The Evolving COVID-19 Epidemic in Arizona

The State's past and current testing, incidence, and death rates

To be updated periodically: Updated 07/06/2020

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Overview

- Arizona recently has experienced a **dramatic rise in cases** that is not solely due to an increase in testing efforts.

- Because of the unique and unfortunate situation Arizonans are experiencing, this presentation will review past and current rates and statistics regarding testing efforts, incidence of COVID-19, and deaths due to COVID-19. This will include highlighting key dates that have led to the increase in community transmission we are observing today.

    - If these rates and statistics are new to you, we suggest either following along through this set while also viewing the "**Commonly Used Epidemiology Statistics in the Time of COVID-19 And What They Do and Do Not Mean**"

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A Few Helpful Hints

- When viewing the graphs, keep in mind that it takes roughly ***at least 4-7 days for numbers of tests, new cases, and deaths to be reported.*** Keep this in mind when you are viewing the data in this presentation.
  - If it looks as though there is a dramatic downturn in these values and they are at the end of the graphs and it is within 4-7 days of when these were updated, **it is likely that these totals have not been completely reported** yet.
  - In the next updates, **you will see these totals increase as the rest of the data is reported** to the Arizona Department of Health Services.
- Some of the charts have multiple data types being presented. **Be sure to look out for the labels on the charts** to keep track of what data and statistics are present so that you are able to read the graphs most effectively.

During the Stay-at-home Order

- Back on March 11th, Arizona's Stay-at-home Order was put into effect, which limited physical interaction in social/business spaces.

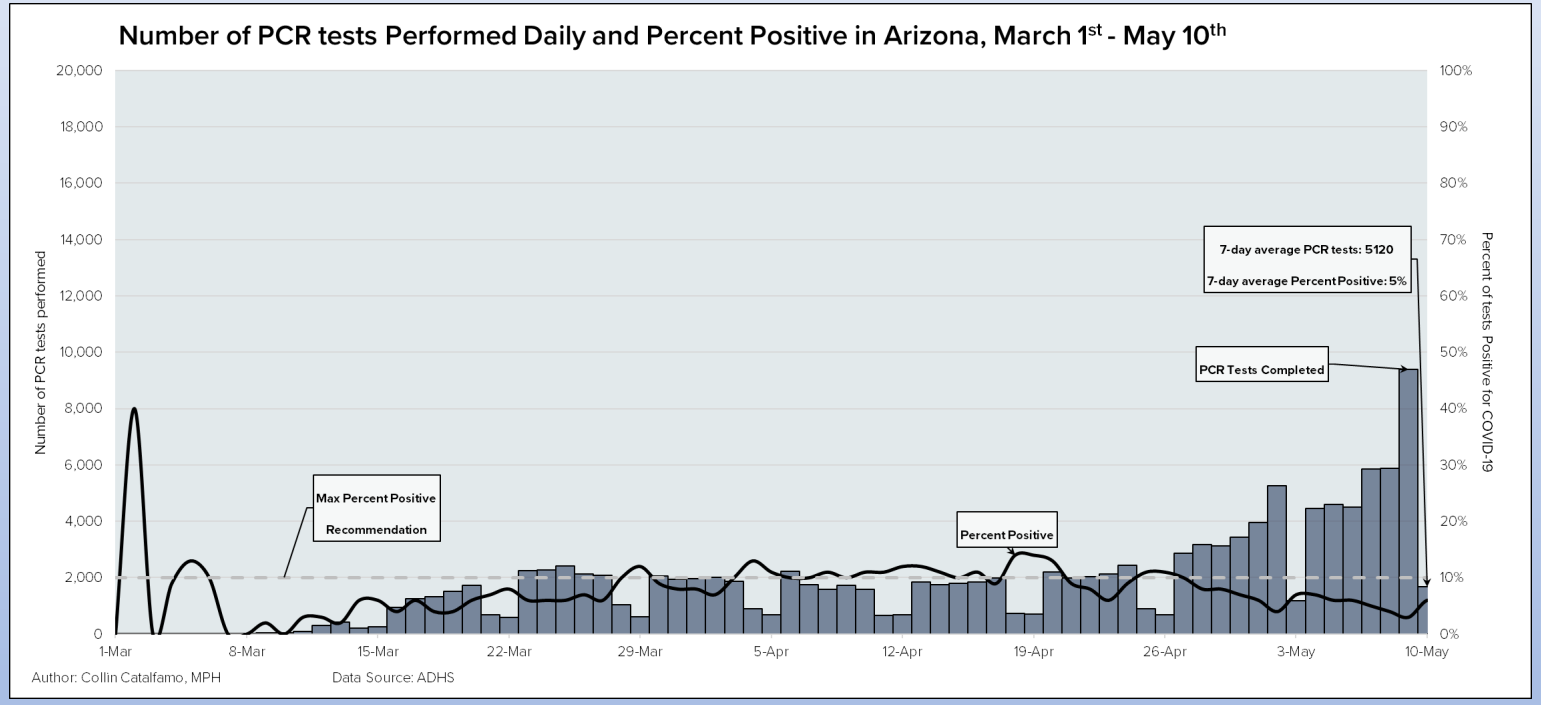
- At this time, Arizona was still towards the beginning of our outbreak of COVID-19 so our testing capacity was low.
  - But our overall cases were also low, so this time was primarily used to try and increase the State's testing capacity, prepare hospitals in the event that the outbreaks increase, and lay down the community/business framework to withstand and keep transmission low once the Stay-at-home order gets lifted.

May 10th, 2020

Before re-opening

Daily PCR (the swab or spit) Tests

- Between March 1st and May 10th, Arizona's testing capacity was increasing.
  - The number of tests performed began low but were able to increase to an average of ~5000 tests over a 7 day period.
  - At the same time, our **percent positive** fluctuate around the 10% mark (the WHO recommendation for maintaining spread of the outbreak).



May 10th, 2020

Before re-opening

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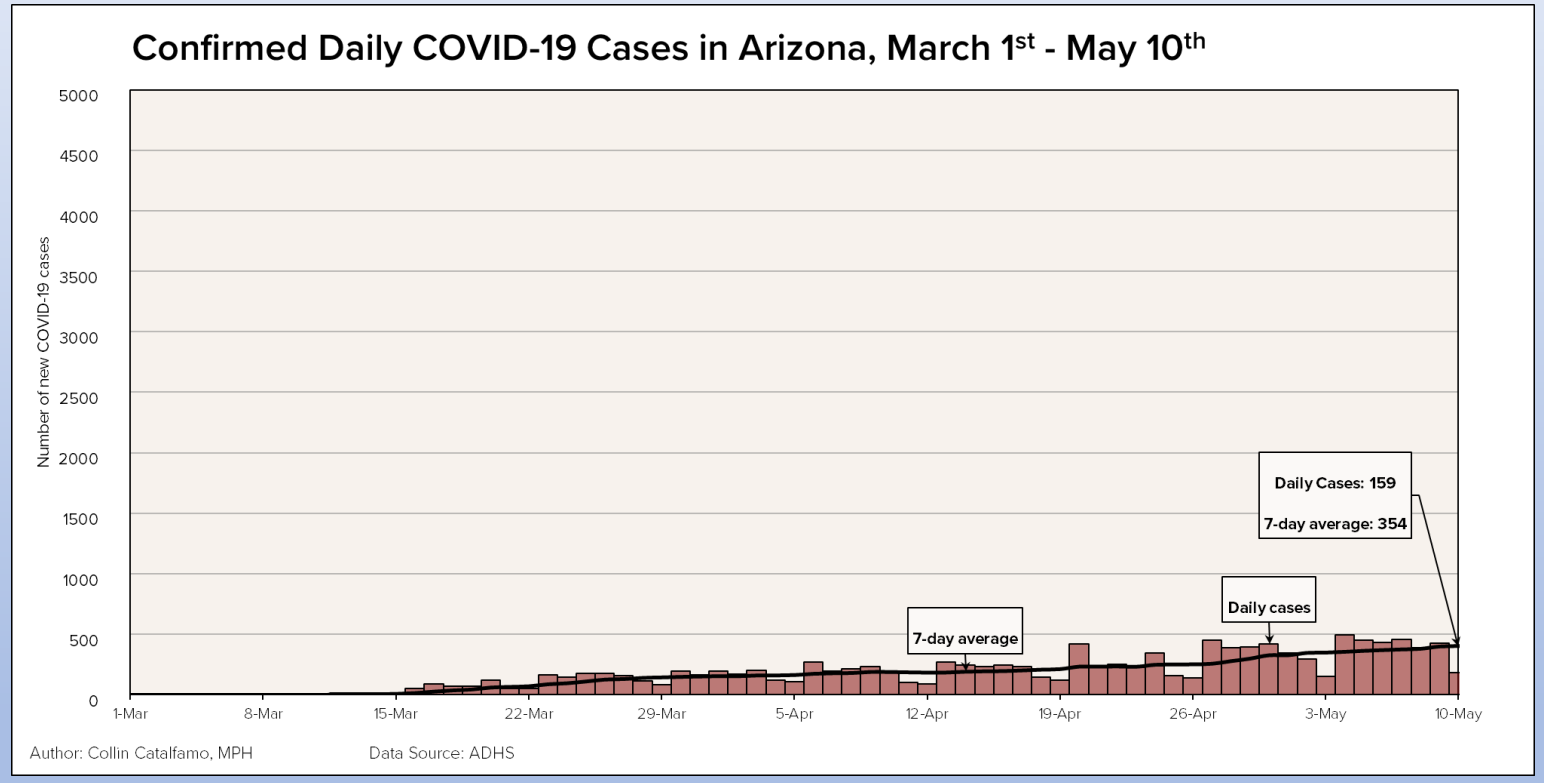
Daily Cases

