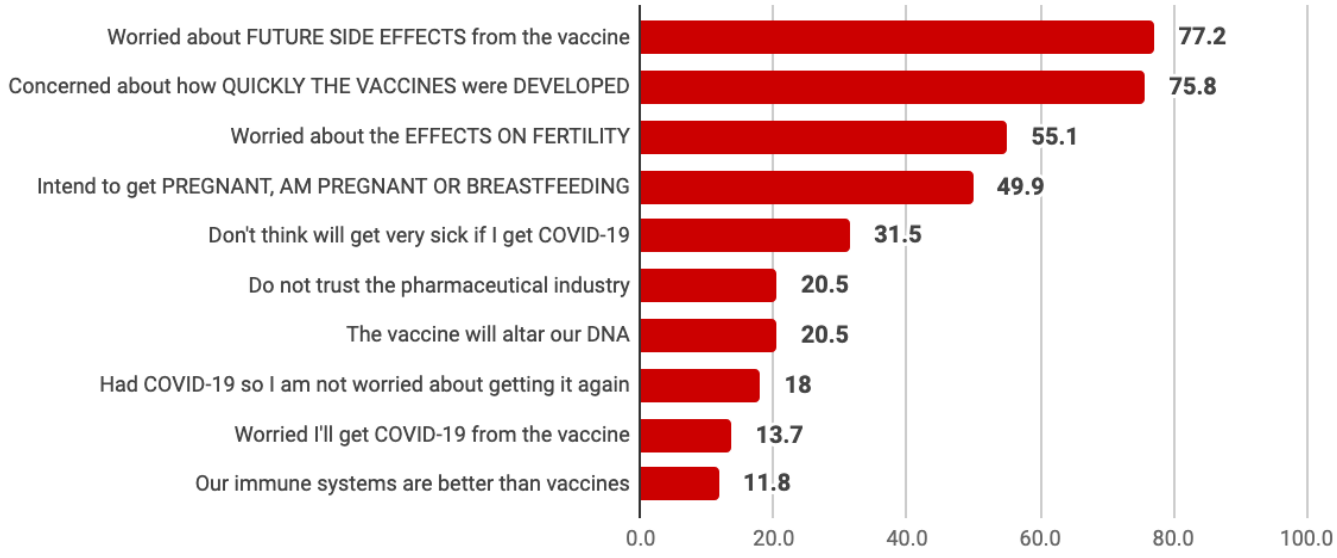
Major Reasons among Vaccine-hesitant Respondents for not Getting the Vaccine

(from Web-based survey: n=270)



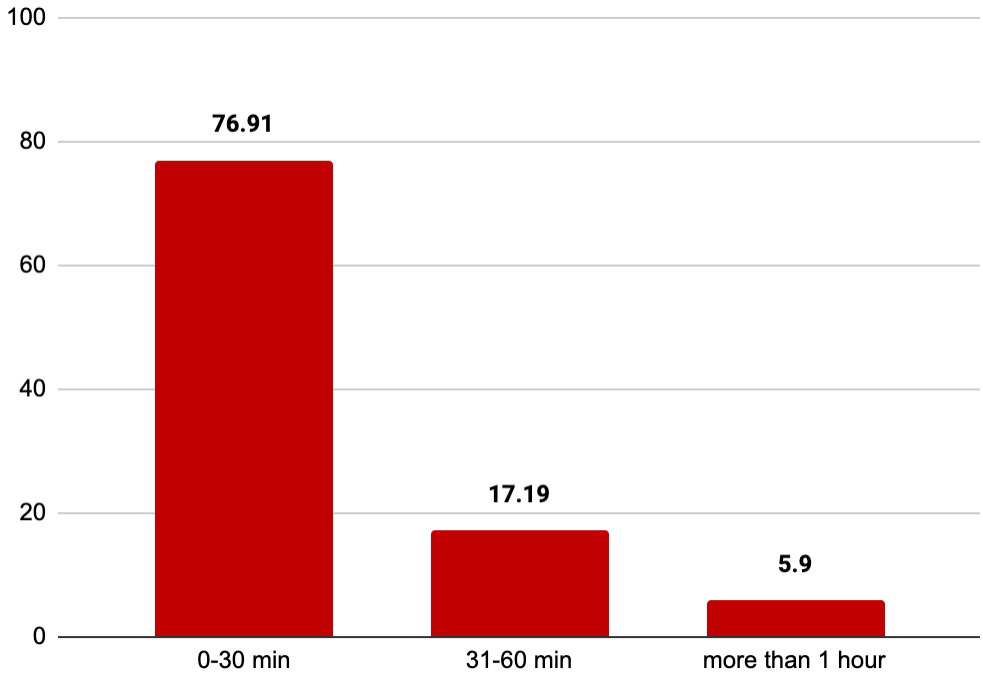
Major Reasons among Vaccine-hesitant Women aged 18-35 for not Getting the Vaccine

(from Web-based survey: n=89)



Time that Vaccine-hesitant Respondents Would be Willing to Spend to Attend One Vaccine Appointment

