

COVID-19 Pandemic: A View from New York State

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Moderator



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COVID-19: A View from New York State

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Local Data Sources:

- **Governor Andrew M. Cuomo's COVID-19 Briefings**
(March 31, April 1, April 2)



**Rikers Island Inmates Offered \$6
Per Hour to Dig Mass Graves as
COVID-19 Deaths Rise**

Source: [GQ.com](https://www.gq.com)



Source: [CNN.com](https://www.cnn.com); Refrigerated trailers in place as workers built a makeshift morgue outside of Bellevue Hospital.



Source: [Dailymail.co.uk](https://www.dailymail.co.uk); A makeshift morgue set up outside of Bellevue Hospital to handle a possible surge.

Increase Continues



Daily New Positive Cases

STAY HOME.

STOP THE SPREAD.

SAVE LIVES.

Total People Tested

COUNTY (TOP 10)	TOTAL TESTED	NEW TESTED (3/31)
NYC	104,041	7,513
Westchester	39,081	1,891
Nassau	24,308	1,908
Suffolk	21,453	2,148
Rockland	9,111	904
Orange	5,752	628
Monroe	3,980	381
Albany	3,810	106
Onondaga	3,616	191
Dutchess	2,892	330
TOTAL	238,965	18,031

Positive Cases

COUNTY (TOP 10)	TOTAL CASES	NEW CASES
NYC	51,809	4,370
Westchester	11,567	884
Nassau	10,587	1,033
Suffolk	8,746	1,141
Rockland	3,751	430
Orange	1,993	237
Dutchess	667	120
Erie	617	153
Monroe	420	71
Albany	253	13
TOTAL	92,381	8,669

Current Hospitalizations

92,381 tested positive

13,383 people currently hospitalized (+1,157)

3,396 ICU Patients (+374)

7,434 patients discharged (+1,292)

