



# Morbidity and Mortality Weekly Report (*MMWR*)

*Weekly* / November 13, 2020 / 69(45);1675–1680

Rebecca T. Leeb, PhD<sup>1</sup>; Rebecca H. Bitsko, PhD<sup>1</sup>; Lakshmi Radhakrishnan, MPH<sup>2</sup>; Pedro Martínez-Costa, PhD<sup>3</sup>; Kristin M. Holland, PhD<sup>5</sup> ([View author affiliations](#))

[View suggested citation](#)

## Summary

**What is already known about this topic?**

Emergency departments (EDs) are often the first point of care for children’s mental health. ED visits for persons of all ages declined during the early COVID-19 pandemic (March–April 2020).

**What is added by this report?**

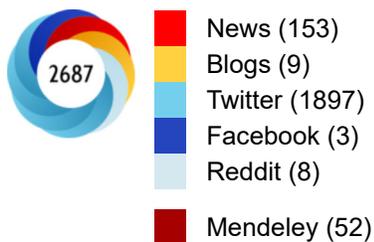
Beginning in April 2020, the proportion of children’s mental health–related ED visits among ED visits increased and remained elevated through October. Compared with 2019, the proportion of ED visits for children aged 5–11 and 12–17 years increased approximately 24% and 31%, respectively.

**What are the implications for public health practice?**

Monitoring indicators of children’s mental health, promoting coping and resilience, and providing services to support children’s mental health are critical during the COVID-19 pandemic.

## Article Metrics

Altmetric:



Citations: 0

Views: 25,474

## Related Materials

[PDF](#)  [168K]

Published reports suggest that the coronavirus disease 2019 (COVID-19) pandemic has had a significant impact on mental health (1,2). Emergency departments (EDs) are often the first point of care for children in mental health emergencies, particularly when other services are inaccessible or unavailable (3). During the early months of the pandemic, when widespread shelter-in-place orders were in effect, ED visits for persons of all ages declined (4). However, ED visits for psychosocial factors increased (4). To assess changes in mental health–related ED visits among children and adolescents in 2020 compared with those collected during the same period in 2019, data from CDC’s National Syndromic Surveillance Program (NSSP) from January 1 through October 2020 were compared with those collected during the same period in 2019. During weeks 1–11 (January through February), the average reported number of children’s mental health–related ED visits overall was higher than in 2019, and the proportion of children’s mental health–related visits was similar. Beginning in week 12 (March), the number of mental health–related ED visits among children decreased 43% concurrent with the widespread implementation of COVID-19 mitigation measures; simultaneously, the proportion of mental health–related ED visits among children increased 5–11 years and 31% among adolescents aged 12–17 years, compared with the same period in 2019. The proportion of children’s mental health–related ED visits during March–October 2020 might be a consequence of the substantial decrease in overall ED visits during the same period and a result of increased reporting to NSSP. However, these findings provide initial insight into children’s mental health during the COVID-19 pandemic and highlight the importance of continued monitoring of children’s mental health during the pandemic, ensuring access to care during public health crises, and improving healthy coping strategies among children and families.

CDC analyzed NSSP ED visit data, which include a subset of hospitals in 47 states representing ED visits.\* Mental health–related ED visits among children aged <18 years was a composite mental health syndrome query of the NSSP data for conditions likely to result in ED visits (e.g., stress, anxiety, acute posttraumatic stress disorder, and panic).<sup>†</sup> Weekly numbers and proportions of mental health–related ED visits (per 100,000 pediatric ED visits<sup>§</sup>) were by age group (0–4, 5–11, and 12–17 years) and sex, and compared descriptively with the corresponding proportions for 2019. Numbers and proportions of visits were compared during calendar weeks 14, 2020) and weeks 12–42 (March 15–October 17, 2020) (before and after a distinct decrease beginning in week 12 in 2020)<sup>¶</sup> (4). Analyses are descriptive and statistical comparisons with

