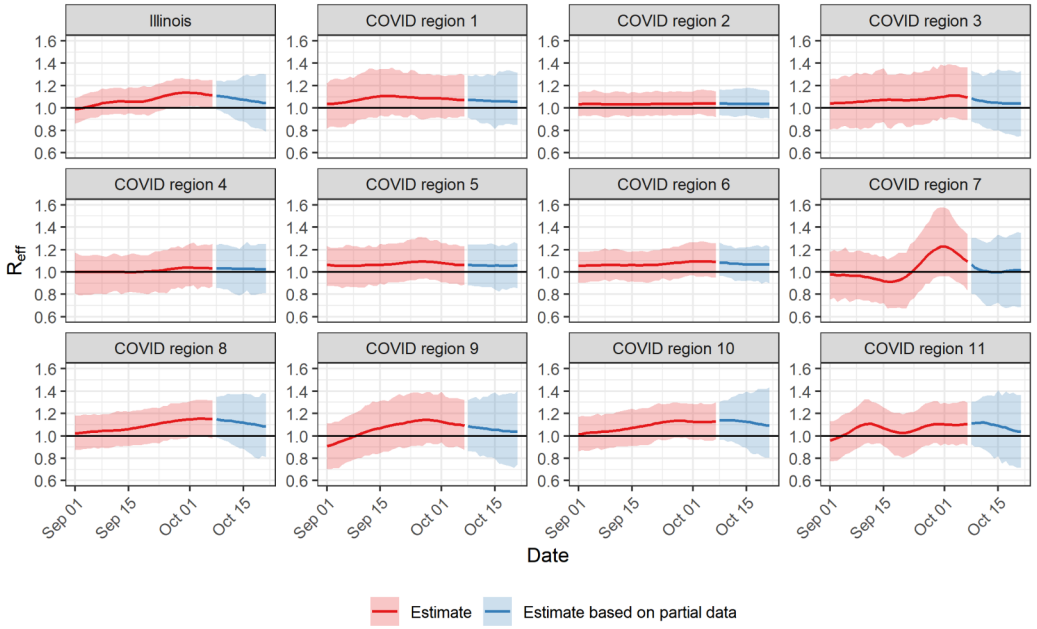
THE UNIVERSITY OF CHICAGO

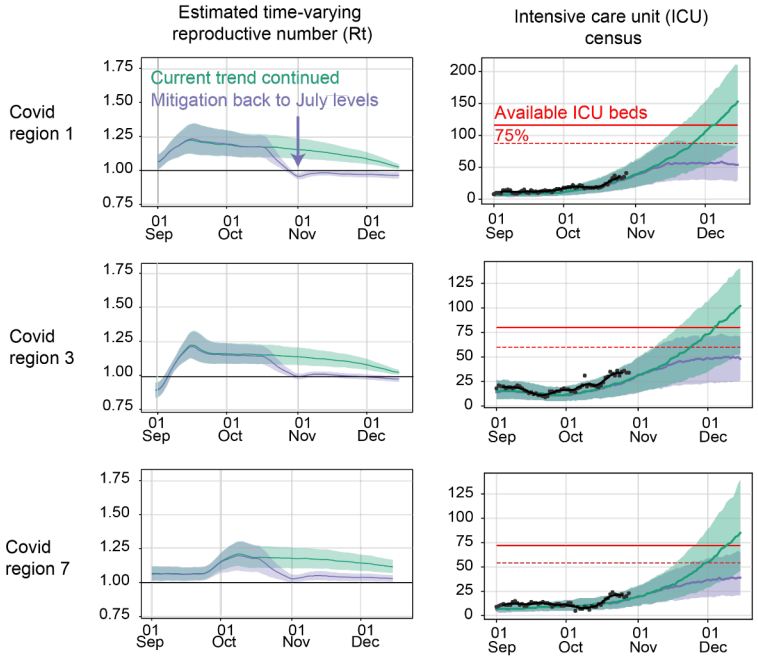
- R_{eff} remains consistently above 1 and the epidemic continues to grow exponentially throughout Illinois.
- Strong mitigation measures, including banning indoor dining, are warranted. Contact rates must effectively drop by at least 20% for the epidemic to decline.
- It is unclear whether current measures will be sufficient, and it will take at least another week to determine the impact of new measures on R_{eff}.
- Effective long-term management of the pandemic, including prioritization of vaccination, would benefit from representative serosurveys and sentinel surveillance.



Oct 30, 2020

Northwestern University

- We estimate that **R_t > 1 in all Covid Regions**.
- **The increase in hospital census is especially concerning in Regions 1, 3, 6, and 7**, where ICU bed capacities are lowest and most likely to be exceeded sooner.
- All Regions have mitigations in place. However, **it is unclear how effective these mitigations will be**: Will they turn around the trend? How long will they need to be maintained? When will ICU bed capacity start to free up again?
- Even with very strong mitigation (reducing R_t to ~0.85), **ICU census will continue to rise for approximately 2 weeks before decreasing**. Mitigation measures need to be in place for at least 14 days if very strong and longer if they are not as strong.



Black points and line: COVID+ ICU census from EMResource
Colors: model prediction of ICU census. Lines: predicted median; shaded area: IQR.
Purple: hypothetical outcome of mitigation measures if R_t goes back to 1.

- Decreasing R_t to around 1 (where we were in July in most of Illinois) will result in leveling off the trend. This may be sufficient for some Regions that currently have substantial excess ICU capacity but not for others that are already near capacity.
- Turning the trend around will require reducing R_t to less than 1, which hasn't been seen since Phase 2 for some Regions.

