2021

Unintentional Childhood Injuries in Kansas

safekidskansas.org  @safekidskansas  @safekidskansas  @safekidskansas
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Executive Summary

The purpose of this report is to share data and strategies to help reduce the burden of childhood injuries in Kansas. This report includes information that can guide stakeholders and public health professionals to help keep children safe from preventable injuries through targeted interventions.

In this document you will find an overview and summary of unintentional injuries among Kansas children 0 to 19 years old. The three data sets used in this document are Kansas Vital Statistics (mortality data), Kansas Hospital Discharge (HD) Database and the Kansas Hospital Emergency Department (ED) Database (non-fatal injury data). 1

These databases vary with respect to injury severity. Cases captured in the Kansas Vital Statistics database are considered the most severe, as they reflect fatal injuries. The Kansas HD dataset is less severe because it includes information on children that were admitted to the hospital for at least 24 hours. The ED database is considered the least severe of the three databases because it includes information on patients admitted to the ED that stayed for less than 24 hours.

This focus of this report is unintentional injuries among Kansas children 0 to 19 years old.

Key Findings:
• Between 2016 and 2019, among Kansas children 0 to 19 years old, there were:
  o 357 unintentional injury deaths
  o 3,611 unintentional injury hospitalizations
  o 253,438 unintentional injury emergency department visits (EDVs)

• Overall, boys had higher unintentional injury rates for mortality, hospitalization, and EDV than girls, except for EDV injuries caused by motor vehicle crashes on public roadways and overexertion:
  o EDV rate due to motor vehicle crash increased 24% in girls
  o EDV rate due to overexertion increased 10% in girls
  o Boys probably sustained more severe crash injuries and thus outnumbered girls in hospitalization and mortality

• Kansas Trauma Regions that had a higher burden of childhood unintentional injury
  o Death: Southeast and Southwest (higher but not statistically different)
  o Hospitalization: South-Central
  o EDV: North-Central

1 Note: Federal and specialty hospitals in Kansas do not report their discharges and emergency department visits to the Kansas Hospital Association. Not all nonfederal, short stay community or general hospitals in Kansas report their emergency department visits or hospital discharge data to Kansas Hospital Association; therefore, these databases do not include 100% of emergency department visits and hospital discharges in Kansas.
The top four causes of unintentional injury are:

<table>
<thead>
<tr>
<th>Death</th>
<th>Hospitalization</th>
<th>EDV¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) All transport accident²</td>
<td>1) All transport accident²</td>
<td>1) Fall</td>
</tr>
<tr>
<td>2) Suffocation</td>
<td>2) Fall</td>
<td>2) Struck by or against</td>
</tr>
<tr>
<td>3) Drowning</td>
<td>3) Poisoning</td>
<td>3) All transport accident²</td>
</tr>
<tr>
<td>4) Poisoning</td>
<td>4) Fires or burns</td>
<td>4) Natural/environmental</td>
</tr>
</tbody>
</table>

¹Excluding unspecified causes
²Including motor vehicle traffic (MVT)/crash, non-traffic, and other accidents.

Childhood unintentional injury summary by cause:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Change in 2016-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffocation</td>
<td>Infants&lt;1 had the highest death and EDV counts and rates.</td>
</tr>
<tr>
<td>Drowning</td>
<td>Most deaths were among teenagers aged 15-19.</td>
</tr>
<tr>
<td>Fall</td>
<td>o Infants&lt;1 had the highest hospitalization rate.</td>
</tr>
<tr>
<td></td>
<td>o Children aged 1-4 had the highest EDV count and rate.</td>
</tr>
<tr>
<td>Fire and burn</td>
<td>Children aged 1-4 had the highest hospitalization and EDV counts and rates.</td>
</tr>
<tr>
<td>Motor vehicle crash (or MVT)</td>
<td>Teenagers aged 15-19 had the highest hospitalization and EDV counts and rates.</td>
</tr>
<tr>
<td>Pedestrian¹</td>
<td>o Most hospitalizations were among teenagers aged 15-19.</td>
</tr>
<tr>
<td></td>
<td>o Teenagers aged 15-19 had the highest EDV count and rate.</td>
</tr>
<tr>
<td></td>
<td>o Most non-fatal injuries were due to MVT crashes on public roadways</td>
</tr>
<tr>
<td>Cycling¹</td>
<td>o Children aged 10-14 and 5-9 had the 1st and 2nd highest EDV counts and rates.</td>
</tr>
<tr>
<td></td>
<td>o Most non-fatal injuries were due to MV non-traffic crashes on non-public roadways</td>
</tr>
</tbody>
</table>
Drug poisonings were more common than non-drug poisonings.

