

# Trends in Suicidal Ideation-Related Emergency Department Visits for Youth in Illinois: 2016–2021

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abstract

**BACKGROUND AND OBJECTIVES:** Increasing suicide rates and emergency department (ED) mental health visits reflect deteriorating mental health among American youth. This population-based study analyzes trends in ED visits for suicidal ideation (SI) before and during the coronavirus disease 2019 (COVID-19) pandemic.

**METHODS:** We analyzed Illinois hospital administrative data for ED visits coded for SI from January 2016 to June 2021 for youth aged 5 to 19 years. We characterized trends in patient sociodemographic and clinical characteristics, comparing three equal 22 month periods and analyzed patient and hospital characteristics associated with the likelihood of hospitalization.

**RESULTS:** There were 81 051 ED visits coded for SI at 205 Illinois hospitals; 24.6% resulted in hospitalization. SI visits accounted for \$785 million in charges and 145 160 hospital days over 66 months. ED SI visits increased 59% from 2016 through 2017 to 2019 through 2021, with a corresponding increase from 34.6% to 44.3% of SI principal diagnosis visits (both  $P < .001$ ). Hospitalizations increased 57% between prepandemic fall 2019 and fall 2020 ( $P = .003$ ). After controlling for demographic and clinical characteristics, youth were 84% less likely to be hospitalized if SI was their principal diagnosis and were more likely hospitalized if coded for severe mental illness, substance use, anxiety, or depression, or had ED visits to children's or behavioral health hospitals.

**CONCLUSIONS:** This study documents child ED SI visits in Illinois spiked in 2019, with an additional surge in hospitalizations during the pandemic. Rapidly rising hospital use may reflect worsening mental illness and continued difficulty in accessing low cost, high-quality outpatient mental health services.



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**WHAT'S KNOWN ON THIS SUBJECT:** Suicide is the second-leading cause of death among children and adolescents. Mental health related emergency department visits were increasing nationally before the coronavirus disease 2019 pandemic.

**WHAT THIS STUDY ADDS:** We show that there was a continuous increase in emergency department visits coded for suicidal ideation for youth in Illinois, with a spike in visits in 2019 before the coronavirus disease 2019 pandemic and a subsequent surge in hospitalizations through 2021.

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Rapidly increasing suicide rates among children are a major public health concern in the United States. Suicide is now the second leading cause of death among United States youth aged 10 to 19 years.<sup>1</sup> Suicide death rates among children have increased by more than 50% over the past 2 decades.<sup>2</sup> In 2019, before the pandemic, almost one-third of high school respondents from the national Youth Behavioral Risk Surveillance survey, including half of all females, reported feeling persistent sadness or hopelessness that interfered with regular activities, a 40% increase since 2009.<sup>3</sup> In that same survey, over 15% of high school students reported making a suicide plan in the past year, a 44% increase since 2009.<sup>3</sup>

Previous research has described alarming trends in pediatric mental health emergency department (ED) visits at the national level.<sup>4-8</sup> Many youth who die by suicide present to ED's with mental health concerns or behavior, such as suicidal ideation (SI).<sup>9,10</sup> Approximately one-third of youth with SI develop a suicide plan and will attempt suicide within 12 months, and suicide attempt is the strongest predictor of subsequent death by suicide.<sup>11</sup> SI-related ED visits are an important epidemiologic indicator of youth mental health crises, and trends in SI ED visits reflect crises above and beyond hospital use related to underlying, often chronic, mental health conditions. The current study focuses exclusively on trends in youth ED visits and hospitalizations with International Classification of Diseases Version 10 (ICD-10) coded suicidal ideation (SI) among children in Illinois before and during the coronavirus disease 2019 (COVID-19) pandemic.<sup>12</sup> Our findings serve as a benchmark for ongoing epidemiologic monitoring of youth mental health in our large and diverse state.

The study sought to characterize trends in SI-related ED visits and hospitalizations among youth aged 5 to 19 years in Illinois over a 66 month period, from January 2016 to June 2021, including ~14 months during the COVID-19 pandemic. The study aims were to analyze overall trends in the frequencies of SI ED visits and hospitalizations, including overall hospital utilization and changes in children's sociodemographic and clinical characteristics and analyze patient and hospital characteristics associated with the likelihood of an ED visit resulting in inpatient hospitalization.

