

# National Trends in Disease Activity for COVID-19 among Children in the US

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## Background

- As of mid June, over four million pediatric COVID-19 cases have been reported in the US.<sup>1</sup> However, the epidemiology of COVID-19 in children is still poorly understood.
- Evaluating COVID-19 trajectories in pediatric populations can help inform pediatric vaccination strategies, return to school, and disease management.
- As vaccine rollout for children continues, evaluation of disease activity will help identify geographic regions where pediatric vaccination efforts should be prioritized and quantify the impact of vaccines on achieving herd immunity across both populations.

## Methods

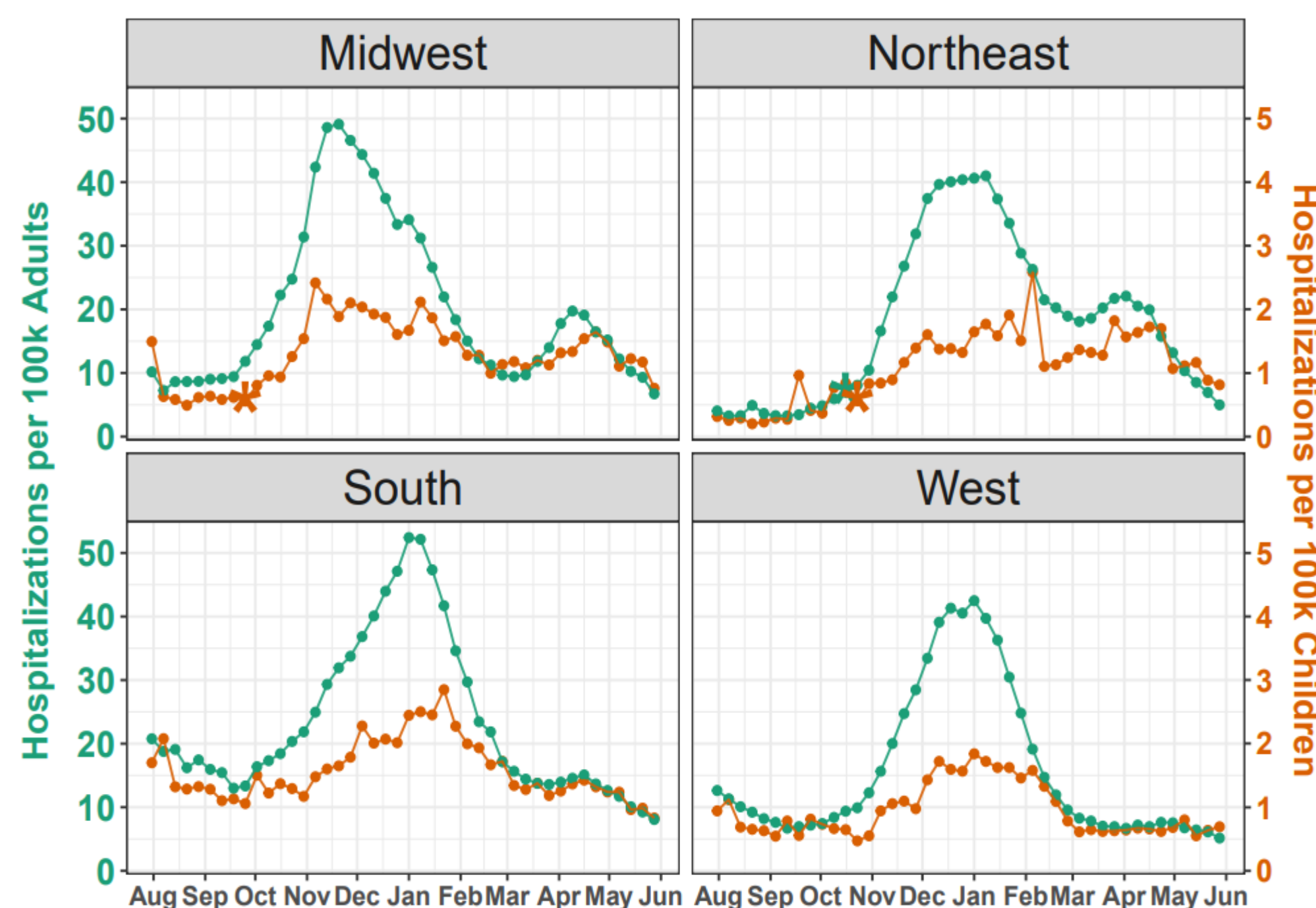
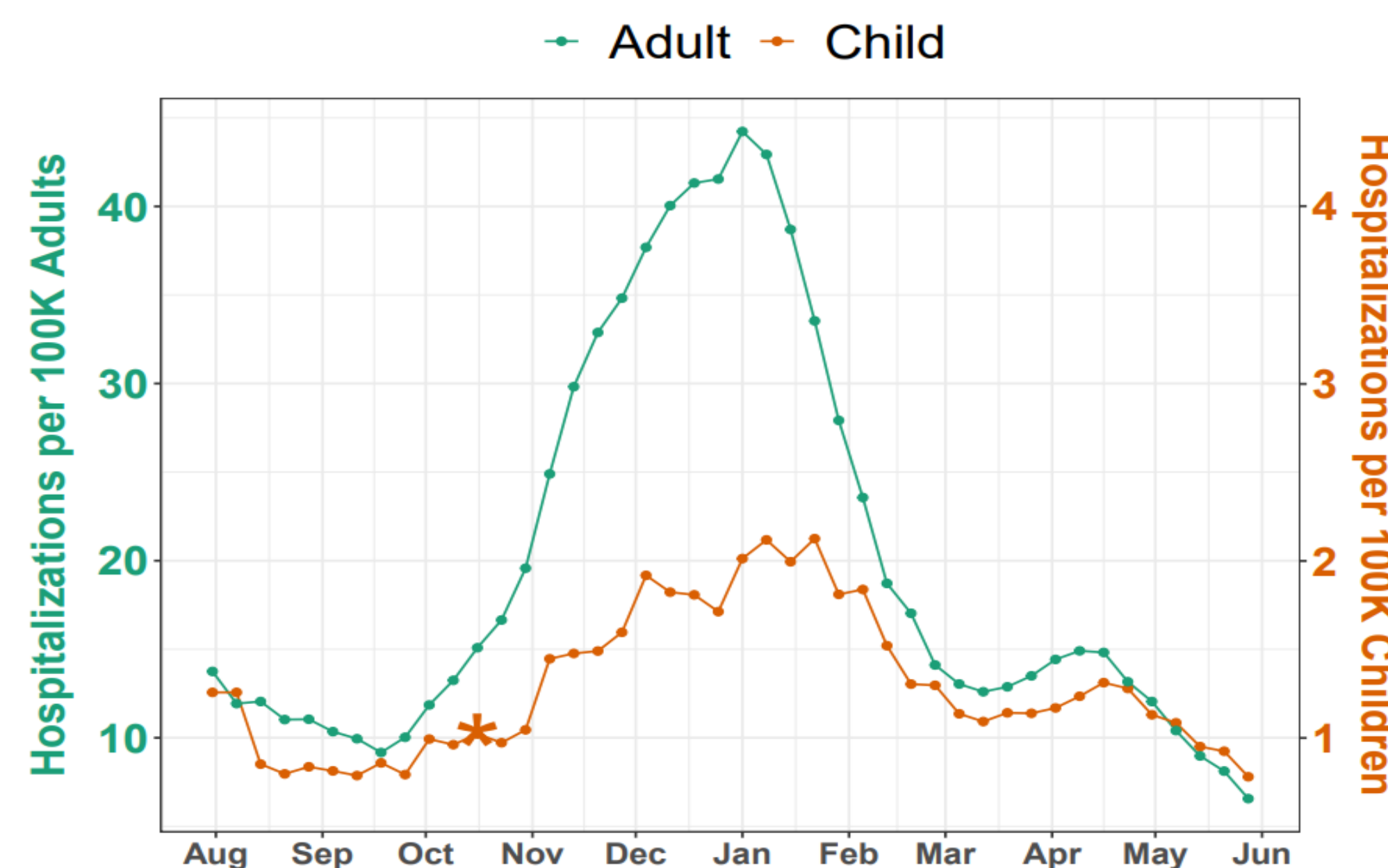
- In July 2020, the United States issued a federal mandate requiring hospitals to report daily COVID-19 hospitalizations<sup>2</sup>
- We examined the weekly counts of hospitalized patients with a laboratory positive COVID-19 test on admission
- Vaccination data were obtained for adults and adolescents 12-17 years<sup>3</sup>
- Trends were examined at both the national and regional level starting **July 31, 2020** to **June 3, 2021**
- Univariate change point analysis was used to identify the date at which there was an upward shift in mean hospitalization or vaccination rate

