COVID-19 SAN ANTONIO - ABRIDGED REPORT 06-Jul-2020

This report contains analyses based on data transmitted on Sunday, July 5, by San Antonio Metro Health Department (SAMHD) and the South Texas Regional Advisory Council (STRAC) to the University of Texas at San Antonio. This report supersedes previous reports.

.1 Highlights

- This model presents projections using data reliably measured up to June 26, 2020. **These projections will evolve as the situation on the ground evolves**. The current lag between modeling and data is 8 days for SAMHD and 0 days for STRAC.

- The effect of the second declaration of emergency in San Antonio on June 17 will be measurable when the number of cases per day has been consolidated up to June 30. See commentary below about consolidation of cases per day. The preliminary results seem encouraging; however, there could be delays in reporting from labs given the surge in cases.

- There could be $34,000 \pm 5,000$ new community transmission cases in the next three weeks. Another $29,000 \pm 6,000$ one week later. This is due to exponential growth in the number of community cases at a rate of exponential growth of approximately 7% daily.

- The total number of cases accumulated by the end of summer could be very large ($104,000 \pm 35,000$).

.2 About Consolidation of Past Records

When a number of cases is reported for a single day, the records are actually distributed in past days. Figure -1 shows how the final number of cases attributed to a single day increase as time progresses. Therefore, caution must be exercised before assuming that a declining trend is indeed a sign of less community transmission.

.3 Model Characteristics

- *Calibration period of one week*: This means that after a major event, it takes one week of data to have a reliable prediction.

- *Window of predictability of one month*: This means that once the model is calibrated, the projections of case numbers are very unlikely to change for about four weeks until a major event occurs.

.4 Major Events Influencing Community Transmission

- **Date of event**: Feb 13. **Date of observed effect**: February 18. This date was found computationally. A retrospective analysis revealed that the only reported

Comparison of Cases per Day on Two Different Dates
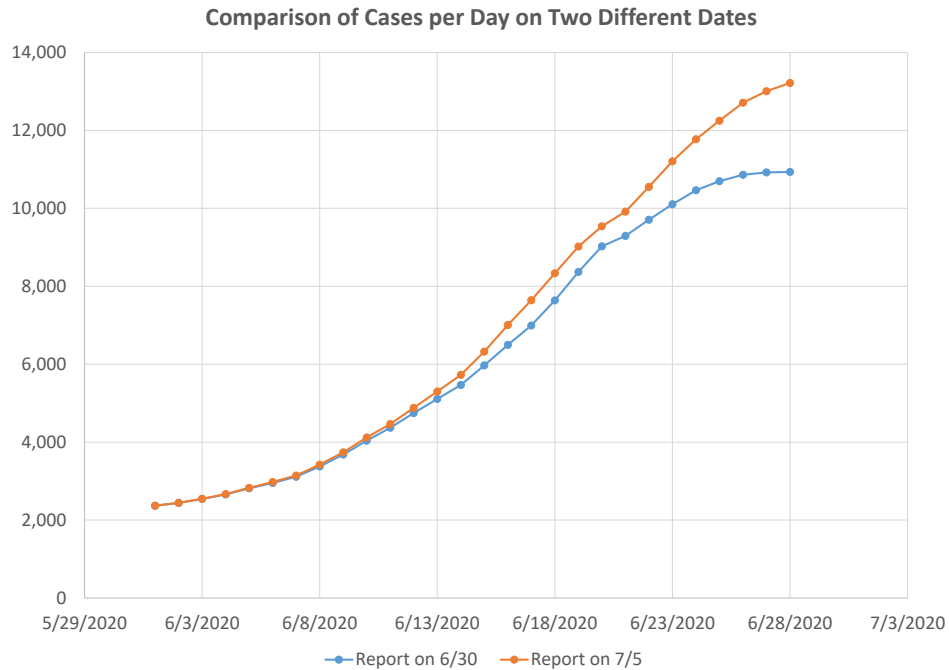

Figure -1:   File: Comparison-7-7

event on February 13 was a positive test from an evacuee at JBSA-Lackland in San Antonio.

- **Date of event**: March 13: Declaration of local disaster and public health emergency by the County Judge.

- **Date of event**: May 1. **Date of observed effect**: May 6. Businesses open at 25% occupancy.

- **Date of event**: May 18: **Date of observed effect**: May 23. Businesses open at 50% occupancy.

- **Date of event**: June 17. **Date of likely observation of effect**: Approximately two to three infectious periods, or 10 to 15 days, by end of June or beginning of July.

.5   Scope of Data

This report uses data up to July 4. The latest data batch adds records to 14 dates in the past. Most of the records in this data batch correspond samples collected on June 27 (103 records) and June 28 (49 records). The additions on July 5 changed the data with which the report was run on July 1. The last 8 days of data did not pass quality control, and were removed from analysis.