The number of children’s mental health–related ED visits decreased sharply from mid-March (week 15, April 5–11) through early April (week 15, April 5–11) and then increased steadily through October. At the same time, the overall proportion of reported children’s ED visits for mental health–related conditions remained higher through the end of the reporting period in 2020 than that in 2019 (Figure 1). The number of mental health–related ED visits among children increased 66%, from 1,094 per 100,000 during April 12–18, 2019 to 1,816 per 100,000 during April 12–18, 2020 (Supplementary Figure 1, <https://stacks.cdc.gov/view/cdc/96610>). The reported number of children’s mental health–related ED visits overall was 25% higher during weeks 12–42, 2020 (342,740) than during the corresponding period in 2019 (274,736), the proportion of children’s ED visits during the same time was similar (1,162 per 100,000 in 2020 versus 1,044 per 100,000 in 2019). During weeks 12–42, 2020 (mid-March–October) however, average weekly reported numbers of mental health–related ED visits were 43% lower (149,055), compared with those during 2019 (262,714), whereas the average proportion of mental health–related ED visits was approximately 44% higher in 2020 (1,673 per 100,000) than that in 2019 (1,162 per 100,000).

Adolescents aged 12–17 years accounted for the largest proportion of children’s mental health–related ED visits in 2019 and 2020 (Figure 2). During weeks 12–42, 2020, the proportion of mental health–related ED visits among children aged 5–11 years and adolescents aged 12–17 years increased approximately 24% and 31%, respectively, compared with 2019; the proportion of mental health–related visits for children aged 0–4 years remained the lowest. The highest weekly proportion of mental health–related ED visits occurred during October for children aged 0–4 years (1,177 per 100,000) and during April (week 16) for adolescents aged 12–17 years (4,758 per 100,000).

During 2019 and 2020, the proportion of mental health–related ED visits was higher among males than among females (Supplementary Figure 2, <https://stacks.cdc.gov/view/cdc/96610>). Similar proportions of mental health–related ED visits were observed in 2020 for males and females during weeks 12–42, 2020 (mid-March and continuing through October).

## Discussion

Substantial declines in the overall reported numbers of children’s mental health–related ED visits from mid-March to early May, coincident with the widespread implementation of community mitigation measures to prevent COVID-19 transmission (e.g., school closures and restrictions to nonemergent ED visits for the same period (4). A previous report found the mean weekly number of ED visits for children’s mental health concerns declined approximately 70% during March 29–April 25, 2020, relative to the corresponding period in 2019. Further, the mean number of weekly ED visits for persons of all ages decreased significantly for otitis media (–65%), and sprain- and strain-related injuries (–39%), and mean weekly ED visits for children’s mental health concerns decreased by 69% (4). This report demonstrates that, whereas the overall number of children’s mental health–related ED visits decreased, the proportion of all ED visits for children’s mental health–related concerns increased substantially higher beginning in late-March to October 2020 than those during the same period in 2019. Both the number and the proportion of mental health–related ED visits provides crucial context for interpreting the increase. This suggests that children’s mental health warranted sufficient concern to visit EDs during a time when such visits were discouraged.

Many children receive mental health services through clinical and community agencies, and the increase in the proportion of ED visits for children’s mental health concerns might reflect increased reliance on ED services as an unintended consequence of mitigation measures, which reduced or modified access to community-based mental health services (2), and could result in increased reliance on ED services for both routine and crisis treatment. The magnitude of the increase should be interpreted carefully because it might also reflect the increase in the number and proportion of other types of ED visits (e.g., asthma, otitis media, and musculoskeletal injuries) and the number of EDs reporting to NSSP.

Adolescents aged 12–17 years accounted for the highest proportion of mental health–related ED visits in 2020, followed by children aged 5–11 years. Many mental disorders commence in childhood, and the increase in these age groups might be exacerbated by stress related to the pandemic and abrupt changes in daily life associated with mitigation efforts, including anxiety about illness, social isolation, and interrupted schooling (5). The majority of EDs lack adequate capacity to treat pediatric mental health concerns, and the increase in demand on systems already stressed by the COVID-19 pandemic. These findings demonstrate the need for mental health care for children during the pandemic and highlight the importance of expanding remote mental health and technology-based solutions (e.g., mobile mental health applications).