- Our 7-day average for cases was increasing slowly.
  - May 10th we had an average of 354 new cases **daily.**
  - **We had not yet seen a consistent 14 day decline in the number of new cases ,** which was one of the key metrics for relaxing restrictions and re-opening the State.
- Our case counts were lower than neighboring states, but this was due to an early enaction of a state-wide Stay-at-home Order.



May 10th, 2020

Before re-opening

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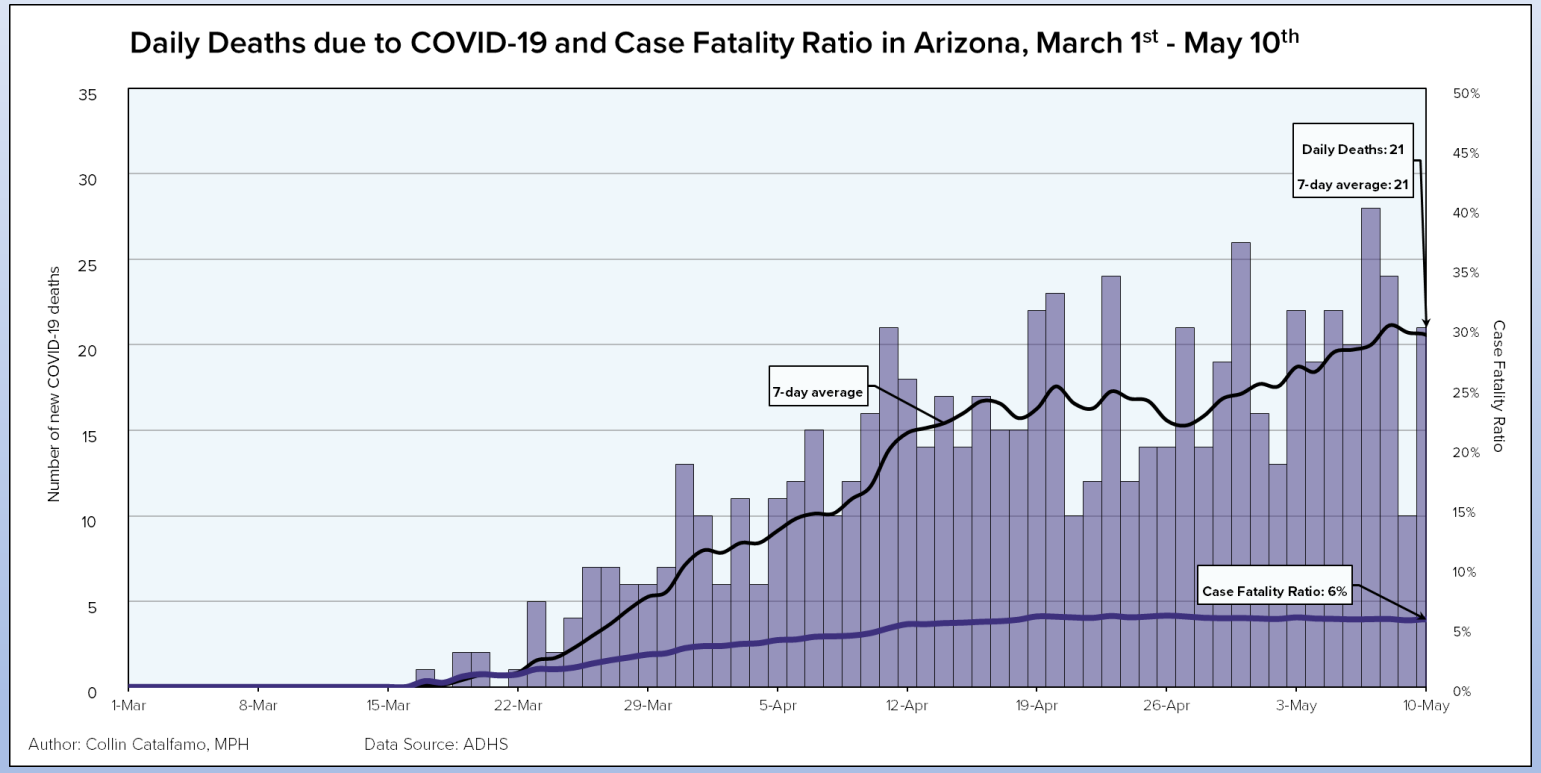
Daily Deaths

- We ended this time period with an average **daily death count due to COVID-19** of 21 deaths per day.
- Those who were getting infected early on in Arizona's outbreak were those in high-risk categories (e.g. those who were older and had chronic health conditions)
  - This led us to also have a higher **case fatality rate** of 6% overall based on our cases and deaths.



May 10th, 2020

Before re-opening

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Once the Stay-at-home Order Expired