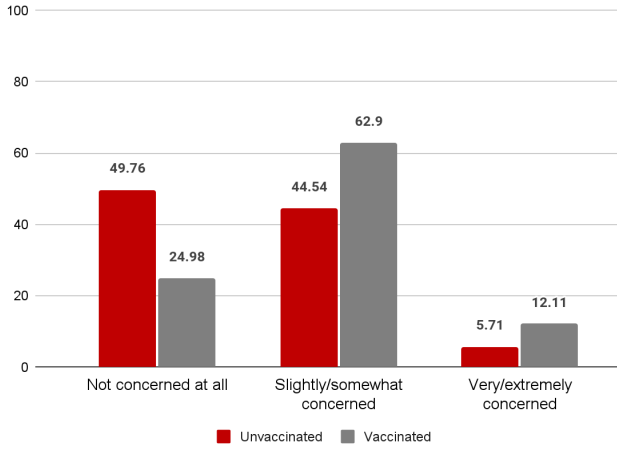
(from Web-based survey n=270)



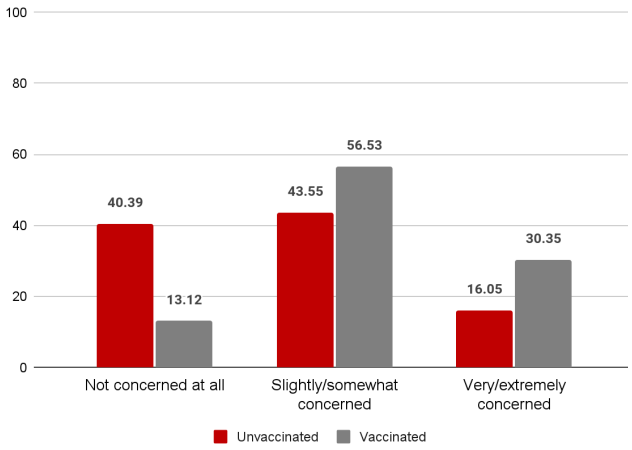
How Concerned are the Unvaccinated about Contracting Covid-19?

(from Web-based survey: Vaccinated n = 1,736; Unvaccinated n = 334)

Concerns about Getting Covid-19



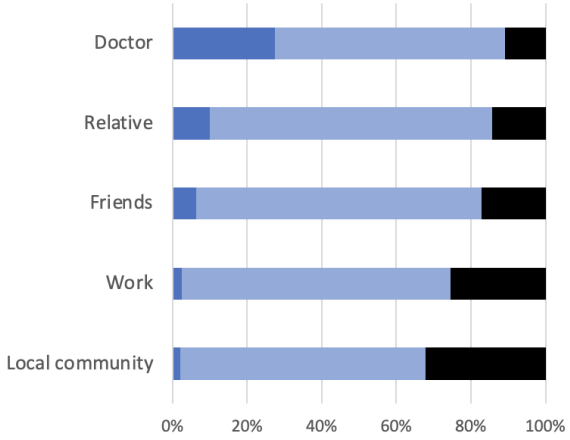
Concerns about Getting Seriously Sick



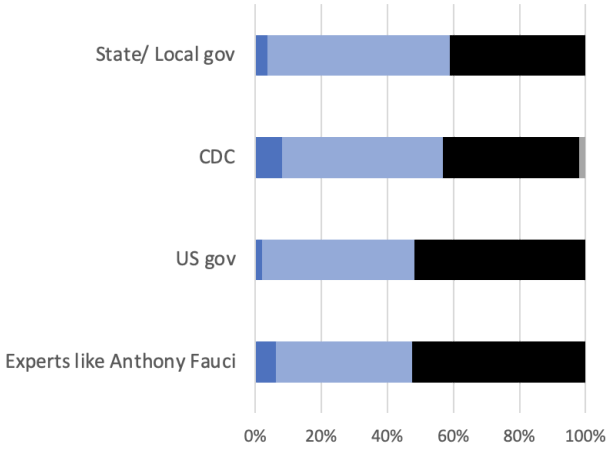
Trust Levels for Covid-19 Information Sources (Among Unvaccinated Respondents)

(from Web-based survey: n= 443)

Top trusted information sources



Trust levels of government sources



HERO Reports: Vaccine Hesitancy Project

Community Assessment for Public Health Emergency Response (CASPER) Door to Door Rapid Survey

- Davis County (released June 23, 2021)
- Salt Lake County (released July 7, 2021)
- Tooele County (released July 7, 2021)
- Utah County (released July 7, 2021)

Online Vaccine Attitude Survey

- Online Vaccine Attitude Survey: Targeted Analysis (released October 8, 2021)
- Online Vaccine Attitude Survey: Key Findings (released October 15, 2021)

Vaccine Attitudes Focus Groups Summaries

- Educators (released July 15, 2021)
- High School Students (released August 2, 2021)
- Young Adults (released August 9, 2021)
- Asian Americans (released August 9, 2021)
- Hispanics (released August 16, 2021)
- Pacific Islanders (released August 16, 2021)
- Rural Utah Communities (released August 2, 2021)
- Women (released August 2, 2021)
- African Americans (released August 9, 2021)
- Political Affiliation Cohort (released August 16, 2021)
- Health Care Workers (released August 16, 2021)

IMPLICATIONS AND RECOMMENDATIONS

As decision-makers in Utah seek to confront the ongoing pandemic—the Delta variant—and to increase vaccination among Utahns, this conclusion to the HERO Project's work can provide important guidance to support an ongoing recovery of public health and economic vitality within the Beehive State.

