

# Covid-19 Disease Outbreak Outlook

## Arizona State and Pima County

Updated May 29, 2020

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For the week ending Sunday, May 24th, 2428 new Covid-19 cases were reported in Arizona. While fewer than the 3051 reported last week, the recent testing “blitz” has lengthened the reporting lag making this week’s count unreliable. For example, last week’s update reported 2669 newly diagnosed cases for the week ending May 17<sup>th</sup>; however, that number has since increased 14% to 3051 cases (Figure 1). The corresponding number of collected tests has since increased 17%, 40757 to 47867 tests. Anecdotal clinical reports also suggest new delays in obtaining PCR test results in some settings.

My assertion last week, that new case counts may have peaked in Arizona, was in retrospect premature. The rapid expansion of testing makes it too difficult to draw meaningful conclusions about the underlying dynamics of viral transmission. It also highlights that the number of tests performed is not a sufficient metric of testing capacity; timely reporting must also be considered. Without it, effective case identification and contact tracing is not possible. Although likely an incomplete counting, at least 30644 individuals provided 38820 PCR samples this week of which 6.3% were positive. An additional 21719 individuals provided 29771 serology samples of which 3.2% were positive.

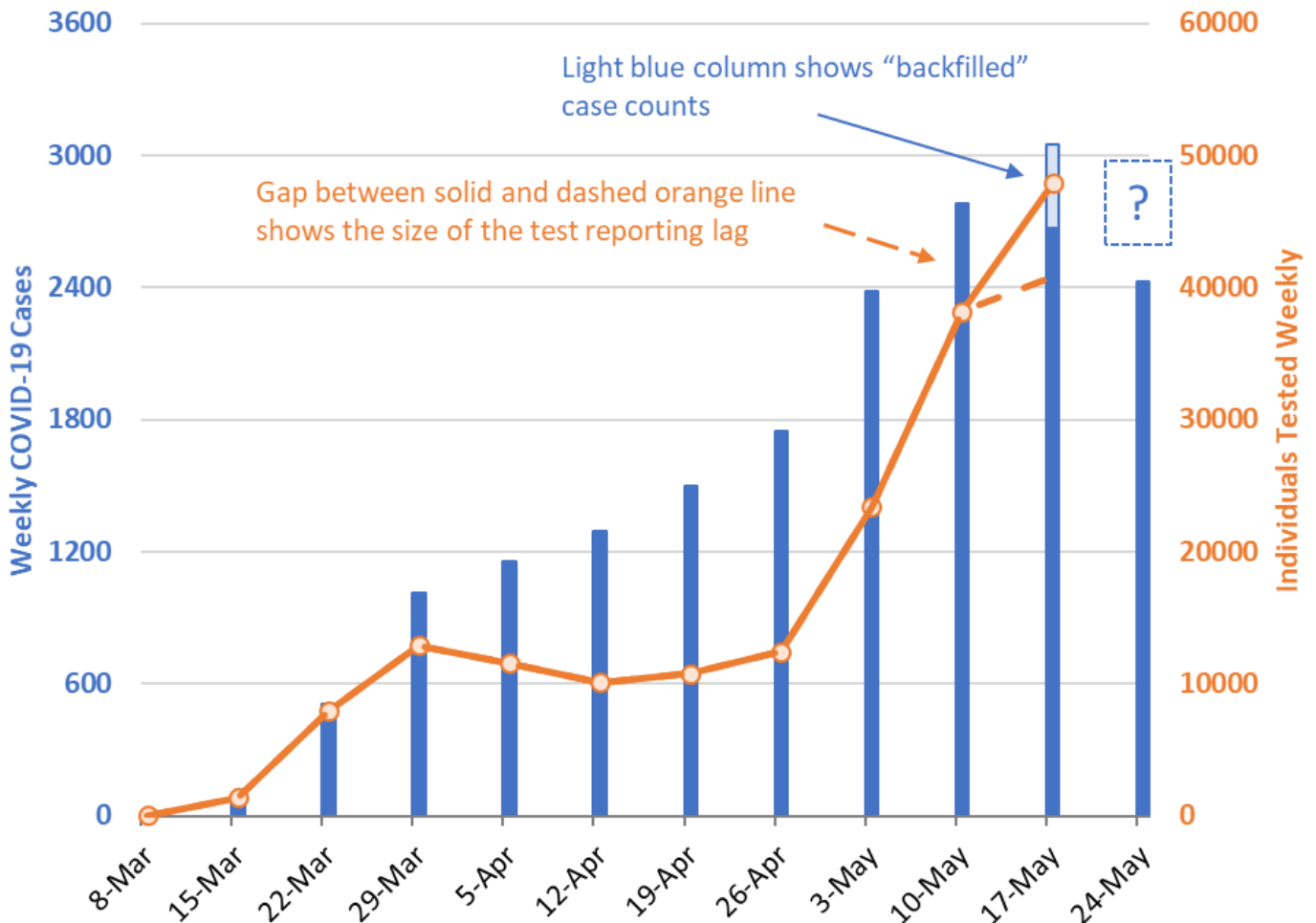
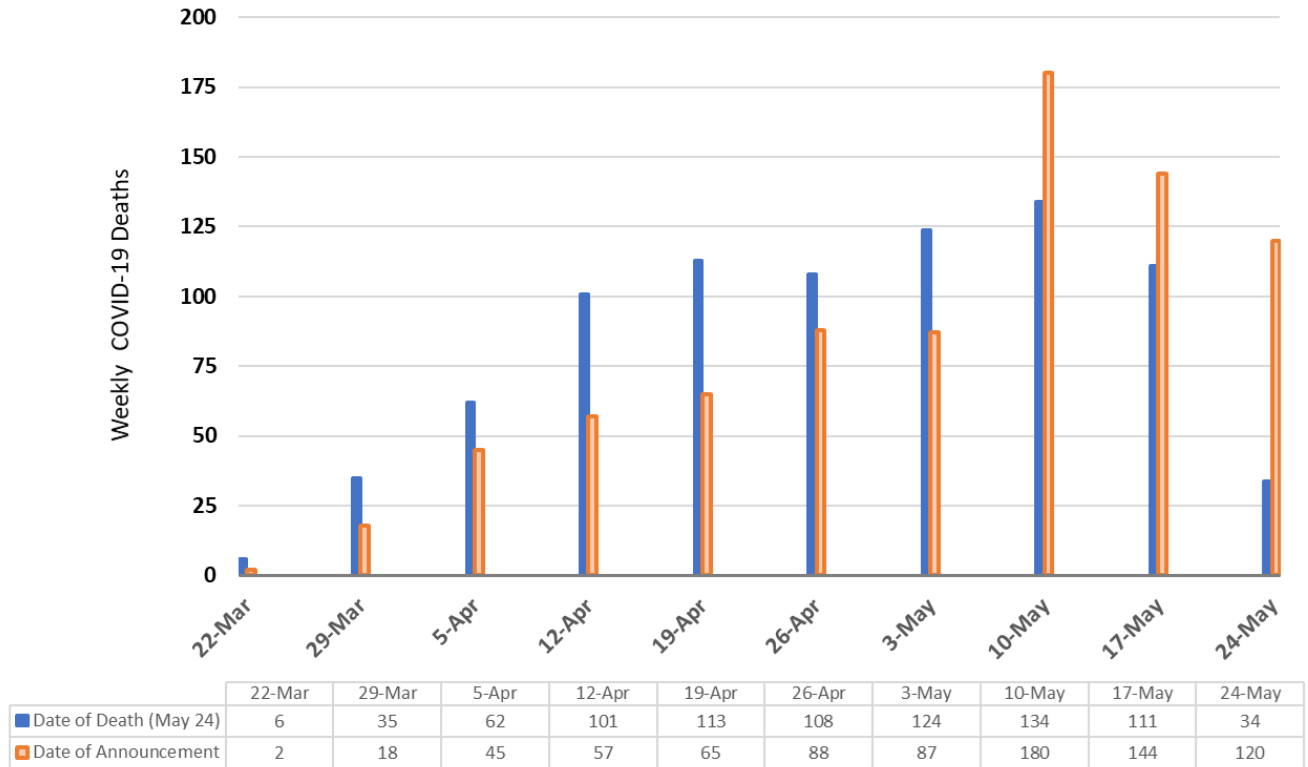
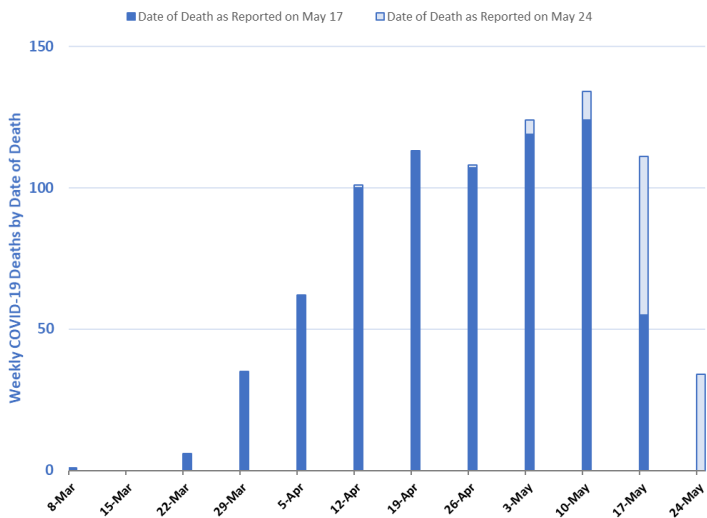