The epidemiological event date is used in analysis for every record. This epidemiological event date, E, is defined as:

1. E = Date of onset.

2. If date of onset is not available, then E = date of sample collection.

3. If date of sample collection is not available, then E = date of lab report.

4. If date of lab report is note available, then E = date entered in the database.

IMPORTANT: 938 congregated cases were removed from analysis on 06-Jul-2020. These cases are not included in projections.

The file analyzed on July 7, 2020 added the following records to past days:

EpiEventDate	Records
12-Jun-2020	1
14-Jun-2020	2
15-Jun-2020	7
16-Jun-2020	2
17-Jun-2020	17
18-Jun-2020	10
19-Jun-2020	2
24-Jun-2020	1
25-Jun-2020	1
26-Jun-2020	29
27-Jun-2020	103
28-Jun-2020	49
03-Jul-2020	20
04-Jul-2020	2

.6 Community Transmission Summary

The analysis of SAMHD data produced the following indicators:

| Modeling Community Transmission UNDER CURRENT CONDITIONS	Value
Maximum number of total cases by end of summer	104,000
Maximum number of people infected at the same time	10,000
Effective reproduction number R_e	2.02
Coefficient of Risk Mitigation K	2.3%
Community exponential growth's coefficient of determination	0.9979
Community cases daily growth rate	6.7%
Community doubling time in days	11
Projected total cases in 1 week	20,000
Projected total cases in 2 weeks	31,000
Projected total cases in 3 weeks	49,000
Projected total cases in 4 weeks	78,000
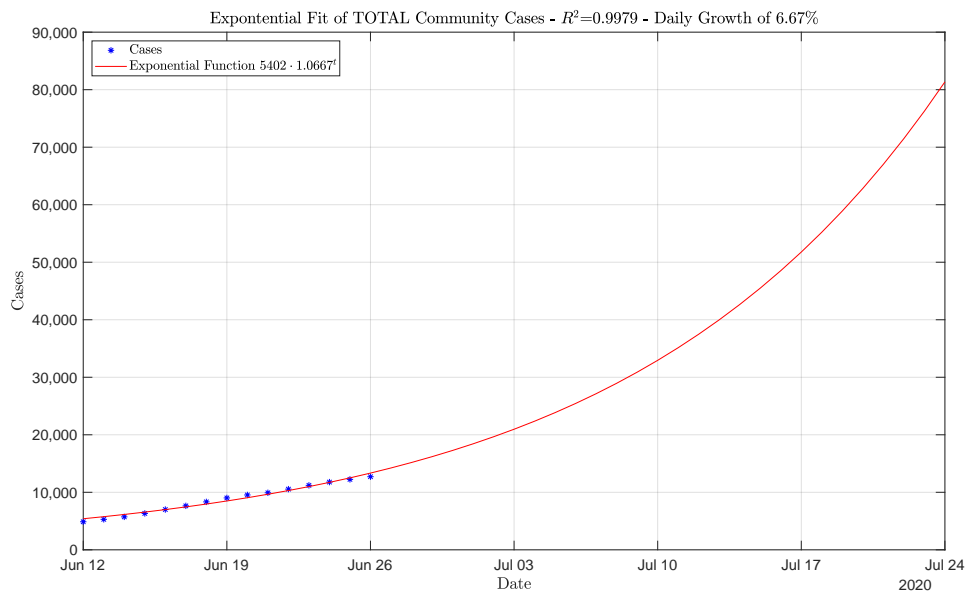
Figure -2:   File: SanAntonio06-Jul-2020-EXPCases

