

National Trends of Cases of COVID-19 in Children Based on US State Health Department Data

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Although there are several accessible sources providing data on coronavirus disease 2019 (COVID-19) cases, hospitalizations, and deaths in the United States,^{1,2} little information has been reported on pediatric cases. However, information on COVID-19, categorized by age group, is publicly accessible on nearly all state health department Web sites.

In a Centers for Disease Control and Prevention (CDC) report in April, it was reported that only 1.7% of confirmed COVID-19 cases were in children <18 years of age,³ whereas more recent CDC data indicate 8.2% of cases were in children.⁴ Although there are reports of serious illness in children from COVID-19 (including multisystem inflammatory syndrome in children), available data indicate children are far less likely to experience hospitalization or death.^{5–7} Yet, as US cases have surpassed 6.3 million, few data exist to understand where and how many children have been infected with COVID-19. We examine trends over 5 months in reported child COVID-19 cases using data from health department Web sites.

METHODS

We describe pediatric COVID-19 infection in the United States: the number of cases and trends by geographic region, proportion of confirmed cases in children, hospitalization rate, and mortality rate.

Data are drawn from publicly available COVID-19 information posted on 49 state (NY State does not provide cases by age), 2 urban (New York City [NYC] and Washington, DC), and 2 territory (Puerto Rico and Guam) health department Web sites. The geographic regions are based on the census categorizations: Northeast, Midwest, South, and West.

Information was collected weekly on Thursdays from April 16, 2020, to September 10, 2020, and pooled to provide national and regional information.

Format, reporting frequency, and data metrics vary by state. Several definitions of child age ranges were used, primarily <20: 0 to 17 (14 states and NYC), 0 to 18 (3 states), and 0 to 19 (29 states and Washington, DC); along with outliers: 0 to 14 (2 states) and 0 to 20 (2 states). As of August 13, Alabama modified the definition of a child case from 0 to 24 to 0 to 17 years; Alabama's cases are included in the cumulative totals but are excluded from the trend analysis in Figs 1 and 2. Forty-nine states; NYC; Washington, District of Columbia; Puerto Rico; and Guam provided age distributions of confirmed COVID-19 cases (TX provided the age distribution of only 8% of their cases on September 10); 24 states and NYC provided information on hospitalizations; and 42 states and NYC reported information on mortality (see the report for detail⁸).

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Dr Sisk conceptualized and designed the study, coordinated and supervised data collection, conducted the analyses, and reviewed and revised the manuscript; Drs Cull and Harris and Ms Rothenburger conceptualized and designed the study, coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content; Dr Olson conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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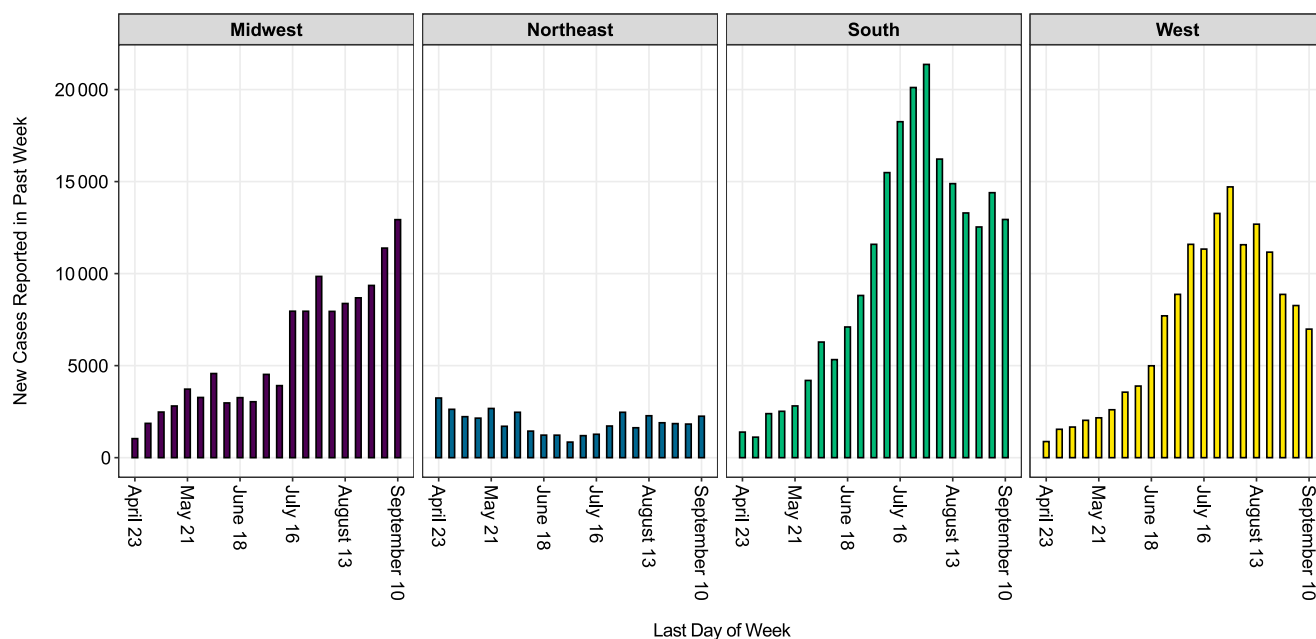


FIGURE 1

New child COVID-19 cases reported in the past week, by region. An analysis of publicly available data from state health departments is presented. The analysis excludes data from Alabama because of a change in the definition of child case on August 13.