## METHODS

### Data Source

We performed a retrospective analysis of hospital administrative data using the Illinois Hospital Association Comparative Health Care and Hospital Data Reporting Services database. We analyzed SI-coded ED visits from January 2016 to June 2021 for 205 nonfederal Illinois Hospital Association hospitals in Illinois.<sup>13</sup> Illinois Hospital Association hospital records account for virtually all emergency department and inpatient visits in the state, with the exception of Veteran's Affairs hospitals.

Data include patient demographic characteristics, ZIP code, and ICD-10 diagnosis codes, including whether SI (ICD-10 code R45.851) was coded as either the primary or principal diagnosis or as a secondary diagnosis. Patient ZIP codes were matched to American Community Survey census ZIP code tabulation areas (ZCTAs) for the proportion of households living at or below the federal poverty level (categorized as >5%, 5% to 10%, 10% to 20%, >20%, or not Illinois resident). All study data were deidentified and publicly available and the study is

exempt from our institutions' Institutional Review Board.

### Analyses of Time Trends

Trends in monthly ED visits for suicidal ideation were calculated across the full 66-month study period. These monthly rates highlight changes throughout the study period, including after the beginning of the pandemic in March 2020. We compared visit rates across 3 equal 22 month periods: January 2016 to October 2017, November 2017 to September 2019, and October 2019 to June 2021. We further characterized differences potentially related to the COVID-19 pandemic by comparing seasonally peak visits during the fall months in 2019 versus the same fall months during the pandemic in 2020.

Youth age groups in years (5-13, 14-17, 18-19), sex, self-reported hospital registration race or ethnicity (non-Hispanic white, non-Hispanic Black, Hispanic, Asian and other or unknown, which includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Multiracial, missing, or refused), insurance status (private, Medicaid, uninsured and other, or unknown), and proportion of poor households in the patient's ZCTA (<5%, 5% to 9.99%, 10% to 19.99%, >20%, or non-Illinois resident) were compared across periods. Patient race and ethnicity was included to determine if there were any differential time trends among the state's diverse pediatric population. Patient ICD-10 diagnosis codes were used to compare periods by other coded mental health diagnoses, including anxiety, depression, and severe mental illness, defined as schizophrenia, bipolar disorder, personality disorder, hallucinations or other psychosis, and substance use, defined as alcohol, cannabis, cocaine, hallucinogen, opioid or other psychoactive drug use.

## Hospital Characteristics

Hospital types were characterized as either children's, psychiatric or behavioral health, safety net as defined by state of Illinois disproportionate share criteria,<sup>14</sup> or teaching or public for institutions who were members of the Council of Teaching Hospitals, which includes both Illinois public hospitals. We also determined whether the SI ED visit occurred on a weekday versus weekend, and whether the visit resulted in an inpatient admission. Interhospital transfers (2.16% of all SI-coded admissions) were only counted as visits to the receiving hospital.

## Hospital Utilization Measures

To provide estimates of overall hospital utilization for SI ED visits, we compared total charges for SI ED visits across study periods adjusted for inflation using the medical care index within the Consumer Price Index<sup>15</sup> to compare as inflation-

adjusted 2020 dollars. We also compared total hospital days across periods to reflect utilization associated with admissions.

