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UTSA COVID-19 AI Modeling Update (18TH May, 2020)

Model 2: AI Theoretical Model: The AI approach frames a modified epidemic model as a recurrent neural network where contact rate is modeled as a function of real-time cell phone mobility data, allowing us to analyze the contributions of six different measures of mobility in the spread of the virus.

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Figure 1: Forecasting of the cumulative cases for Bexar County for four different scenarios of physical distancing. Mobility data is real-time **cell phone/mobile device location** for Bexar County collected from Google LLC COVID19 Mobility Data. Mobility data comprises of six categories: retail, grocery&pharmacy, workplace, parks, residential and transit stations.

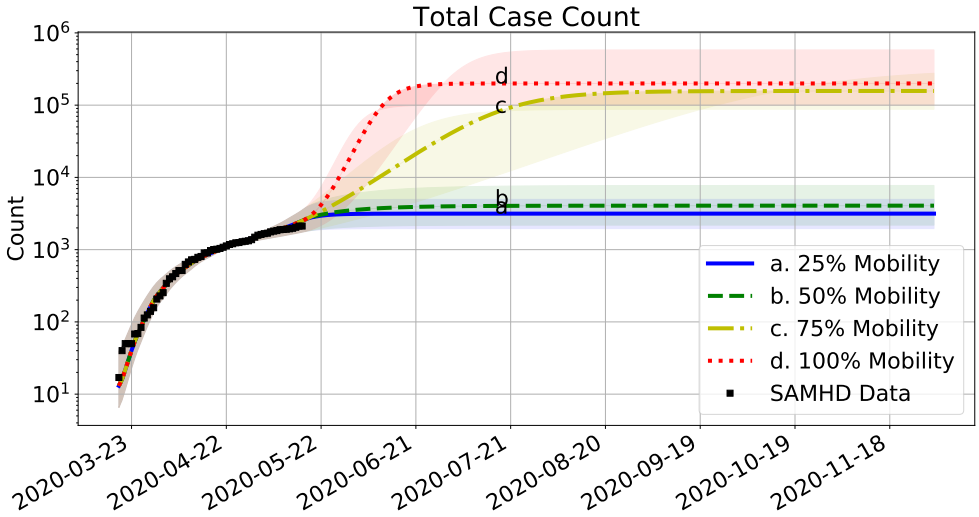

Table 1: Summary of model projections for population that will be actively infectious. Hospitalization for ≈ 20% of the active cases.

Label	Physical Distancing Scenario	Peak Active Cases	Peak Timeframes
b	50% Mobility (≈ Current Mobility)	466	Early May
c	75% Mobility (+50% Current mobility)	14375	Early July
d	100% Mobility (Pre COVID-19 mobility)	48492	Early June

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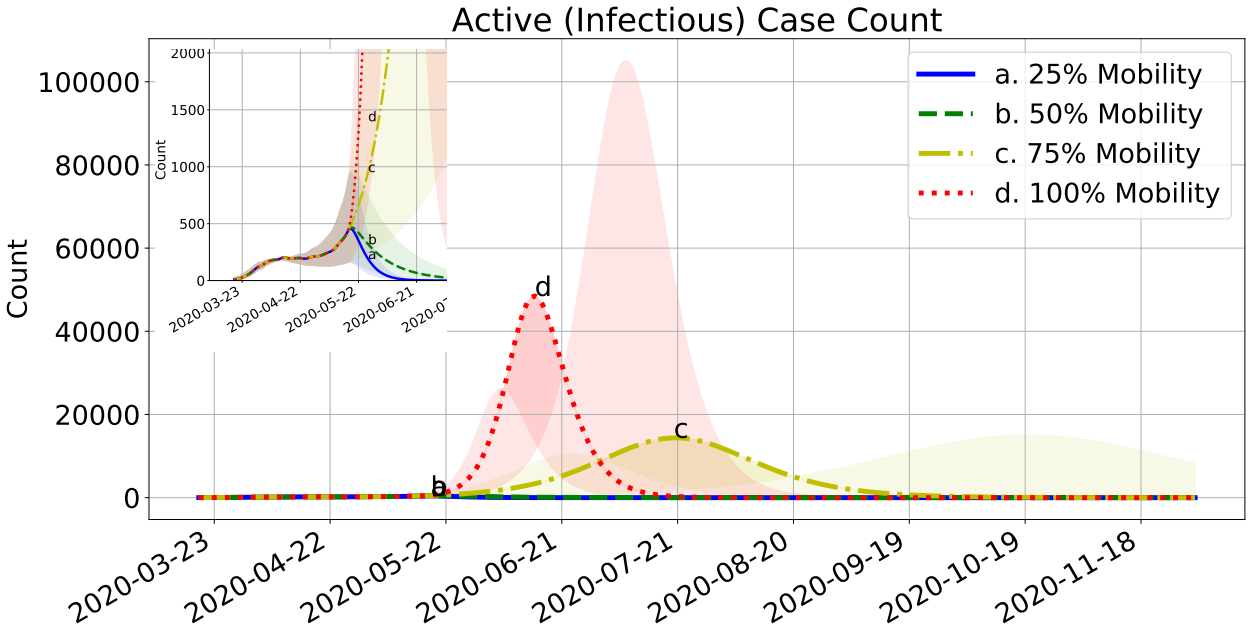
Figure 2: Forecasting of active cases for Bexar County for four different scenarios of physical distancing. Mobility data is real-time **cell phone/mobile device location** for Bexar County collected from Google LLC COVID19 Mobility Data. Mobility data comprises of six categories: retail, grocery&pharmacy, workplace, parks, residential and transit stations. Fig 2(a): Visualization of the active cases for four different scenarios of physical distancing. Fig 2(b) on the top left is further magnified onto the active cases with mobility of 25% and 50% (with confidence intervals). The scale is reflective of this change. The best, nominal, and worst case reporting rate scenarios are accounted for each mobility range. The different peaks for each mobility range are representative of these reporting rates.



Important Note: ≈10 day latency between becoming exposed/positive confirmation (due to incubation period (≈5 days)/testing latency) are accounted in the model. Actual cases are expected to be ≈50% higher than reported. Data-driven AI models provide a window into understanding the potential impact and should be treated as a qualitative guidance due to the rapid changes associated with the data collection, testing strategies, reporting, and the virus transmission.