COVID-19 Forecast for Atlanta, GA, May 2020
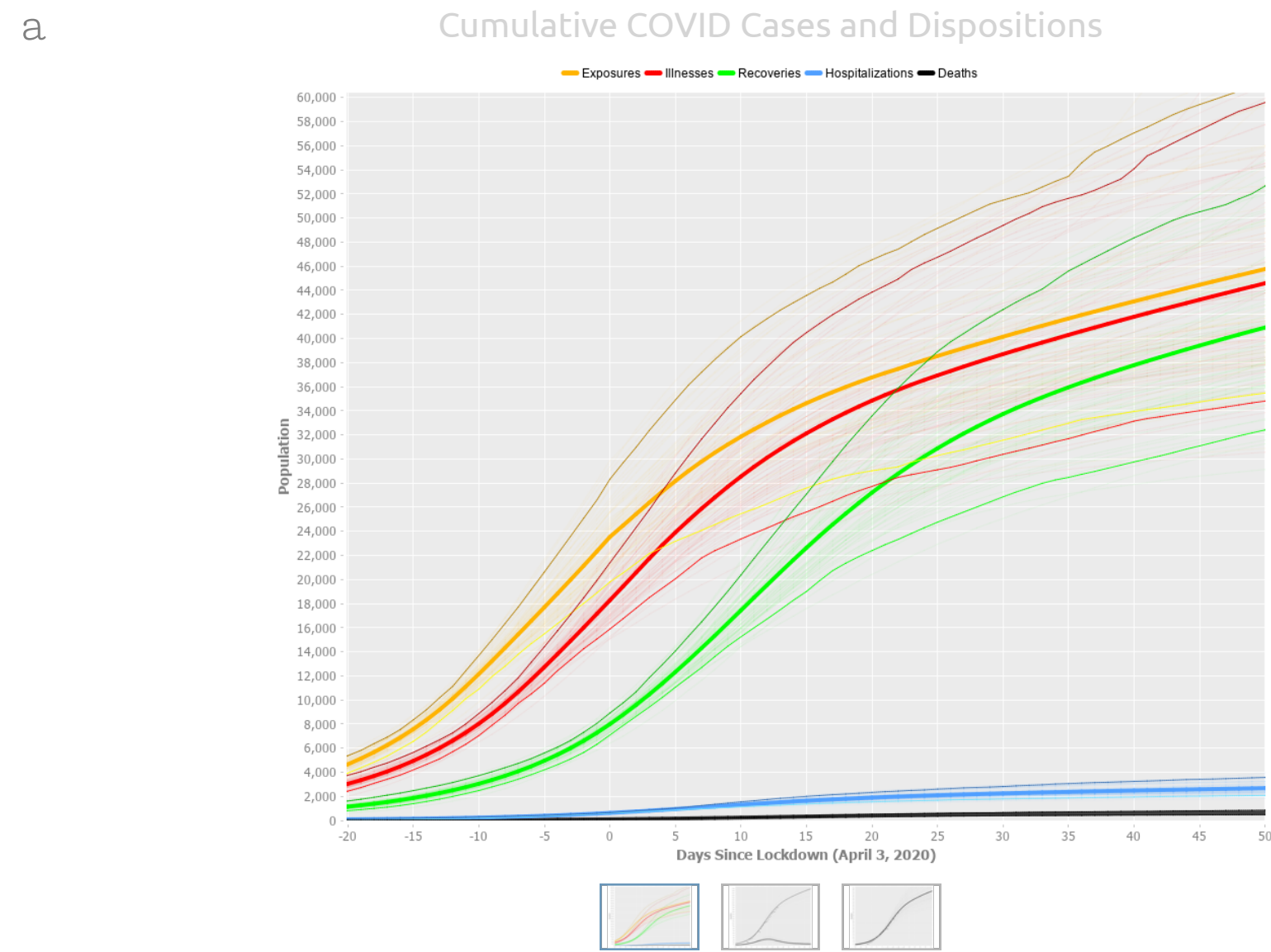
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Apr 25, 2020

covid-19-spread

model type: *agent*

city: *Atlanta, GA*

a   Cumulative COVID Cases and Dispositions

Here we extend and update our predictions for the spread of COVID-19 in Atlanta, GA, USA. The model has been updated in the following ways: 1) parameters for incubation and hospital stay duration have been updated based upon the latest literature; 2) transmission parameters have been adjust to best match the latest observations in light of the other altered parameter; and 3) the policy parameter has been extended to reflect the relaxation of Georgia's "stay-at-home" order.

We used an agent-based modeling approach to explore and predict the COVID-19 outbreak in Atlanta, GA, USA. Georgia's first confirmed case was on March 2, 2020. A variety of mitigation efforts, begun in mid-March, have helped lower the burden of disease. A number of businesses have been given permission to reopen beginning April 24, 2020, with restaurants and movie theaters preparing for limited reopening on April 27, 2020.

