

COVID-19 Disease 15-Day Outbreak Forecast

Arizona State and Pima County

Updated March 17, 2020

As of March 16th, there were 20 confirmed COVID-19 cases in Arizona; 2 were newly diagnosed. No deaths have been reported. Confirmed cases are increasing by a factor of 1.20 per day which equates to a doubling time of 3.5 days (Table 1). To date, social distancing has not slowed the growth rate; however, changes won't be immediately noticeable.

Assuming current trends continue, the epidemic peak is projected to occur on May 16 with 64964 new cases being diagnosed on that day (Figure 1). While unabated growth is extremely unlikely, these projections can help gauge the extent to which public health interventions "flatten the epidemic curve" by delaying the peak and reducing the number of new cases at the peak.

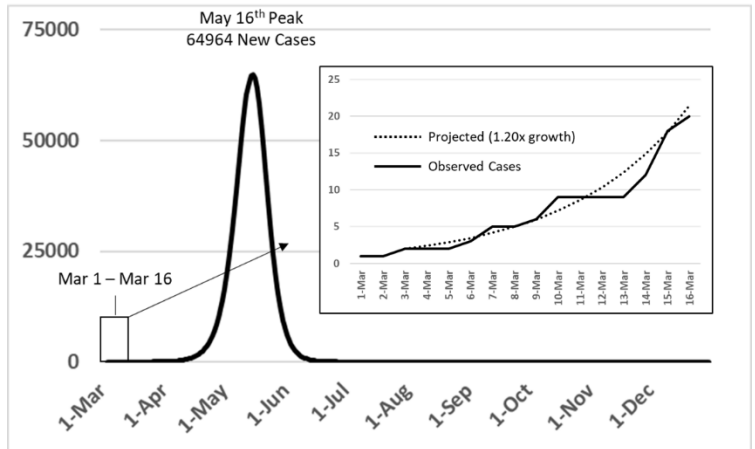


Fig 1. Projected and Confirmed Arizona COVID-19 Cases

Table 1. Reported and Projected Arizona COVID-19 Cases.

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Mar 15	Mar 16	+5 Days	+10 Days	+15 Days
Total Reported Cases	9	9	9	9	12	18	20	-	-	-
New Cases	3	0	0	0	3	6	2	+32	+79	+198
Projected Case Count	7	9	10	12	15	18	21	53	132	330
7-Day Moving Average	1.27	1.27	1.27	1.20	1.15	1.22	1.21	1.20	1.20	1.20

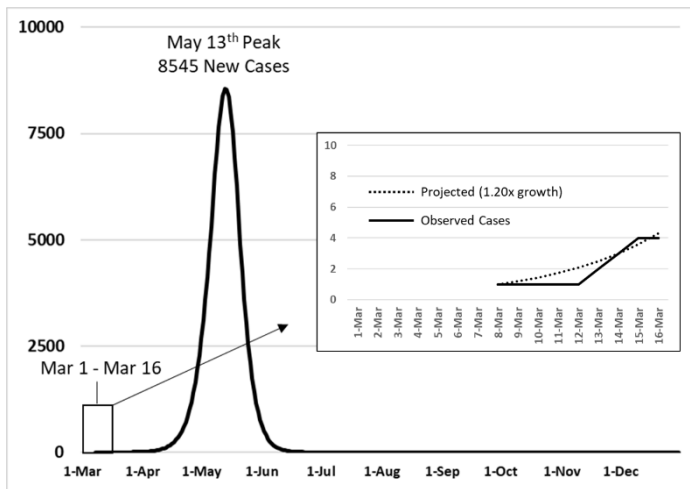


Figure 2. Projected and Confirmed COVID-19 Cases in Pima County, Arizona

As of March 16th, there were 4 confirmed COVID-19 cases in Pima County, Arizona. None were newly diagnosed. No deaths have been reported. Based on state-wide data, confirmed cases are increasing by a factor of 1.20 per day which equates to a doubling time of 3.5 days (Table 2). Assuming current trends continue unabated, the epidemic peak is projected to occur in Pima County on May 13 with 8545 new cases being diagnosed on that day (Figure 2). While unabated growth is extremely unlikely, these projections can help gauge the extent to which public health interventions "flatten the epidemic curve."

Current social distancing interventions include school closures, prohibition of gatherings >10 people, closures of specific public facing businesses, and similar measures. According to the current infection growth rate, these measures are certainly warranted, and may in fact, be insufficient to adequately slow the outbreak. On a positive note, the early adoption of measures in Pima County has the greatest potential to avoid preventable deaths in the future. The next update is scheduled for March 22nd.

Table 1. Reported and Projected COVID-19 Cases in Pima County, Arizona.

	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Mar 15	Mar 16	+5 Days	+10 Days	+15 Days
Total Reported Cases	1	1	1	2	3	4	4	-	-	-
New Cases	0	0	0	1	1	1	0	+7	+16	+39
Projected Case Count	1	2	2	2	3	4	4	11	27	66
7-Day Moving Average	-	-	-	-	-	1.26	1.26	1.20	1.20	1.20