Projected Cases Under Conditions on 06-Jul-2020. β_A =1.16, β_Y =1.15, K_{last} =0.014, R_e =2.02
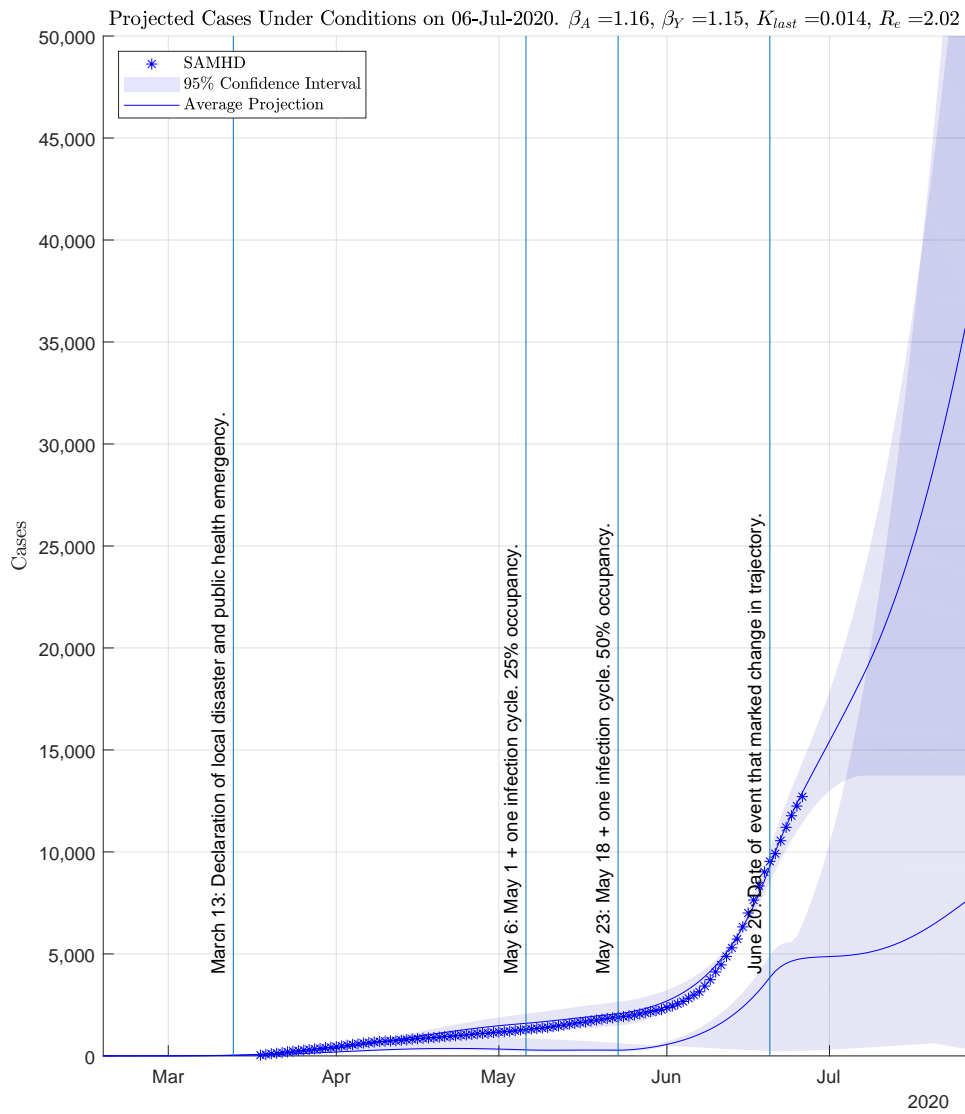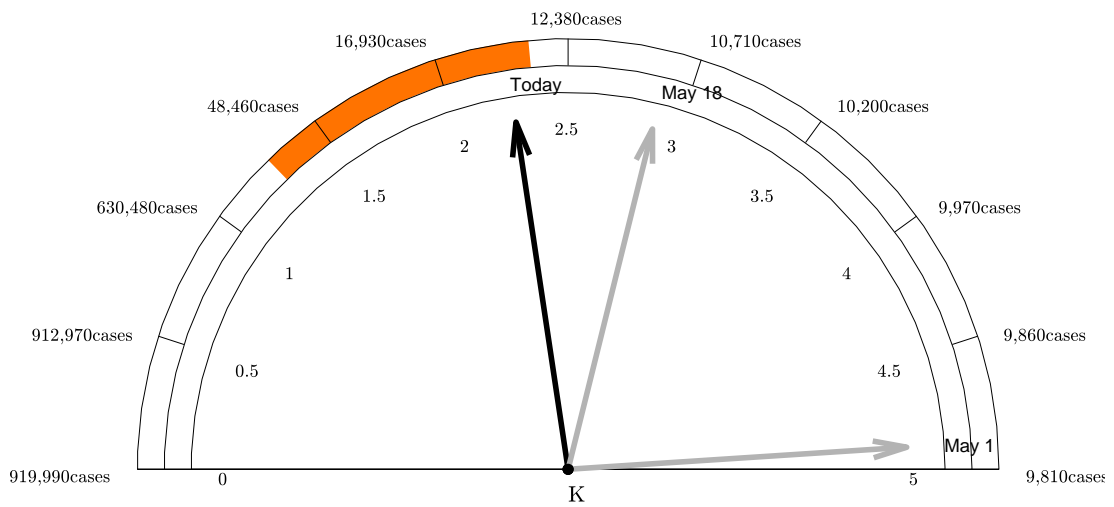

Figure -3: IMPORTANT: 938 congregated cases were removed from analysis on 06-Jul-2020. These cases are not included in projections. File: SanAntonio06-Jul-2020-EVOLUTION

Case Projection by Risk Mitigation Coefficient. $K =$**2.3%**, $R_e =$**2.02**

Colored annular wedge representes confidence interval for projected number of cases. Color represents hazard.

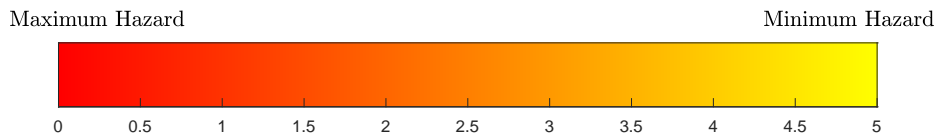Maximum Hazard   Minimum Hazard

Figure -4:   File: SanAntonio06-Jul-2020-INDICATOR-K