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 infections, hospitalizations, and deaths. This stochastic model is used to assign various attributes to agents (people of Atlanta) and simulate interaction between these agents at various time points. The model simulation took place 64 times; these observations were used to compile key outcomes.

We expect there to be 43235 (90% CI: 34718, 57655) cumulative cases (confirmed and unconfirmed), 2560 (90% CI: 2108, 3511) cumulative hospital admissions, and 617 (90% CI: 502, 830) cumulative deaths in Atlanta by May 22, 2020. Compare this to 38750 cases, 2379 hospital admissions, and 582 deaths estimated if Georgia were to remain under the "stay-at-home" order.

Note that this projection is limited to approximately 4 weeks, and the cumulative totals are only as of that point. Behavior following the relaxation of restrictions is unknown at this point and can only be given a range with low confidence. The difference in deaths only reflects one to two weeks of the effect, and can be expect to grow over a longer duration.

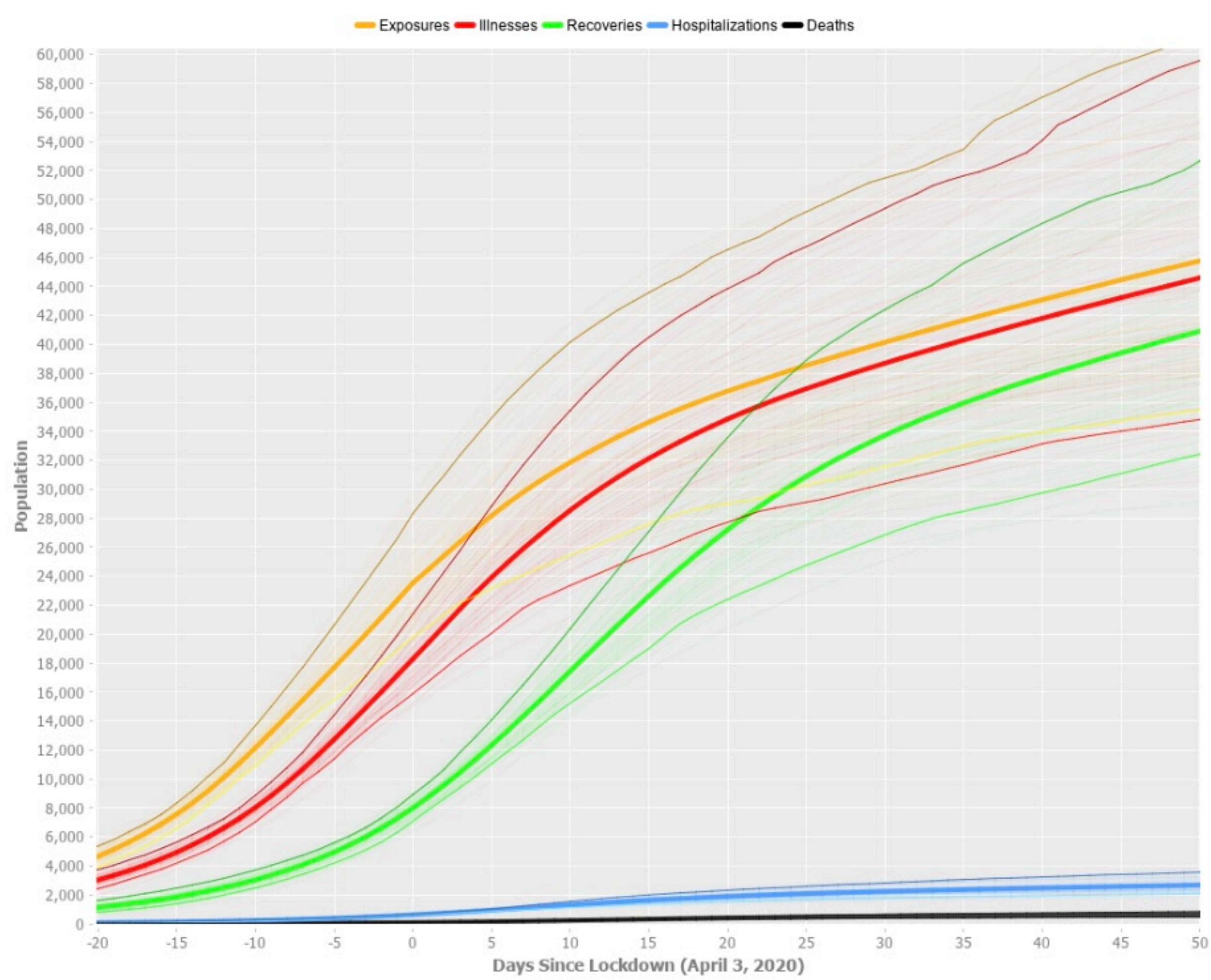We hope that this information can inform policy makers as they chart a path through the COVID-19 crisis.