Most deaths were among teenagers aged 15-19.

Children aged 1-4 had the highest hospitalization and EDV counts and rates.

19% increase in hospitalization (meaningful but not statistically significant)

1Include those resulting from motor vehicle crash/MVT and other transport accidents.
2Include both drug and non-drug poisoning.

The leading cause of unintentional TBI-induced injury are:
- All Transport-related Accidents was the leading cause of unintentional TBI-induced deaths (88%) and hospitalization (58%).
- Falls were the leading cause of unintentional TBI-induced EDVs (42%).
- Leading causes of TBI injury varied by age groups:

<table>
<thead>
<tr>
<th>Hospitalization</th>
<th>EDV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant, 1-4yrs</td>
<td>Fall</td>
</tr>
<tr>
<td>5-9yrs</td>
<td>Fall, MVT</td>
</tr>
<tr>
<td>10-14yrs,15-19yrs</td>
<td>MVT</td>
</tr>
</tbody>
</table>

Childhood unintentional TBI injury summary
- Age Group:
  - Most (60%) TBI deaths were among KS adolescents aged 15-19.
  - Infants had the highest TBI hospitalization rate due to fall injury.
  - Adolescents aged 15-19 had the highest TBI EDV count and rate due to struck by/against injury.
- Change in 2016-2019:
  - The TBI hospitalization rate for MVT injuries decreased by a meaningful 17%.
  - The TBI EDV rate for other transport (happened on non-public roadways) injuries decreased by a meaningful 21%.
I. Introduction

Childhood unintentional injury is the leading cause of death among Kansas children ≤ 19yrs. In 2017 alone, fatal childhood unintentional injuries resulted in 5,894 years of potential life lost (YPLL). This number is based on the presumption these children could have lived until age 75 and would have experienced an estimated $160 million in medical expense and work loss.²

Unlike most cancers or other chronic diseases, injuries are largely predictable and preventable. For example, wearing a helmet while biking can prevent a traumatic brain injury (TBI) and possibly death. A correctly used car seat or seatbelt can keep a child from being ejected during a car crash. Simple injury prevention strategies have the potential to save children’s lives. Safe Kids Kansas is a network of partners and local coalitions across the state that work to prevent childhood injury by implementing injury prevention strategies. The lead agency for Safe Kids Kansas is the Kansas Department of Health and Environment (KDHE). In the map below, counties with a current Safe Kids Coalitions are highlighted in blue.


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Safe Kids Coalitions in Kansas by County, 2020

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II. Demographic Data

Geographic Analysis

The population of children in Kansas is divided by trauma regions in Table 1. These regions as defined by the Kansas Trauma Program include North-Central, Northeast, Northwest, South-Central, Southeast, and Southwest. The risk of unintentional injury is known to be more common among younger populations. Therefore, it is important to know where most children in Kansas live to help identify areas where prevention efforts could provide the most benefit. This information is also foundational to understand how causes of unintentional injury are related to where children live.

<table>
<thead>
<tr>
<th>Trauma Region</th>
<th>Children 0-19 years old</th>
<th>Percent of children 0-19 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-Central</td>
<td>31,224</td>
<td>4%</td>
</tr>
<tr>
<td>Northeast</td>
<td>402,094</td>
<td>51%</td>
</tr>
<tr>
<td>Northwest</td>
<td>22,880</td>
<td>3%</td>
</tr>
<tr>
<td>South-Central</td>
<td>233,381</td>
<td>30%</td>
</tr>
<tr>
<td>Southeast</td>
<td>46,309</td>
<td>6%</td>
</tr>
<tr>
<td>Southwest</td>
<td>46,203</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>782,091</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>


