COVID-19 | Models & Projections

INTEGRATED SOLUTIONS CONSULTING

Institute for Health Metrics and Evaluation (IHME) Model

Intervention assumptions
This model assumes social distancing stays in place until the pandemic, in its current phase, reaches the point when COVID-19 deaths are less than 0.3 per million people. Based on these latest projections, IHME expects social distancing measures to be in place through the end of May.

Methods: Non-linear mixed effects curve-fitting

Imperial Model

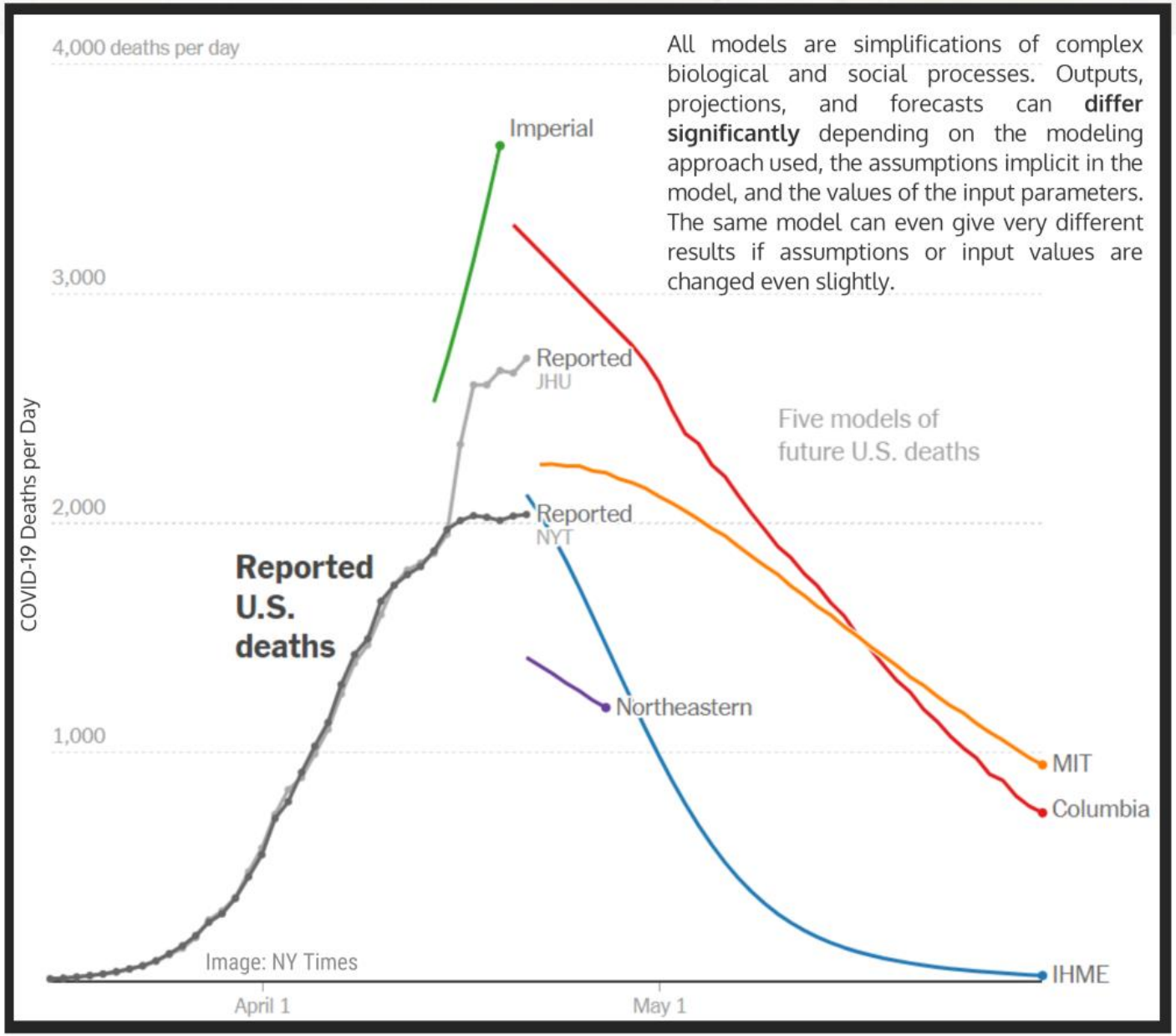
Intervention assumptions
Projected U.S. cases, deaths across a range of different mitigation and suppression scenarios, over the next year. Projected 2.2 million U.S. deaths might occur in an "unmitigated" scenario

Methods: SEIR model

MIT Model

Intervention assumptions
The model underlying predictions is DELPHI (Differential Equations Leads to Predictions of Hospitalizations and Infections). DELPHI is a compartmental model that is based on the widely successful SEIR model, but with many additions to account for realistic effects. In particular there are two important effects that are considered: Underdetection and Governmental Response. The model separates people into 11 possible states of being in the epidemic.

Methods: SEIR model



Columbia University Model

Intervention assumptions
These models are based on assumptions of reducing the number of contacts per case. Three different adaptive scenarios of contact reduction are projected: 20%, 30%, and 40% contact reduction in US counties with at least 10 cases. Additional reductions are implemented with additional new cases, and all social distancing interventions remain in place until the end of the projection.

Methods: Metapopulation SEIR model

Northeastern Model

Intervention assumptions
The GLEAM framework is based on a metapopulation approach in which the world is divided into geographical subpopulations. The world surface is divided into census cells that are assigned to subpopulations centered around transportation hubs. The population layer describing the census cells is coupled with two mobility layers, the short-range commuting layer and the long-range air travel layer. Superimposed on the worldwide population and mobility layers is an agent-based epidemic model that defines the infection and population dynamics.

Methods: Global Epidemic and Mobility Model (GLEAM), an individual-based, stochastic, and spatial epidemic model

Disclaimer: The scenarios are projections and were developed to visualize the potential path forward. Many factors will ultimately influence the severity of COVID-19, and impacts on individual communities will vary.