Coronavirus Response Plan: Northern Arizona Region Executive Summary

The COVID-19 epidemic in the United States is growing with community wide transmission occurring in every state. This report summarizes epidemiological data and recommendations to support public health officials and local government to navigate the rapidly evolving COVID-19 epidemic in Northern Arizona, and specifically in Coconino County. Data and recommendations presented are those available at the time of preparation of the report. The full report outlines public health mitigation strategies organized by major public and private sector partners and stakeholders and vulnerable populations of our region. Each recommendation requires full development of a strategy and adaptation for the target audience.

Pandemic of COVID-19. According to the Centers for Disease Control (CDC), the CDC is responding to a pandemic of respiratory disease spreading from person-to-person caused by a novel (new) coronavirus. The disease has been named "coronavirus disease 2019" (abbreviated "COVID-19"). Coronaviruses are a large family of viruses that are common in people and many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people such as with MERS-CoV, SARS-CoV, and now with this new virus (named SARS-CoV-2). This situation poses a serious public health risk. The federal government is working closely with state, local, tribal, and territorial partners, as well as public health partners, to respond to this situation. COVID-19 can cause mild to severe illness; most severe illness occurs in adults 65 years and older. The virus that causes COVID-19 is infecting people and spreading easily from person-to-person. On March 11, 2020, the COVID-19 outbreak was characterized as a pandemic by the World Health Organization.

Stay-at-Home Advisories

The trigger for issuing a stay-at-home advisory in a US state is when **case counts are doubling every three to five days** (based on the current New York experience) or when state and local officials recommend it based on the local context (for example, growth on track to overwhelm the health system's capacity).

The trigger for issuing a recommendation to step down from a stay-at-home-advisory back to "slow the spread" is when the number of new cases reported in a state has declined steadily for 14 days (i.e., one incubation period) and the jurisdiction is able to test everyone seeking care for COVID-19 symptoms.

Pandemic Planning is important to ensure effective local, federal and global responses to highly infectious diseases like COVID-19. A multi-sectoral approach, inclusive of public health, health care, education, business, transportation, not for profit, housing, and social service sectors among many others is required for effective planning. To ensure equity and the opportunity for all people to be included and considered, the process must be done in collaboration with community leaders and organizations, especially with and for those representing vulnerable populations, such as those identified at high medical and social risk. Among those considered at high medical risk for COVID-19 are those over the age of 65 years, those with underlying health conditions. Those residents who occupy societal positions that increase their social risk for COVID-19, include low wage earners, people experiencing homelessness, immigrants, American Indian, justice involved and families living in poverty among many other vulnerable populations. In coordination, stakeholders are best able to consider the characteristics of the local community and region and create a comprehensive plan to address COVID-19 which protect or collective health, and wellbeing, our interconnected economies and our vision for the future.

Non-pharmaceutical interventions (NPI) are any measure that an individual or population of people could take to prevent the spread of disease without the use of medical intervention. For example, social distancing is an effective non-pharmaceutical intervention that recommends limiting person–to-person contact as much as possible to prevent the spread of infection.

Benchmarks for Lifting Social and Physical Distancing: According to the National Coronavirus Response: A Road Map to Reopening prepared by the American Enterprise Institute [1] to effectively transition away from NPIs such as physical or social distancing as the primary tool for controlling current and future spread of COVID-19 and move to reopening and establishing protections to be able to lift all physical and social restrictions, a state or region can safely proceed when it has achieved the following benchmarks:

1. A sustained reduction in cases for at least 14 days
2. The state is able to test all people with COVID-19 symptoms
3. Hospitals in the state are safely able to treat all patients requiring hospitalization without resorting to crisis standards of care
4. The state is able to conduct active monitoring of confirmed cases and their contacts.