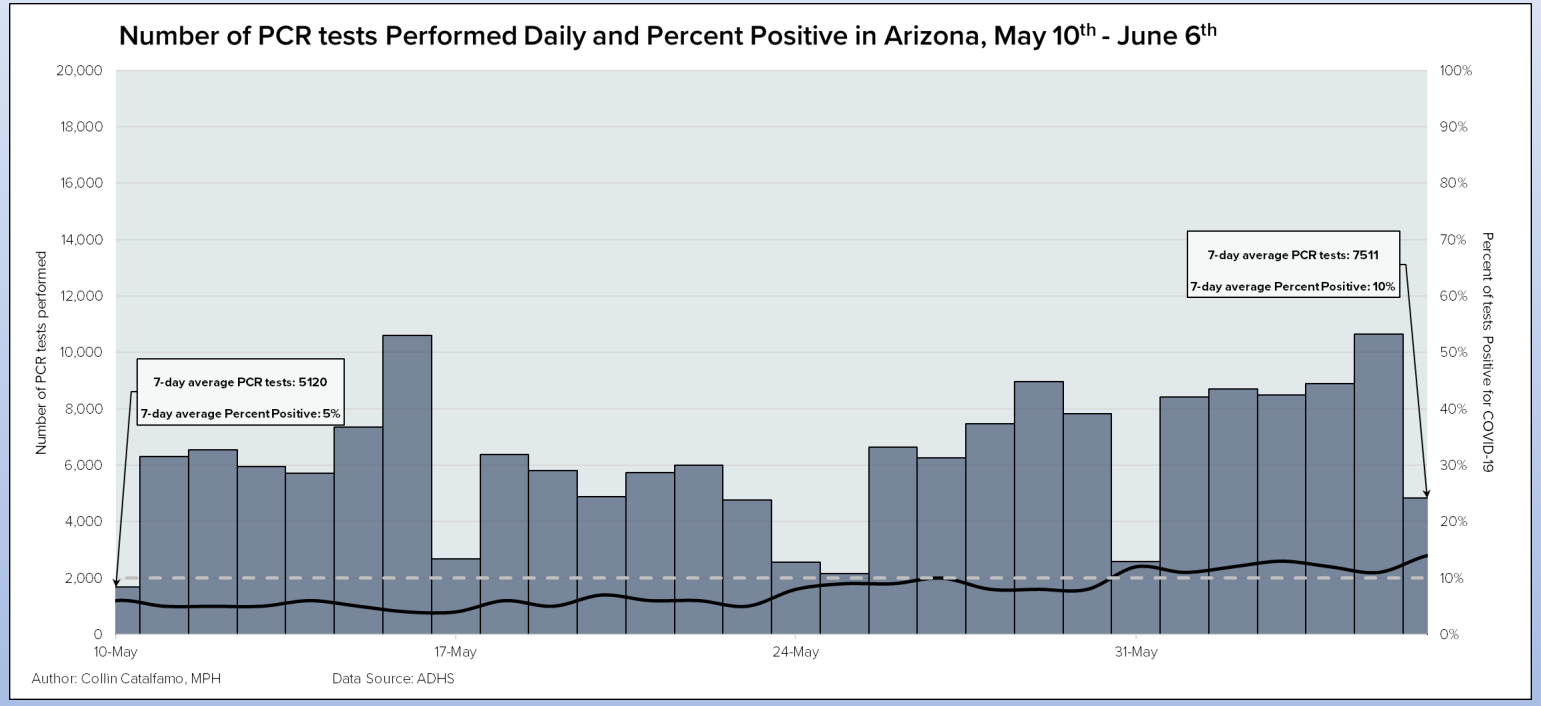
- Beginning May 12th, restaurants were allowed to start reopening their establishments to in-house dining.
- **The Stay-at-home Order expired on May 15th** which allowed for other businesses to open as long as they met certain criteria.
  - A gradual relaxation of this criteria occurred throughout this time.
- Memorial Day Weekend was also during this time period. While some Arizonans chose to follow public health guidance, **others did not and took advantage of bars and clubs opening with little to no physical distancing and mask use not required.**

June 6th, 2020

After re-opening

Daily PCR (the swab or spit) Tests

- During this time, testing only increased marginally.
  - We began testing an average of 5120 people per day and ended at 7511, **only a 2391 increase.**
- We also started to see an increase in the **percent positive** towards the end of this period where we trended about 10% mark (a sign that community transmission could be increasing).
  - This is also around the period of time we would start to see if disregard for precautionary measures during Memorial Day Weekend would result in an increase in cases.



June 6th, 2020

After re-opening

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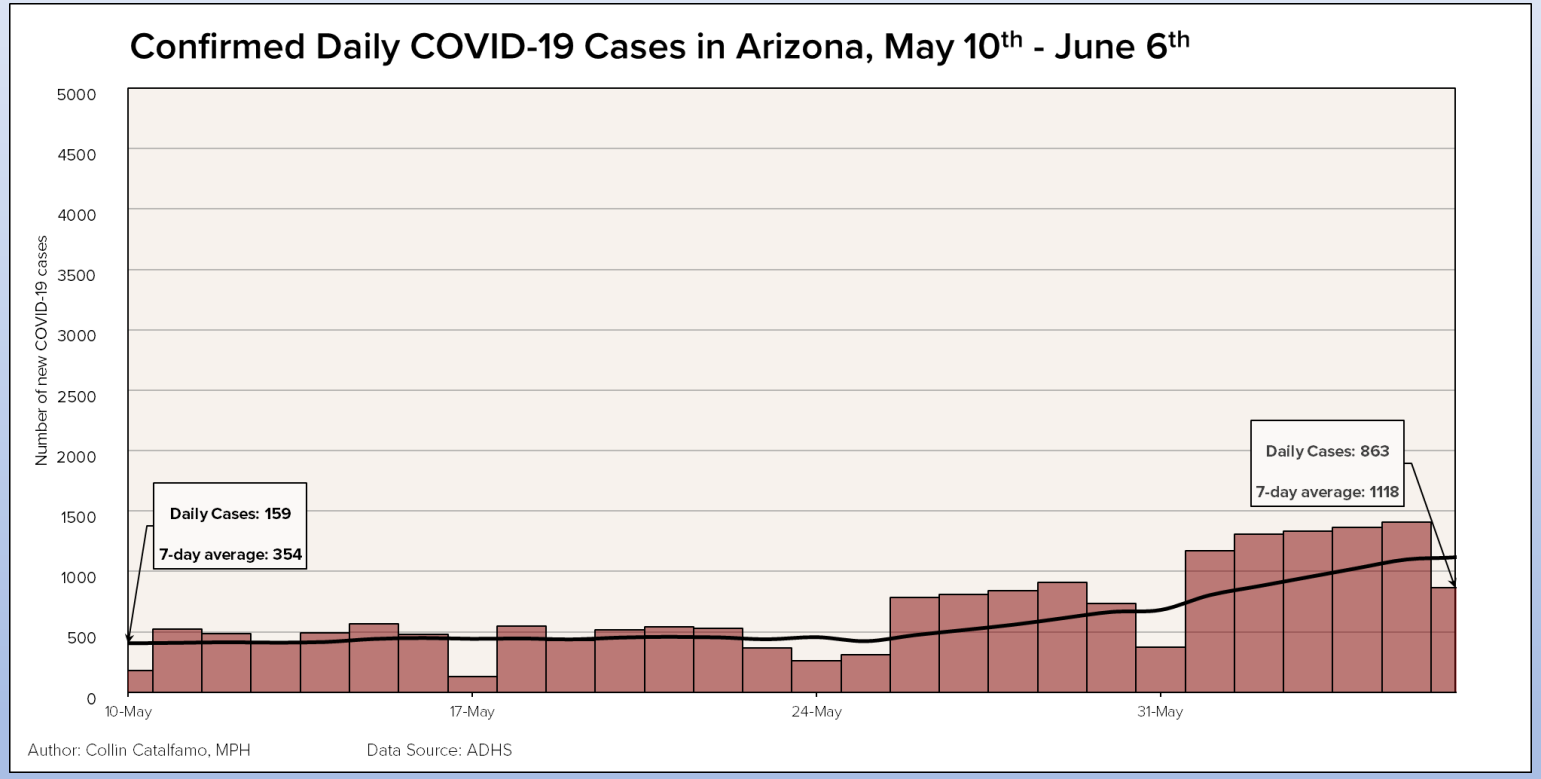
Daily Cases

- Along with an increase in the **percent positive** of PCR tests, Arizona also began to see a consistent uptick in **daily cases.**
  - Before the restrictions were lifted, **we saw 354 new cases daily on average.**
  - Afterwards, we were trending at **1118 new cases of COVID-19 daily.**



