Covid-19 Disease Outbreak Outlook
Arizona State and Pima County
Updated August 21, 2020

Disclaimer: This information represents my personal views and not those of The University of Arizona, the Zuckerman College of Public Health, or any other government entity. Any opinions, forecasts, or recommendations should be considered in conjunction with other corroborating and conflicting data. Updates can be accessed at https://publichealth.arizona.edu/news/2020/covid-19-forecast-model.

For the week ending August 16th, 4503 new Covid-19 cases were diagnosed in Arizona (Figure 1). Given that >75% of PCR results are now being reported within 48 hours, this count should remain reasonably stable over time. For example, last week's tally was upwardly revised by 8% (5332 to 5762 cases) and the count from two weeks ago was upwardly revised by 6% (8120 to 8584 cases). While viral transmission is waning, absolute transmission levels remain higher than they were during late May; therefore, continued vigilance is warranted.

The percent of patients testing positive has declined from a peak of 23% the week ending July 25th to 7% the week ending August 16th (Figure 2 following page). A declining test positive percentage in the face of stable testing frequency supports the notion that viral transmission is in fact waning. The percent of patients testing positive on the antibody (serology) test has remained stable for the past 4 weeks at 12 – 13%.

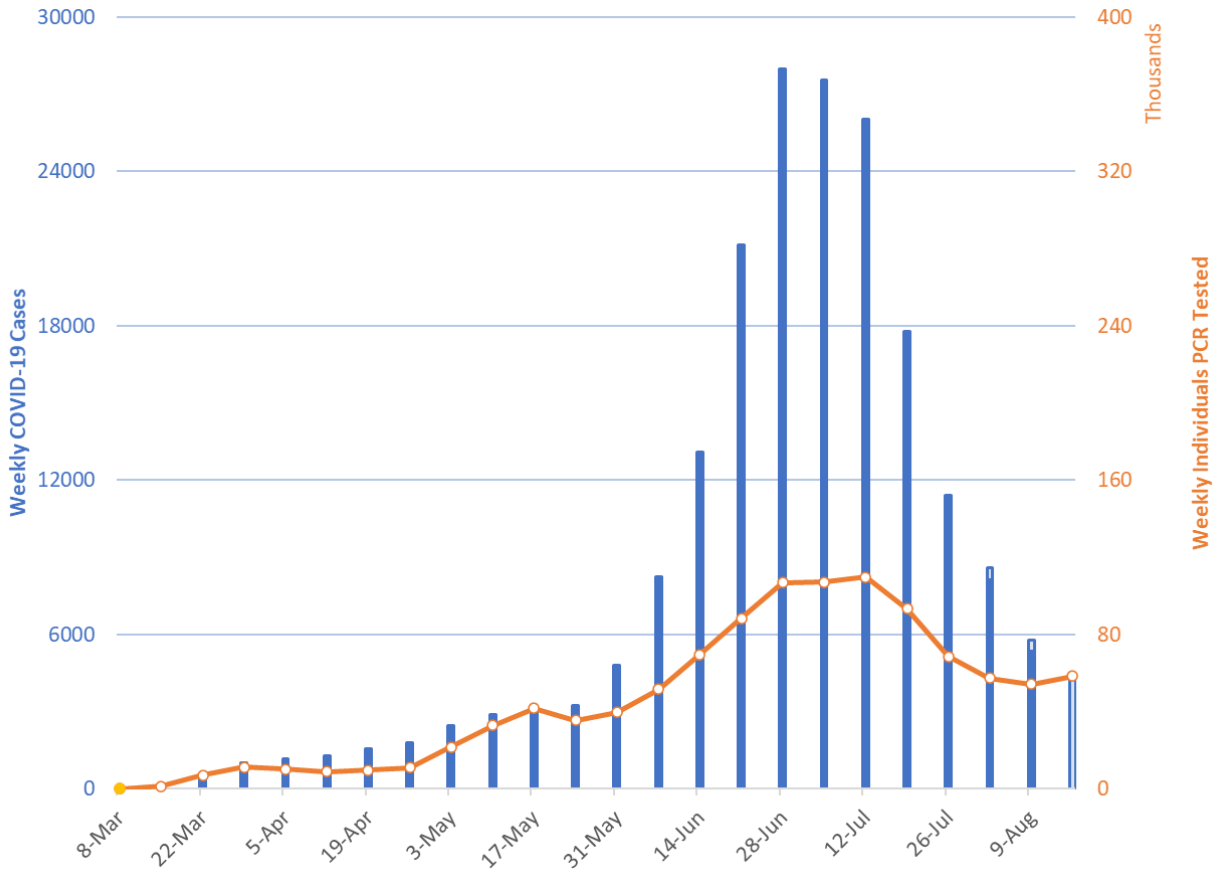

Figure 1. Newly Diagnosed Covid-19 Cases in Arizona and Number of Individuals Undergoing PCR Testing March 1 through August 16.

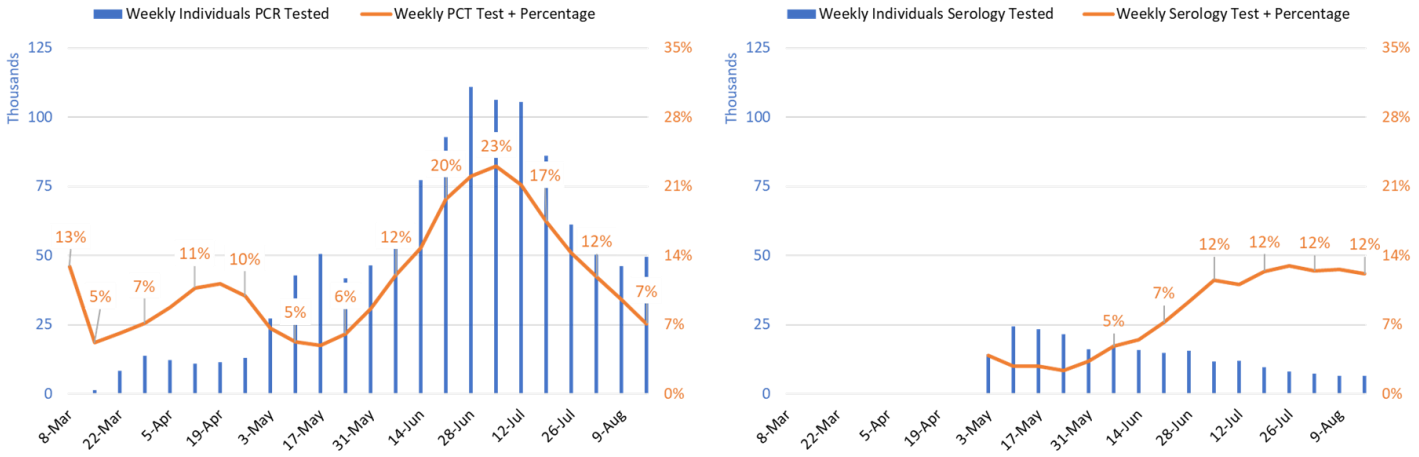

Figure 2. Weekly Number Patients Tested and Percent of Individuals with Positive Covid-19 PCR and Serology Results March 1 - August 16.

As of August 21, Covid-related hospitalizations remain 29% higher than a May 22 plateau, 1409 versus 1093 occupied beds (Figure 3). Since last week, Covid-19 hospitalization has decreased 18% from 1724 to 1409 occupied beds. Hospital occupancy should continue to decline over the coming weeks.

As of August 21st, 1046 (13%) of Arizona's 8002 general ward beds were occupied by patients with suspected or confirmed Covid-19 infection, a 18% decline from last week. An additional 1337 (17%) beds remain available which is slightly lower than last week's 1346 beds. Similarly, 363 (22%) of Arizona's 1682 ICU beds were occupied for Covid-19 care, an 18% decrease from last week. An additional 363 beds (22%) beds remain available which is slightly lower than last week's 370 beds.