## Hospitalization Rates

	Children	Adults
<b>NATIONAL</b>	1.2 (1-1.6)	14.3 (11.9-28.4)
<b>Midwest</b>	1.3 (1-1.7)	15.1 (9.7-27.8)
<b>Northeast</b>	1.1 (0.8-1.6)	18.6 (6.4-26.5)
<b>South</b>	1.4 (1.2-2)	17.9 (14.3-30.3)
<b>West</b>	0.8 (0.6-1.2)	9.5 (7.2-21.2)

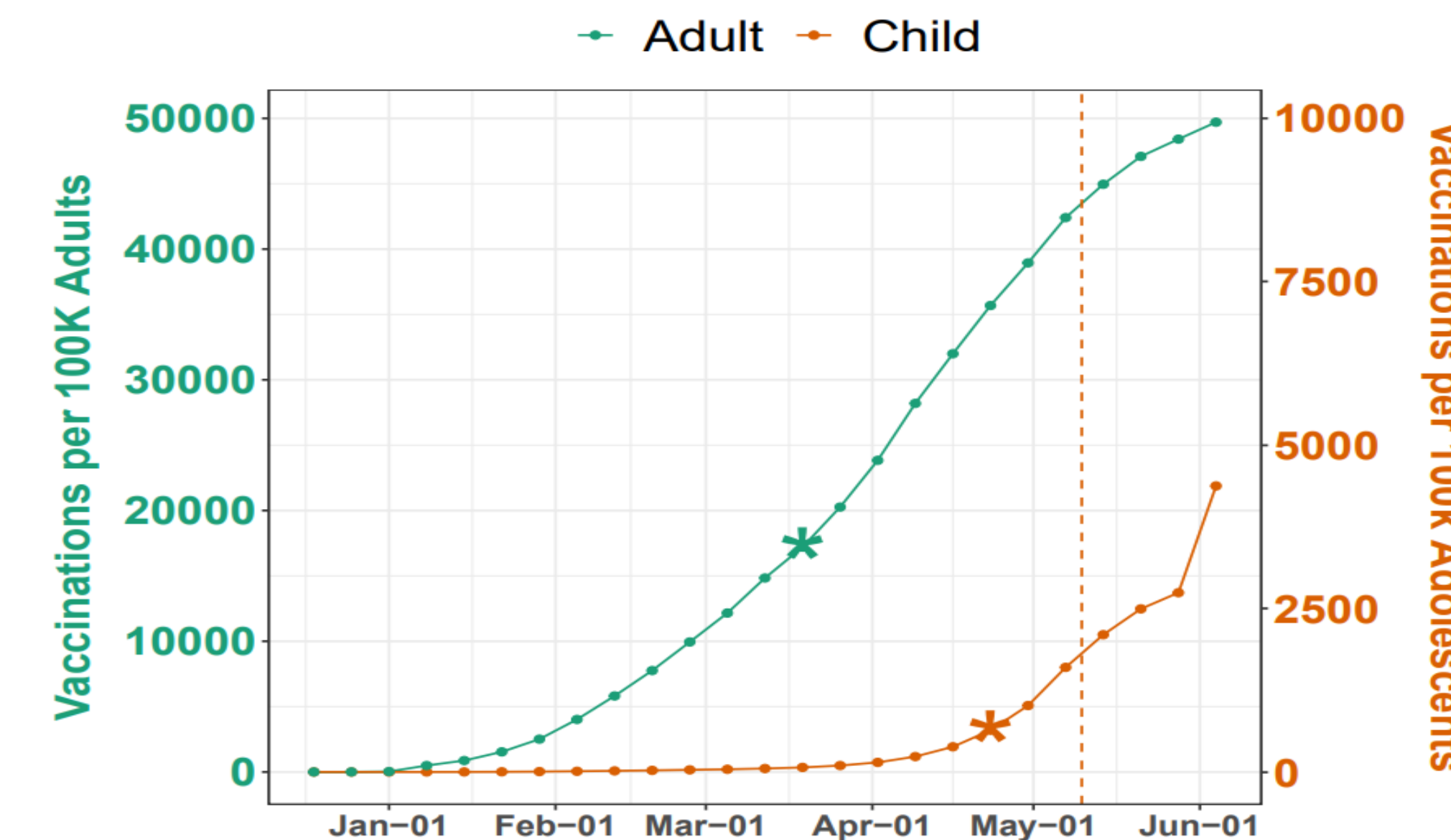
Median and interquartile range of hospitalizations per 100,000 children or adults.

## National & Regional Hospitalization Trends



Hospitalizations were standardized per 100,000 children or adults using US Census population estimates. The scale for pediatric hospitalizations is 10-fold less than for adults. Asterisks indicate significant (P <0.004) change points. Dashed lines demarcate vaccination change points.

## Vaccination Trends



Cumulative vaccinations were standardized per 100,000 children or adults using US Census population estimates. The scale for pediatric vaccinations is 5-fold less than for adults. Asterisks indicate significant (P <0.004) change points. Dashed line demarcates FDA EUA for adolescents 12-15 years of age.

## Conclusions

- At the national level, peak COVID-19 hospitalization rates were 20-fold less for children than adults.
- Regionally, variation exists in hospitalization rates and timing of changes in disease activity. Consideration of regional variation is critical for best informing local and national policies for disease management and vaccination strategies.
- As pediatric vaccination rates continue to increase, further investigation is needed to evaluate the impact of vaccines on hospitalization rates and disease burden across different segments of the population.

## References

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- <https://github.com/meghutch/COVID-19-Hospitalization-Trends>