Figure 1. Newly Diagnosed Covid-19 Cases in Arizona and Number of Individuals Tested through May 24

As of May 29<sup>th</sup>, 885 deaths have been announced in Arizona; however, reporting lag makes it difficult to interpret these counts in real-time. For example, ADHS announced 120 new deaths during the week ending May 24<sup>th</sup>, but only 34 of these deaths occurred during this period (Figure 3). The week ending May 10 is the first to show ADHS's practice of using case tracking and [death certificate data](#) to identify deaths, but the impact of this change appears to be waning. Without considering reporting lag, the week with the largest number of deaths remains the week ending May 10<sup>th</sup>. Of note, 124 deaths were reported during this period in the last update, but that number has since increased 8% to 134 deaths.



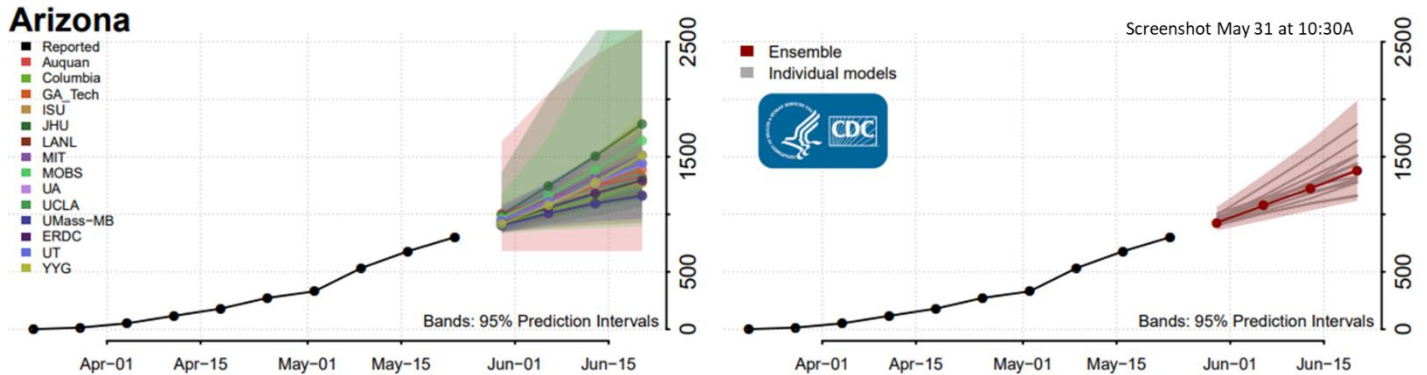
**Figure 3. Weekly Arizona Covid-19 Deaths by Date of Announcement and Date of Death Mar 1 – May 24**



**Figure 4. Weekly Arizona Covid-19 Deaths (Mar 1 – May 24) by Date of Death as Known on May 17 (dark blue) and May 24 (light blue)**

The impact of reporting lag on tabulations of Covid-19 deaths is illustrated in Figure 4. These data show how deaths that were made known to ADHS during the week ending May 24<sup>th</sup> were distributed across prior weeks. Of the 107 newly verified deaths, only 34 (32%) actually occurred the week ending May 24<sup>th</sup>. The largest number were apportioned to the week ending May 17<sup>th</sup>, 56 (52%). Another 10 (9%) were apportioned to the week ending May 10<sup>th</sup>. Thirteen (120 – 107 deaths) of the newly announced deaths this week have yet to have their date of death verified and do not appear in the totals above.