RESULTS

As of September 10, there were 549 432 cumulative child COVID-19 US cases, a rate of 729 cases per 100 000 children. There has been substantial

variation in case growth by region: In April, a preponderance of cases was in the Northeast (Fig 1). In June, cases surged in the South and West, followed by mid-July increases in the Midwest.

Over time, the proportion of pediatric COVID-19 cases has risen substantially (Fig 2), although below children's share of the US population (22.6%).⁹ Although, currently,

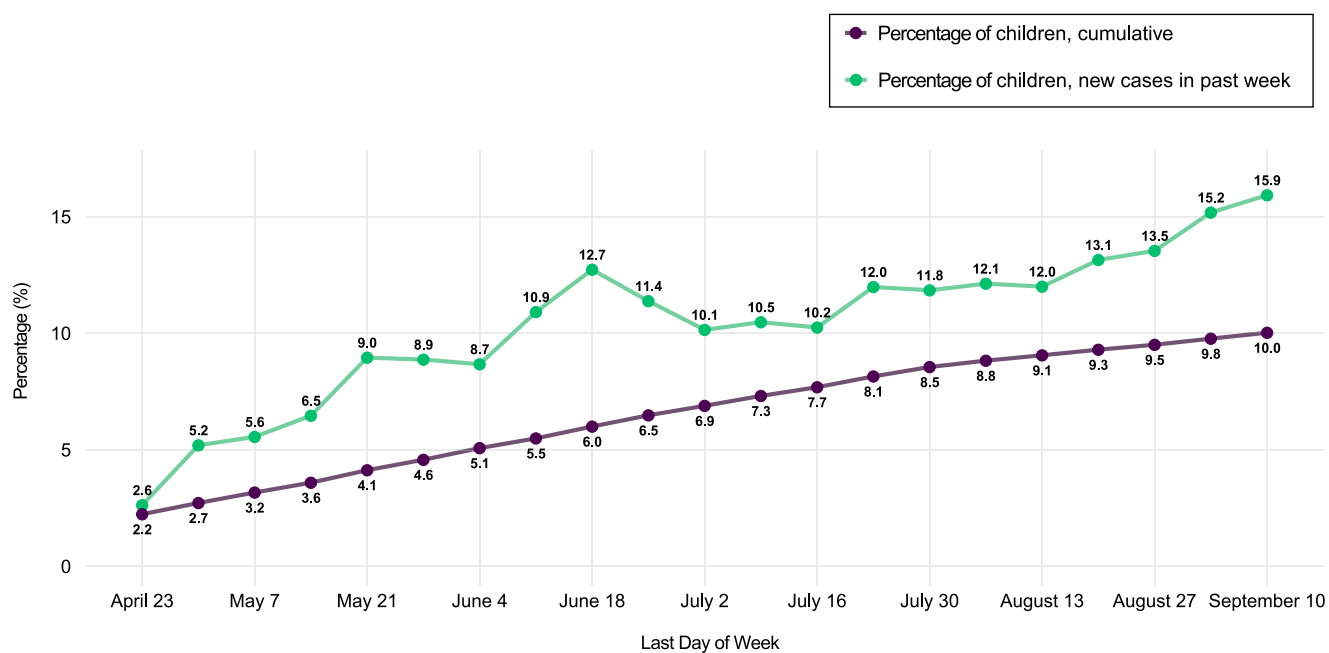


FIGURE 2

Percentage of COVID-19 cases that were in children: cumulative and new cases in past week. An analysis of publicly available data from state health departments is presented. The analysis excludes data from Alabama because of a change in the definition of child case on August 13.

children represent 10% of the cumulative number of reported cases, the history behind that cumulative number shows substantial change. In April, <3% of the reported cases were pediatric. In the last 8 weeks, children represented between 12% and 15.9% of new weekly reported cases.

Although children represent a growing percentage of total cases, hospitalization and death due to COVID-19 is uncommon. On September 10, children represented 1.7% of total hospitalizations, and ~2% of child cases resulted in hospitalization. Children made up 0.07% of total deaths, and 0.01% of child cases resulted in death. These rates have remained stable across the study period.

DISCUSSION

Data compiled from state health departments confirm that children can contract COVID-19, although severe disease appears to be uncommon. Child cases have risen concomitantly with the general population, with the geographic profile of case growth shifting from the Northeast in April to the South and West in June and to the Midwest in July. The data are limited by states' heterogeneous data reporting methods, and it is unknown how many children have been infected but not tested. It is unclear how much of the increase in child cases is due to increased testing capacity, although CDC data from public and commercial

laboratories show the share of all tests administered to children ages 0 to 17 has remained stable at 5% to 7% since late April.¹⁰ Going forward, states should continue to report cases, testing, hospitalizations, and mortality by age so that the effects of COVID-19 on children's health can be closely monitored.

ABBREVIATIONS

CDC: Centers for Disease Control and Prevention
 COVID-19: coronavirus disease 2019
 NYC: New York City

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2020-031682.

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