Currently, the state of Arizona nor Coconino County have met these benchmarks. To meet these benchmarks for lifting social and physical distancing in any significant way, three main areas currently require strengthening:

1. Better data to identify areas of spread and the rate of exposure and immunity in the population;
2. Improvements in state and local health care system capabilities, public-health infrastructure for early outbreak identification, case containment, and adequate medical supplies; and
3. Therapeutic, prophylactic, and preventive treatments and better-informed medical interventions that give us the tools to protect the most vulnerable people and help rescue those who may become very sick

Current Evidence

COVID-19 Cases and Testing (Benchmark 1 and 2)

Coconino County confirmed its first case of COVID-19 on March 15, 2020. According to the Arizona Department of Health Services (ADHS) COVID-19 Dashboard Community transmission of COVID-19 is considered widespread with risk for infection increasing with some areas of heightened risk. As of April 27, 2020:

- Coconino County had the 4th highest case rate in Arizona, with 425 cases and 38 deaths and a significantly higher positively rate of 23% compared to 9% positivity rate for Arizona.

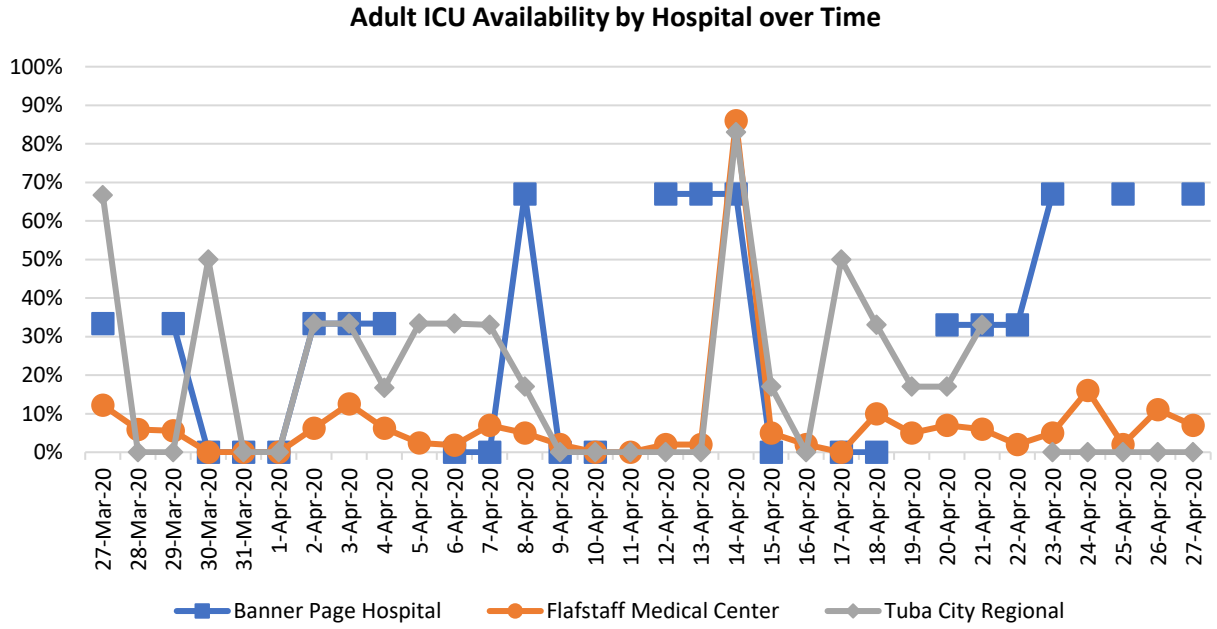
[1] Gottlieb S, Rivers C, McClellan M, Silvis l, Watson C. National Coronavirus Response: A roadmap to reopening. America Enterprise Institute. March 28, 2020. Accessed at : https://bit.ly/2VFw4xb

- Approximately 1, 433 COVID-19 tests have been administered in Coconino County by private and state laboratories, which equates to less than .1% of the total population of Coconino County residents tested for COVID-19.
- Currently, there are 93.4 COVID-19 cases per 100,000 county residents and a fatality of 3.83 per 100, 000 residents.
- As a Northern Arizona region, inclusive of Apache, Coconino, Navajo and Mojave counties, we account for 22% (1,511) total COVID-19 cases in Arizona.