The findings in this report are subject to at least three limitations. First, the proportions of ED visits for mental health–related ED visits constitute a small percentage of all pediatric ED visits (1.1% in 2019 and 1.2% in 2020), and the susceptibility of rates to decreases in ED visits during the pandemic. In addition, NSSP ED visits are not nationally representative; these findings might not be generalizable because the data are not nationally representative; these findings might not be generalizable because the data are not nationally representative.

NSSP. Further, usable information on race and ethnicity was not available in the NSSP data to under- and overestimation. Variation in reporting and coding practices can influence the mental health–related visits observed. ED visits represent unique events, not individual persons that reflect multiple visits for one person. The definition of mental health focuses on symptoms (e.g., anxiety) that might increase after a disaster in the United States and might not reflect all reasons for visits. Still, these data likely underestimate the actual number of mental health–related health care visits that occur outside of EDs.

Children’s mental health during public health emergencies can have both short- and long-term effects on overall health and well-being (8). This report provides timely surveillance data concerning the context of the COVID-19 pandemic. Ongoing collection of a broad range of children’s mental health data is needed to monitor the impact of COVID-19 and the effects of public health emergencies on children. Ensuring availability of and access to developmentally appropriate mental health services in the emergency department setting will be important as communities adjust mitigation strategies (3). Implementing remote mental health services and prevention activities to enhance healthy coping and resilience can effectively support their well-being throughout response and recovery periods (5,7). CDC’s research on the emotional well-being of children and families and provides developmentally appropriate interventions to address stressors that might contribute to children’s mental health–related ED visits<sup>††</sup> (9).

## Acknowledgment

Kathleen Hartnett, CDC.

Corresponding author: Rebecca T. Leeb, [RLeeb@CDC.gov](mailto:RLeeb@CDC.gov).

---

<sup>1</sup>Division of Human Development and Disability, National Center on Birth Defects and Developmental Disabilities; <sup>2</sup>Innovation, Technology, and Analytics Task Force, CDC COVID-19 Response Team; <sup>3</sup>Division of Field Epidemiology, CDC; <sup>4</sup>Center for Injury Prevention and Control, CDC; <sup>5</sup>Community Interventions and Critical Populations, CDC COVID-19 Response Team; <sup>6</sup>Division of Overdose Prevention, National Center for Injury Prevention and Control, CDC.

All authors have completed and submitted the International Committee of Medical Journal Editors form on potential conflicts of interest. No potential conflicts of interest were disclosed.

\* The National Syndromic Surveillance Program (NSSP) is a network developed and maintained by state and local health departments, and academic and private sector health partners to collect electronic

includes ED visit data from a subset of hospitals in 47 states (all but Hawaii, South Dakota <https://www.cdc.gov/nssp/participation-coverage-map.html>; <https://www.cdc.gov/nssp/ca>

<sup>†</sup> Mental health–related ED visits were defined using the NSSP Syndrome Definition (SD) S developed syndrome definition for mental health conditions likely to increase in emergency during and after natural or human-caused disaster events. This syndrome definition addresses health conditions and presentations that showed increases in visit frequency after select events. There are no disaster-related terms inherent to this query. The query has been added to I Electronic Surveillance System for the Early Notification of Community-based Epidemics a Discharge Diagnosis category. <https://knowledgerepository.syndromicsurveillance.org/dis-syndrome-definition-subcommittee> .

<sup>§</sup> Average proportion of ED visits for children’s mental health = (average number of ED visits for mental health/average total number of ED visits for the same age or sex population [e.g., children]).

<sup>¶</sup> To decrease the effect of differential reporting, this analysis was restricted to only include ICD-10 codes at patient discharge that are >75% complete and informative, with <20% standard deviation from previous 2 years.

\*\* [https://www.whitehouse.gov/wp-content/uploads/2020/03/03.16.20\\_coronavirus-guidance-for-businesses-and-organizations.pdf](https://www.whitehouse.gov/wp-content/uploads/2020/03/03.16.20_coronavirus-guidance-for-businesses-and-organizations.pdf); <https://www.cdc.gov/coronavirus/2019-ncov/community/community-mitigation.html>.