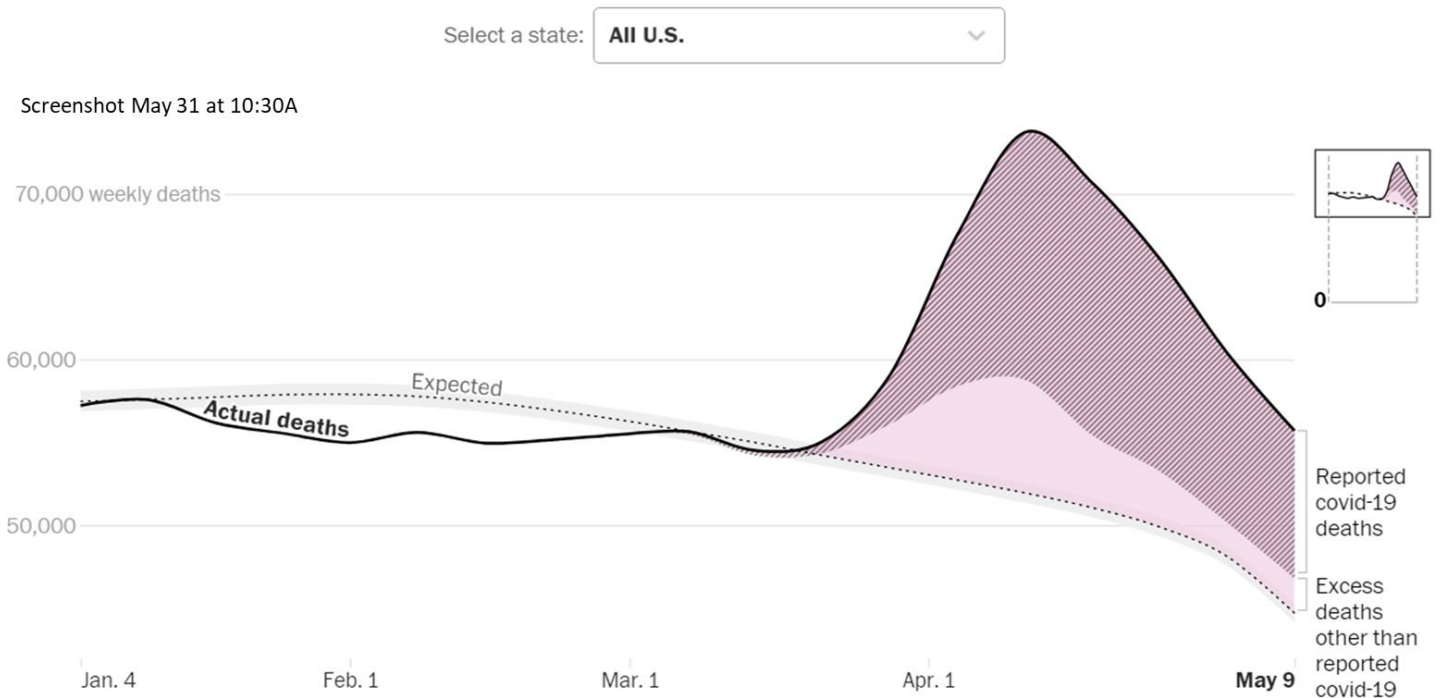
The Centers for Disease Control and Prevention (CDC) is now [aggregating various model projections](#) to provide a consensus view of the trajectory of new Covid-19 deaths nationally and across the 50 states (Figure 5). These models predict that cumulative deaths will continue to increase at roughly the same trajectory for the next 6 weeks. A non-governmental source for similar model aggregation can be found at [FiveThirtyEight](#).



