THE UNIVERSITY OF CHICAGO

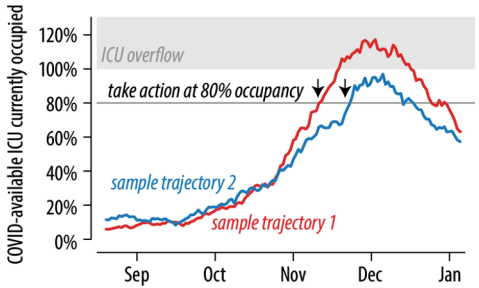
- **Epidemic growth remains concerning in COVID regions 4 and 5.** Our model suggests that increasing hospitalizations in regions 4 and 5 are driven by increases in transmission that occurred in August. We estimate that R_{eff} remains at or above 1 in these regions, indicating that the epidemic continues to grow.

- **Recent trends in COVID regions 1 and 2 also merit attention**. Hospitalizations are increasing in these regions and the test positivity rate continues to climb in region 1 despite increased testing.

- **Sentinel outpatient surveillance would provide the clearest and earliest signal of changes in transmission rates (R_{eff}), especially when transmission is focused in younger age groups**. Recent spikes in cases caused by backlogs in processing as well as uneven sampling across the population make it difficult to infer underlying trends in transmission from standard case data. We have not estimated R_{eff} using the most robust methods this week due to uncertainty in interpreting case data. Sentinel surveillance at outpatient sites would allow us to provide a clearer picture of how transmission is changing across the state.

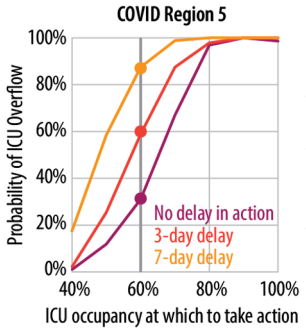
Northwestern University

If we want to avoid overflowing ICU capacity, what level of ICU occupancy should trigger taking action?



- We simulated realistic resurgence scenarios in each COVID Region.
- When the threshold for action (X% ICU beds occupied) is reached, mitigation measures are introduced that take us back to June levels of transmission.
- After the rollback is triggered, we assess the risk of capacity overflow. ICU occupancy will take a few weeks to come back down, and we could still exceed 100% capacity during this time.

The ICU occupancy threshold for imposing new mitigation depends on:



If our threshold for taking action is 60% of COVID beds being filled, we could still overflow ICU capacity, especially if we wait several days to take action.

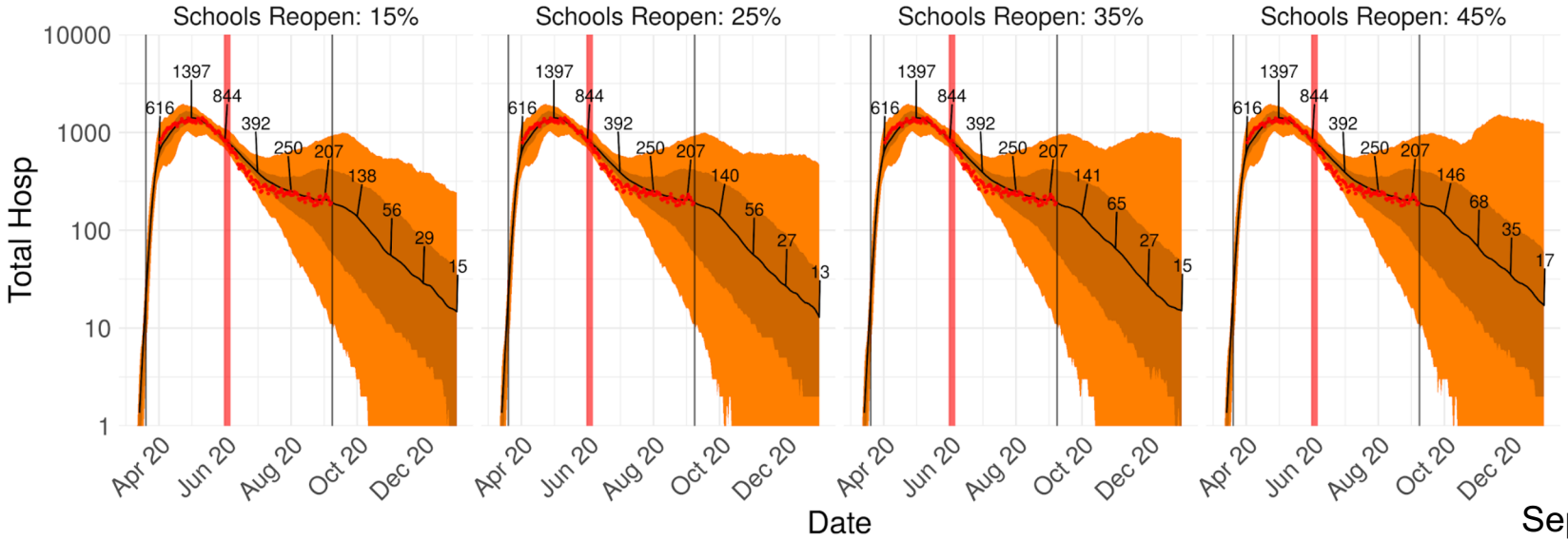
100% of simulations overflow by December
action = return to June levels of transmission (very low)