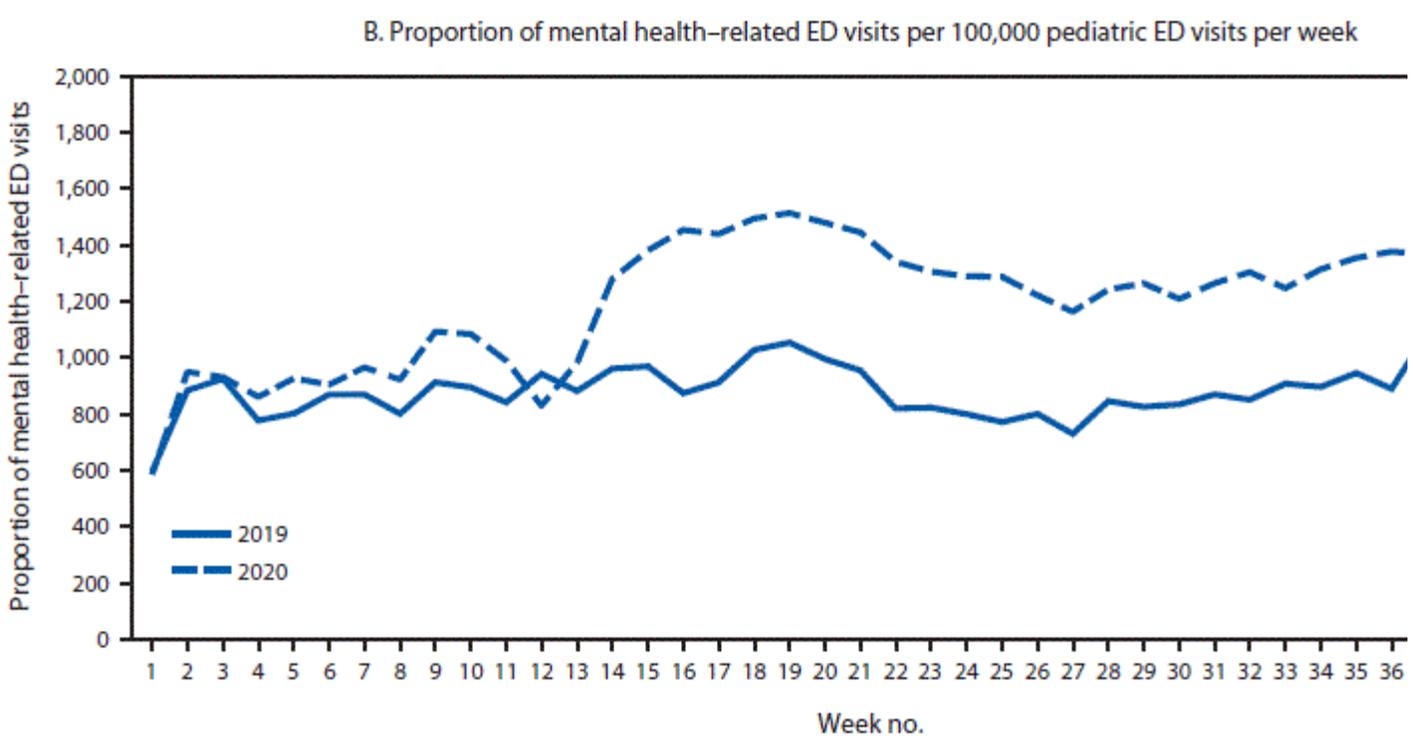
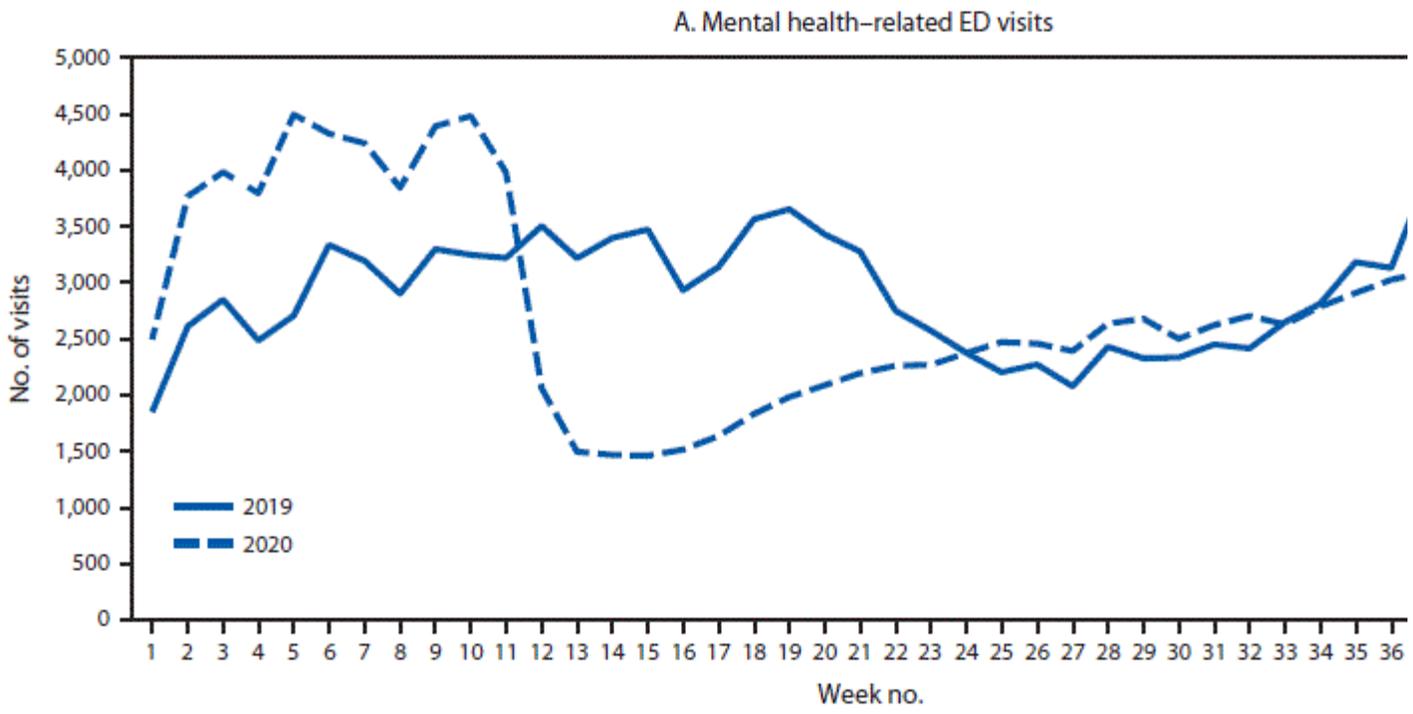
\*\* <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/parental-resource-kit/>.