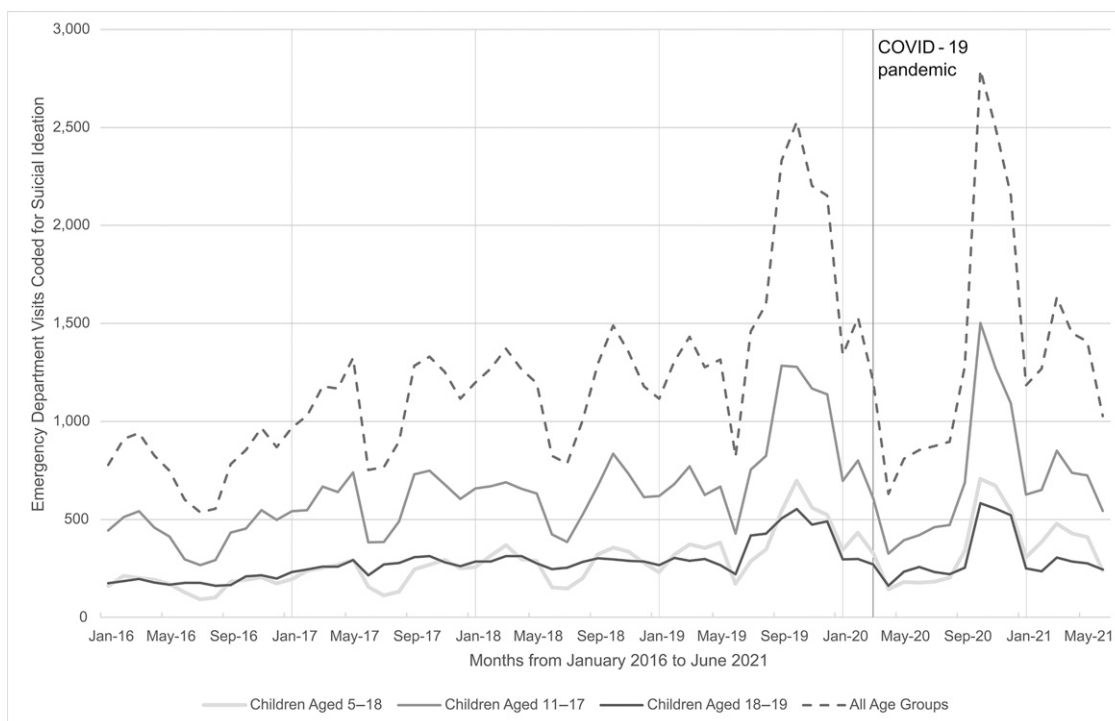
## Data Analysis

$\chi^2$  tests of association were used to determine the significance of differences across periods in proportions of ED visits by children's sociodemographic and clinical characteristics, and also for hospital types. Trends in total inpatient hospital days and total charges were also compared across time periods. A Poisson regression model was estimated for the likelihood of hospital admission versus discharge for an ED visit, controlling for individuals' demographic and clinical characteristics, hospital types and study time periods, with standard errors adjusted for clustering of observations within hospitals. The Poisson robust variance model estimates incident rate ratios (IRRs),

providing a better estimate of relative risk than odds ratios when dependent variable incidence is greater than 20%.<sup>16,17</sup> Statistical analyses were performed with Stata Version 16 (College Station, TX) and IBM SPSS (Armonk, NY).

## RESULTS

There were 81 051 ED visits with an ICD-10 code for SI among youth aged 5 to 19 years at 205 Illinois hospitals over the 66 month study period. Approximately 23.3% of these visits resulted in hospitalization. Figure 1 displays monthly SI-related ED visits, which were consistently higher among all age groups during fall and winter months. Although there was a modest increasing trend from 2016 to 2018, there was a very sharp spike in fall 2019, followed by a similar spike during the pandemic fall of 2020, with highest number of monthly visits during October 2020. Youth aged 14 to 17 years had the highest



**FIGURE 1**

Frequency of ED visits with diagnoses of SI by age for youth aged 5 to 19 years, 205 Illinois hospitals, January 2016 to June 2021.

frequency of SI ED monthly visits, with visits in this group greater than the other age groups combined.

Table 1 compares the three 22 month study periods showing SI ED visits increasing from 20 068 in 2016 to 2017 to 26 929 in 2017 to

2019, followed by an even bigger increase to 34 054 visits during the 22 months in 2019 to 2021. Almost two-thirds (62.3%) of all SI ED visits

**TABLE 1** Emergency Department Visits Coded for Suicidal Ideation, Patients Aged 5 to 19 at 205 Illinois Hospitals, by 22 Month Periods, January 2016 to June 2021