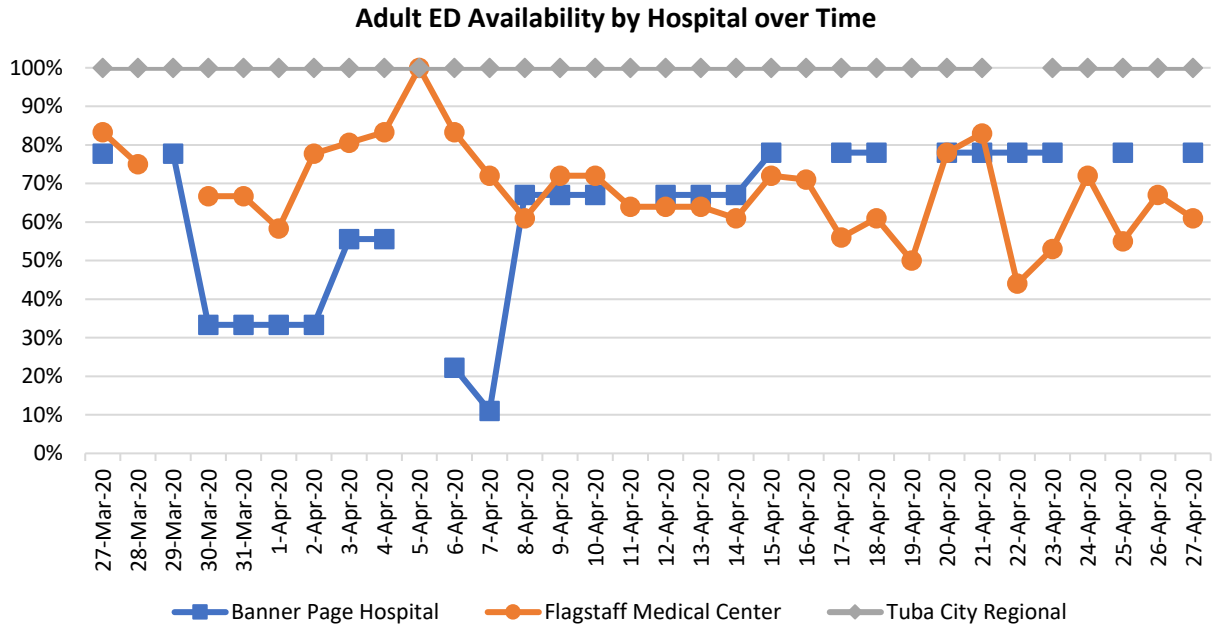
Health Systems Capacity (Benchmark 2)

In collaboration with the Coconino County COVID-19 Surveillance Team, epidemiologists from the Northern Arizona University (NAU) College of Health and Human Services tracked adult Intensive Care Unit (ICU), Emergency Department (ED), Adult Medical-Surgical, and ventilator availability overtime and across three major health systems in the Northern Arizona region, including Flagstaff Medical Center (FMC), Banner Page Hospital, and Tuba City Regional Medical Center.

