

Vanderbilt Dept. of Health Policy COVID-19 Report: Masking Requirements and Hospitalizations in Tennessee

Aug. 10, 2020

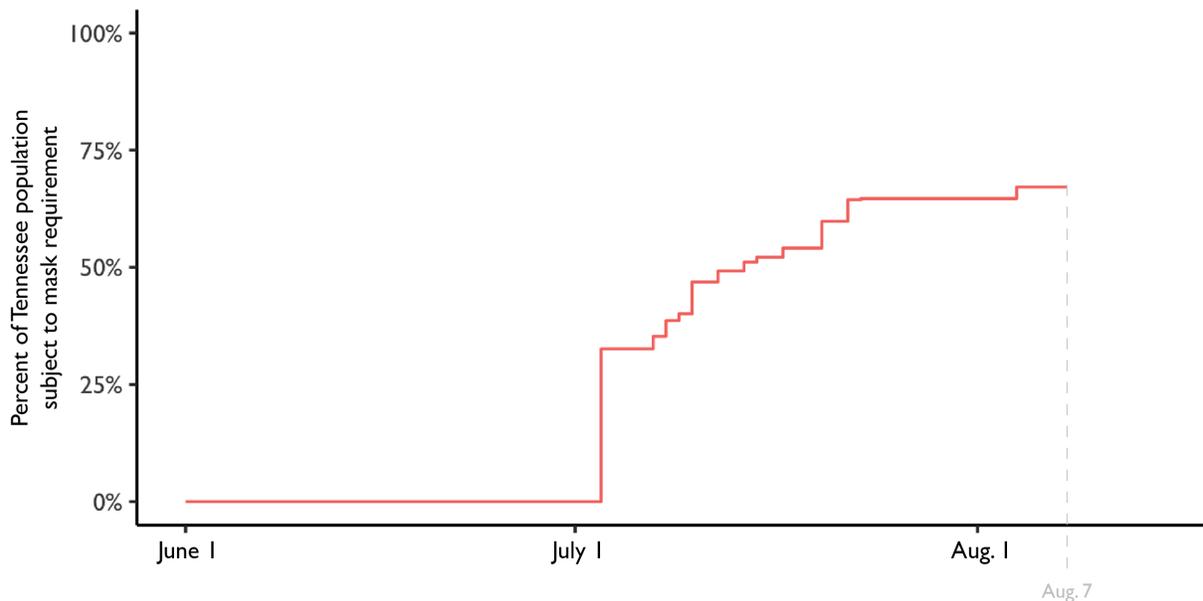
Twenty-six Tennessee counties have implemented mask requirements. As of August 4, 2020, these policies covered approximately 68% of Tennessee residents. In this report, we examine whether or not local masking requirements and other mitigation strategies are associated with lower growth in hospitalizations in those areas.

We find evidence that, in areas where masking requirements have been implemented, hospitalizations for COVID-19 have been stable or declined compared to areas where there are no such requirements.

Below we provide information on the population covered by mask orders, how it has varied by region and over time, and corresponding patterns in hospitalizations.

Chart 1

The chart below shows the percentage of Tennesseans who live in counties with mask requirements over time through Aug. 7, 2020.