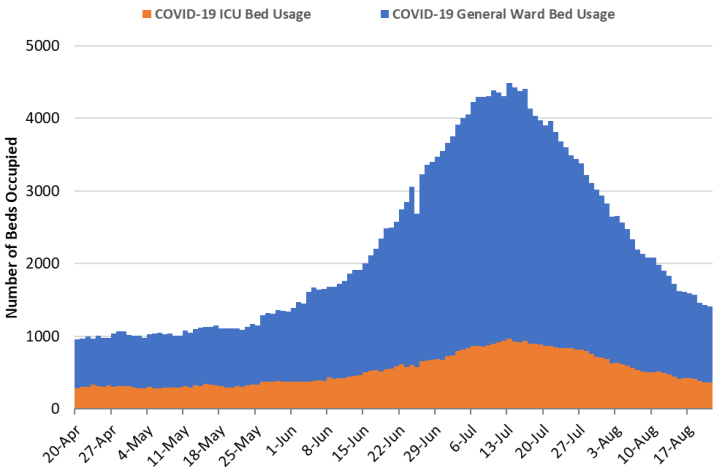

Figure 3. Arizona Daily Covid-19 General Ward and ICU Census April 20 – August 21.

Arizona will not exceed its listed capacity of non-surge general ward or ICU beds unless improvements reverse (Figure 4, following page). While state-wide occupancy for general ward beds dipped below the 80% threshold last week it has once again risen above 80% occupancy presumably to reduce the backlog of patients waiting elective procedures. ICU occupancy continues to hover just below 80% occupancy. It will likely take several months before the backlog of care is fully resolved.

Created by: Joe K. Gerald, MD, PhD (Associate Professor, Zuckerman College of Public Health, geraldj@email.arizona.edu) with gratitude to Patrick Wightman, PhD, MPP from the UA Center for Population Health Sciences for assistance with data analysis.