Number of Deaths

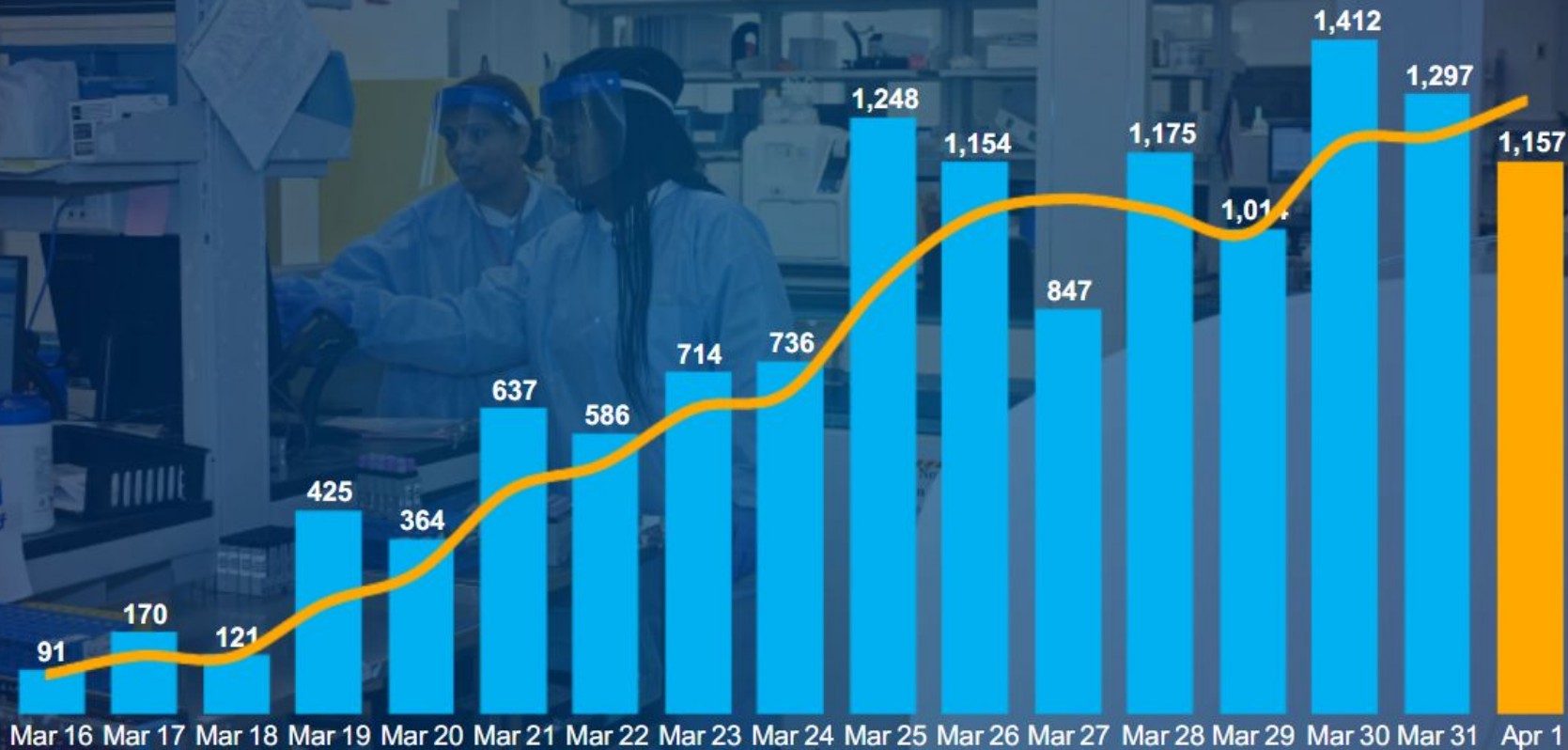
2,373
up from
1,941

STAY HOME.

STOP THE SPREAD.

SAVE LIVES.

Total New Hospitalized



Change in Daily Intubations



2 Missions

The diagram features a central orange header with the text '2 Missions'. Two large yellow arrows point downwards from the header to two separate blue text boxes. The left box contains the text '“Frontline” of the battle is our hospital system' and is set against a background image of medical professionals in a hospital setting. The right box contains the text 'Social responsibility: Stay home' and is set against a background image of a city street with a crosswalk.

“Frontline” of the battle is our hospital system

**Social responsibility:
Stay home**

Frontline Hospitals

- Follow projections of experts
- Procure equipment
- Identify beds
- Support staff
 - They are the “frontline”
 - Need relief
 - Physical/emotional exhaustion

STAY HOME.

STOP THE SPREAD.

SAVE LIVES.



Remember: main battle is at the
“apex” of the curve

- Plan now
- Staffing plan now
- Equipment stockpile now
- Social acceptance of time expectations now

Function and Plan as One System



Upstate New York

Westchester

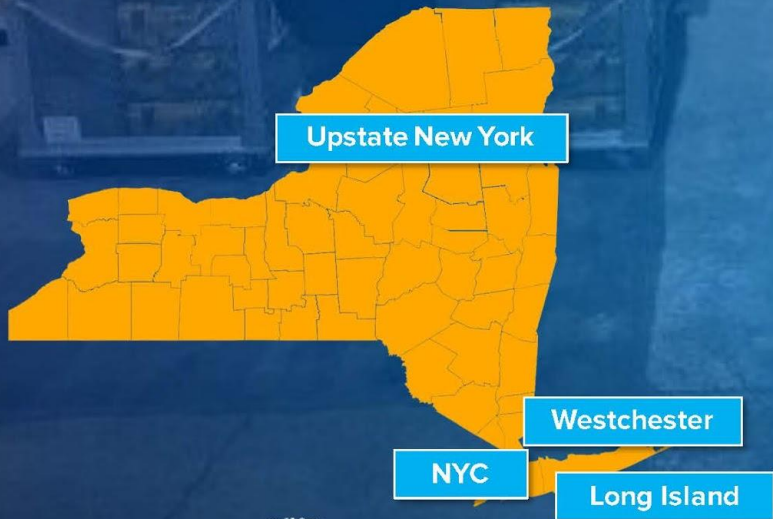
NYC

Long Island

Must Break the Barriers



Added Complexity



**NYC
HEALTH+
HOSPITALS**

Javits FMS



USNS Comfort

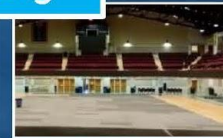
Planning



JAVITS CENTER -
USACE



STONY BROOK



WESTCHESTER



OLD WESTBURY

Planning



BRONX



BROOKLYN



STATEN ISLAND



QUEENS

WE KNOW WHAT WE HAVE TO DO

WE JUST HAVE TO DO IT

**INDIVIDUAL DISCIPLINE
GOVERNMENT SKILL & PERFORMANCE
SOCIAL STAMINA
NATIONAL UNITY**



DR. DAVID R HOLTGRAVE

Dean, SUNY Empire Innovation Professor, and
SUNY Distinguished Professor
University at Albany School of Public Health





Dr. Anthony S. Fauci

Photo Credit: NIAID

"While we must prepare for 100,000 or more deaths in the U.S. we do not have to be prepared to accept it."