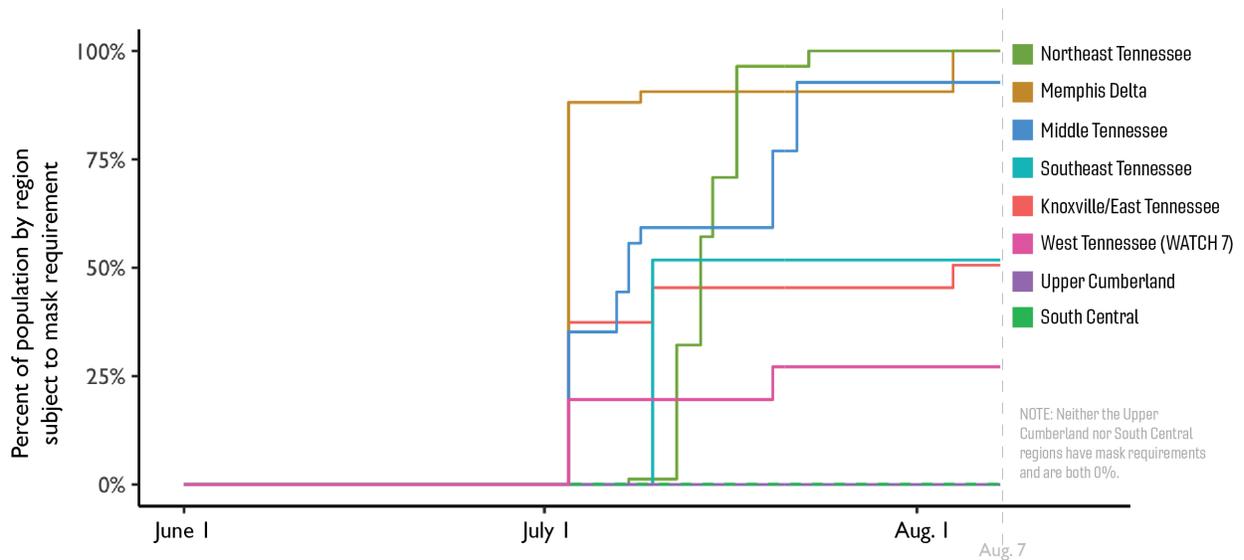


There is wide variation across health care coalition (HCC) regions in the proportion of people living in areas subject to mask requirements. Nearly 100% of the population in the

Tennessee Highland Rim region around Nashville and Davidson County and Mid-South region around Memphis are under a mask requirement, while less than 25% of the population in West Tennessee (WATCH 7), Upper Cumberland, and the South Central HCC are currently living in an area with an requirement. All of the residents of Northeast Tennessee are now under mask requirements, while none in the Upper Cumberland and South Central regions are.

Chart 2

The chart below shows the percentage of the population by region subject to mask requirements over time through Aug. 7, 2020.



With two-thirds of the Tennessee population currently living in an area with a county-based mask requirement, it is natural to ask whether we see an association between masking and COVID-19 hospitalizations.

A challenge to answering this question is that Tennessee hospitals treat patients from wide catchment areas. While nearly 100% of Davidson County residents are under a masking order, only a fraction of the patients treated by hospitals in Davidson County are from counties with mandates.

To account for this, we classified each hospital using historical data on the percentage of its (overall) patients who came from counties that have mask requirements in place as of July 10, 2020.¹ July 10 was selected as the cutoff date since it takes several weeks for the effects of masking to be observed.

Specifically, we used historic hospitalization data to measure “flows” in the number of patients from each ZIP code into different hospitals across the state. Hospitals were then grouped into one of the following categories: <25% of patients from counties with mask requirements, 26-50%, 51-75%, >75%.