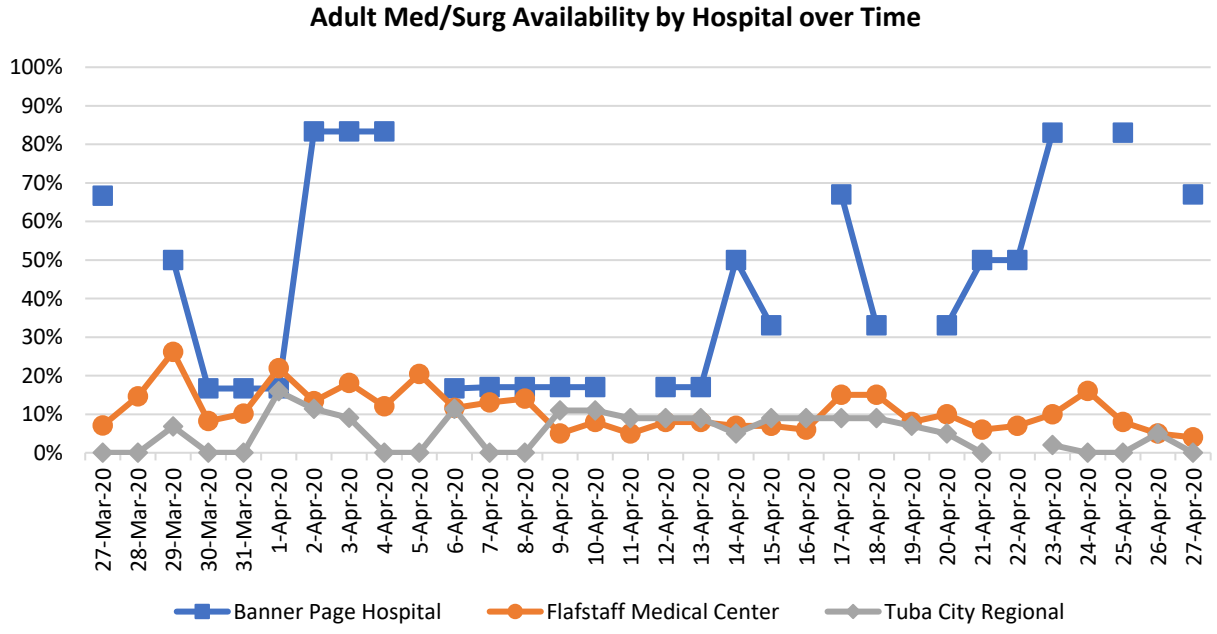
- **ICU availability** has fluctuated since the start of the COVID-19 pandemic, ranging from 0% to 90% of availability on any given day. Tuba City Regional has experienced low levels of availability. Flagstaff Medical Center (FMC) ICU availability has remained under 20% during the course of the pandemic. Banner Page's and Tuba City Regional's availability of their 3 and 6 ICU beds, respectively, has fluctuated over time. As of April 27, 2020, there was less than 20% adult ICU availability at FMC and Tuba City Regional.



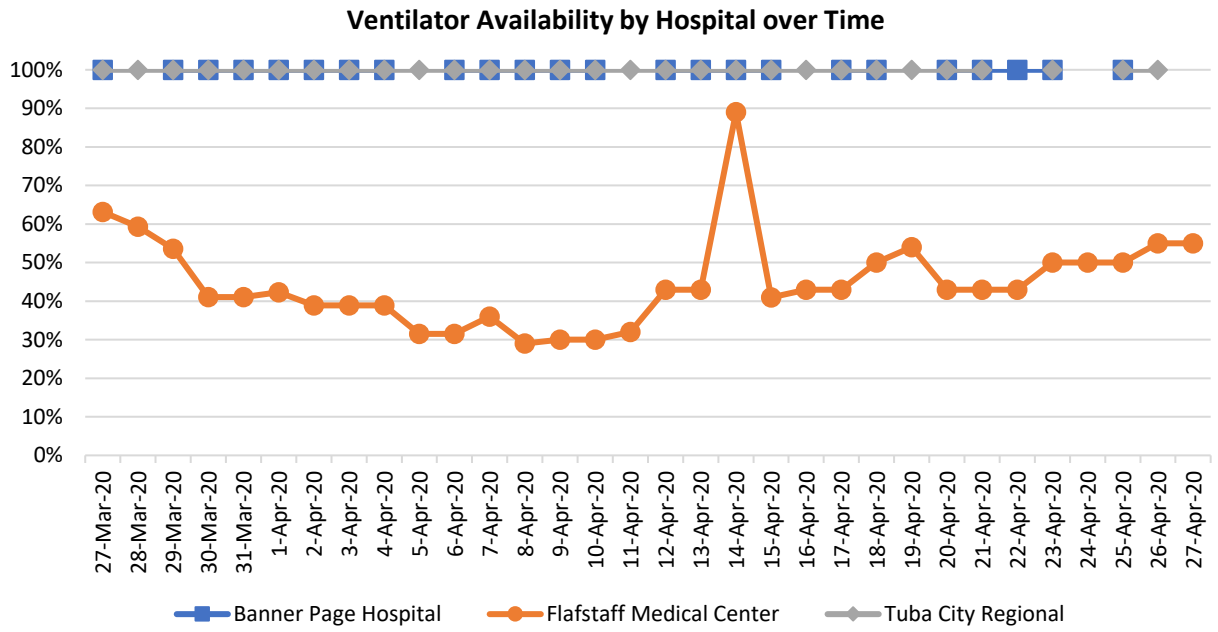
- **Adult ED availability** also fluctuates over time. Both FMC and Tuba City Regional ED availability has remained over 60%. Banner Page has experienced spikes in low availability of their 9 ED beds.