-Paraphrased from Dr. Anthony Fauci, White House Coronavirus Briefing, March 31, 2020



WAYS TO AVOID ACCEPTING PROJECTED FATALITY LEVELS IN NY STATE

- Maximize physical distancing (avoiding looking for "loopholes"... e.g., playgrounds in New York City)
- Maximize physical distancing but also maximize social connection (please stop saying "social distancing")
- Accept micro-level health screenings (ala checking temperatures to gain access to essential businesses in South Korea)
- In New York State, especially New York City, testing is very largely diagnostic, and there is a truly urgent need to expand testing very broadly



WAYS TO AVOID ACCEPTING PROJECTED FATALITY LEVELS IN NY STATE *(continued)*

- Reinvigorate contact tracing after larger testing strategy is rolled out
- Rapid studies of potential therapies (blending an array of observational studies and randomized controlled trials)
- Keep expanding hospital surge capacity, and creatively utilize "all COVID-19" hospital designations (e.g., SUNY Downstate)
- Creatively produce PPE for HCWs (and eventually beyond) from sources very large and very small (use every 3D printer, and every needle & thread!)
- Bring all of the above to scale and don't stop until the metrics move to necessary levels (accelerate until we get to where we need to go)

Role of models in understanding the trajectory of the COVID-19 pandemic

Eli Rosenberg, PhD

Associate Professor

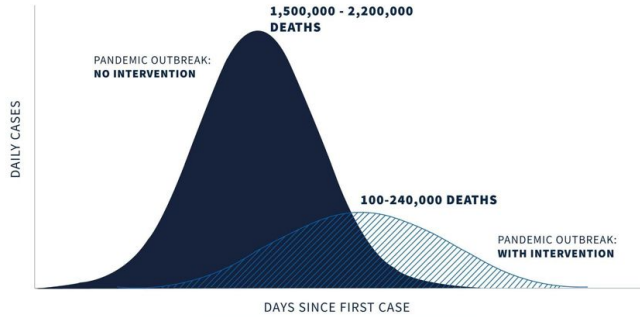
Department of Epidemiology and Biostatistics, University at Albany

School of Public Health

NYS DOH COVID-19 Response Team

Models are front and center of pandemic

GOALS OF COMMUNITY MITIGATION



- 1 Delay outbreak peak
- 2 Decompress peak burden on hospitals/infrastructure
- 3 Diminish overall cases and health impacts
- 4 Decreases fatalities

Remember: main battle is at the “apex” of the curve

- Plan **now**
- Staffing plan **now**
- Equipment stockpile **now**
- Social acceptance of time expectations **now**

15

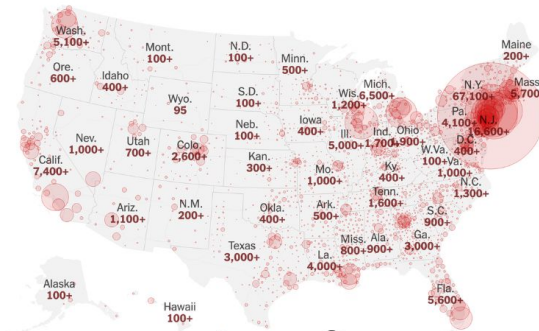
Grim Models Project High U.S. Toll in a Months-Long Crisis

Updates: Studies Forecast 100,000 Dead and Millions Infected

Statistical models that appeared to have convinced President Trump to extend social distancing guidelines will be made public today.

The number of deaths in the U.S. has surpassed China's toll, but the figures from Beijing are being questioned. Here's the latest.

Live 39m ago 956 comments



[See more maps](#)



Why Asia's New Wave of Virus Cases Should Worry the World

After a surge in cases tied to international travelers, places that seemed to have the epidemic under control imposed stricter measures.

3h ago

Why are models suddenly so popular?