June 6th, 2020

After re-opening

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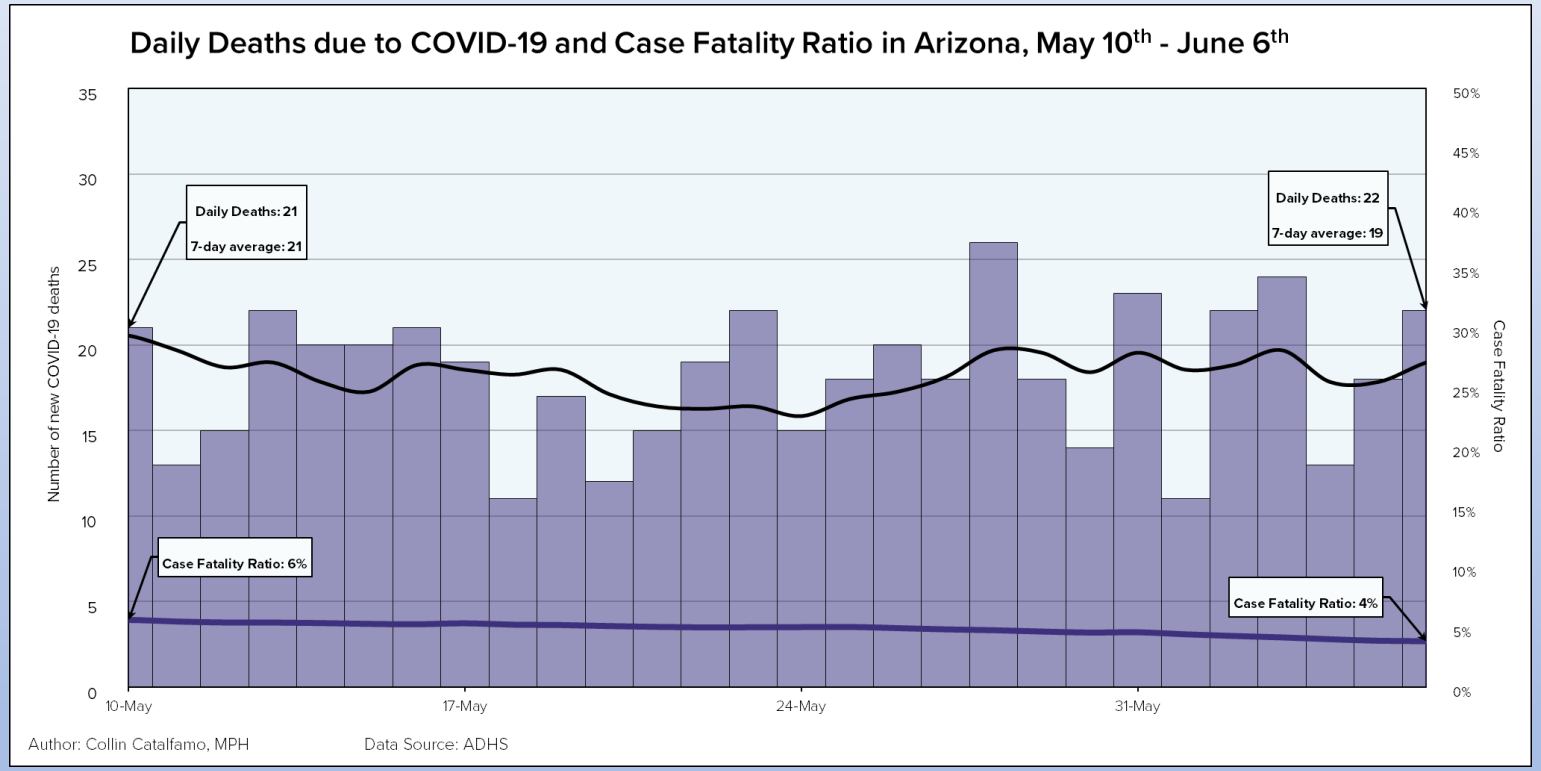
Daily Deaths

- Around this time, our daily deaths due to COVID-19 remained the same.
  - On average, between 19 and 21 deaths per day.
- However, our **case fatality rate** saw a decrease from 6% to 4%
  - **This was a sign that more people who were not at as high a risk of death were beginning to contract and spread COVID-19**



June 6th, 2020

After re-opening

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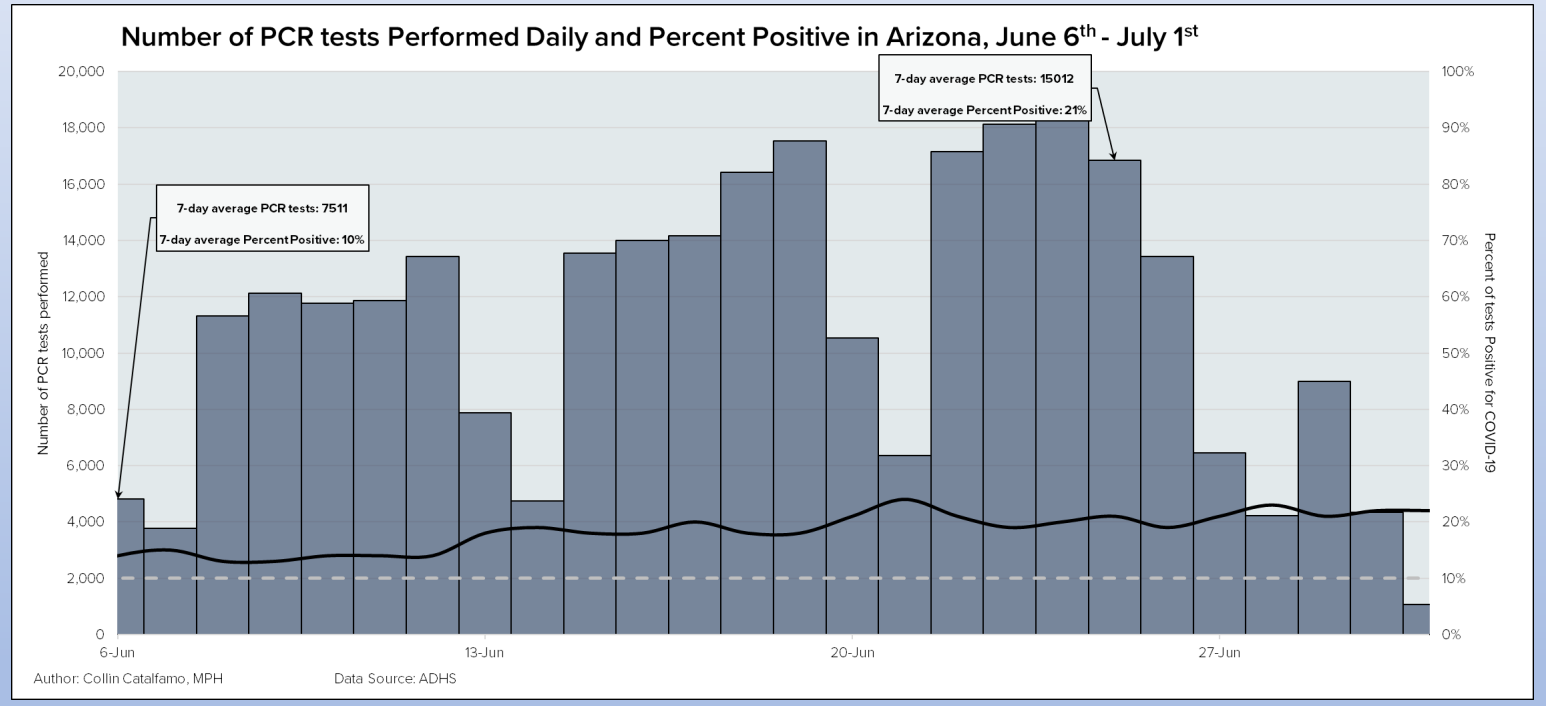
Present Day

- Fast forward to our current situation in the State:
  - We have seen very significant upticks in the **percent positive** and **number of cases** of COVID-19 consistently almost ***on a daily basis.***
  - Blatant disregard for precautionary measures after reopening the state has led to widespread community transmission in rural and metropolitan areas in the Arizona.
  - The situation continues to evolve daily with a greater need for individuals to wear masks, physically distance, and keep up with disinfecting recommendations to prevent the State from reinstating a Stay-at-home order to reduce community transmission.

Daily PCR (the swab or spit) Tests



- Our capacity for testing has increased.
  - On June 25th we were testing an average of 15,012 people per day.
- However, our increase in **percent positive to 21%** tells us that our testing capacity is still not enough to match the amount of community transmission that is occurring.