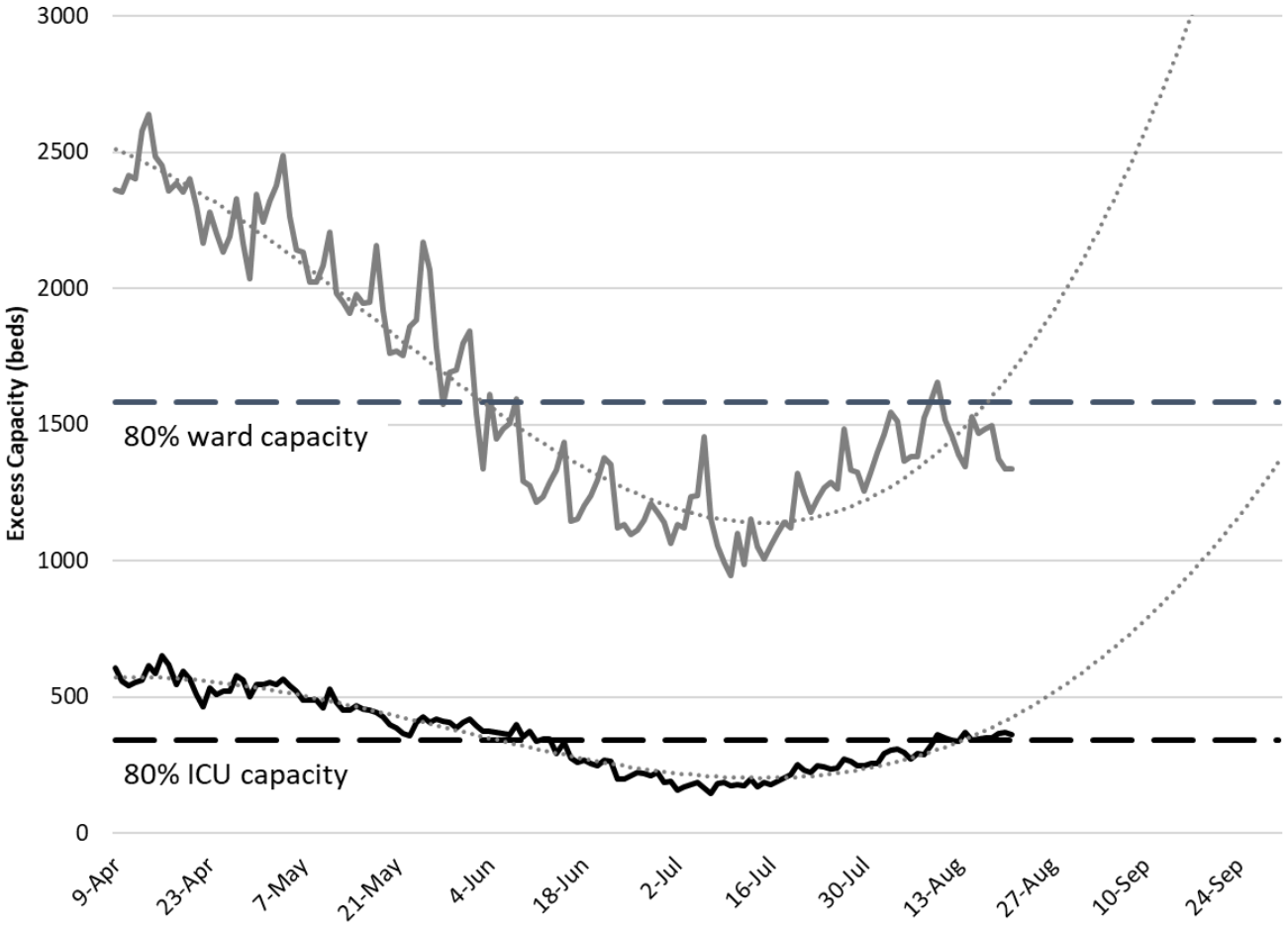

Figure 4. Observed and Projected Excess Non-Surge General Ward and ICU Capacity April 20 – September 31.

With 558 deaths reported to date, the week ending July 19th remains Arizona's deadliest week (Figure 5). Because deaths are declining it is unlikely that we will see a higher weekly tally for the foreseeable future. This is definitely welcomed news.

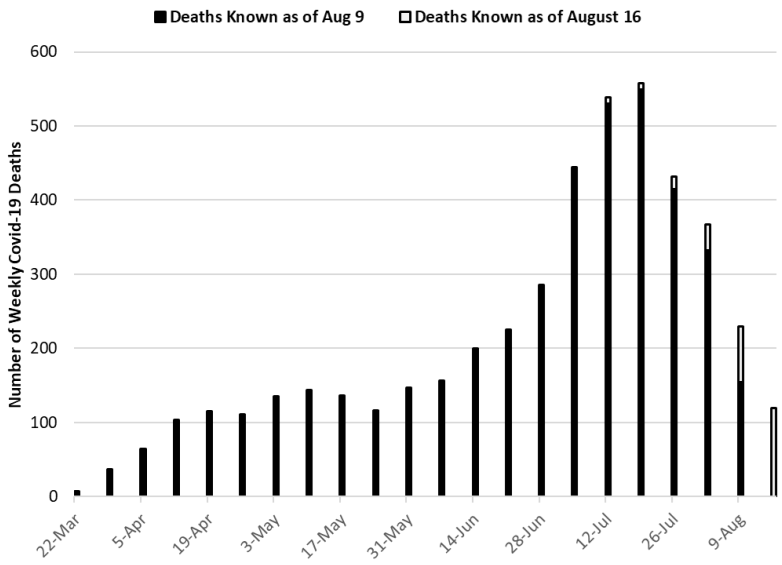

Figure 5. Weekly Arizona Covid-19 Deaths March 1 – August 16 by Date of Death

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Pima County Outlook

For the week ending August 16th, 923 Pima County residents were diagnosed with Covid-19. This is a 13% increase over the 818 cases identified the week ending August 9th. Similar to the state as a whole, PCR reporting in Pima County is such that ≥75% of results are reported within 48 hours. While the "spike" the week ending August 2nd was attributable to a large outbreak in a congregate setting, the most recent increase remains unexplained (Figure 6). While too soon to be certain, the decline in new case counts appears to have stopped in Pima County. This change is unexpected and contrasts with general improvement throughout the state.