## References

1. Lee J. Mental health effects of school closures during COVID-19. *Lancet Child Adolesc Health* 2020;16:e100–101. [PubMed](#) 
2. Patrick SW, Henkhaus LE, Zickafoose JS, et al. Well-being of parents and children during the COVID-19 national survey. *Pediatrics* 2020;146:e2020016824. [CrossRef](#)  [PubMed](#) 
3. Dolan MA, Fein JA; Committee on Pediatric Emergency Medicine. Pediatric and adolescent emergency department visits during emergencies in the emergency medical services system. *Pediatrics* 2011;127:e1356–1360.
4. Hartnett KP, Kite-Powell A, DeVies J, et al.; National Syndromic Surveillance Program Team. Impact of the COVID-19 pandemic on emergency department visits—United States, January–February 2020. *Morb Mortal Wkly Rep* 2020;69:699–704. [CrossRef](#)  [PubMed](#) 
5. Golberstein E, Wen H, Miller BF. Coronavirus disease 2019 (COVID-19) and mental health.

- adolescents. *JAMA Pediatr* 2020;174:819–20. [CrossRef](#) [PubMed](#)
6. Cree RA, So M, Franks J, et al. Characteristics associated with presence of pediatric mental health emergency departments. *Pediatr Emerg Care* 2019. Epub November 13, 2020. [CrossRef](#)
  7. Gurwitsch RH, Salem H, Nelson MM, Comer JS. Leveraging parent-child interaction to address the unique needs of young children during the COVID-19 public health crisis. *JAMA Pediatr* 2020;12(S1):S82–4. [CrossRef](#) [PubMed](#)
  8. Substance Abuse and Mental Health Services Administration. Disaster technical assistance research bulletin: behavioral health conditions in children and youth exposed to natural disasters. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/sites/default/files/srb-childrenyouth-8-22-18.pdf>
  9. Stone DM, Holland KM, Bartholow BN, Crosby AE, Jack SPD, Wilkins N. Preventing suicide: a national technical package of policies, programs, and practices. Atlanta, GA: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. <https://www.cdc.gov/violenceprevention/pdf/suicideTechnicalPackage.pdf>

**FIGURE 1. Weekly number of emergency department (ED) mental health-related and proportion of (B) children’s mental health–related ED visits per total children aged <18 years — National Syndromic Surveillance Program, United States, October 2019 and 2020**



\* Proportion of mental health–related ED visits = number of ED visits for children’s mental health-related ED visits / total pediatric ED visits x 100,000.

**TABLE. Average number and proportions\* of emergency department (ED) health–related ED visits† among children aged <18 years — National Syn Program (NSSP), United States, 2019–2020**

Surveillance period/indicators	2019				2020
	Age group, yrs				Age group
	All <18	0–4	5–11	12–17	All <18
<b>Weeks 1–42<sup>§</sup></b>					
Average weekly total ED visits	265,863	110,002	81,133	74,728	199,782
Average weekly mental health–related ED visits	3,025	80	625	2,320	2,872
Mental health–related ED visits per 100,000 visits	1,130	73	762	3,084	1,539
<b>Weeks 1–11<sup>¶</sup></b>					
Average weekly total ED visits	274,736	118,926	83,924	71,886	342,740
Average weekly mental health–related ED visits	2,876	82	594	2,200	3,974
Mental health–related ED visits per 100,000 visits	1,044	69	707	30,45	1,162
<b>Weeks 12–42<sup>**</sup></b>					
Average weekly total ED visits	262,714	106,835	80,143	75,736	149,055

Surveillance period/indicators	2019				2020
	Age group, yrs				Age group
	All <18	0–4	5–11	12–17	All <18
Average weekly mental health–related ED visits	3,078	79	635	2,363	2,481
Mental health–related ED visits per 100,000 visits	1,161	75	782	3,098	1,673

\* Average proportion of ED visits for children’s mental health = (average number of ED visits for mental health/average total number of ED visits for the same age or sex population [e.g., children’s mental health]). Numbers have been rounded to the nearest whole number.