There were over 20,000 more boys than girls among Kansas children ages 0-19 in 2019, and the distribution by sex was similar in each trauma region. More children reside in the Northeast and South-Central Trauma Regions of the state. These regions have a greater population of children, as they include larger cities and have a greater number of urban communities. The Northeast Trauma Region includes the cities of Topeka, Lawrence, Kansas City, and Overland Park. The South-Central Trauma Region includes the city of Wichita. Combined, these two regions account for over 80% of Kansas children ages 0 to 19 years old.
<table>
<thead>
<tr>
<th>Trauma Region</th>
<th>County</th>
<th>Population 0-19 years old</th>
<th>Percent of population 0-19 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-Central</td>
<td>Clay</td>
<td>2,017</td>
<td>6.5%</td>
</tr>
<tr>
<td></td>
<td>Cloud</td>
<td>2,361</td>
<td>7.6%</td>
</tr>
<tr>
<td></td>
<td>Dickinson</td>
<td>4,684</td>
<td>15.0%</td>
</tr>
<tr>
<td></td>
<td>Ellsworth</td>
<td>1,219</td>
<td>3.9%</td>
</tr>
<tr>
<td></td>
<td>Jewell</td>
<td>627</td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td>Lincoln</td>
<td>710</td>
<td>2.3%</td>
</tr>
<tr>
<td></td>
<td>Mitchell</td>
<td>1,572</td>
<td>5.0%</td>
</tr>
<tr>
<td></td>
<td>Osborne</td>
<td>788</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td>Ottawa</td>
<td>1,392</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td>Republic</td>
<td>1,078</td>
<td>3.5%</td>
</tr>
<tr>
<td></td>
<td>Saline</td>
<td>13,957</td>
<td>44.7%</td>
</tr>
<tr>
<td></td>
<td>Smith</td>
<td>819</td>
<td>2.6%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>31,224</strong></td>
<td><strong>100.0%</strong></td>
</tr>
<tr>
<td>Northeast</td>
<td>Anderson</td>
<td>2,176</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Atchison</td>
<td>4,491</td>
<td>1.1%</td>
</tr>
<tr>
<td></td>
<td>Brown</td>
<td>2,625</td>
<td>0.7%</td>
</tr>
<tr>
<td></td>
<td>Chase</td>
<td>575</td>
<td>0.1%</td>
</tr>
<tr>
<td></td>
<td>Coffey</td>
<td>1,954</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Doniphan</td>
<td>1,957</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Douglas</td>
<td>29,138</td>
<td>7.2%</td>
</tr>
<tr>
<td></td>
<td>Franklin</td>
<td>6,761</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>Geary</td>
<td>10,397</td>
<td>2.6%</td>
</tr>
<tr>
<td></td>
<td>Jackson</td>
<td>3,617</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td>Jefferson</td>
<td>4,722</td>
<td>1.2%</td>
</tr>
<tr>
<td></td>
<td><strong>Johnson</strong></td>
<td><strong>158,201</strong></td>
<td><strong>39.3%</strong></td>
</tr>
<tr>
<td></td>
<td>Leavenworth</td>
<td>20,834</td>
<td>5.2%</td>
</tr>
<tr>
<td></td>
<td>Linn</td>
<td>2,331</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td>Lyon</td>
<td>8,791</td>
<td>2.2%</td>
</tr>
<tr>
<td></td>
<td>Marshall</td>
<td>2,547</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td>Miami</td>
<td>9,153</td>
<td>2.3%</td>
</tr>
<tr>
<td></td>