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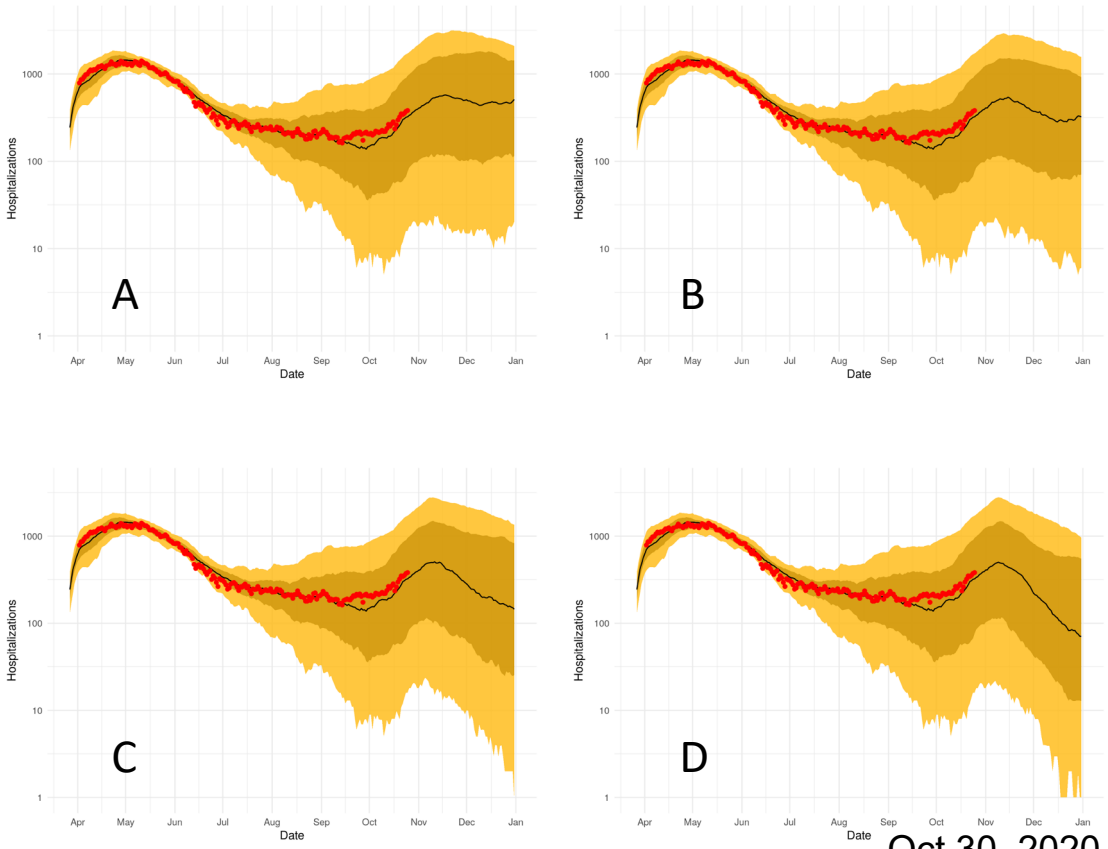
TIMING AND SCALE OF MITIGATION EFFECTS ON HOSPITALIZATIONS IN CHICAGO

- We considered how the October 30 mitigations for Chicago could affect hospitalizations, focusing on the timing and scale of the effects.
- Any effects of the mitigation are expected to be observed prior to mid-November (all panels).
- Flattening of hospitalizations (panel A), can occur if the mitigations result in a 10% reduction in out of household activities and 25% improvement in protective behaviors in the 18+ ages.
- Further 10% reduction in activity levels (panel B), 25% improvement in protective behaviors (panel C), and their combined effects (panel D) progressively promote downward trends.

Out of Household (OOH) Activity Levels After Oct. 30 Decreasing

Protective Behaviors After Oct. 30 Improving



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Preventing ICU overflow may reduce deaths

1. The hospital mortality has been dramatically falling (2-fold) since April as long as the ICU capacity is not exceeded.

2. Hence, the best strategy to reduce deaths is to prevent ICU overflow

3. 75% of the COVID-19 ICU bed availability in regions 3, 7, 8, 10 is likely to be exceeded by mid-December

1. Per capita cases and deaths in Illinois are following similar trajectories as in Wisconsin, UK, and Israel (before lockdown).

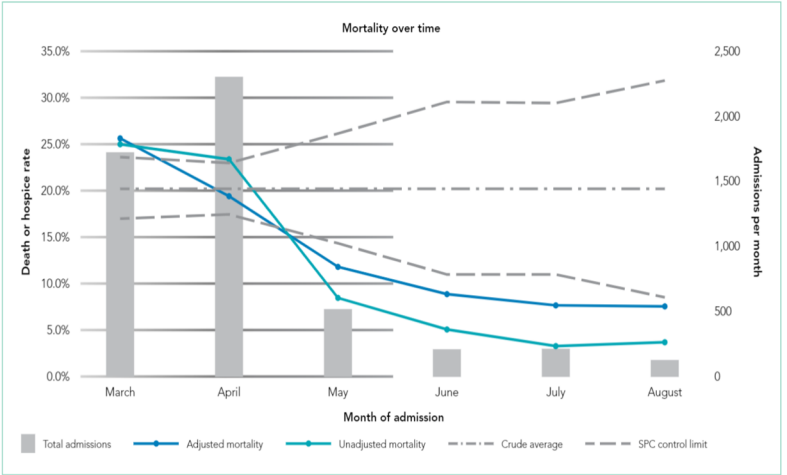

FIG. Adjusted and Unadjusted Mortality or Hospice Rate, by Month of Admission.

Risk-adjusted hospital mortality fell 2-fold since April due to better treatment options.

See dark blue line in figure from Horwitz et al https://www.doi.org/10.12788/jhm.3552)

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