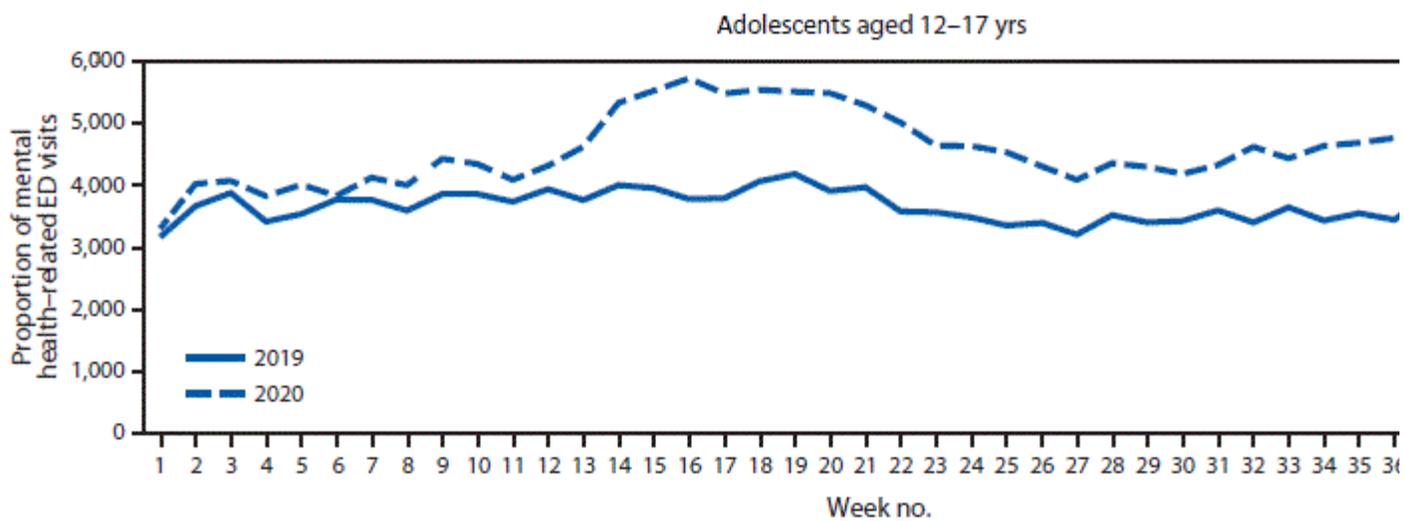
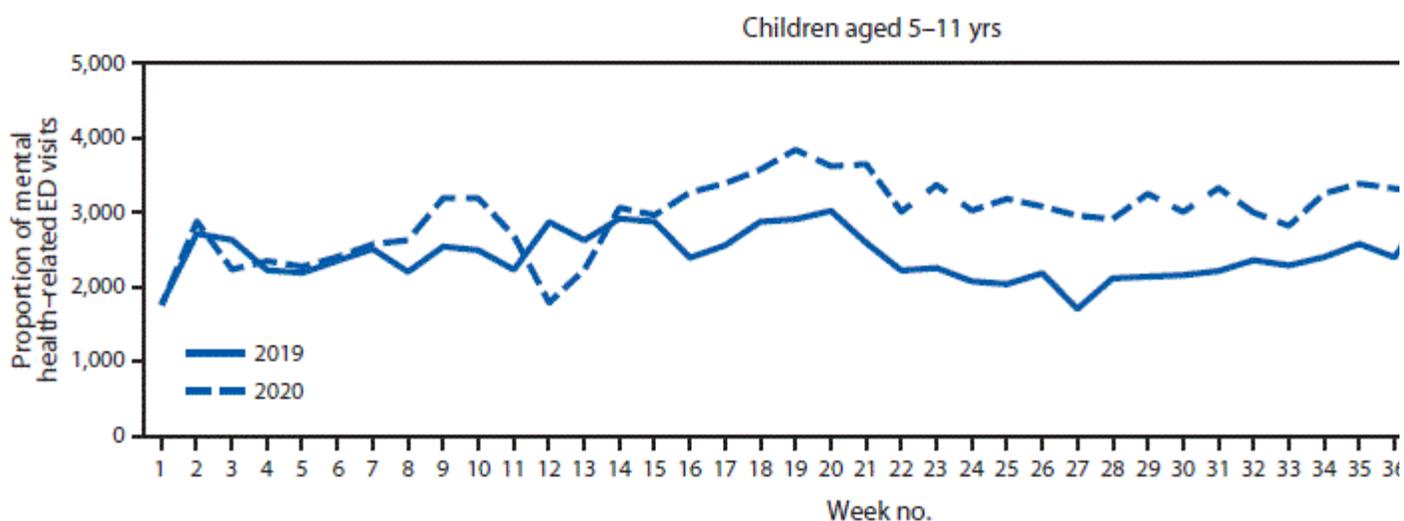
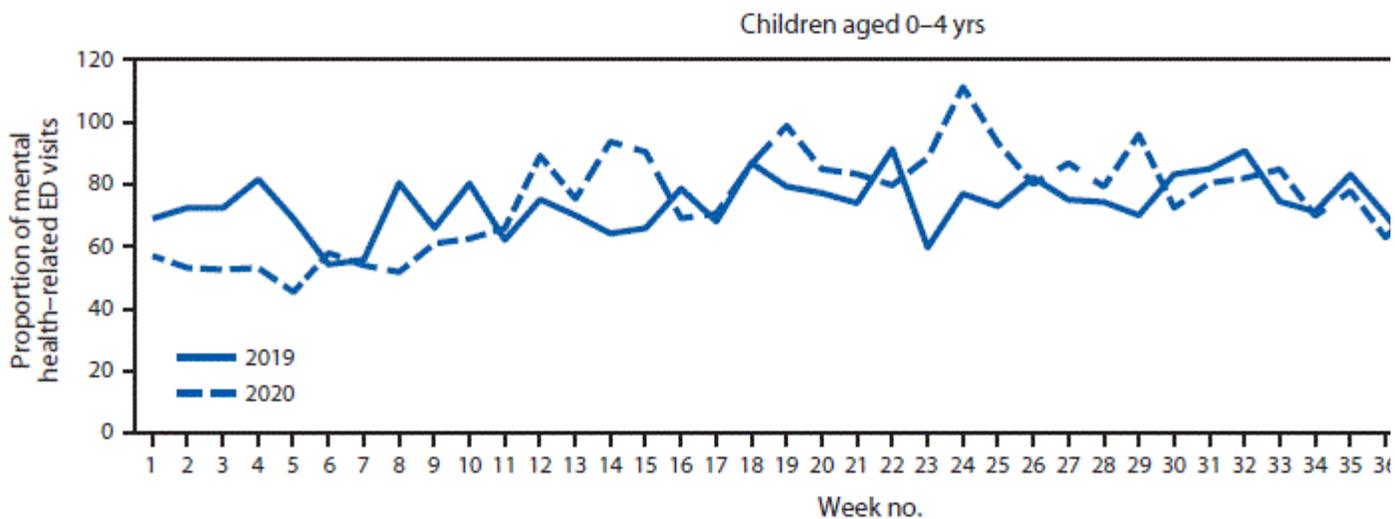
† Mental health–related ED visits were defined using NISSP’s Syndrome Definition (SD) Subcommittee-developed syndrome definition for mental health conditions likely to increase in ED frequency after human-caused disaster events. This syndrome definition attempts to leverage only mental health presentations that showed increases in visit frequency after select disasters in the United States. The query has been added to NISSP BioSense Platform for the Early Notification of Community-based Epidemics as a Chief Complaint and is available at <https://knowledgerepository.syndromicsurveillance.org/disaster-related-mental-health-v1-subcommittee>.<sup>1</sup>