<td>Morris</td>
<td>1,269</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>Nemaha</td>
<td>2,986</td>
<td>0.7%</td>
</tr>
<tr>
<td></td>
<td>Osage</td>
<td>4,030</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>Pottawatomie</td>
<td>7,643</td>
<td>1.9%</td>
</tr>
<tr>
<td></td>
<td>Riley</td>
<td>17,804</td>
<td>4.4%</td>
</tr>
<tr>
<td></td>
<td>Shawnee</td>
<td>45,436</td>
<td>11.3%</td>
</tr>
<tr>
<td></td>
<td>Wabaunsee</td>
<td>1,753</td>
<td>0.4%</td>
</tr>
<tr>
<td></td>
<td>Washington</td>
<td>1,323</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>Wyandotte</td>
<td>49,580</td>
<td>12.3%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>402,094</strong></td>
<td><strong>100.0%</strong></td>
</tr>
<tr>
<td>Northwest County</td>
<td>Population 0-19 years old</td>
<td>Percent of population 0-19 years old</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------</td>
<td>---------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cheyenne</td>
<td>614</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>Decatur</td>
<td>610</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td><strong>Ellis</strong></td>
<td><strong>7,217</strong></td>
<td><strong>31.5%</strong></td>
<td></td>
</tr>
<tr>
<td>Gove</td>
<td>689</td>
<td>3.0%</td>
<td></td>
</tr>
<tr>
<td>Graham</td>
<td>544</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td>Logan</td>
<td>724</td>
<td>3.2%</td>
<td></td>
</tr>
<tr>
<td>Ness</td>
<td>629</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>Norton</td>
<td>1,098</td>
<td>4.8%</td>
<td></td>
</tr>
<tr>
<td>Phillips</td>
<td>1,288</td>
<td>5.6%</td>
<td></td>
</tr>
<tr>
<td>Rawlins</td>
<td>586</td>
<td>2.6%</td>
<td></td>
</tr>
<tr>
<td>Rooks</td>
<td>1,175</td>
<td>5.1%</td>
<td></td>
</tr>
<tr>
<td>Rush</td>
<td>685</td>
<td>3.0%</td>
<td></td>
</tr>
<tr>
<td>Russell</td>
<td>1,607</td>
<td>7.0%</td>
<td></td>
</tr>
<tr>
<td>Sheridan</td>
<td>666</td>
<td>2.9%</td>
<td></td>
</tr>
<tr>
<td>Sherman</td>
<td>1,620</td>
<td>7.1%</td>
<td></td>
</tr>
<tr>
<td>Thomas</td>
<td>2,177</td>
<td>9.5%</td>
<td></td>
</tr>
<tr>
<td>Trego</td>
<td>541</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td>Wallace</td>
<td>410</td>
<td>1.8%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22,880</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>South-Central County</th>
<th>Population 0-19 years old</th>
<th>Percent of population 0-19 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barber</td>
<td>1,106</td>
<td>0.5%</td>
</tr>
<tr>
<td>Barton</td>
<td>6,765</td>
<td>2.9%</td>
</tr>
<tr>
<td>Butler</td>
<td>18,855</td>
<td>8.1%</td>
</tr>
<tr>
<td>Comanche</td>
<td>448</td>
<td>0.2%</td>
</tr>
<tr>
<td>Cowley</td>
<td>9,372</td>
<td>4.0%</td>
</tr>
<tr>
<td>Edwards</td>
<td>721</td>
<td>0.3%</td>
</tr>
<tr>
<td>Harper</td>
<td>1,453</td>
<td>0.6%</td>
</tr>
<tr>
<td>Harvey</td>
<td>9,336</td>
<td>4.0%</td>
</tr>
<tr>
<td>Kingman</td>
<td>1,741</td>
<td>0.7%</td>
</tr>
<tr>
<td>Kiowa</td>
<td>670</td>
<td>0.3%</td>
</tr>
<tr>