- **Adult medical-surgical bed** availability has generally remained below 20% in all three hospitals with little fluctuation at FMC and Tuba City Regional. Banner Page has seen more fluctuation of the availability of their 6 med/surg beds.



- **Ventilator** availability has a slow downward trend from the end of March (60% availability) to mid-April (30% availability). On April 27, 2020, FMC had a 55% ventilator availability. Both Tuba City Regional and Banner Page hospitals have reported 100% availability in ventilators during the course of the pandemic.



Case Tracing and Monitoring (Benchmark 4)

People in close contact with someone who is infected with a virus, such as the Coronavirus, are at higher risk of becoming infected themselves, and of potentially further infecting others. Closely watching these contacts after exposure to an infected person will help the contacts to get care and treatment, and will prevent further transmission of the virus This monitoring process is called contact tracing, which can be broken down into 3 basic steps:

- **Contact identification:** Once someone is confirmed as infected with a virus, contacts are identified by asking about the person's activities and the activities and roles of the people around them since onset of illness. Contacts can be anyone who has been in contact with an infected person: family members, work colleagues, friends, or health care providers.

- **Contact listing:** All persons considered to have contact with the infected person should be listed as contacts. Efforts should be made to identify every listed contact and to inform them of their contact status, what it means, the actions that will follow, and the importance of receiving early care if they develop symptoms. Contacts should also be provided with information about prevention of the disease. In some cases, quarantine or isolation is required for high risk contacts, either at home, or in hospital.

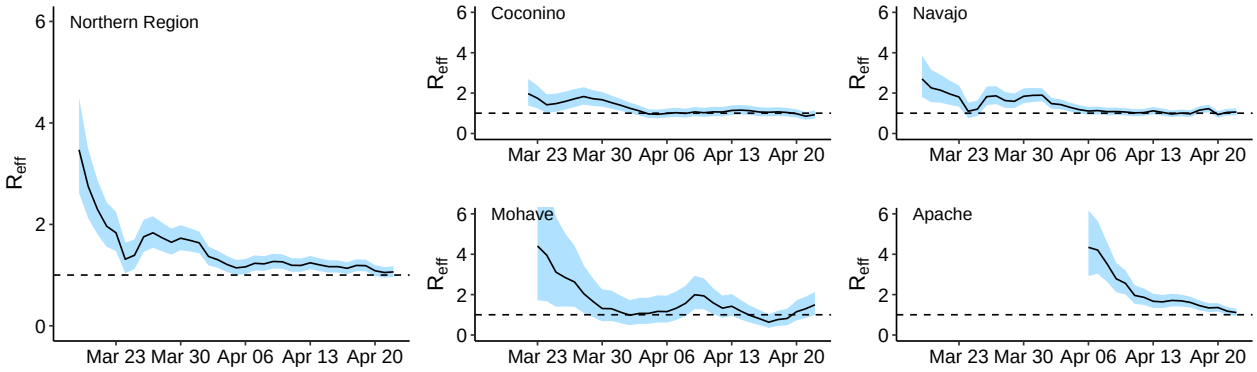
- **Contact follow-up:** Regular follow-up should be conducted with all contacts to monitor for symptoms and test for signs of infection.

Currently, 6 case investigators conduct contact identification, contact listing and follow up per day M-F; and on weekend; with 3 case investigators per day taking phone calls from the public. Capacity to conduct case tracing in Coconino County and in the Northern Arizona region is not at the desired level at this time.

