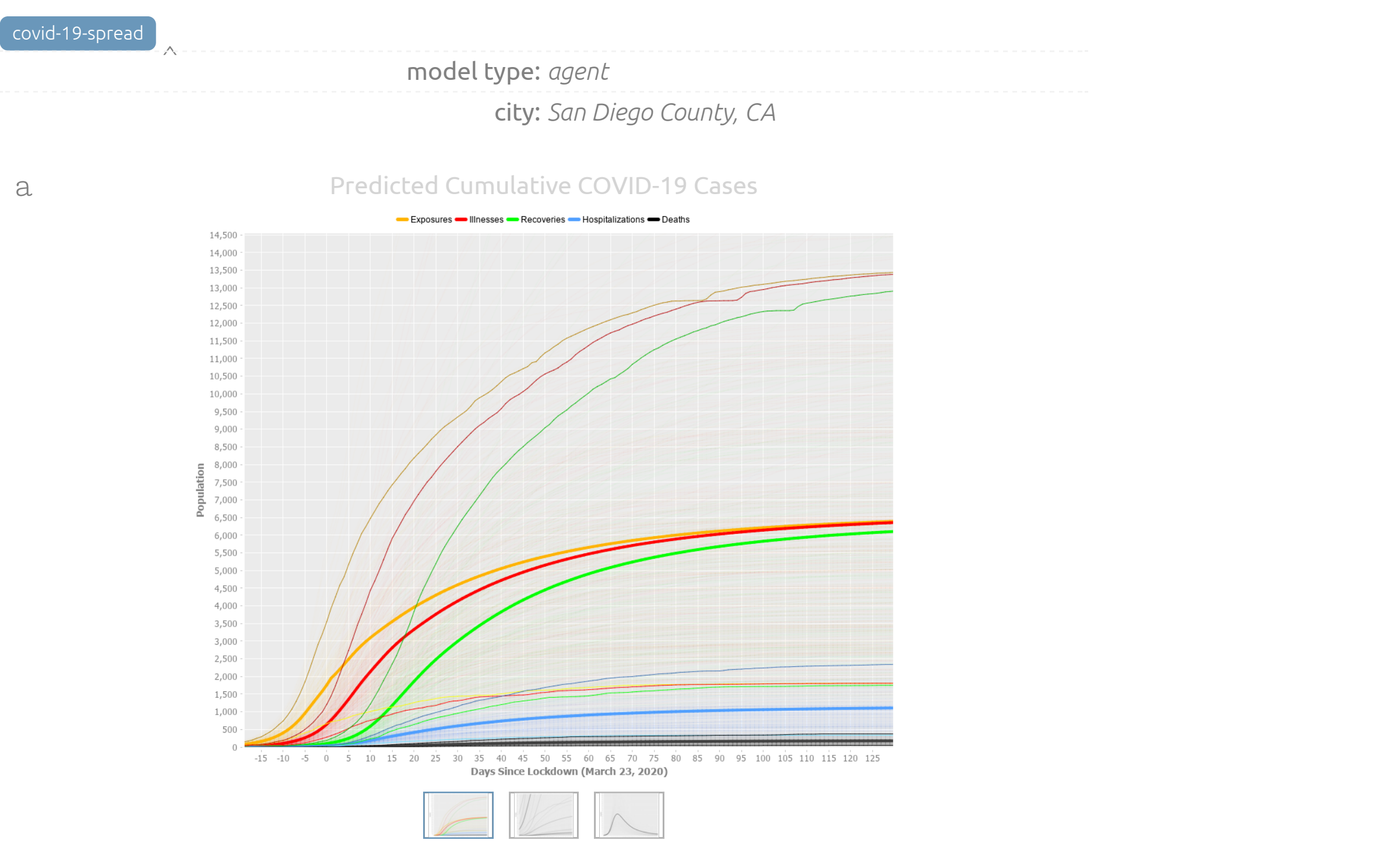


# COVID-19 Forecast for San Diego County, April 2020

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Apr 21, 2020



We used an agent-based modeling approach to demonstrate the criticality of the COVID-19 outbreak in San Diego County, CA, USA. San Diego’s first confirmed case was on March 7, 2020. A “stay-at-home” order was issued at the state level on March 19, with additional local measures enacted March 23.

Using an agent-based modeling technique, we simulated an outbreak represented by an SEIHRD (Susceptible, Exposed, Infected, Hospitalized, Recovered, Dead) model in order to estimate the expected number of total infections and deaths, the peak hospitalization date, and the number of days the crisis will last. This stochastic model is used to assign various attributes to agents (people of San Diego) and simulate interaction between these agents at various time points. The model simulation took place 244 times; these observations were used to compile key outcomes.