<td>Marion</td>
<td>2,883</td>
<td>1.2%</td>
</tr>
<tr>
<td>McPherson</td>
<td>7,250</td>
<td>3.1%</td>
</tr>
<tr>
<td>Pawnee</td>
<td>1,223</td>
<td>0.5%</td>
</tr>
<tr>
<td>Pratt</td>
<td>2,494</td>
<td>1.1%</td>
</tr>
<tr>
<td>Reno</td>
<td>15,415</td>
<td>6.6%</td>
</tr>
<tr>
<td>Rice</td>
<td>2,545</td>
<td>1.1%</td>
</tr>
<tr>
<td><strong>Sedgwick</strong></td>
<td><strong>143,981</strong></td>
<td><strong>61.7%</strong></td>
</tr>
<tr>
<td>Stafford</td>
<td>1,071</td>
<td>0.5%</td>
</tr>
<tr>
<td>Sumner</td>
<td>6,052</td>
<td>2.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>233,381</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td>Southeast</td>
<td>County</td>
<td>Population 0-19 years old</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Allen</td>
<td>3,167</td>
<td></td>
</tr>
<tr>
<td>Bourbon</td>
<td>4,154</td>
<td></td>
</tr>
<tr>
<td>Chautauqua</td>
<td>703</td>
<td></td>
</tr>
<tr>
<td>Cherokee</td>
<td>4,978</td>
<td></td>
</tr>
<tr>
<td><strong>Crawford</strong></td>
<td><strong>10,187</strong></td>
<td></td>
</tr>
<tr>
<td>Elk</td>
<td>618</td>
<td></td>
</tr>
<tr>
<td>Greenwood</td>
<td>1,421</td>
<td></td>
</tr>
<tr>
<td>Labette</td>
<td>5,115</td>
<td></td>
</tr>
<tr>
<td>Montgomery</td>
<td>8,639</td>
<td></td>
</tr>
<tr>
<td>Neosho</td>
<td>4,358</td>
<td></td>
</tr>
<tr>
<td>Wilson</td>
<td>2,235</td>
<td></td>
</tr>
<tr>
<td>Woodson</td>
<td>734</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46,309</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Southwest</th>
<th>County</th>
<th>Population 0-19 years old</th>
<th>Percent of population 0-19 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark</td>
<td>534</td>
<td></td>
<td>1.2%</td>
</tr>
<tr>
<td><strong>Finney</strong></td>
<td><strong>12,232</strong></td>
<td></td>
<td><strong>26.5%</strong></td>
</tr>
<tr>
<td>Ford</td>
<td>11,107</td>
<td></td>
<td>24.0%</td>
</tr>
<tr>
<td>Grant</td>
<td>2,361</td>
<td></td>
<td>5.1%</td>
</tr>
<tr>
<td>Gray</td>
<td>1,877</td>
<td></td>
<td>4.1%</td>
</tr>
<tr>
<td>Greeley</td>
<td>356</td>
<td></td>
<td>0.8%</td>
</tr>
<tr>
<td>Hamilton</td>
<td>797</td>
<td></td>
<td>1.7%</td>
</tr>
<tr>
<td>Haskell</td>
<td>1,220</td>
<td></td>
<td>2.6%</td>
</tr>
<tr>
<td>Hodgeman</td>
<td>452</td>
<td></td>
<td>1.0%</td>
</tr>
<tr>
<td>Kearny</td>
<td>1,185</td>
<td></td>
<td>2.6%</td>
</tr>
<tr>
<td>Lane</td>
<td>367</td>
<td></td>
<td>0.8%</td>
</tr>
<tr>
<td>Meade</td>
<td>1,117</td>
<td></td>
<td>2.4%</td>
</tr>
<tr>
<td>Morton</td>
<td>694</td>
<td></td>
<td>1.5%</td>
</tr>
<tr>
<td>Scott</td>
<td>1,382</td>
<td></td>
<td>3.0%</td>
</tr>
<tr>
<td>Seward</td>
<td>7,585</td>
<td></td>
<td>16.4%</td>
</tr>
<tr>
<td>Stanton</td>
<td>622</td>
<td></td>
<td>1.3%</td>
</tr>
<tr>
<td>Stevens</td>
<td>1,694</td>
<td></td>
<td>3.7%</td>
</tr>
<tr>
<td>Wichita</td>
<td>621</td>
<td></td>
<td>1.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46,203</strong></td>
<td></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Race and Ethnicity