July 1st, 2020
Present Day

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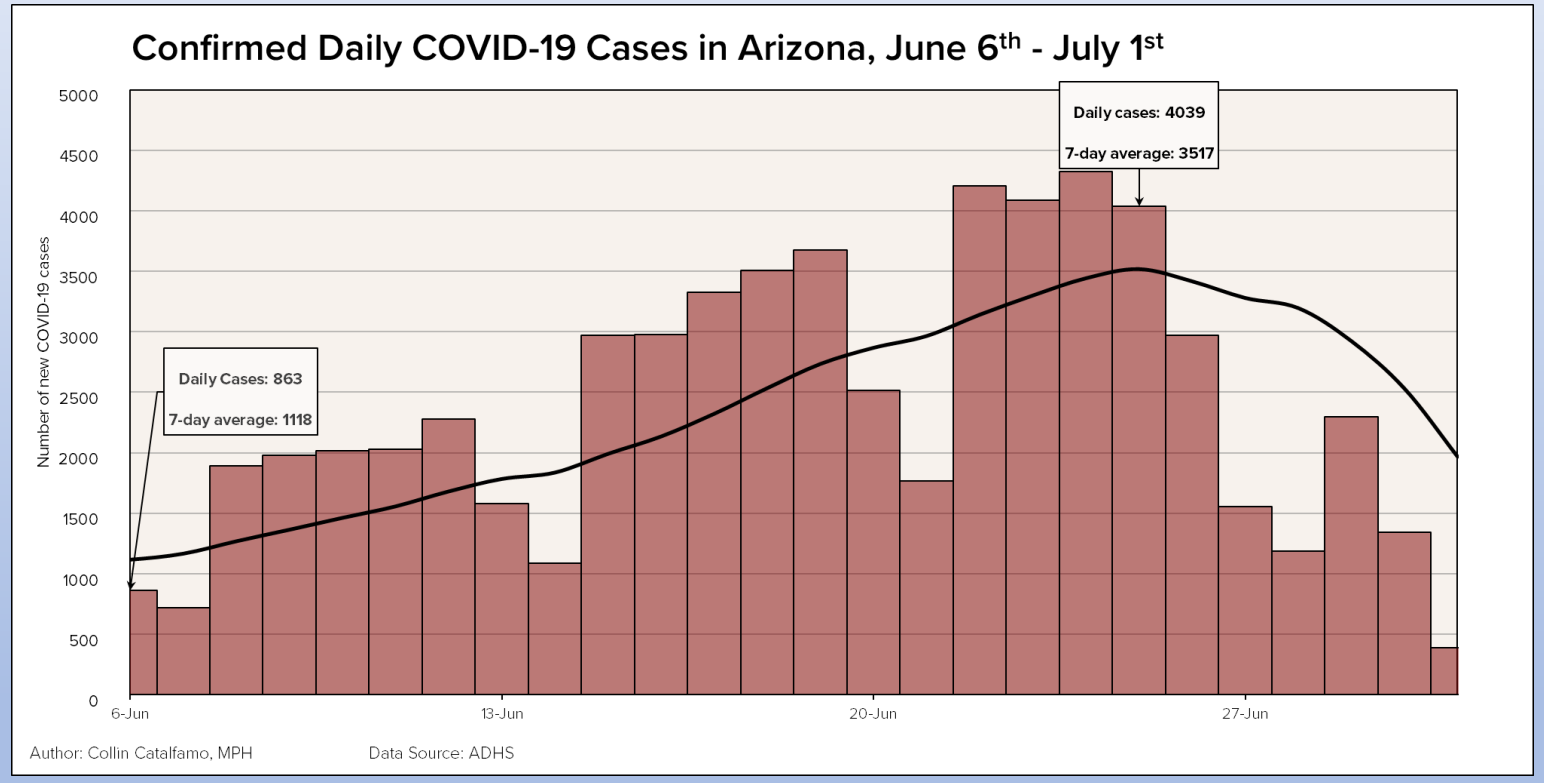
Daily Cases



- We have increased from an average of 863 cases per day, to more than **4000 new cases of COVID-19 daily.**
  - That is a **368% increase** in our daily number of new cases.
- Per capita, the rate of transmission in Arizona is **greater than that of Brazil**

July 1st, 2020
Present Day

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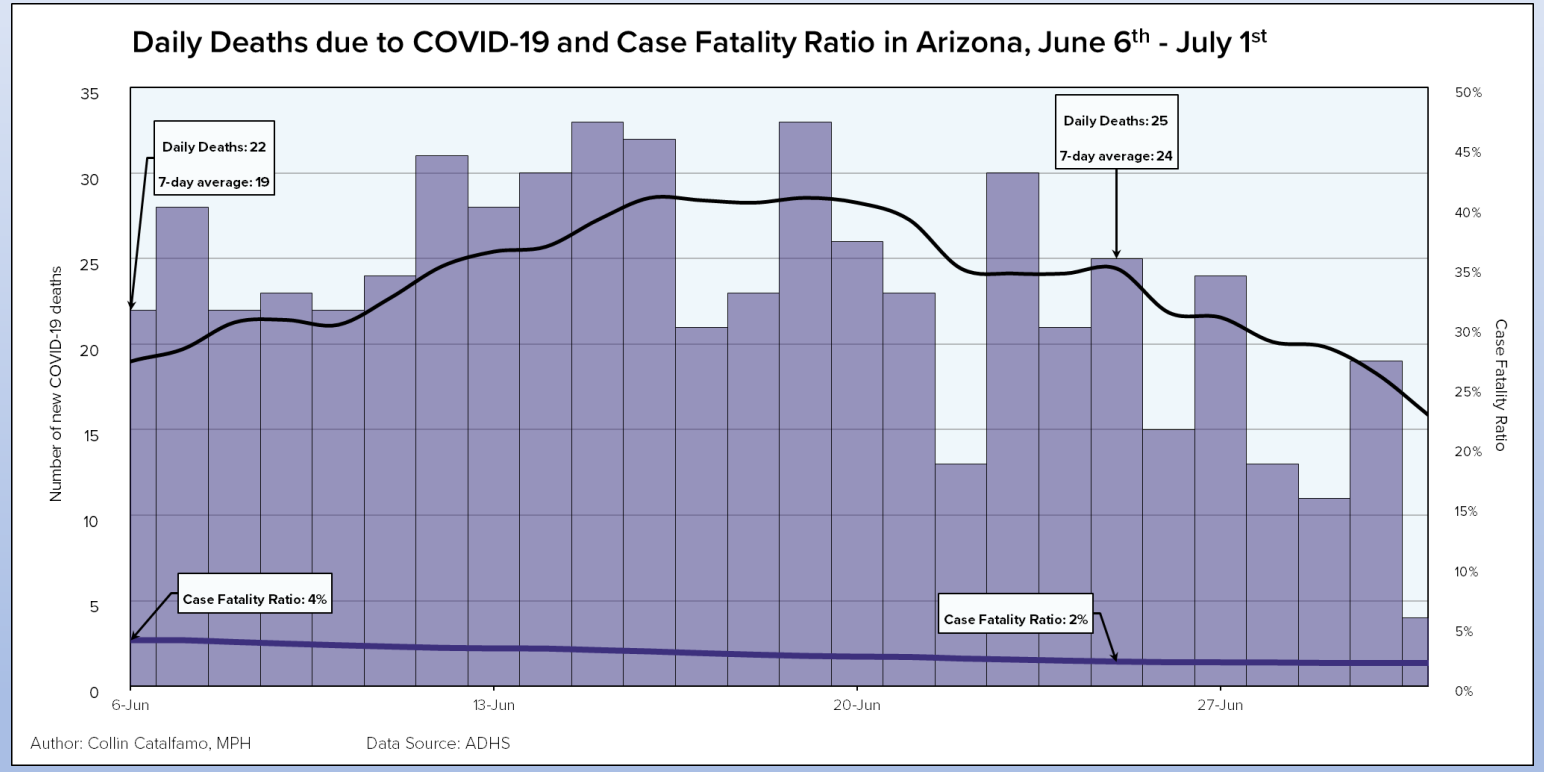
Daily Deaths



- While our daily deaths due to COVID-19 did not increase significantly (from 19 to 24 deaths per day), our **case fatality rate** decrease to 2%.
  - An increase in **daily cases and percent positive** with a decrease in the **case fatality** further signifies that we have greater community transmission now among individuals who are at less risk of dying from the illness.