We expect there to be 6694 (90% CI: 1820, 13862) cases (confirmed and unconfirmed), 328 (90% CI: 107, 676) peak hospital census, 1179 (90% CI: 341, 2513) total hospital admissions, and 191 (90% CI: 53, 419) total deaths in San Diego County. Our model indicates the peak hospitalization date occurred on April 15, 2020 (sometime between April 9 to April 21). It is important to note that our model assumes continued observation of the current mitigation efforts. Given the recent protests and civil disobedience over the ongoing isolation orders, it is possible that isolation will be relaxed in the coming days. If social interaction should increase, then there could be a significant increase in new COVID-19 cases, rendering these predictions invalid.

We hope that this information can inform critical and time-sensitive decisions made by hospital administrators and local officials regarding resource allocation and clinical operation.

References:

1) <https://www.annualreviews.org/doi/10.1146/annurev-publhealth-040617-014317>

Protocols:

1) [Agent-Based Model for Simulation of COVID-19 Spread](#)

Code:

1) [Terminus](#)

Datasets:

- 1) [San Diego Hospitalizations April 8](#)
- 2) [San Diego COVID Predictions](#)

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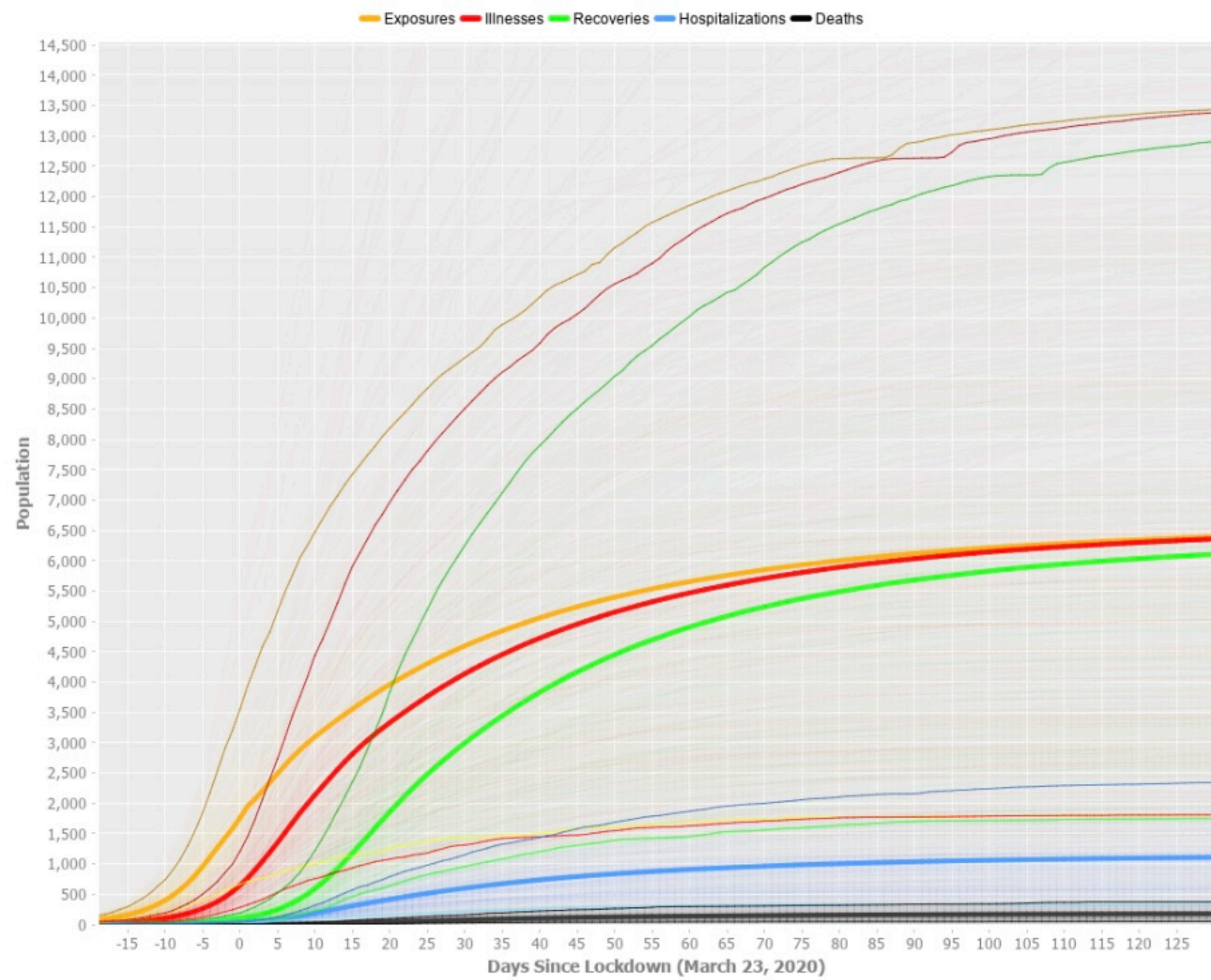
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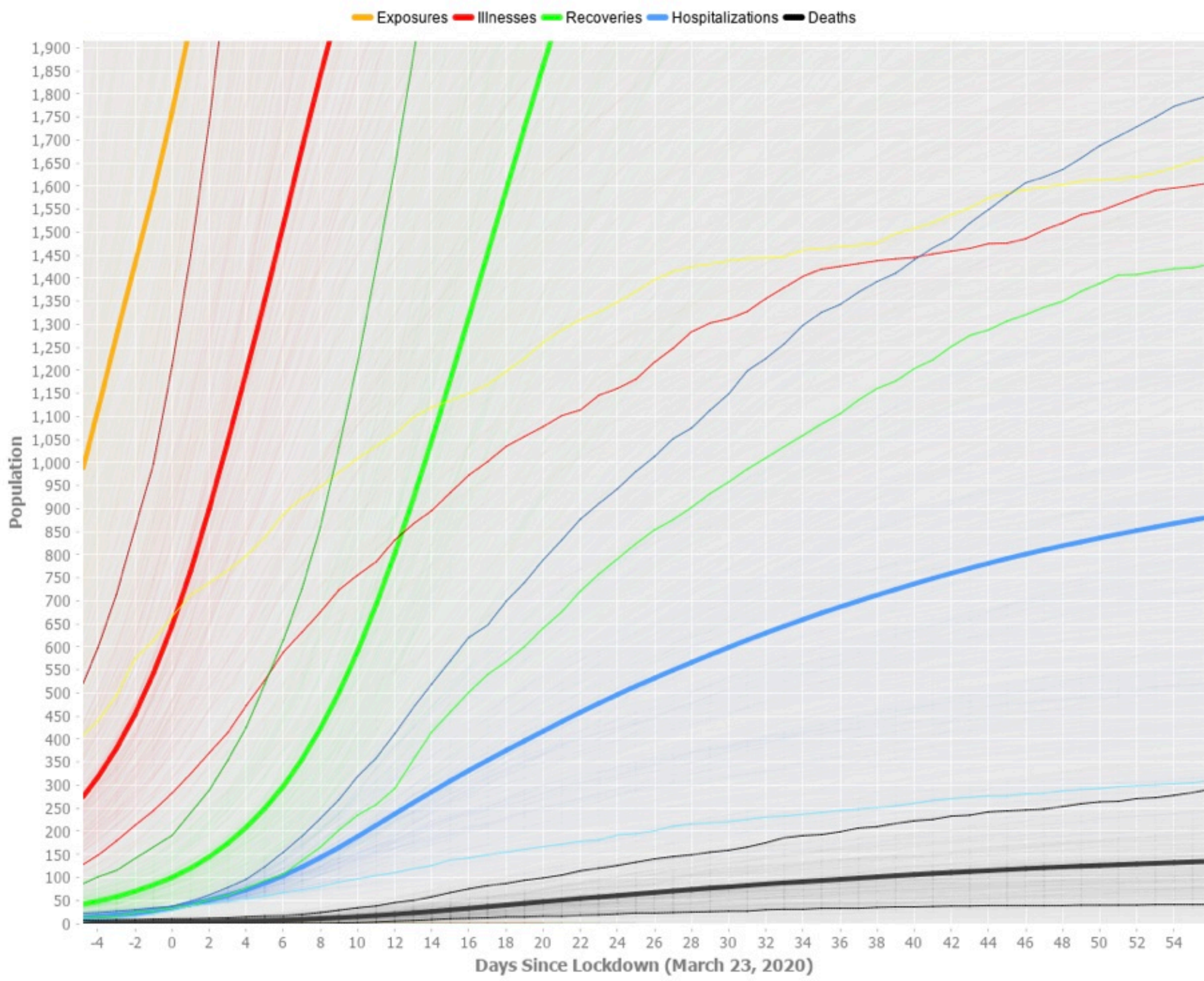
### Predicted Cumulative COVID-19 Cases





b

Predicted COVID-19 Hospitalization, Deaths





C

Predicted COVID-19 Hospital Census