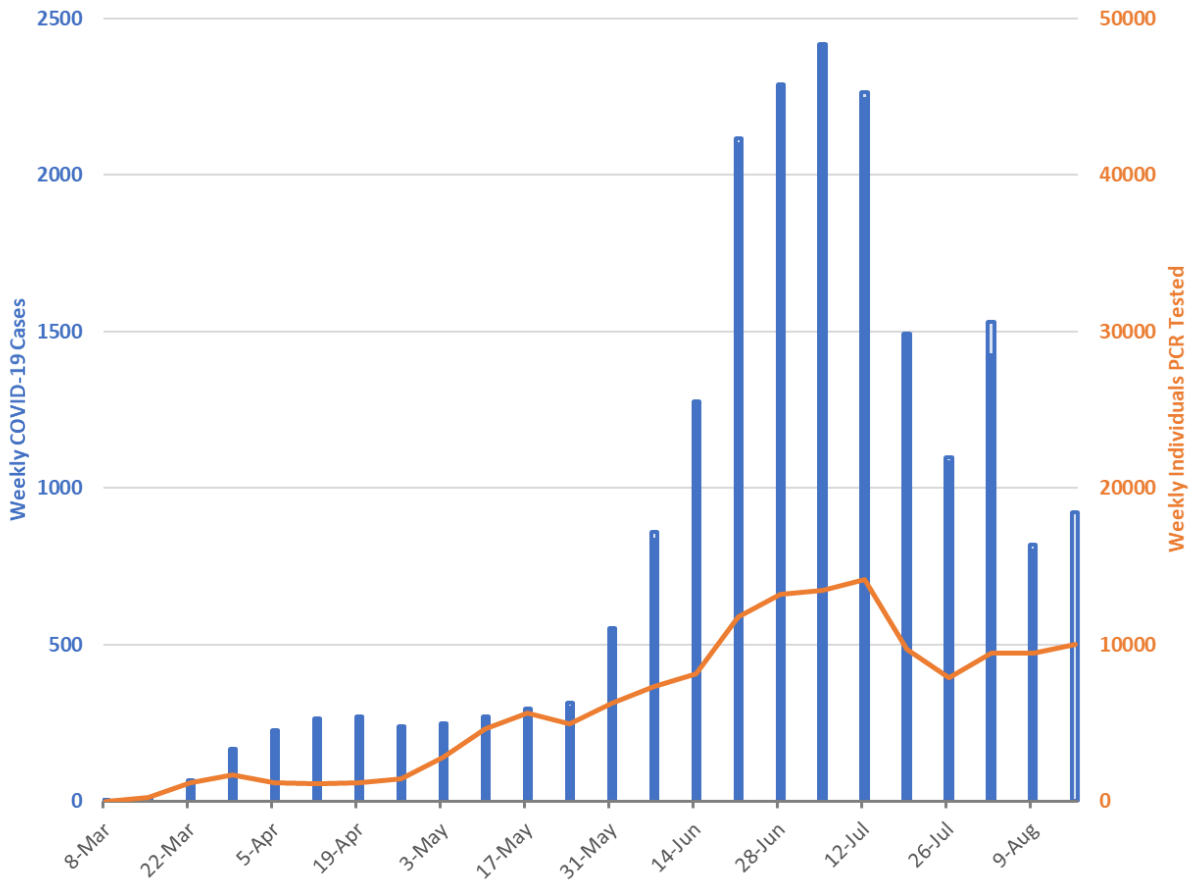

Figure 6. Newly Diagnosed Covid-19 Cases in Pima County and Individuals PCR Tested through August 16.