	Column Percent, All Visits, 1/2016–6/2021 N = 81 051	Row Percent, Period 1, 1/2016–10/2017 n = 20 068	Row Percent, Period 2, 11/2017–8/2019 n = 26 929	Row Percent, Period 3, 9/2019–6/2021 n = 34 054
Suicidal ideation as primary or principal diagnosis	38.3	34.6	33.6	44.3
Weekend visit	18.9	18.7	18.5	19.4
Inpatient admission	23.3	24.6	26.1	20.2
Female	62.3	62.5	60.7	63.4
Age, y				
5–13	23.8	20.8	23.5	25.9
14–17	52.9	54.9	52.5	52.1
18–19	23.2	24.3	24.0	22.0
Race and ethnicity				
Asian	2.0	1.6	2.0	2.2
Hispanic	14.8	13.7	14.5	15.6
Non-Hispanic Black	16.1	16.0	16.8	15.7
Non-Hispanic white	59.6	60.5	59.3	59.2
Other or unknown <sup>a</sup>	7.6	8.3	7.4	7.3
Illinois county area				
Cook county	29.1	29.5	28.9	29.1
Collar counties	24.9	25.3	24.8	24.8
Downstate	45.9	45.2	46.3	46.0
Insurance				
Private	47.0	47.1	47.3	46.7
Medicaid	47.7	47.0	48.1	47.9
Medicare	0.4	0.3	0.4	0.5
Uninsured	4.4	3.8	4.3	5.0
Other or unknown	0.5	1.8	0.0	0.0
Poverty category				
Less than 5%	31.2	29.9	30.6	32.4
5% to 10%	28.6	28.7	28.4	28.5
10% to 20%	30.6	32.1	31.0	29.5
Greater than 20%	6.7	6.8	6.8	6.6
Unknown or non-Illinois resident	3.0	2.5	3.2	3.0
Other mental health diagnoses, primary or secondary				
Serious mental illness <sup>b</sup>	13.7	14.0	14.9	12.6
Substance use <sup>c</sup>	5.0	5.8	5.2	4.4
Depression	57.7	57.5	60.5	55.7
Anxiety	8.2	9.4	8.1	7.7
Hospital type <sup>d</sup>				
Community	63.3	54.3	67.0	65.2
Children's	2.9	2.6	3.8	3.2
Psychiatric	7.1	8.1	7.2	7.5
Teaching or Public	14.7	14.4	14.6	14.6
Safety Net	12.0	10.6	7.4	7.7

All comparisons between time periods  $P < .001$ , except weekend and county area.

<sup>a</sup>Other or unknown includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Multiracial, missing, or refused.

<sup>b</sup>Serious mental illness defined as schizophrenia, bipolar disorder, personality disorder, hallucinations or other psychosis.

<sup>c</sup>Substance use defined as alcohol, cannabis, cocaine, hallucinogen, opioid or other psychoactive drug use.

<sup>d</sup>Hospital types were characterized as children's hospital, psychiatric or behavioral health hospital, adult safety net hospital as defined by Health Resources and Services Administration (HRSA) criteria, or adult teaching hospital, if an institution was a member of the Council of Teaching Hospitals. Hospitals meeting none of these criteria were characterized as community hospitals.

were for females. Over half of youth visiting the ED for SI were uninsured (4.4%) or covered by Medicaid (47.7%). Visits during the weekend (28.6% of days) remained roughly the same over time. The proportion of visits in each period with SI coded as the principal or primary diagnosis had a relative increase of almost 30% from the first study period through the third ( $P < .001$ ). There were relatively small differences in other children's clinical or sociodemographic characteristics across periods, although most comparisons were statistically significant except for differences in weekday versus weekend visits and across Illinois county areas. There was a modest increase in the number of visits by Hispanic patients but little change over time in patient race and ethnicity.