- Although things have look looked less catastrophic so far, models let us peer into future.
- Understand impact of COVID-19 on population and healthcare system
- Lets us ask “what if” questions to help plan policies and resources
 - Under different intervention scenarios
 - Under different assumptions about COVID-19 and in the US setting, for which we have thin empirical data
 - Under different “data realities” on the ground

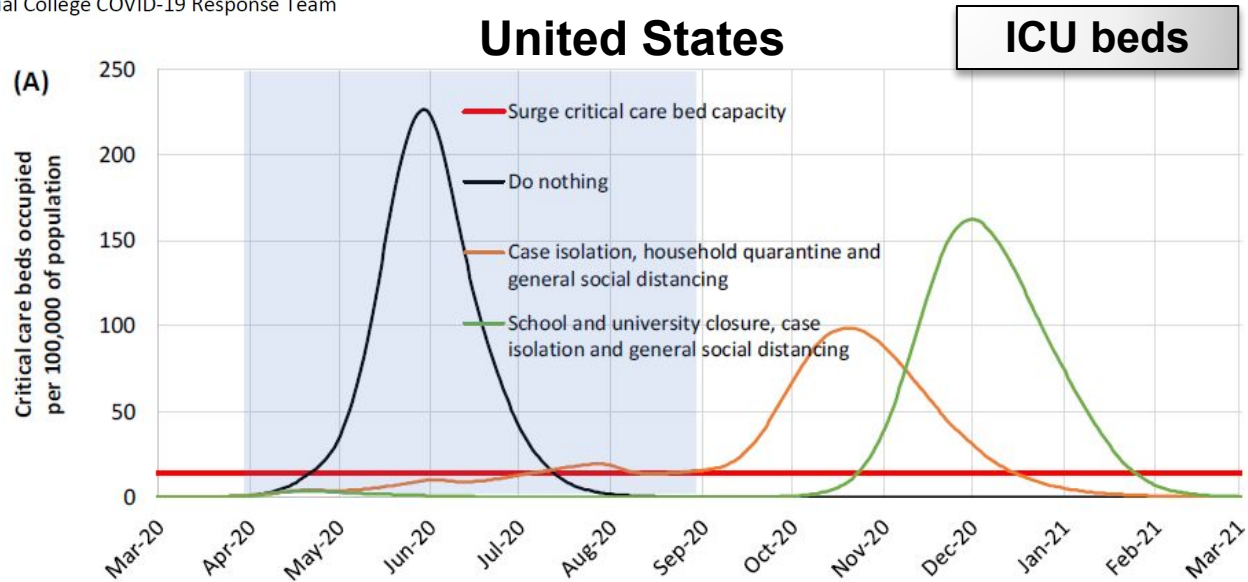
What's in a model?

- General structure and mechanics
 - Statistical
 - Simulation: SEIR, agent-based models
- Many assumptions
 - How long can people transmit SARS-Cov-2?
 - How many asymptomatic?
 - What's the likelihood of needing to be hospitalized? To need an ICU? Mechanical ventilation? For how long?
 -
- Many outcomes to track
 - Infections
 - Hospitalization
 - ICU
 - Deaths
 -
- Intervention scenarios
 - Base case
 - New interventions compared to base

Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand

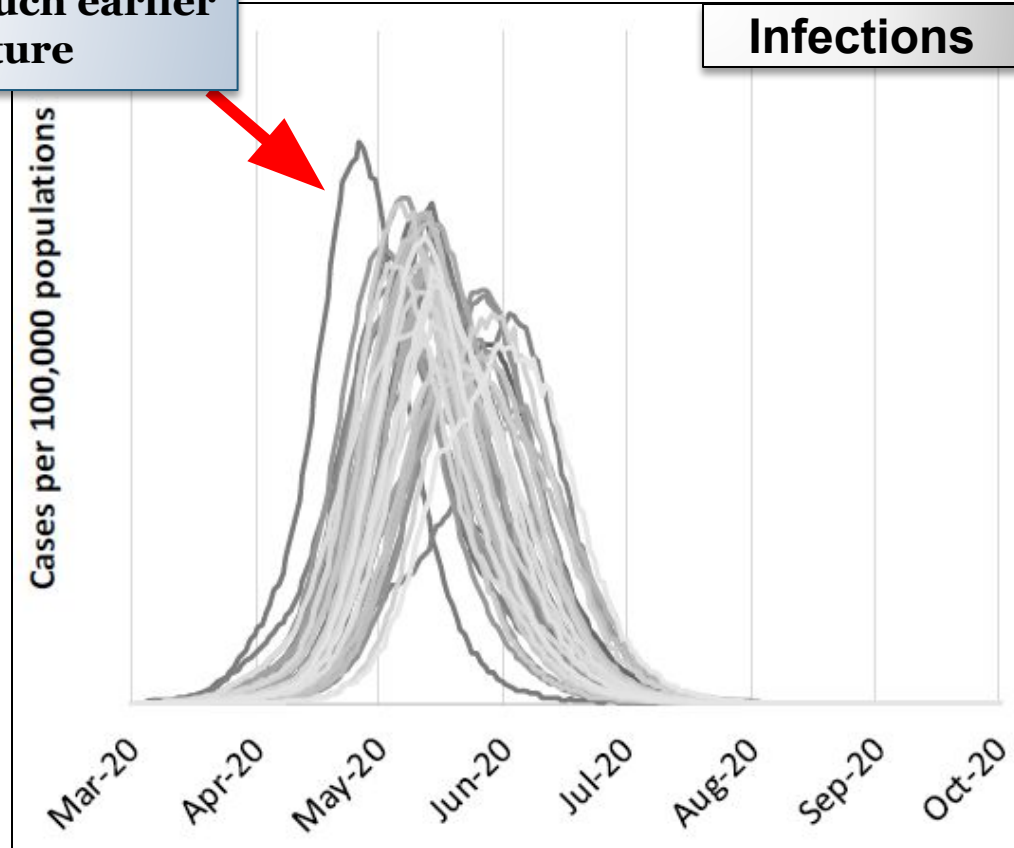
Neil M Ferguson, Daniel Laydon, Gemma Nedjati-Gilani, Natsuko Imai, Kylie Ainslie, Marc Baguelin, Sangeeta Bhatia, Adhiratha Boonyasiri, Zulma Cucunubá, Gina Cuomo-Dannenburg, Amy Dighe, Ilaria Dorigatti, Han Fu, Katy Gaythorpe, Will Green, Arran Hamlet, Wes Hinsley, Lucy C Okell, Sabine van Elsland, Hayley Thompson, Robert Verity, Erik Volz, Haowei Wang, Yuanrong Wang, Patrick GT Walker, Caroline Walters, Peter Winskill, Charles Whittaker, Christl A Donnelly, Steven Riley, Azra C Ghani.

On behalf of the Imperial College COVID-19 Response Team



But COVID-19 is best modeled locally

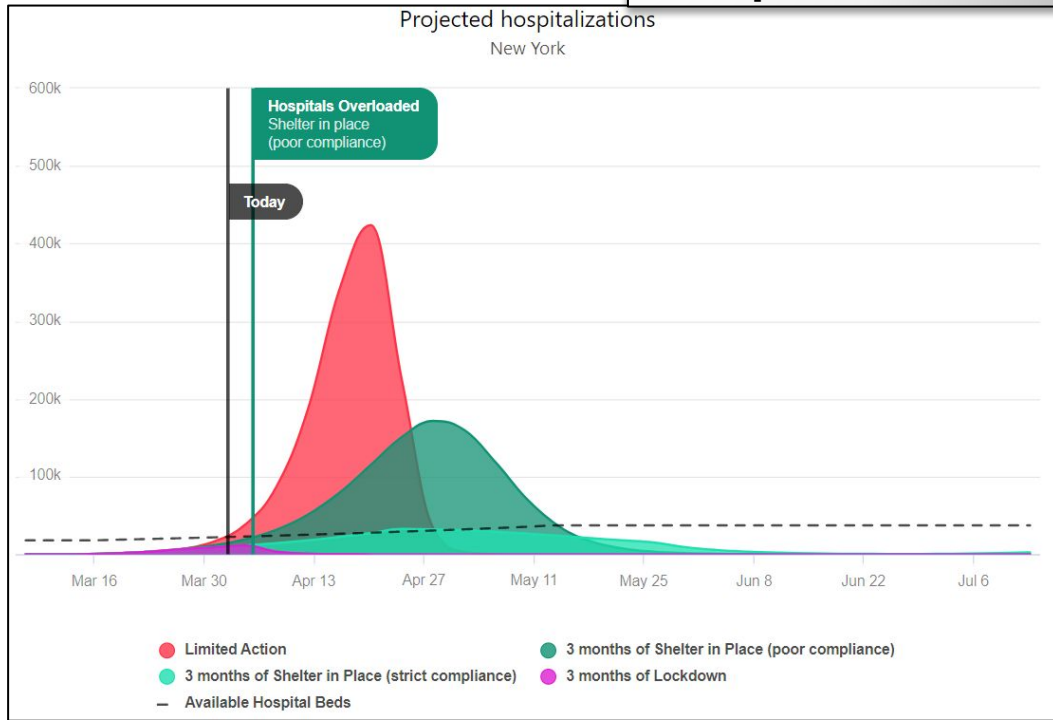
Probably NY – much earlier peak than US picture