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Summary:

- The pace of viral transmission continues to slow appreciably as indicated by declining case counts, hospital utilization, and deaths.
    - Reporting lag for PCR results has improved such that ≥75% of results are returned within 48 hours making it easier to interpret changes in case counts and to conduct timely case identification, contact tracing, and isolation.
    - Absolute levels of community-driven viral transmission remain comparatively high as evidenced by weekly Covid-19 cases that exceed levels observed prior to the May 15th re-opening of Arizona's economy.
    - For most locales, mask-wearing ordinances will be needed for the foreseeable future to "claw back" excess hospital capacity, restore some of the lost safety margin, and address the backlog of patients waiting for "elective care." We can expect to see resumption of some normal business activities in the coming weeks (e.g., schools and businesses) as case counts continue to decline.
- Covid-related hospital utilization continues to decline while excess capacity is being replenished more slowly owing to larger amounts of non-Covid care. Adequate capacity is available for the foreseeable future.
    - From now until January, non-Covid hospitalizations are expected to increase putting additional strain on hospital capacity. In addition, hospitals will be experiencing larger volumes of elective care to reduce the backlog of patients.
- Current Covid-19 test capacity is improving as evidenced by quicker turn-around for PCR test results and a PCR test positive percentage of 7% which is now nearing the recommended 3 – 5% threshold.

Next update scheduled for August 28.

County Data (weekly crude and population-adjusted cases counts) appear in Appendix.

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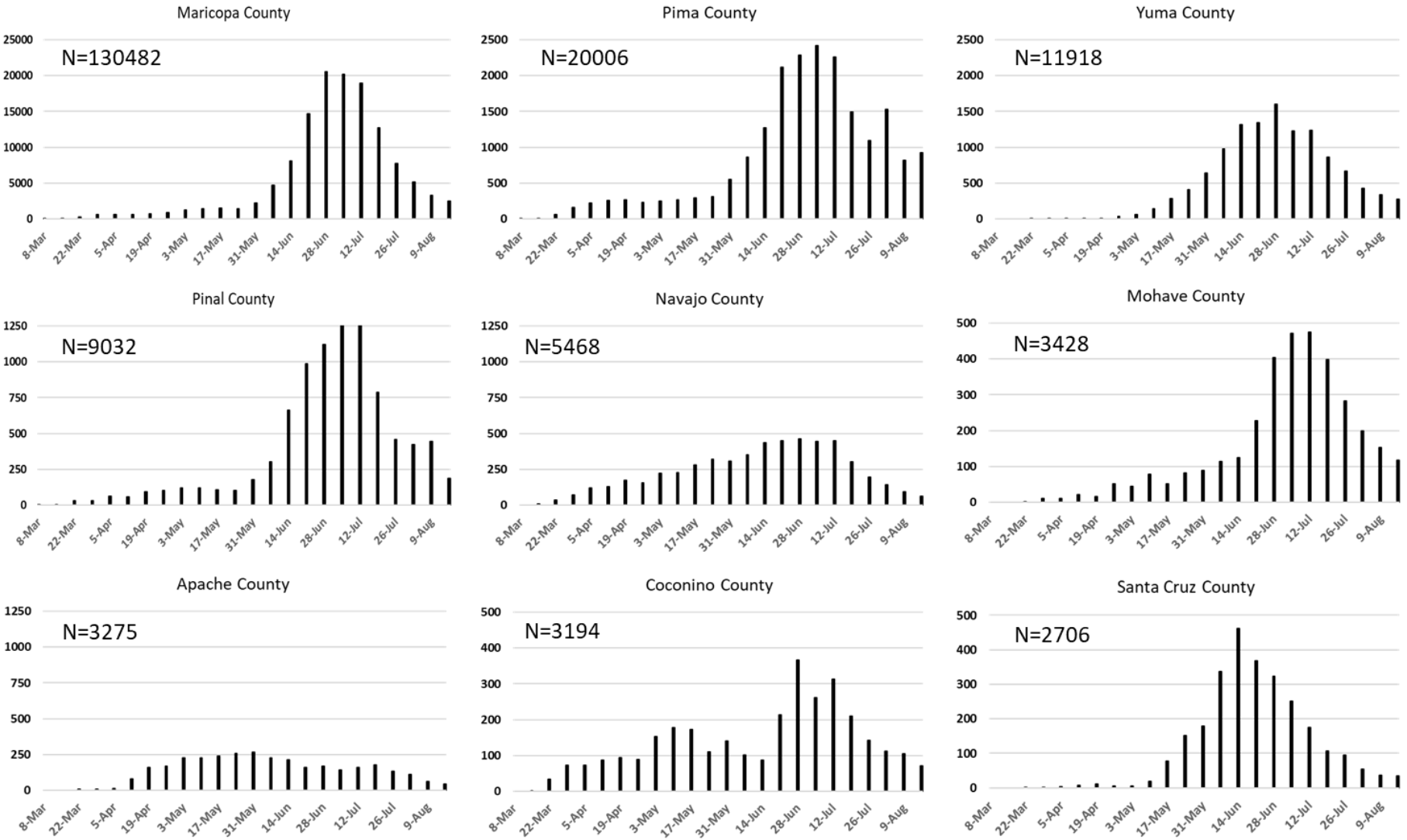