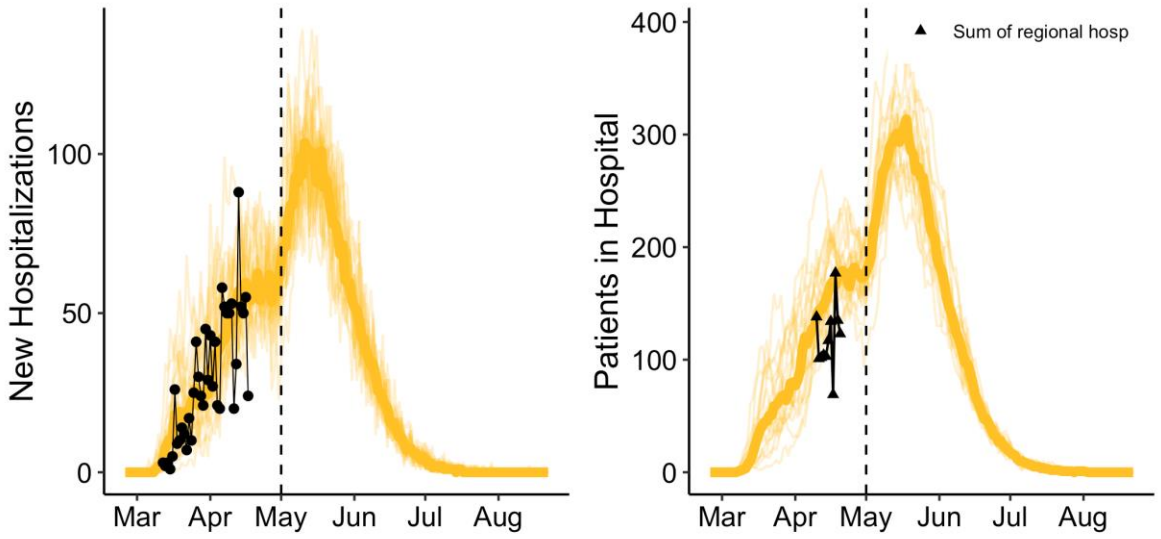
Modeling Coronavirus in Northern Arizona

Northern Arizona University researchers generated several time-based modeling scenarios to determine the best course for social distancing interventions to mitigate disease transmission and hospitalization in the Northern Arizona region.

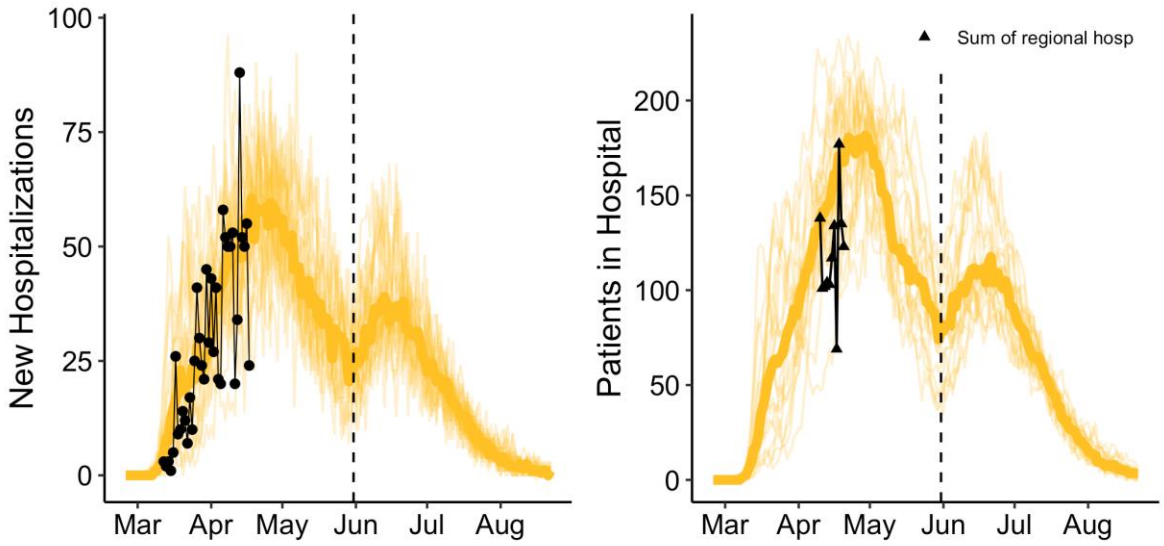
The researchers calculated the time-varying R0 (R-naught) of the pathogen, which is often referred to as the effective reproductive number of the pathogen (R_{eff}). This number represents the average number of secondary infections that arise from a primary infection. Values above 1 mean that the pathogen is spreading exponentially, values equal to 1 mean the pathogen is spreading in a linear fashion, while values below 1 mean that the pathogen is declining in the population. Across the region, interventions have been successful in bringing the pathogen growth down to linear growth, although the pathogen is not yet declining in these populations. This also varies across the region, by counties. Note that our ability to detect cases influences the accuracy of these results.