Why you must act now

Hospitalizations



**Note earlier peak than Imperial College Model.
Also constantly updated with new data.**

Hospitalizations

New York ▾

The charts below show projected hospital resource use based on COVID-19 deaths. The model assumes continued social distancing until the end of May 2020.

8 days until peak resource use on
April 9, 2020

All beds needed 75,224 beds	→	All beds available 13,010 beds	→	Bed shortage 62,214 beds
ICU beds needed 11,621 beds	→	ICU beds available 718 beds	→	ICU bed shortage 10,903 beds
Invasive ventilators needed 9,297 ventilators				



A few takeaways for comparing models



- Pay close to attention to the specific outcomes, assumptions, and interventions!
- Significant variations between states and even within NYS on when the peaks will be
- Models have a limited shelf life, as we learn more
 - Older models less useful now
 - All models likely to converge on truth over time
- All models show we are likely to vastly exceed vital healthcare resources in next few months and many lives will be affected.
 - Differences only on when exactly and by how much.

Coda: Models show us this is a long game

- Short-term apparent successes of strategies are misleading



Why Asia's New Wave of Virus Cases Should Worry the World



After a surge in cases tied to international travelers, China, Hong Kong, Singapore and other places that seemed to have the epidemic under control have imposed stricter measures.

15h ago · By MOTOKO RICH

- With current medical tools and one period of mitigation, COVID-19 will bounce back and be mainly stopped by population-level immunity due to earlier infection

Imperial College Model – possible but impractical approach to managing this

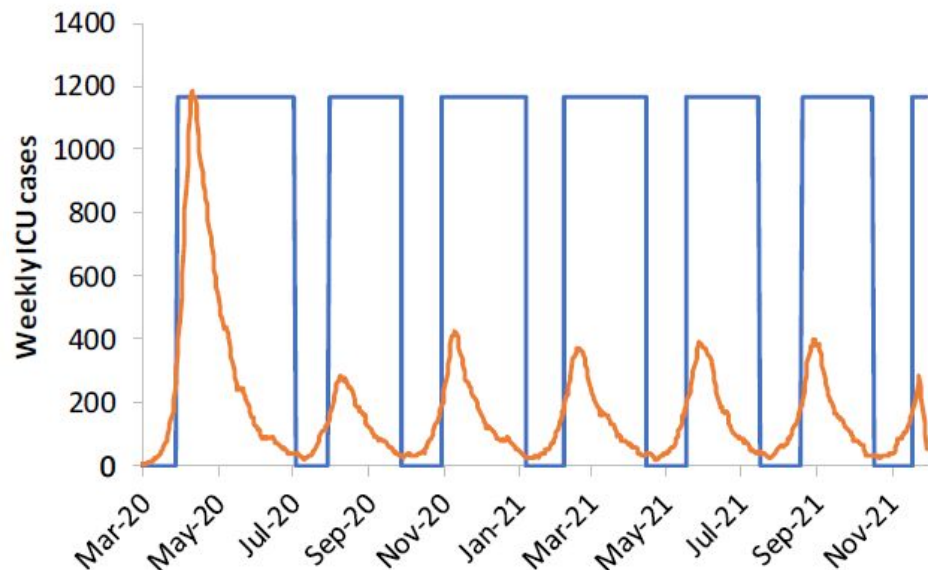


Figure 4: Illustration of adaptive triggering of suppression strategies in GB, for $R_0=2.2$, a policy of all four interventions considered, an “on” trigger of 100 ICU cases in a week and an “off” trigger of 50 ICU cases. The policy is in force approximate 2/3 of the time. Only social distancing and school/university closure are triggered; other policies remain in force throughout. Weekly ICU incidence is shown in orange, policy triggering in blue.

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Q&A



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