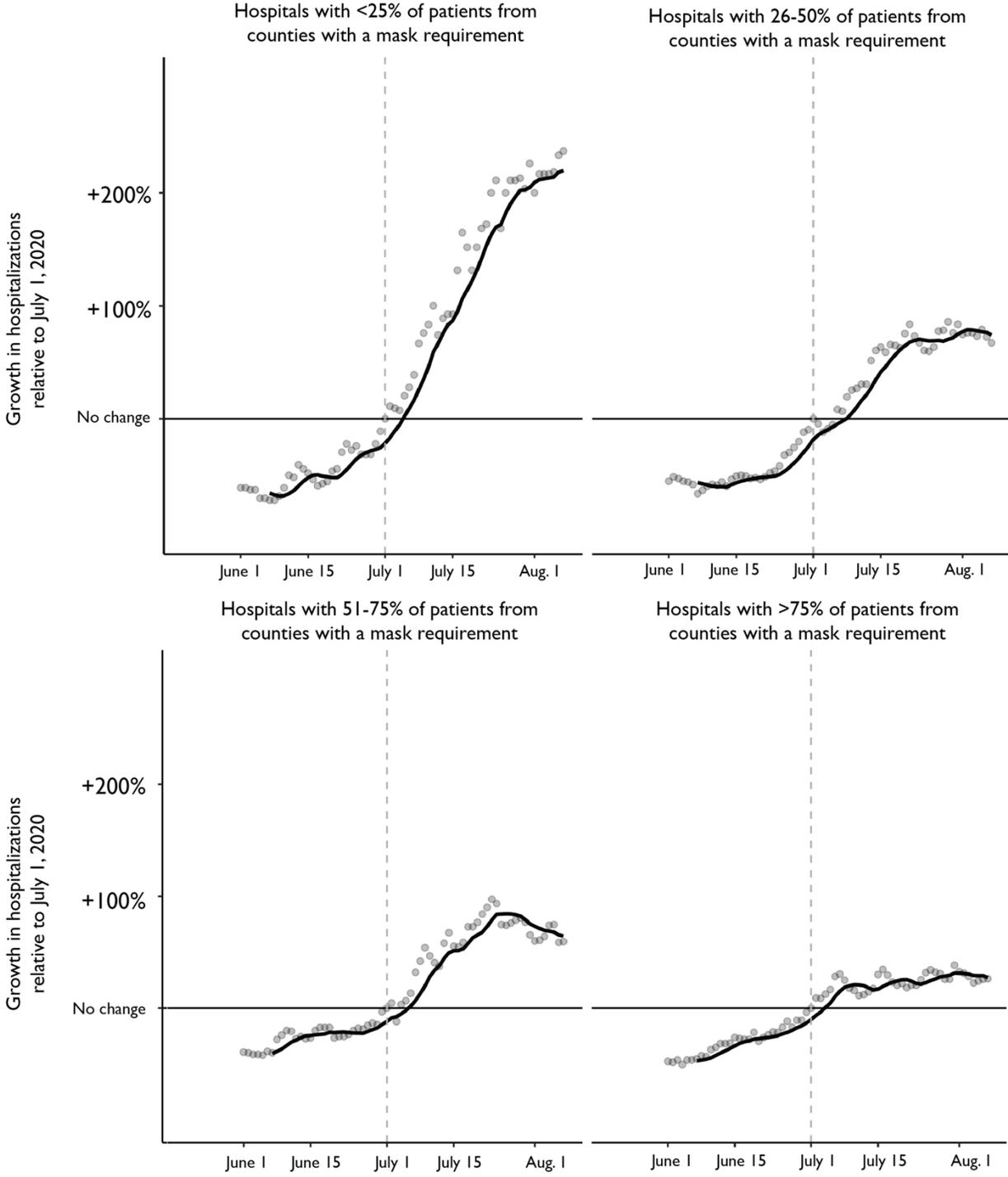
To facilitate comparisons of growth rates over time and across groups, we also indexed COVID-19 hospitalizations for each group based on the total observed on July 1, 2020, before most of the masking requirements had been put in place in areas across the state. Thus, if the <25% category (cumulatively) had 100 hospitalized COVID-19 patients on July 1 and 200 on August 1, that group would receive an indexed value of 1.0 on July 1 (100 / 100) and 2.0 (200/100) on August 1—which corresponds to a 100% increase in hospitalizations over a one-month time period. This allowed us to compare rates of growth across regions.

Chart 3 shows growth in hospitalizations over time for each group. The figure demonstrates that the set of hospitals that predominantly serve patients from areas without masking requirements (the <25% group) had the highest rate of growth in hospitalizations over the month of July, with that trajectory continuing through the beginning of August. Conversely, hospitals in which more than 75% of patients come from a county with a mask requirements experienced very little growth in hospitalizations.

Hospitalizations overall are still higher than we would hope, but the “flattening of the curve” that is needed to maintain new cases and hospitalizations below a point of stressing the health care system is only occurring in those hospitals serving patients primarily from areas with a mask requirement. If the current rate of growth continues, hospitals serving patients from communities without mask orders could become stressed or overwhelmed. Further, their patients may overflow to other areas.

Chart 3

The chart below shows the growth in hospitalizations by hospital type, based on the percentage of patients they treat from counties with mask requirements. Data is through Aug. 7, 2020.



It is important to emphasize that mask requirements are often put in place alongside other non-pharmaceutical interventions (NPIs). For example, some communities that were early to put in place mask requirements have also implemented other measures including restrictions on large gatherings and restrictions on operations for certain businesses and industries, like restaurants and bars. Therefore, it is difficult to definitively attribute the trend in hospitalizations specifically to masking requirements versus other non-pharmaceutical interventions.

What we do know is that Tennessee communities that have initiated multi-faceted public health responses to COVID-19 — including mask requirements — have seen lower growth in hospitalizations over the summer months. Additional steps to put in similar protocols and public health measures in the remaining areas could help ensure that the state can remain open for both education and business in the months ahead.

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