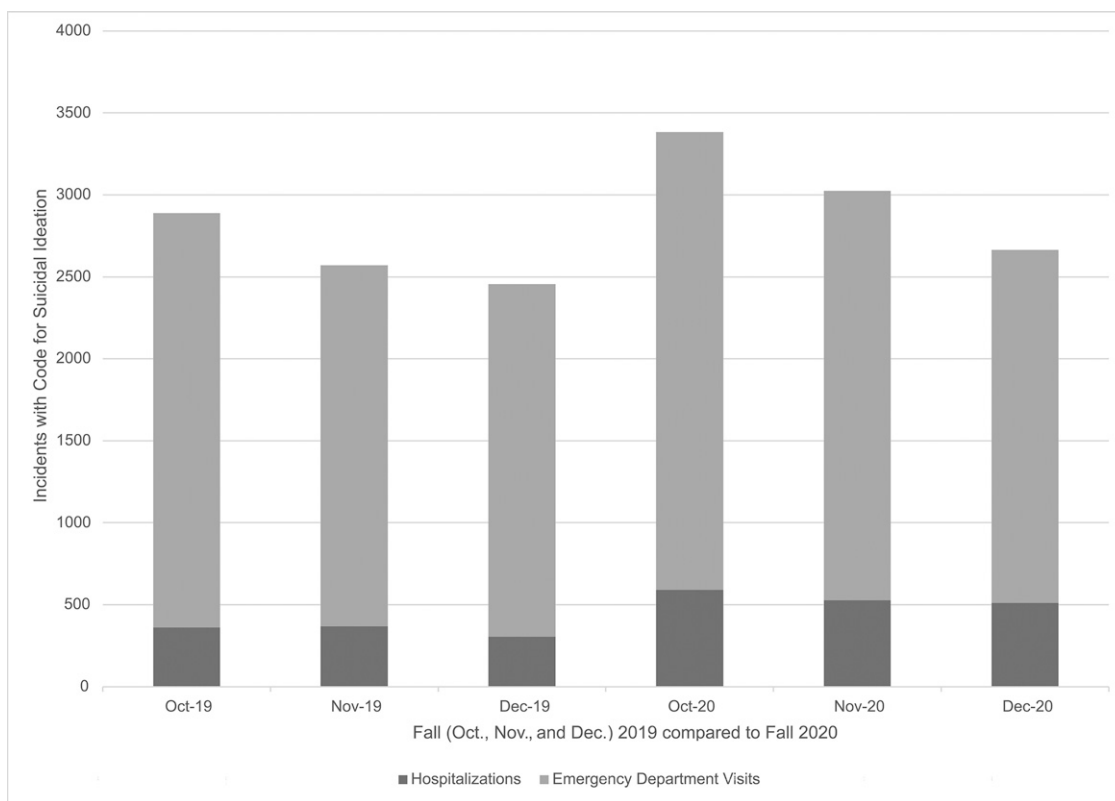
Figure 2 shows monthly visits for fall 2019 to 2020 when seasonal variation in SI ED visits is highest. There was a nonsignificant relative 3 month mean increase of 10% in 2020, however, inpatient mean monthly hospitalizations increased by 57% after the pandemic, from a mean of 344 in 2019 to 542 in 2020 ( $P < .003$ ).

Figure 3 illustrates the overall 2016 to 2021 trend in total inpatient hospital days and total hospital charges in inflation-adjusted 2020 dollars (see also Supplemental Fig 4). Cumulative charges for ED SI visits were more than \$785 million overall; charges during the third period alone reached nearly \$350 million, a relative increase of over 97% compared with the first study period. Total hospital days also increased by almost 70% over the

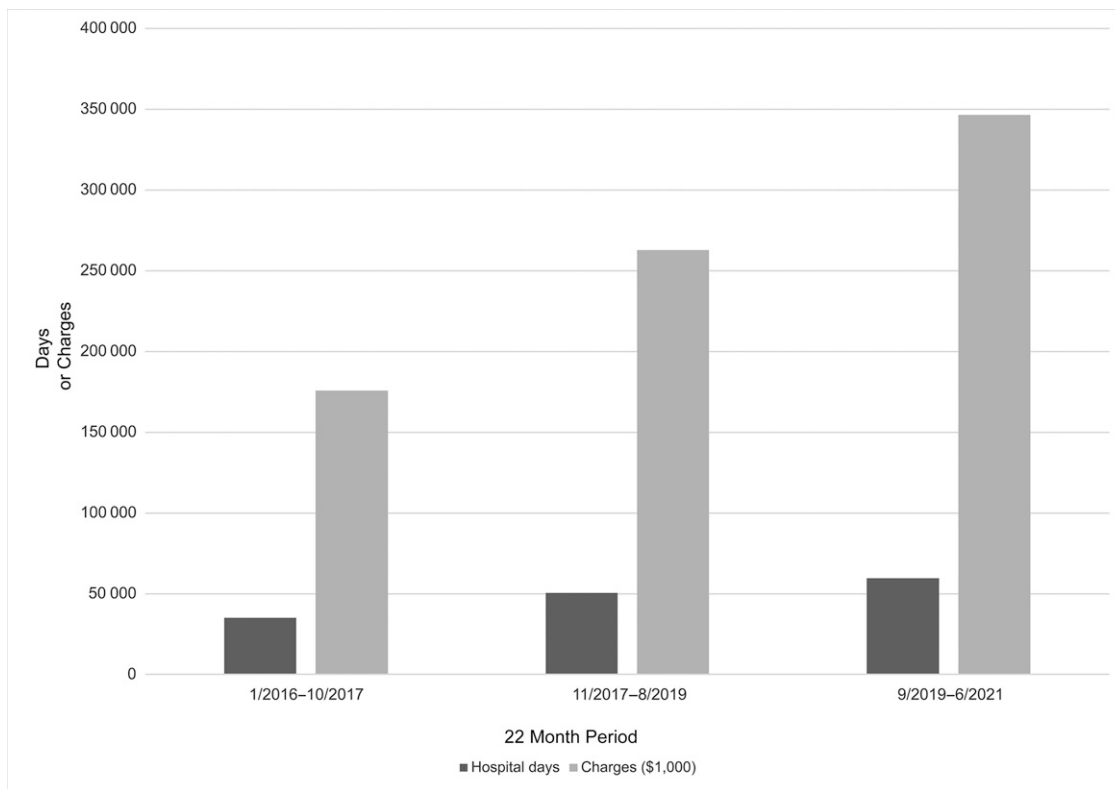
same time span, accounting for 145 089 hospital days over 66 months.