In 2019, most Kansans aged 0 to 19 years old were White, non-Hispanic (69%, n=537,866). The 2nd most populous racial group was Hispanic (19%, n=144,847). The racial and ethnic makeup of children was fairly consistent across all Kansas trauma regions, with the exception of the Southwest Trauma Region. More than half of all children 0 to 19 years old who lived in the Southwest Trauma Region were Hispanic (59%, n=27,092).


Figure 1. Race and ethnicity of children ages 0-19, KS 2019

Figure 2. Race and ethnicity of children aged 0-19 by trauma region, KS 2019

Economic Makeup

Figure 3. Percentage of children ages 0-17 living in poverty by county, KS 2019

In 2019, 14.3% (90%CI:13.6, 15.0) of children in Kansas aged 0 to 17 years old were living in poverty. The estimate was statistically significantly lower than the national average, 16.8% (90%CI:16.6, 17.0).

Overall, counties in the Southeast Trauma Region of Kansas had a higher childhood poverty prevalence than the rest of the regions.

III. Mortality Data Summary

Table 2: Demographics of unintentional injury death, KS 2016-2019

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
<th>Age-Adjusted Death Rate&lt;sup&gt;1&lt;/sup&gt;</th>
<th>95% Confidence Interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>357</td>
<td>100</td>
<td>11.3</td>
<td>10.2, 12.5</td>
</tr>
<tr>
<td>Sex (N = 357)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>229</td>
<td>64</td>
<td>14.1</td>
<td>12.3, 16.1</td>
</tr>
<tr>
<td>Female</td>
<td>128</td>
<td>36</td>
<td>8.3</td>
<td>7.0, 9.9</td>
</tr>
<tr>
<td>Race/Ethnicity (N = 357)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White&lt;sup&gt;2&lt;/sup&gt;</td>
<td>239</td>
<td>67</td>
<td>10.9</td>
<td>9.6, 12.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>92</td>
<td>26</td>
<td>16.4</td>
<td>13.2, 20.1</td>
</tr>
<tr>
<td>Others&lt;sup&gt;2,3&lt;/sup&gt;</td>
<td>26</td>
<td>7</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<sup>1</sup>Per 100,000

<sup>2</sup>Non-Hispanic

<sup>3</sup>Black, American Indian/Alaska Native, and others

From 2016 to 2019, 357 Kansas children aged 0-19 died of unintentional injuries with the death rate 11.3 per 100,000 (Table 2).

Most (64%) of the children who died from unintentional injuries were males and were 69% more likely to die than females (Table 2).

Hispanics were 50% more likely to die from unintentional injuries than White, non-Hispanics (Table 2).

Nearly 43 per 100,000 infants (&lt;1yr old) died from unintentional injury in 2016-2019 in Kansas, making infants the age group with the highest death rate among children ages 0-19 (Figure 4).

Most unintentional injury deaths among children occurred in the Northeast Trauma Region. The Southeast Trauma Region had the highest age-adjusted death rate (16.9 per 100,000 children, 95% CI: 11.6-23.9), followed by the Southwest Trauma Region (15.5 per 100,000 children, 95% CI: 10.4-22.3). However, all 4 death rates did not differ from each other statistically significantly (Figure 5).
Figure 5. Age-adjusted unintentional injury death rate\(^1\) by trauma regions among children 0-19 years old, KS 2016-2019

NW: *, N=18
NC: *, N=18
NE: 10.0, 95%CI (8.6, 11.7), N=163

SW: 15.5, 95%CI (10.4, 22.3), N=29
SC: 10.4, 95%CI (8.4, 12.7), N=97
SE: 16.9, 95%CI (11.6, 23.9), N=32

\(^1\)Rate per 100,000
*Rate suppressed when count < 20.
Source: Death from 2016-2019 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.
From 2016 to 2019, there were a total of 641 injury-related deaths among Kansas children aged 0-19. Over half (56%) of the deaths were unintentional deaths, followed by 27% suicide, 16% homicide, and 1% other violent deaths.

Among injury deaths, unintentional injuries were more common among younger children:

- 86% among infants under 1 year old
- 72% among children aged 1-4
- 81% among children aged 5-9
- 55% among children aged 10-14
- 45% among children aged 15-19

Between 2016 and 2019, the four leading causes of unintentional injury deaths among children in Kansas consisted of 85% of the total: transport-related crashes, suffocation, drowning, and poisoning (Figure 6).

Most (90%) of the transport crashes were associated with MVT or motor vehicle crashes that occurred on public roadways (Figure 6).
IV. Hospital Discharge Data Summary

Table 3: Demographics of unintentional injury-related hospitalization, KS 2016-2019

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
<th>Age-Adjusted Rate</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>3,611</td>
<td>100.0</td>
<td>114.0</td>
<td>110.3, 117.7</td>
</tr>
<tr>
<td><strong>Sex (N = 3,608)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,309</td>
<td>64</td>
<td>142.0</td>
<td>136.2, 147.8</td>
</tr>
<tr>
<td>Female</td>
<td>1,299</td>
<td>36</td>
<td>84.3</td>
<td>79.7, 88.9</td>
</tr>
<tr>
<td><strong>Race/Ethnicity (N = 3,486)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White²</td>
<td>2,371</td>
<td>68</td>
<td>108.1</td>
<td>103.8, 112.5</td>
</tr>
<tr>
<td>Black²</td>
<td>374</td>
<td>11</td>
<td>141.9</td>
<td>127.5, 156.2</td>
</tr>
<tr>
<td>American Indian/Alaska Native²</td>
<td>11</td>
<td>&lt;1</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Asian/Pacific Islander²</td>
<td>60</td>
<td>2</td>
<td>57.0</td>
<td>42.6, 71.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>495</td>
<td>14</td>
<td>87.1</td>
<td>79.5, 94.8</td>
</tr>
<tr>
<td>Multi-Racial²</td>
<td>58</td>
<td>2</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Other²</td>
<td>117</td>
<td>3</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

*Rate suppressed when count < 20 or denominator not available

1Per 100, 000

Among Kansas children ≤19 in 2016-2019, 3,611 were hospitalized due to unintentional injuries with the rate of 114.0 per 100,000 children (Table 3).