- **How fast we can act:** the longer the delay between hitting the threshold and taking action, the lower the thresholds needs to be.
- **How quickly transmission is increasing:** if transmission is increasing quickly, we need lower thresholds for action. To assess this, we need fast, reliable measurements of R_{eff}, which we can get through **sentinel surveillance**.
- **How strong the mitigation is:** the stronger the action we take, the higher the threshold for action can be.
- **Acceptable risk of overflowing capacity:** we can have higher thresholds for action if we're more comfortable with higher risk of ICU overflow.
- **COVID Region:** capacity limits, population immunity, and maximum mitigation strength are all different by Region.

Sep 11, 2020

REGION 11: HOSPITALIZATIONS

- We ran scenarios to understand the effects on hospitalizations of different assumptions for peer activity levels of children (<18 year-olds) as schools reopen in Chicago (15%-45% of pre-COVID activity levels)
- Here we assume that schools are practicing recommended social distancing guidelines
- We see negligible effects on the median trajectories but increased uncertainties for worse case scenarios as the activity levels increase (dark bands = 50%, light bands = 95% intervals)

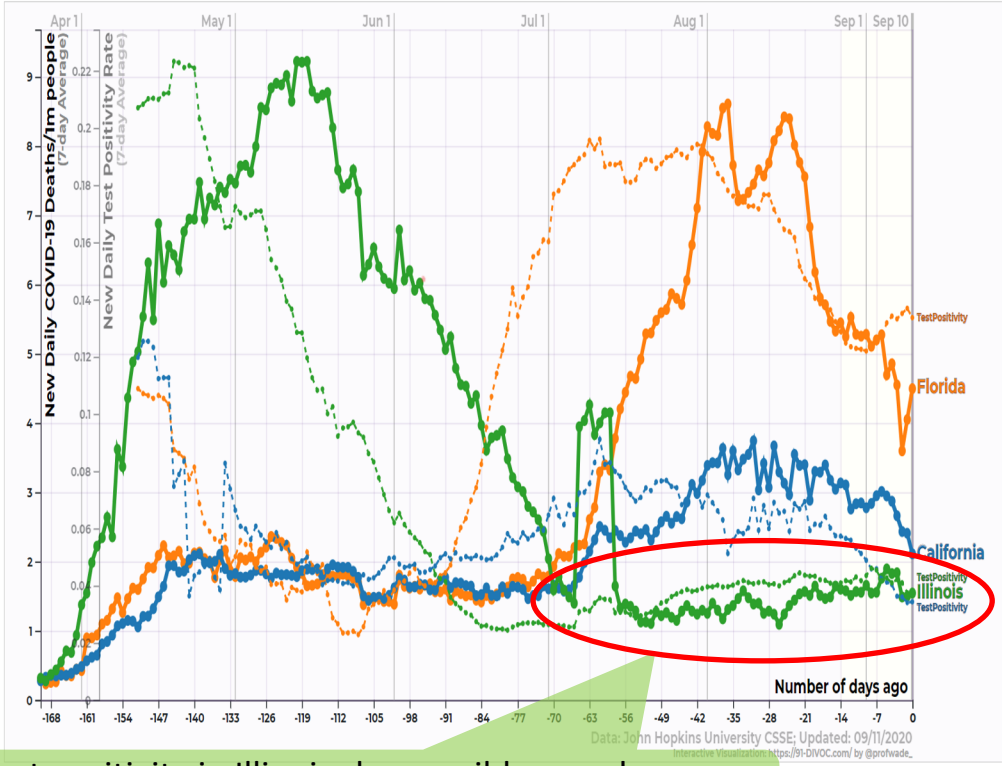


Sep 11, 2020

ILLINOIS

Second wave is continuing, but deaths are unlikely to rise by much

- The second wave in Illinois is relatively mild as seen from test positivity
- Currently, we **do not see a risk** of exceeding hospital/ICU capacity in next 4 weeks
- Death rate in the second wave are unlikely to grow much higher than what we see right now
- This is inferred from comparison between test positivity (dashed line) and death rate per 1 million (solid line) in other states: Florida (orange) and California (blue). Deaths closely follow the test positivity with delay



Test positivity in Illinois shows mild second wave: death rate is likely to remain low

Sep 11, 2020