### Likelihood of Hospitalization

Table 2 presents Poisson regression estimates for the association of children's sociodemographic and clinical characteristics and hospital type with the likelihood that an ED visit became an inpatient hospitalization. Although there were no significant differences across periods or by age group, race and ethnicity, or ZCTA poverty level, males and downstate residents did have a significantly higher likelihood of being hospitalized after an ED visit. Youth with weekend versus weekday visits, and the uninsured compared with the privately insured, had significantly lower likelihood of hospitalization.



**FIGURE 2** Frequency of ED encounters and hospitalizations with diagnoses of SI by month for youth aged 5 to 19 years, 205 Illinois hospitals, fall 2019 and fall 2020.



**FIGURE 3** Cumulative hospital days and total charges from ED visits with diagnoses of SI for youth aged 5 to 19 years, 205 Illinois hospitals, January 2016 to June 2021.

The largest difference in hospitalization was for youth with a primary or principal diagnosis of SI, who were much less likely to be hospitalized (IRR = 0.02, 95% confidence interval [CI] 0.01-0.03) compared with those with a SI listed as a secondary diagnosis. Consistent with this finding, youth with a co-occurring diagnosis of serious mental illness, depression, anxiety, or substance use were more likely to be hospitalized than individuals without those diagnoses. Youth visiting an ED at a psychiatric hospital (IRR 1.93, CI 1.36-2.73) or children’s hospital (IRR 2.56, CI 1.78-3.69) had much higher odds of hospitalization compared with those visiting community hospitals. Almost three-quarters of SI ED visits had a cooccurring diagnosis of serious mental illness, depression, anxiety, or substance use, which all

conferred greater risk of hospitalization and was highest for ED visits to behavioral health and children’s hospitals.

### DISCUSSION

SI-related ED visits among youth aged 5 to 19 years in Illinois increased modestly from 2016 to 2018 and then spiked in fall 2019, followed by a further increase in fall 2020 during the pandemic. SI was also much more likely coded as a primary or principal diagnosis in 2019 to 2021 than in previous years. Whereas the total ED visit burden increased only modestly in 2020 vs 2019, the number of SI-coded admissions through the ED increased significantly during the pandemic. Almost three-quarters of SI ED visits had a cooccurring diagnosis of serious mental illness,

depression, anxiety, or substance abuse (data not shown).

Examining hospitalizations, patients presenting with SI as a principal diagnosis (indicating that SI was the primary reason for the hospital visit) were much less likely to be hospitalized. This indicates patients presenting with more severe mental illness requiring hospitalization were less likely to have SI noted as the primary reason for the visit, as opposed to patients with few other underlying conditions who had SI listed as a principal diagnosis. Hospitalizations were more common among youth with co-occurring depression, anxiety, or substance abuse, reflecting more severe underlying illness. Lower hospitalization rates for weekend visits and for uninsured patients reflect access barriers.<sup>18,19</sup> Higher

**TABLE 2** Poisson Regression Results for Likelihood of Inpatient Admission for Suicidal Ideation  
 N = 81 051 Emergency Department Visits for Patients Aged 5 to 19 at 205 Illinois  
 Hospitals, January 2016 to June 2021