July 1st, 2020
Present Day

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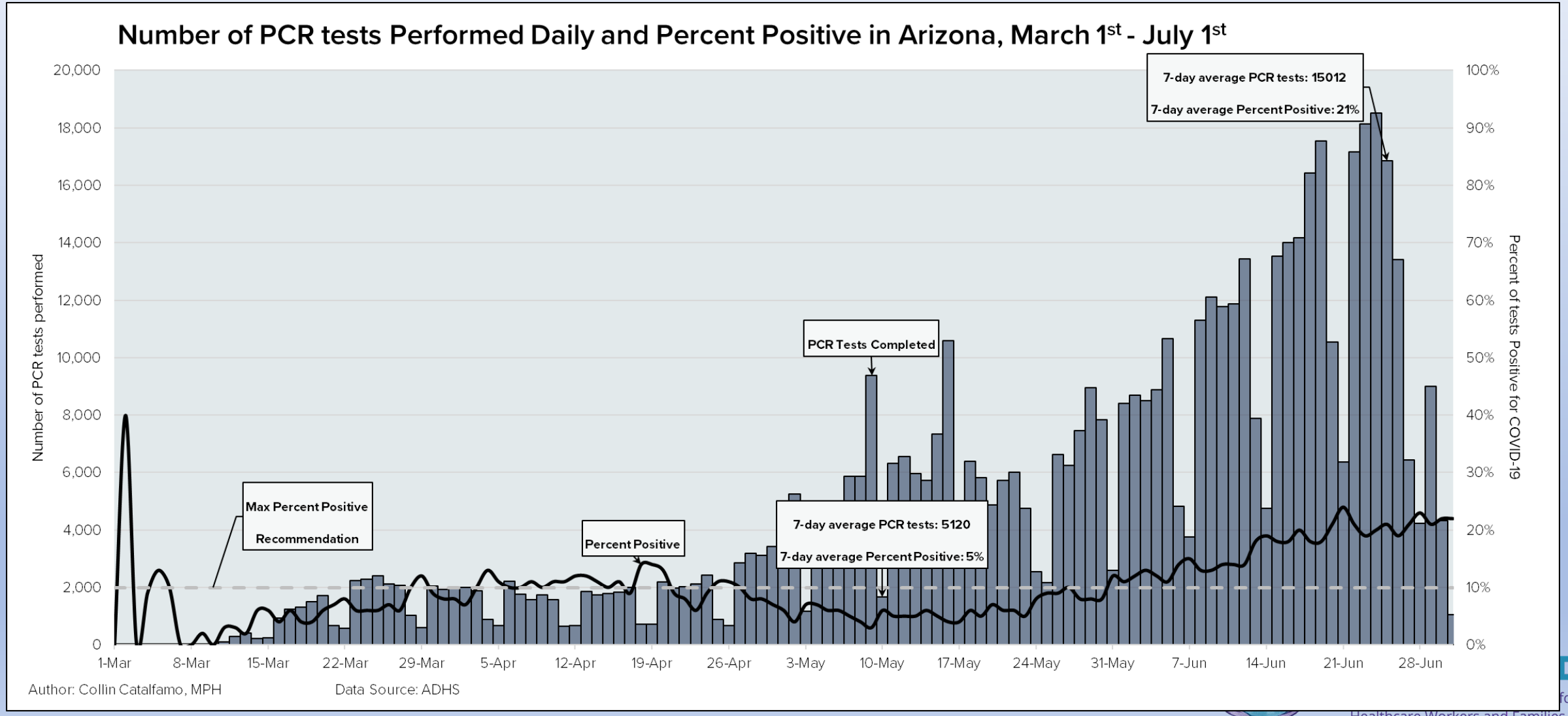
The Big Picture: Daily Tests



The Big Picture: Daily Tests

- While Arizona has increased it's testing capacity from only performing 5000 PCR tests per day to, on average, 15,000 tests per day (3 times what we did during closure), our **percent positive rate has more than doubled.**
  - We went from meeting the WHO's recommendation of maintaining a less than 10% percent positivity to now exceeding it at greater than 20%
  - I.e. **More than 1 out of every 5 people who get tested have COVID-19**

- **An increase of this magnitude is NOT due to an increase in testing.** If there was not an increase in community spread, our percent positive would have remained relatively steady.

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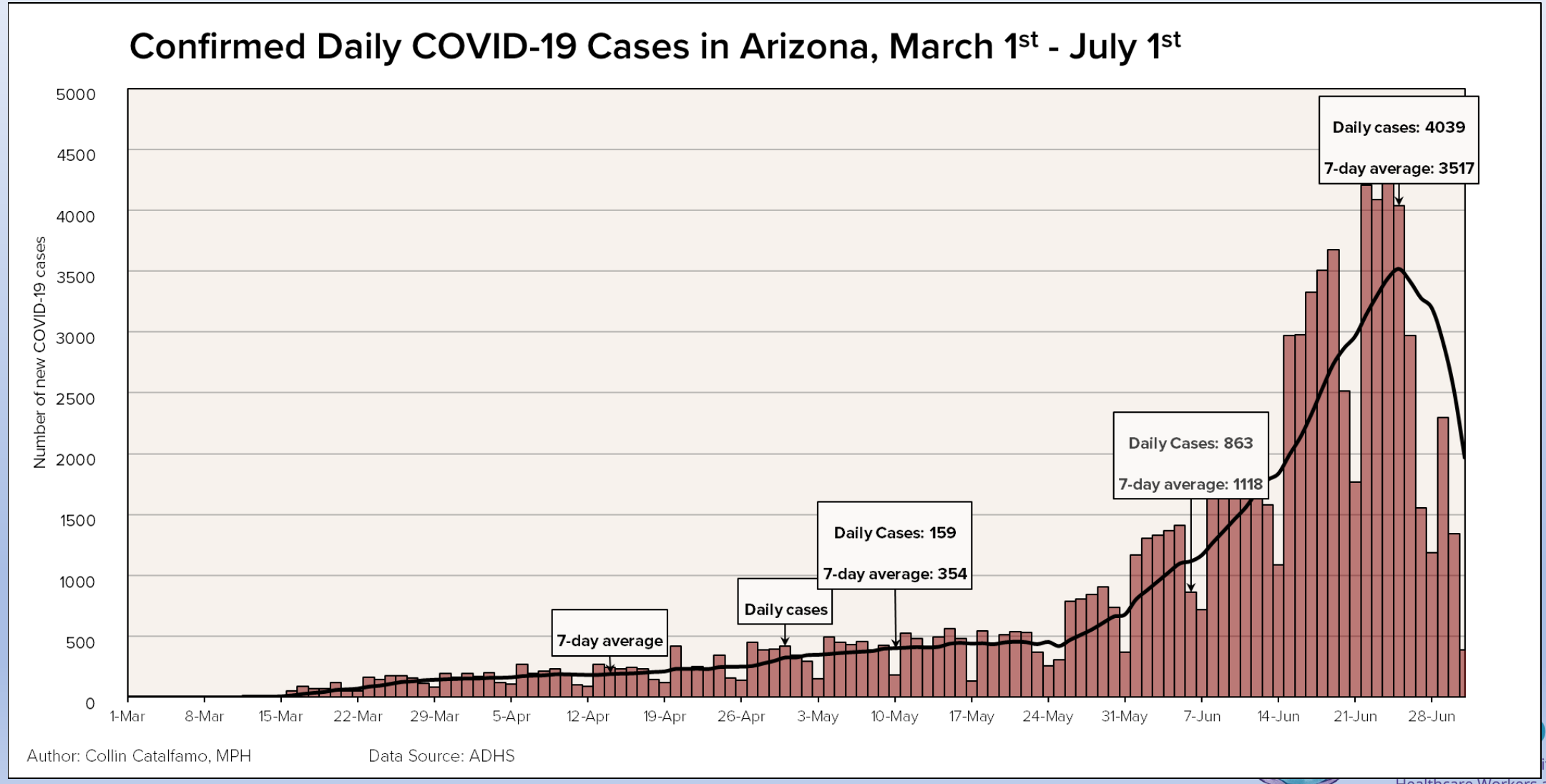
The Big Picture: Daily Cases



The Big Picture: Daily Cases

- Arizona went from having only 354 new cases per day to now reporting **more than 4000 new cases daily**.
  - This is a **more than a 1000% increase** in daily cases compared to when our Stay-at-home order expired.
  - **I.e. Arizona has 11 times the amount of new cases daily in July than it did back at the beginning of May.**

- It appears as though **our increase in cases is largely due in part to a disregard for prevention measures beginning around Memorial Day Weekend**. Residents rushing to "go back to normal" and not physically distance or wear masks has allowed the virus to start to spread significantly through our communities.