Boys were about 68% more likely to be hospitalized due to unintentional injuries than girls. About 142 out of 100,000 boys were hospitalized (Table 3).

Although Nearly 7 in 10 children hospitalized for unintentional injuries were White, Blacks had a 31% higher rate than Whites, 141.9 versus 108.1 per 100,000 (Table 3).

Figure 7 shows that children ages 15-19 were the most likely to be hospitalized due to unintentional injuries, followed by infants <1yr old.

The South-Central Trauma Region had the age-adjusted unintentional injury hospitalization rate (141.9 per 100,000, 95% CI: 134.3, 149.6) 24% higher than the Kansas average (Figure 8). The Northeast Trauma Region was 14% lower than the state average rate, at 98.5 per 100,000, 95% CI: (93.7, 103.3) (Figure 8).
Figure 8. Age-adjusted unintentional injury hospitalization rate\(^1\) by trauma regions among children 0-19 years old, KS 2016-2019

NC: 114.9, 95%CI (96.2, 133.5), N=146

NW: 103.0, 95%CI (82.4, 123.7), N=96

SW: 112.7, 95%CI (97.4, 128.0), N=209

SE: 115.1, 95%CI (99.8, 130.4), N=218

NE: 98.5, 95%CI (93.7, 103.3), N=1,606

SC: 141.9, 95%CI (134.3, 149.6), N=1,334

\(^1\)Rate per 100,000

Source: Hospitalization database from 2016-2019 Kansas Hospital Association
Between 2016 and 2019, falls, transport-related crashes, poisoning, and fire or burn constituted 76% of the total unintentional injury hospitalizations among children 0-19 in Kansas (Figure 9). Most (70%) of the transport crashes were MVT crashes that happened on public roadways. MVT and poisoning can be serious fatal injuries as they were in the top four causes of unintentional death along with suffocation and drowning (Figure 6).

Figure 10 describes the hospitalization rates for leading causes among children aged 0-19 over time.

Although there were gradual changes in rates for MVT, poisoning, and fire or burn, the changes were not statistically significant.
V. Emergency Department Data Summary

Table 4: Demographics of unintentional injury-related emergency department visit (EDV), KS 2016-2019

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
<th>Age-Adjusted Rate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>253,438</td>
<td>100</td>
<td>8,015.2</td>
<td>7,984.0, 8,046.4</td>
</tr>
<tr>
<td><strong>Sex (N = 253,415)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>142,587</td>
<td>56</td>
<td>8,800.2</td>
<td>8,754.5, 8,845.9</td>
</tr>
<tr>
<td>Female</td>
<td>110,828</td>
<td>44</td>
<td>7,190.3</td>
<td>7,148.0, 7,232.7</td>
</tr>
<tr>
<td><strong>Race/Ethnicity (N=245,140)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>169,884</td>
<td>69</td>
<td>7,786.9</td>
<td>7,749.9, 7,824.0</td>
</tr>
<tr>
<td>Black</td>
<td>24,751</td>
<td>10</td>
<td>9,381.7</td>
<td>9,264.7, 9,498.6</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1,200</td>
<td>&lt;1</td>
<td>3,662.6</td>
<td>3,454.2, 3,871.0</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3,267</td>
<td>1</td>
<td>3,138.3</td>
<td>3,030.6, 3,246.0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>33,832</td>
<td>14</td>
<td>5,844.6</td>
<td>5,782.3, 5,907.0</td>
</tr>
<tr>
<td>Multi-Racial</td>
<td>3,783</td>
<td>2</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Other</td>
<td>8,423</td>
<td>3</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

*Rate suppressed when count < 20 or denominator not available

1Per 100,000

Among Kansas children ≤19 in 2016-2019, over 253 thousand visited ED due to unintentional injuries, which translated to about 7,190 in every 100,000 Kansas children (Table 4).

Boys were about 29% more likely to visit ED due to unintentional injuries than girls. About 8,761 out of 100,000 boys visited ED (Table 4).