**Figure 5. Centers for Disease Control and Prevention (CDC) Ensemble Forecast of Covid-19 Deaths in Arizona through June 22**

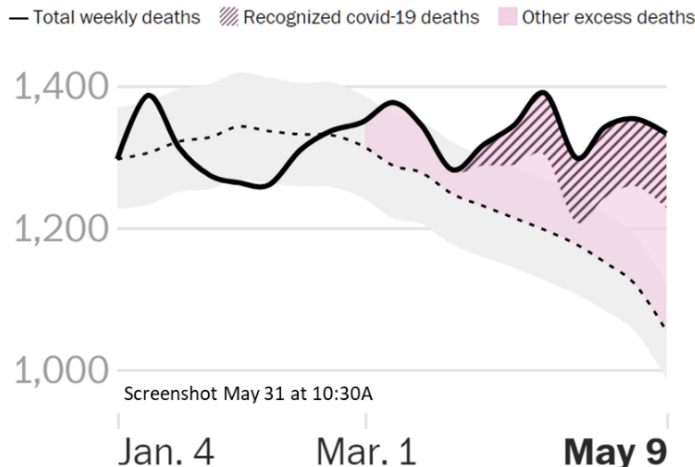
The Washington Post released a new analysis of [excess deaths presumably attributable to coronavirus](#). Excess deaths are derived statistically by comparing the number of observed all-cause deaths from a current period with those that occurred in time-matched prior periods. Assuming no other major changes in causes of deaths, deaths above those expected from past years' experiences are assumed to be due to coronavirus. The advantage of this approach is that unrecognized coronavirus deaths can be estimated; a death certificate cause of death or laboratory confirmation is not required.

Nationally, the Washington Post analysis suggests that 101,600 (95% CI 97,500 – 105,400) excess deaths occurred between March 1 – May 9<sup>th</sup> (Figure 6). This represents 26,000 deaths that were not accounted for in official COVID-19 related deaths, about a 25% potential undercount.



**Figure 6. Excess Covid-19 Deaths in the US, January 4 – May 9, as Reported by Washington Post.**

## Arizona



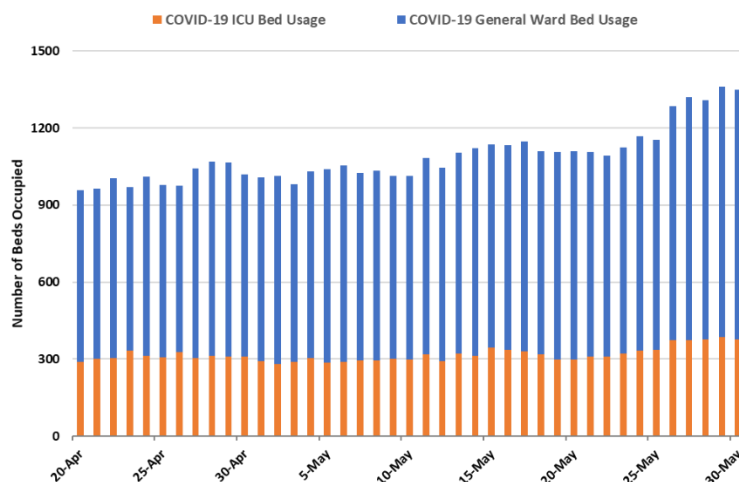
**Figure 7. Excess Covid-19 Deaths in the US, January 4 – May 9, as Reported by Washington Post.**

As of May 30, 973 (9.6%) of Arizona's 10187 general ward beds were occupied by patients with suspected or confirmed COVID-19 infection; 1,682 (16.5%) additional beds were available for use. With regard to ICU beds, 376 (16.6%) of 2267 ICU beds were occupied by patients with suspected or confirmed COVID-19 infections; 380 (16.8%) additional beds were available for use. According to the [ADHS dashboard](#), excess capacity in general ward beds has declined from 32% to 17% since March 26. Over the same period, excess capacity in ICU beds has declined from 38% to 17%.