Doctors are a trusted source of information and should be leveraged to disseminate information. If provided a toolbox, customized for practice type, doctors may effectively communicate with patients information about vaccines. Messaging should be clear and address the risks and concerns Utahns may have about vaccinations. It should clearly state that the vaccine is well researched.

Coupled with a toolbox, bringing local doctors into the community may increase vaccination rates as some Utahns do not see doctors regularly. Information should be disseminated widely across communities, and address time and convenience concerns. Efforts should be made to continue vaccine appointments to be as efficient and accessible as possible, and leaders can consider allowing time off for employees to become vaccinated..

Schools should continue to enforce prevention policies such as masking when community spread is high, and encourage students and staff to get vaccinated. For those who are unvaccinated, schools should implement 'test to play" and "test to stay" policies to minimize infection rates. Implementing testing policies for the unvaccinated should be encouraged.

Comprehensive List: HERO Project Reports

Summary Reports
Utah HERO Project Report (Nov. 24, 2020)
Final HERO Project Summary Report (*this report*)

Community Testing Project
Community Testing Update (released March 31, 2021)
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Door to Door Rapid Survey
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Utah County (released July 7, 2021)

Web-based Survey
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Online Vaccine Attitude Survey: Key Findings (released October 15, 2021)

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Women (released August 2, 2021)
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Political Affiliation Cohort (released August 16, 2021)
Health Care Workers (released August 16, 2021)

Acknowledgments

Leading the HERO Project are Stephen C. Alder, PhD; Adam Looney, PhD; and Matt Samore, MD. The project is funded by the State of Utah in coordination with the Governor's Office of Management and Budget and the Utah Department of Health.

Senior advisors to the project are Taylor Randall, MBA, PhD; Natalie Gochnour, MS; and Michael Good, MD. The Project team is Andrew T. Pavia, MD; Julio Delgado, MD, MS; Adam Hersh, MD; Krow Ampofo, MD; and Tom Greene, PhD. The following teams and centers supported the project:

Center for Clinical & Translational Science Study Design and Biostatistics Center
Brian Orleans, MS
Gentry Carter
Angela Presson, PhD
Chong Zhang, MS
Jian Ying, PhD
Chelsea Allen, PhD
Andrew Redd, PhD
Molly Mcfadden, MS
Ben Brintz, PhD
Tyler Bardsley, MS
Yue Zhang, PhD
Jincheng Shen, PhD
Zhining Ou

CTSI Qualitative Research Core
Patrick Galyean, BS
Elisabeth Kimball, MS
Jeanette Young, MA

Division of Epidemiology
Kristina Stratford, PMP, CCRP
Tavis Huber
Molly Leecaster, PhD
Candace Haroldsen, BS
Xiangyang Ye, PhD
Susan L. Zickmund, PhD

Marriner S. Eccles Institute for Economics and Quantitative Analysis
Nathan Seegert, PhD
Mac Gaulin, PhD
MJ Yang, PhD

University of Utah Health Clinical Operations
Michael Bronson, JD, MBA
Nikki Gilmore, MSN, RN
Christina Butterfield, MSN, RN
David Ence, MHSA

Survey Design and Measurement Core
Morgan Millar, PhD

Utah HERO Project Team
Alicen Bringard, MPA
Elizabeth Rabon, MA
Jill Stephenson, MPA
Soumava Basu, PhD
Jeanette Nelson, PhD
Christopher "Kit" Fry
Jonathan Frehner
Jamon Winegar
Devin Ostler
Annie Smith
Hannah Crane
Braden Card
Maddison Dillon
Cassie Cowdell

The Church of Jesus Christ of Latter-Day Saints generously contributed the use of their parking lots and buildings to support mobile testing for this project. In addition, we thank the HERO Project's field team that has staffed and supported countless testing events across the state. We also appreciate the support of the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1TR002538.

This report was developed by the Sorenson Impact Center at the University of Utah's David Eccles School of Business in partnership with the HERO Project leadership. Sorenson Impact works with public, nonprofit, and private sector stakeholders to develop, structure, and mobilize capital for innovative and data-driven approaches to difficult social and public health challenges. This report was compiled by Anna Kaufman and Allison Nicholson.

For more information about this report, contact Elizabeth Rabon, Associate Director of Administration of the Center for Business, Health, and Prosperity at the University of Utah.

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David Eccles School of Business THE UNIVERSITY OF UTAH
Hope Corps STUDENTS LIFTING UTAH
HEALTH UNIVERSITY OF UTAH
ARUP LABORATORIES