Appendix Figure 1. Weekly Covid-19 Cases by County March 1 – Aug 16.

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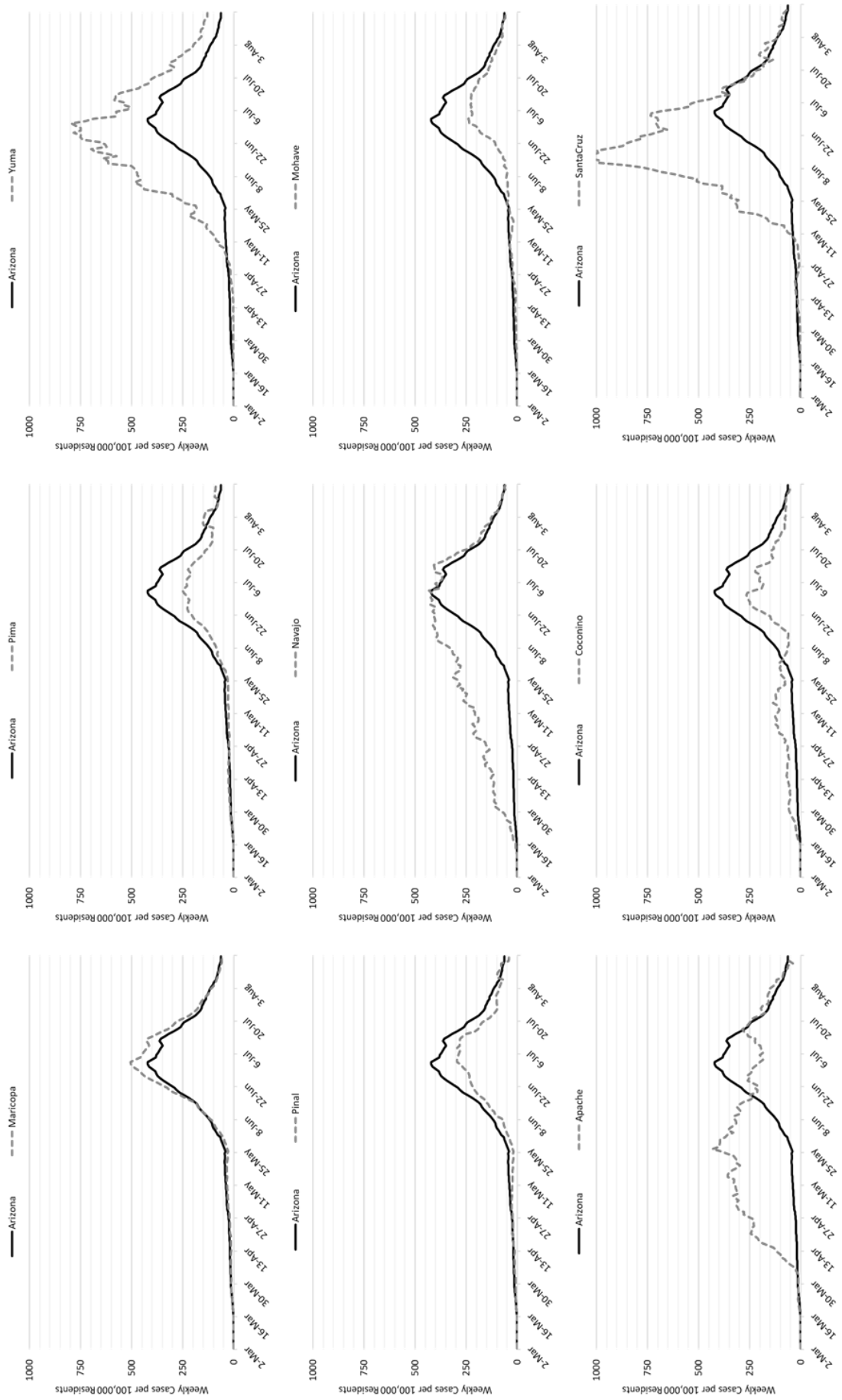