The total COVID-19 hospitalization has increased from April 20 – May 30. The total number of ward and ICU beds devoted to COVID-19 care increased from 1093 beds last week to 1349 beds this week, a 23% increase (Figure 7). However, excess capacity only declined by 2% owing to changes in total capacity and non-Covid use. Nevertheless, the recent uptick in Covid-19 related hospital utilization is worth careful review.

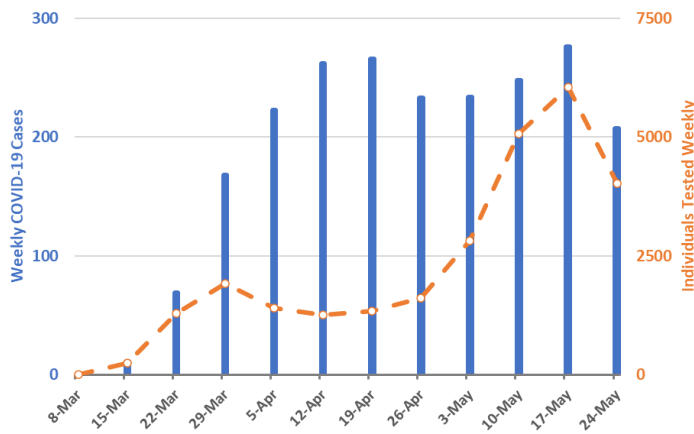
The Washington Post further states, "In Arizona, ...the number of deaths attributed to covid-19 was 40 percent of the estimated excess deaths" (Figure 7). This was based on 13374 total deaths between March 1 – May 9, of which 1424 were considered "excess" deaths. Of these, 565 were known Covid-19 deaths leaving 859 unaccountable deaths.

While the Washington Post analysis attempted to control for lag in death reporting, the 565 Covid-19 deaths in their analysis is fewer than number since reported by ADHS after expanding its case definition, 684 confirmed deaths through May 10 (48% of excess deaths). The Washington Post analysis also counted all deaths above the mean projection as excess rather than deaths above the 95<sup>th</sup> percentile which would tend to make its projections closer to the upper bound of plausibility. Nevertheless, a substantial number of unrecognized Covid-19 deaths have occurred in Arizona.



**Figure 7. Arizona Daily Covid-19 General Ward and ICU Census April 20 – May 30**

## Pima County Outlook



**Figure 8. Newly Diagnosed COVID-19 Cases in Pima County and Individuals Tested through May 24**

For the week ending Sunday, May 24, weekly case counts aggregated by test collection date show a decline the number of newly diagnosed cases in Pima County from the prior week (Figure 8). While changes in test capacity making it challenging to understand the true pace of viral spread, there is greater evidence that newly diagnosed cases are declining in Pima County since the week ending April 19 even though more cases were identified the week ending May 17, 266 versus 276 cases, respectively.

### Summary:

- Now that social distancing restrictions have been lifted, a greater frequency and intensity of human interaction will tend to facilitate viral spread. This tendency may be mitigated by individual actions including hand hygiene, mask wearing, and self-distancing.
- State-wide--reported cases, hospitalizations, and deaths seem to be following their previous trends, a notably slow, but consistent increase. However, some locales are seeing continued increases while others are plateauing or declining.
  - Absolute levels of community-driven viral transmission remain relatively high as evidenced by substantial numbers of newly reported cases.
  - For some locales, social distancing restrictions may be needed to prevent reported cases, hospitalizations, and ICU utilization from further increasing.
  - Hospital utilization, including Covid-related care, continues to increase with excess capacity declining from approximately 30% to 15% over the past two months. While adequate capacity exists, additional viral spread will narrow that safety margin.
- While the absolute number of Covid-19 tests has increased, the PCR test positive rate remains >3% indicating capacity may not be adequate to meet clinical and public health demands. This 3% target reflects testing practices in countries that had a more robust public health response and were more effective in controlling viral spread.
  - In addition to the absolute number of tests performed, the timeliness reporting results must also be considered a key metric of capacity. The recent testing “blitz” considerably slowed reporting which will hinder effective case identification and contact tracing efforts.
- It is still difficult to assess the underlying trends in viral transmission because testing capacity has expanded significantly thereby identifying milder disease that would have previously remained undiagnosed and by lengthening the reporting lag.

Next update scheduled for Jun 5.