The research group also developed several scenarios to describe how the pathogen spread might affect hospitalization rates in the future. According to these time-based modeling scenario estimates, if existing physical and social distancing measures were lifted on April 30, 2020, current hospitalization percentages of COVID-19 patients would triple (or more) between April 30 and May 15, which could outpace the ability of local hospitals to manage the situation.



If social distancing remained in place through May 30, 2020, disease transmission would flatten the curve enough to keep hospitalizations roughly at their current rate through the beginning of July 2020.



Note that these projections have several limitations and are not yet peer-reviewed. Models and projections will be continually refined. The decline in infections in August has much uncertainty and could be influenced by new importations of the virus from other regions, meaning that smaller outbreaks might arise continually until most people have been exposed to the virus.

Recommendations for Lifting Social Distancing

Until the triggers for relaxing Stay-at-Home ordinances are achieved and while community-wide transmission remains high in Arizona and in the neighboring Northern Arizona counties and Native Nations, and according to best available data we recommend the following specific steps provided by

the American Enterprise Institute to successfully transition out of Phase 1 of the COVID-19 epidemic in our region:

Maintain Physical Distancing

- Closing community gathering spaces such as schools, shopping centers, dining areas, museums, and gyms statewide (places where people congregate indoors);
- Promoting telework for nonessential employees statewide;
- Urging the public to limit unnecessary domestic or international travel;
- Canceling or postponing meetings and mass gatherings;
- Shutting dining areas but encouraging restaurants to provide takeout and delivery services if possible;
- Issuing stay-at-home advisories in hot spots where transmission is particularly intense (i.e., when case counts are doubling in a city or locality every three to five days); and
- Monitoring community adherence to physical distancing and stay-at-home advisories, adjusting risk messaging as appropriate, and identifying alternative incentives for compliance if needed.

Increase diagnostic testing capacity and build data infrastructure for rapid sharing of results

- Increase diagnostic testing capacity for: 1) Hospitalized patients (rapid diagnostics are needed for this population); 2) Health care workers and workers in essential roles (those in community-facing roles in health and public safety); 3) Close contacts of confirmed cases; and
- Outpatients with symptoms. (This is best accomplished with point-of-care diagnostics in doctors' offices with guidelines that encourage widespread screening and mandated coverage for testing.)

Implement Comprehensive COVID-19 Surveillance Systems

- Widespread and rapid testing at the point of care using cheaper, accessible, and sensitive point-of-care diagnostic tools that are authorized by the Food and Drug Administration (FDA);
- Serological testing to gauge background rates of exposure and immunity to inform public health decision-making about the level of population-based mitigation required to prevent continued spread in the setting of an outbreak; and
- A comprehensive national sentinel surveillance system supported by and coordinated with local public health systems and health care providers.

Massively Scale Contact Tracing, Isolation and Quarantine

- Surge the existing public health workforce to conduct case finding and contact tracing;
- Enable rapid reporting to state, local, and federal health authorities, through the public health workforce and electronic data sharing from health care providers and labs; and
- Develop and field a technological approach to enable rapid data entry, reporting, and support for isolation and quarantine.

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