Code:

1) Terminus

Datasets:
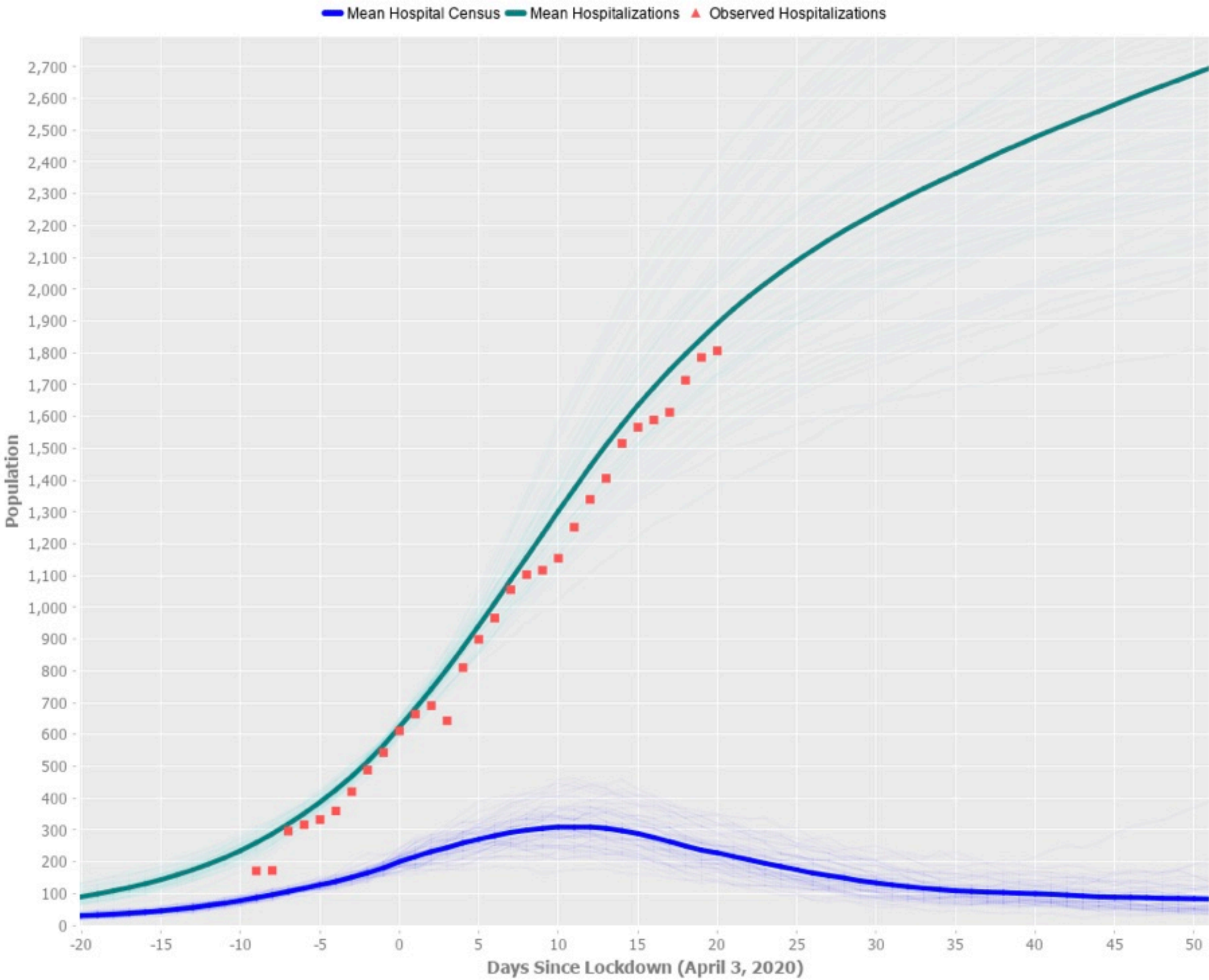
1) Atlanta COVID Predictions 2020-04-25

a

Cumulative COVID Cases and Dispositions

— Exposures — Illnesses — Recoveries — Hospitalizations — Deaths

b

Actual and Estimated COVID Hospitalizations

— Mean Hospital Census — Mean Hospitalizations ▲ Observed Hospitalizations

C

Actual and Estimated COVID Deaths

Legend: Mean Predicted Deaths — Simulation Deaths ▲ Observed Deaths

Y-axis: Population
X-axis: Days Since Lockdown (April 3, 2020)