§ Weeks 1–42 in 2019 correspond to December 30, 2018–October 19, 2019; weeks 1–42 in 2020 correspond to December 29, 2019–October 17, 2020.

¶ Weeks 1–11 in 2019 correspond to December 30, 2018–March 16, 2019; weeks 1–11 in 2020 correspond to December 29, 2019–March 14, 2020.

\*\* Weeks 12–42 in 2019 correspond to March 17–October 19, 2019; weeks 12–42 in 2020 correspond to March 17–October 17, 2020.

**FIGURE 2. Weekly proportion of mental health–related emergency department visits per total ED visits among children aged <18 years, by age group — National Emergency Department Collaborative Surveillance Program, United States, January–October 2019 and 2020**



\* Proportion of mental health–related ED visits = number of ED visits for children’s mental health–related ED visits x 100,000.

**Suggested citation for this article:** Leeb RT, Bitsko RH, Radhakrishnan L, Martinez P, Nj, Health–Related Emergency Department Visits Among Children Aged <18 Years During t United States, January 1–October 17, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1675 /10.15585/mmwr.mm6945a3 [↗](#).

*MMWR* and *Morbidity and Mortality Weekly Report* are service marks of the U.S. Department of Health and Hun Use of trade names and commercial sources is for identification only and does not imply endorsement by the U Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute c organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not respo these sites. URL addresses listed in *MMWR* were current as of the date of publication.

All HTML versions of *MMWR* articles are generated from final proofs through an automated process. This conve translation or format errors in the HTML version. Users are referred to the electronic PDF version (<https://www.cdc.gov/mmwr>) *MMWR* paper copy for printable versions of official text, figures, and tables.

Questions or messages regarding errors in formatting should be addressed to [mmwrq@cdc.gov](mailto:mmwrq@cdc.gov).