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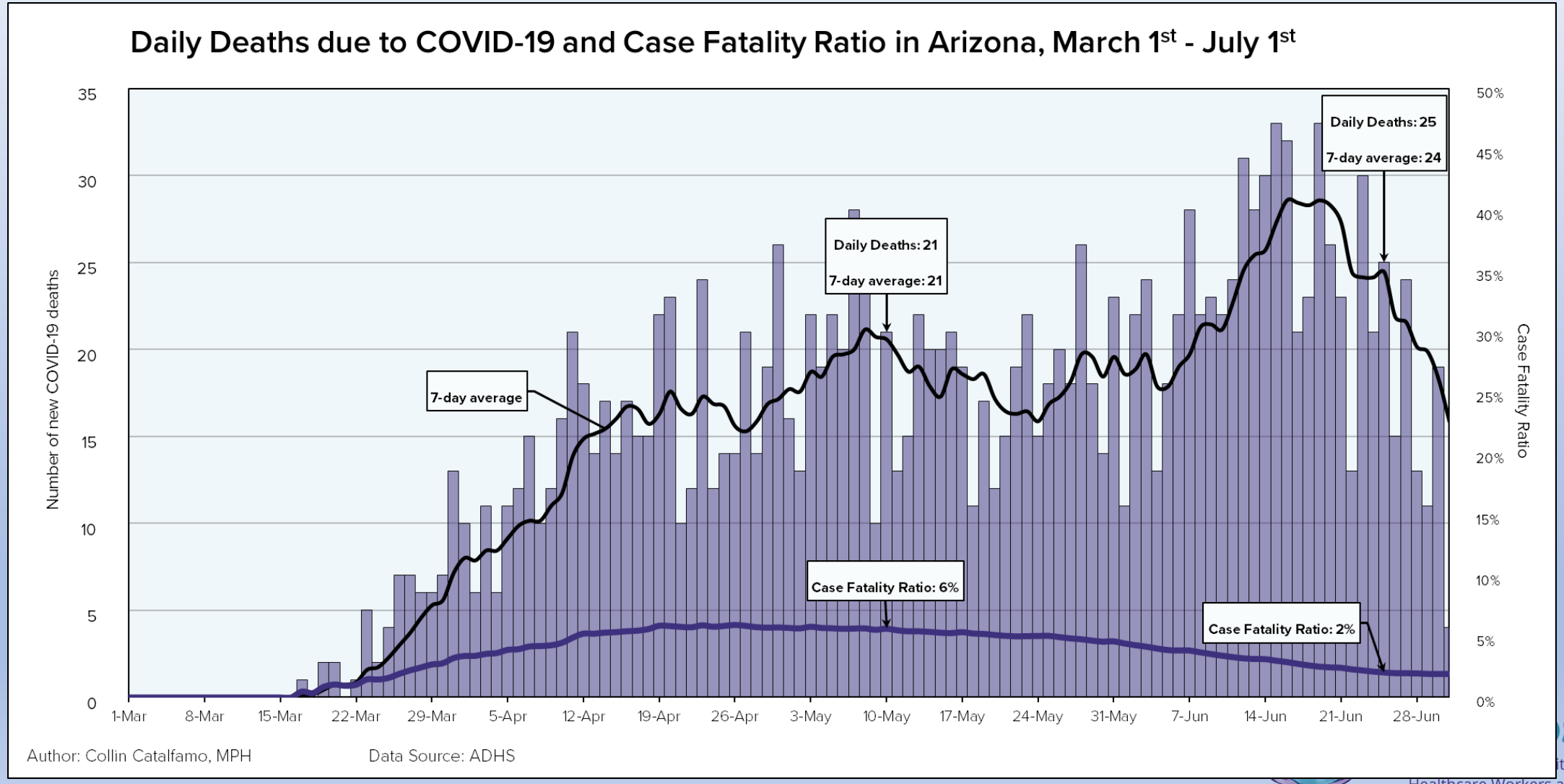
The Big Picture: Daily Deaths



The Big Picture: Daily Deaths

- Our average daily number of deaths from COVID-19 has increased from 19 to 24, opposite to the trend that the overall US is seeing.
  - Our **case fatality rate** has decreased, but this is more evidence towards greater community transmission. This is because more people are acquiring the infection but they are not at as high of a risk of death from the illness.

- We will need to pay special attention to the number of daily deaths that are being reported. **As our ICUs in the State begin to reach capacity, we will likely also see an increase in daily deaths from COVID-19** due to the lack of resources to adequately care for each person who becomes sick with the illness.

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Present Day

- Many Mayors have recently mandated face coverings and masks be worn in all public spaces and businesses in which physically distancing is not possible.

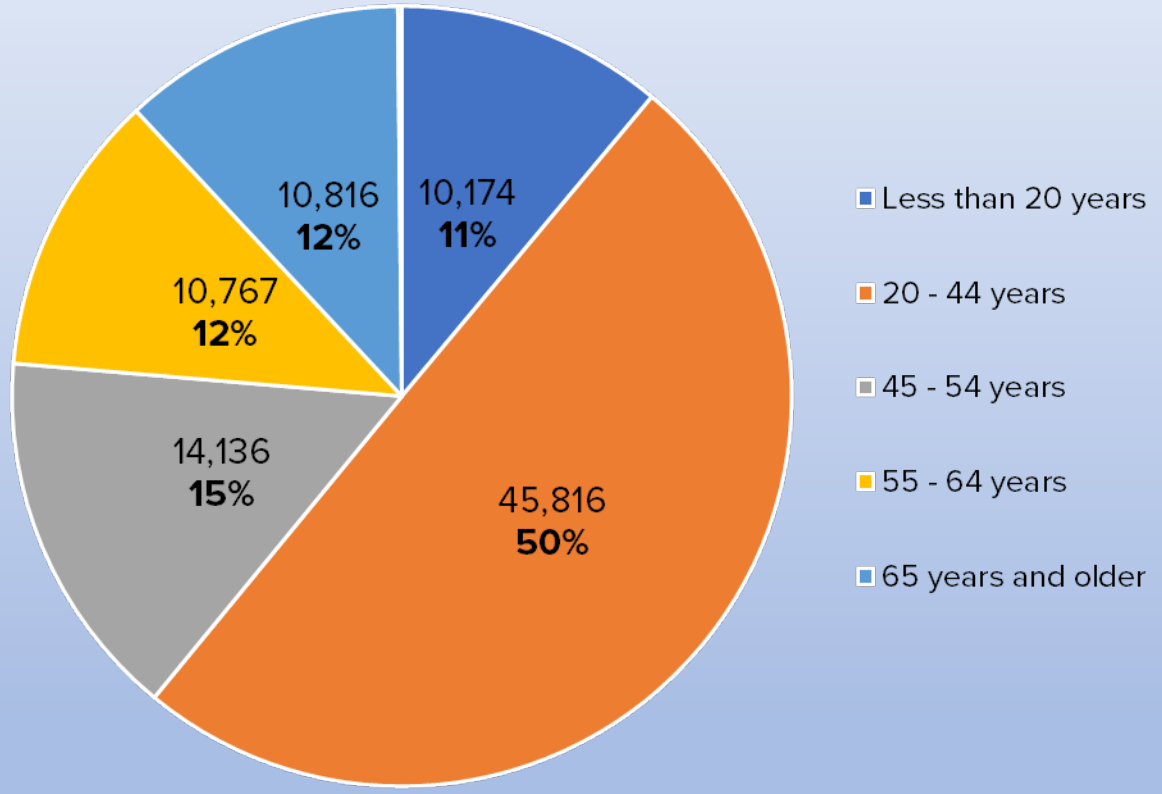
- Governor Ducey has also mandated that certain businesses like movie theatres and gyms, among others, close back down to reduce transmission.