	Incidence Rate Ratio	95% Confidence Interval
<b>Period</b>		
1/2016–10/2017	Reference	Reference
11/2017–8/2019	0.99	0.93–1.06
9/2019–6/2021	0.92	0.82–1.02
<b>Gender</b>		
Male	1.09	1.05–1.14
Female	Reference	Reference
<b>Age, y</b>		
5–13	1.00	0.90–1.12
14–17	Reference	Reference
18–19	1.15	0.97–1.35
<b>Race and Ethnicity</b>		
Hispanic	0.89	0.75–1.04
Non-Hispanic Black	1.04	0.93–1.17
Non-Hispanic white	Reference	Reference
Other or unknown <sup>a</sup>	1.06	0.87–1.28
<b>Illinois county area</b>		
Cook county	Reference	Reference
Collar counties	1.15	0.81–1.65
Downstate	1.31	0.97–1.78
<b>Insurance</b>		
Private	Reference	Reference
Medicaid	0.92	0.84–1.00
Uninsured	0.75	0.64–0.87
<b>Poverty category</b>		
Less than 5%	Reference	Reference
5% to 10%	1.06	0.96–1.18
10% to 20%	1.09	0.90–1.32
Greater than 20%	1.09	0.94–1.26
Unknown or non-IL resident	1.49	0.94–2.29
<b>Suicidal ideation as primary or principal diagnosis</b>		
Other mental health diagnoses, primary or secondary	0.02	0.01–0.03
<b>Serious mental illness<sup>b</sup></b>		
Serious mental illness <sup>b</sup>	1.89	1.61–2.22
Substance use <sup>c</sup>	1.30	1.21–1.39
Depression	1.64	1.42–1.89
Anxiety	2.43	1.92–3.07
<b>Hospital type<sup>d</sup></b>		
Community	Reference	Reference
Children's	2.56	1.78–3.69
Psychiatric	1.93	1.36–2.73
Teaching or public	1.08	0.68–1.73
Safety net	1.55	0.87–2.77

<sup>a</sup>Other or unknown includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Multiracial, missing or refused.

<sup>b</sup>Serious mental illness defined as schizophrenia, bipolar disorder, personality disorder, hallucinations or other psychosis.

<sup>c</sup>Substance use defined as alcohol, cannabis, cocaine, hallucinogen, opioid or other psychoactive drug use.

<sup>d</sup>Hospital types were characterized as children's hospital, psychiatric or behavioral health hospital, adult safety net hospital as defined by Health Resources and Services Administration (HRSA) criteria, or adult teaching hospital, if an institution was a member of the Council of Teaching Hospitals. Hospitals meeting none of these criteria were characterized as community hospitals.

hospitalization rates after an ED visit to a psychiatric or children's hospital likely reflect these institutions' psychiatric bed availability. Behavioral health hospitals accounted for only 7.5% of

ED visits coded for SI in this sample but accounted for 64.3% of all direct SI-coded admissions that did not come through a hospital emergency department during the study period (data not shown).

Illinois, a large and diverse state, mirrors the growing crisis in youth mental health nationwide.<sup>20</sup> One national study of pediatric ED visits showed a 60% increase in mental health visits from 2007 to 2016, with visits coded for substance use increasing 159% over that period.<sup>6</sup> Although most studies have analyzed rising trends in all ED mental health visits, 1 previous study reported a doubling between 2008 and 2015 of the proportion of pediatric ED visits at children's hospitals specifically coded for SI and suicide attempts.<sup>5</sup> Findings for mental health ED visits during the early COVID-19 pandemic wave have described increases at specific institutions,<sup>21,22</sup> a decrease in SI visits at another health system,<sup>12</sup> and an initial national decrease in mental health visits followed by a sharp increase in the fall of 2020.<sup>23</sup>

The gravity of the prepandemic youth mental health crisis was recently described in the Surgeon General's 2021 Advisory report, *Protecting Youth Mental Health*.<sup>24</sup> The report surveys the literature on possible contributing factors, including a reduction in mental health stigma and a greater willingness of young people to openly reveal mental health concerns.<sup>25</sup> Some researchers have emphasized the role of increased academic pressure in a society where being a college graduate is increasingly perceived as fundamental to a middle class standard of living.<sup>26</sup> There is also continuing concern about social isolation and exposure to toxic online environments and cyberbullying. Digital social media can erode adolescent self-worth and has been linked to increasing depressive symptoms, suicide related deaths, and SI.<sup>27,28</sup>