Appendix Figure 2. Weekly Covid-19 Cases per 100,000 Residents by County March 1 – Aug 16.

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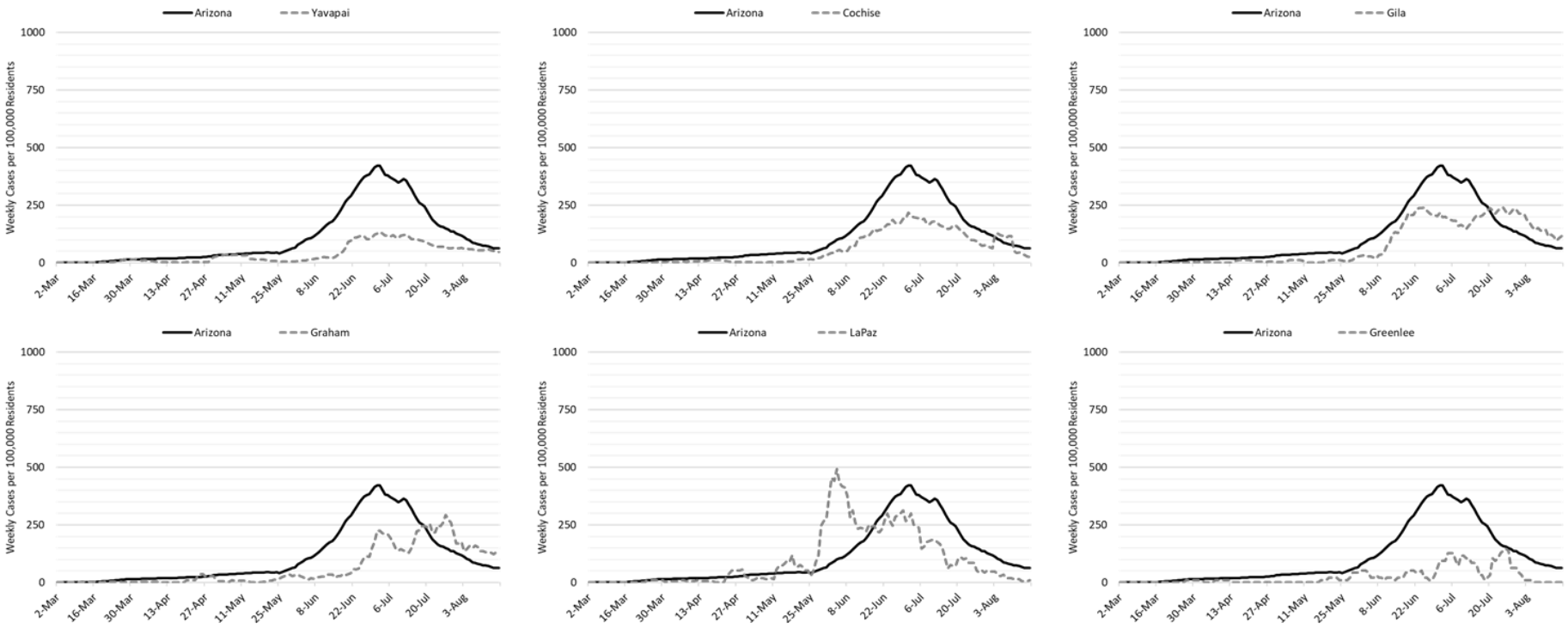

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