- We will not be able to see if these strategies are making a difference for 3-4 weeks as enforcement and adoption of these policies take effect.

July 1st, 2020
Present Day

Who is getting sick?

- In the beginning of Arizona's outbreak, those who were 65 and older held the greatest proportion of people with COVID-19 illnesses.
  - This was partly due to outbreaks among long term care facilities.
- Currently, younger residents hold the greatest share of cases with **50% of our total COVID-19 cases being between the ages of 20 and 44 years.**



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Who is getting sick?

- Because of the increased transmission of the virus, it is also starting to greatly affect Arizona communities who are at increased risk of death and severe illness from COVID-19.
  - This was partly due to outbreaks among long term care facilities
- Hispanic and Native American individuals account for 30% of the total number of cases.
  - **Even though Native American communities make up a little over 5% of the Arizona's total population, they account for 18% of the State's deaths from COVID-19**
- In order to protect these at risk communities, community transmission needs to be reduced immediately.

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Arizona Nursing Homes and Assisted Living Facilities

- Arizona's Nursing Home and Assisted Living Facility resident populations are among some of the most hard hit by the COVID-19 outbreak in the State.
  - At least 1 in 3 nursing home facilities has reported at least one case of COVID-19 since the beginning of the outbreak, with at least 1 in 5 reporting one death due to the illness
- **Out of the 645 outbreaks that have occurred in congregate settings in Arizona, 344 of them have occurred in nursing home and long term care facilities.**
  - This is especially worrisome as the majority of these **residents are older in age and often have other comorbidities that put them at higher risk of death** and sever complications from the illness

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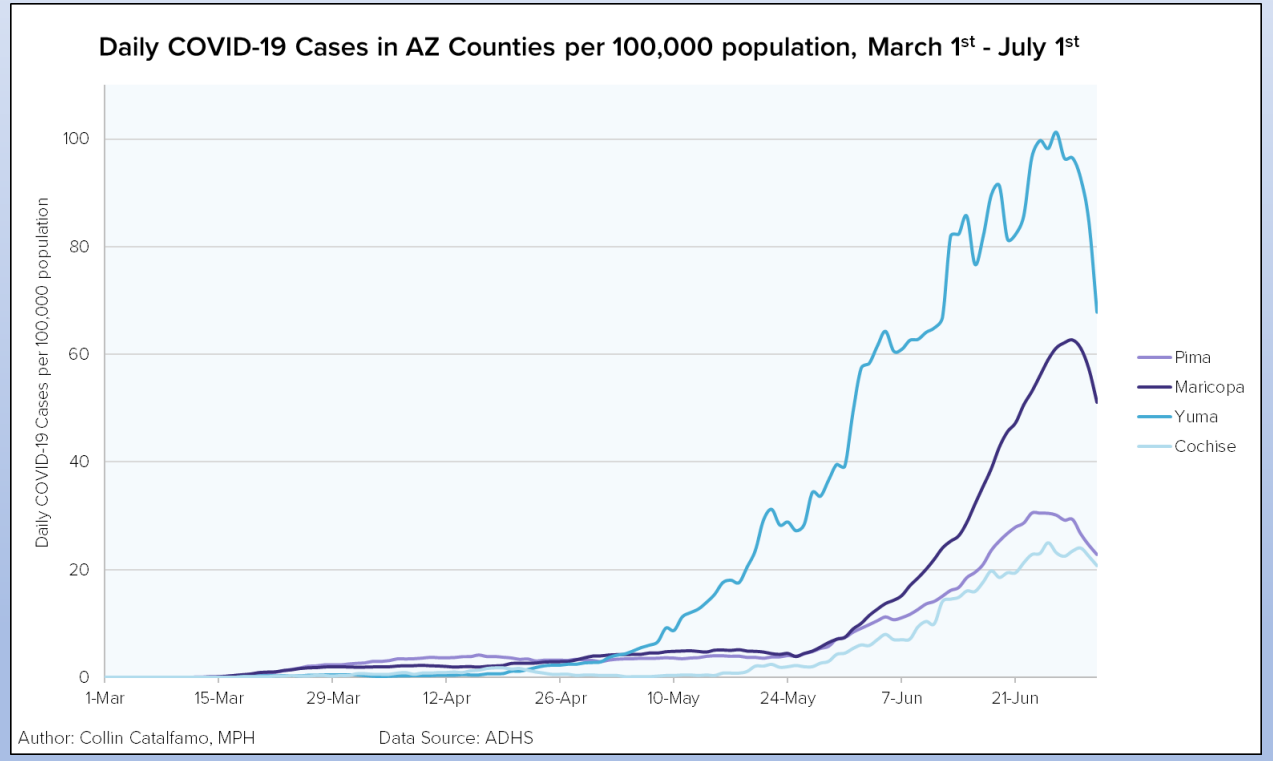
Urban vs Rural Counties

- By far, the majority of the cases in Arizona have been in counties and cities with larger population densities.
  - Maricopa County holds a massive share of the total cases with 64,915 cases, **or 64% of the cases for the entire State.**
  - Pima county has the next highest number of cases with 9,873 cases, **or 9.7% of the cases for Arizona.**
- Urban centers do have a higher number of cases than rural areas. However, areas with greater populations will always have more cases if the outbreaks in these areas are progressing at the same rate as rural areas.

Urban vs Rural Counties

- We can see that the rate of increase in some of the more rural counties is actually greater than that of urban centers.
  - **Yuma has the greatest increase in cases compared to Maricopa and Pima** even though they have less overall cases out of the four counties shown here.
- Communities should be tracking their rate of increase in cases, not the total number
  - **This is especially true for rural areas. Often, lower total population also means lower hospital capacities so a smaller number of overall cases can exhibit more strain in these hospitals due to inadequate resources.**



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Arizona vs Other States

- Each State has a different population size in addition to different criteria for who can get a PCR (the swab or spit) test for COVID-19. Acknowledging this limitation, we can still compare different states using per capita incidence rates. These take into account each State's population to create a rate that is comparable.
- Arizona currently has a rate of **53 daily cases per 100,000 people** in its population**. This rate of increase is more than double the rate in other states who are experiencing increases in case counts.**
  - Texas, California, New Mexico, Alabama, Mississippi, Delaware, Tennessee, Kansas, Nevada, Georgia, and Idaho all have per capita rates less than half that of Arizona, less than 26 daily cases per 100,000 individuals.
- Florida has a rate less than Arizona's, but is close to reaching the same level of increase at 40 daily cases per 100,000 individuals.

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Arizona vs Other Countries

- Comparisons between different countries is subject to the same limitations that comparing between different states is. Regardless, the rate of new cases of COVID-19 in **Arizona surpasses that of other countries across the globe**.

  - **Brazil** on average sees **171 new cases daily** per 1,000,000 people of its population
  - **Germany** sees between **4 and 5 new cases daily** per 1,000,000 people of its population
  - **New Zealand** sees **less than 1 new case daily** (0.24) per 1,000,000 people of its population
  - **Arizona** has been seeing **274 or more new cases daily** per 1,000,000 individuals.