It is also important to understand that most children during our study years came of age in the aftermath

of the 2008 economic crisis, which harshly impacted young families through job loss, evictions, foreclosures and debt.<sup>29</sup> A 2013 review of 52 studies concluded that socioeconomically disadvantaged children were 2 to 3 times more likely to experience mental health problems, creating an intergenerational cycle that reflects growing wealth and income inequality.<sup>30</sup> Finally, the intergenerational impact of exposure to adverse childhood experiences (ACEs), including abuse, neglect, and household stressors, impacts children who are exposed, leading to increased risk for poor mental and physical health outcomes over the life course.<sup>31–34</sup> In addition, ACEs have continued unabated with younger adult respondents who reported greater prevalence of ACEs as older adult cohorts.<sup>35</sup>

### **The Pandemic and Youth Mental Health**

The largest year-to-year increase in SI-related ED visits in our study was between 2018 and 2019. After peaking in 2019, SI-related ED visits in Illinois did not increase greatly during the COVID-19 pandemic. However, there was a significant increase in hospitalizations through the ED between fall 2019 and fall 2020, a potential marker of the severity of presenting symptoms among children experiencing SI. The early pandemic period coincided with constrained access to pediatric mental health services through schools, pediatric primary care homes, and mental health clinics for many children and their families.<sup>36</sup> The proportion of child mental health visits increased relative to other types as patients avoided ED visits during the early wave of the COVID-19 pandemic.<sup>23,37</sup> Thus, the increase in hospitalizations during fall 2020 may reflect patients' deferring care until symptoms

became even more severe. Our data end in June 2021 during the summer downturn in SI ED visits; there may be a sharp fall and winter 2021 spike related to the social isolation experienced by families.<sup>38–40</sup>

### **Public Health Policy and Youth Mental Health**

Improving outpatient mental health will require addressing the shortage of pediatric psychiatrists,<sup>41</sup> the closing of pediatric psychiatric hospitals, and imposing stringent state Medicaid coverage of mental health services across the United States.<sup>42</sup> Increased use of the ED for mental health care is linked to limited access to outpatient mental health resources. The 2016 Survey of Children's Health found that less than half of children with treatable mental health disorders received treatment, with an inverse correlation between state prevalence of disorders and untreated children.<sup>43</sup> This finding mirrors the acute shortage of child psychiatrists in areas with high rates of poverty and low educational attainment.<sup>41</sup>

Over the past year, the American Academy of Pediatrics, the American Academy of Child and Adolescent Psychiatry and the Children's Hospital Association declared a national emergency in child and adolescent mental health. The Surgeon General report highlights the need for new models of behavioral and mental health care for children, such as the Centers for Medicare and Medicaid Services Innovative Center's Integrated Care for Kids Model for the state of Illinois, launched in 2020.<sup>44</sup> Another Illinois-based effort is the Illinois Suicide Prevention Alliance, a state-funded task force comprised of state agencies and advocacy organizations who focus on prevention of suicide and improvement of mental health.

School-based services through partnerships with hospitals are another important touchpoint: multitiered support systems<sup>45</sup> or mental health urgent care clinics<sup>46</sup> can increase access to care while limiting academic disruption, especially in areas with limited resources. Additional work should explore programs that expand the child mental health workforce through increased financial compensation and expansion of training positions,<sup>47</sup> while ensuring this next generation of care providers reflect the diversity of their local communities.

### **Limitations**

The current study is based on ICD-10 codes in hospital medical records, which are known to vary across institutions and may not accurately reflect clinical severity and complexity. We do not know whether a patient coded with SI was suffering from a highly active or more passively expressed intention. Illinois hospital administrative data do not identify unique patients and cannot be used to ascertain the frequency of multiple ED visits or readmissions by the same children, or statistically cluster results for multiple visits by the same patient,<sup>48</sup> preventing calculating a per-capita rate for youth SI ED visits. Outcomes were not adjusted by population; however, the population of Illinois has changed little over recent years, with a 1.1% population difference from April 2020 to July 2021.

### **CONCLUSIONS**

The increase in SI-related ED visits for youth began before the COVID-19 pandemic and indicates continuous increasing mental health crises for individuals aged 5 to 19 years in Illinois. The increase in pediatric ED visits for SI in Illinois likely reflects both the difficulty in accessing high-quality pediatric outpatient services



and deteriorating mental health conditions among youth. Specific community-based mental health strategies targeting most at risk youth may help improve mental health outcomes among youth and decrease the burden of mental health care utilization in ED and inpatient settings, as we continued to face pandemic-related

challenges, such as social isolation and exposure to socioeconomic adversities.

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#### ABBREVIATIONS

ED: emergency department  
SI: suicidal ideation  
ZCTA: zip code tabulation area

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