About 7 in 10 children who visited ED for unintentional injuries were Whites, followed by 14% Hispanic and 10% Blacks. Black children had the highest EDV rate, which was 20% higher than Whites (Table 4).

Figure 11 shows that children aged 1-4 were most likely to visit ED than other age groups.

The North-Central Trauma Region had the highest unintentional injury EDV rate among children 0 to 19 years old (10,008.7 per 100,000, 95% CI: 9,834.9, 10,182.6), followed by the counties from the South. South-Central and Southwest regions had significantly higher EDV rates than the Kansas average (Figure 12).
Figure 12. Age-adjusted unintentional injury emergency department visit (EDV) rate\(^1\) by trauma regions among children 0-19 years old, KS 2016-2019

\(^1\)Rate per 100,000

Between 2016 and 2019, the top five causes among Kansas children aged 0-19 consisted of 78% of total unintentional injury EDVs: falls, struck by or against, unspecified, transport-related crashes, and natural/environmental accidents (Figure 13).

Most (66%) of the transport crashes occurred on public roadways, MVT (Figure 13).

Fall and transport crashes were also the leading causes of unintentional injury-related hospitalizations (Figure 9).

Figure 14 shows how the leading causes of injury EDV rates changed over time. The rate for natural or environmental injuries decreased by 20% in 2019 compared to 2016.
The Safe Kids Kansas Coalition, established in 1991, is a nonprofit coalition of statewide and regional organizations, agencies and businesses, and 29 local coalitions covering 35 Kansas counties and 70% of Kansas children ages 0 to 19. In addition to CDC funding through the Preventative Health Block Grant, Safe Kids also receives funding from private sources to support work in primary prevention of injury.
Suffocation

The Problem

Nationally, suffocation is the leading cause of unintentional injury deaths for infants under age one and the 4th leading cause of unintentional injury deaths for children 1-4 years old. The accidental suffocation and strangulation in bed (ASSB) mortality rate has been increasing since 1997 in the US. In 2017, the mortality rate was 24.6 deaths per 100,000 live births, and ASSB accounted for 26% of sudden unexpected infant deaths (SUIDs). Most infant suffocation deaths occur in the home and are the result of unsafe sleeping environments. In children aged 1-4 years most of these incidents involve choking on food or toys.

Figure 15. Suffocation injuries among children 0-19, KS 2016-2019

Figure 16. Emergency department visit (EDV) due to unintentional suffocation among children 0-19 by year, KS 2016-2019

4 CDC-Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion (April 21, 2020) Sudden Unexpected Infant Death and Sudden Infant Death Syndrome, Retrieved July 24, 2020 from: https://www.cdc.gov/sids/data.htm#pie
Key Findings

- From 2016 to 2019 among Kansas children ages 0-19, 62 out of total 262 (23%) suffocation injuries were fatal (Figure 15).
- About 84% (n=52) of fatal injuries were infants <1.
- Most (36%) of suffocation EDVs were among infants <1 who had the highest EDV rate, 39.9 per 100,000 infants (95%CI: 29.7, 50.0).
- In 2019, about 4 out of 100,000 (95%CI: 2.8, 5.7) Kansas children aged 0-19 visited ED due to unintentional suffocation (Figure 16).
- Although EDV rates of unintentional suffocation decreased meaningfully over time by 40% (Figure 16), the fatal injuries remained stable during this time period:
  - In 2016, N=14
  - In 2017, N=16
  - In 2018, N=15
  - In 2019, N=17

Strategies for Prevention

- Teach all caregivers the ABCs of safe sleep. Infants should be placed to sleep alone, on their back, in a clutter-free crib.
- Encourage families to dress baby in a wearable blanket rather than putting blankets in the crib.
- Keep cords and string, including those attached to window blinds, out of our child’s reach.
- Increase awareness of foods that are common choking hazards for young children such as popcorn, hot dogs and grapes.
- Educate families about the dangers of toys with small parts, magnets, button batteries and products that grow when you add water. Keep these items away from young children to prevent choking and other injuries.
- Publicize emergency contacts and promote community resources for training the public in infant and child CPR and choking first aid.
- Work with the Consumer Product Safety Commission and manufacturers to improve the design of baby furniture and other juvenile products as well as enforcing warning label requirements on toys.
- Support and promote the network of KIDS Network Certified Safe Sleep Instructors (SSIs) across Kansas.
- Provide free portable cribs and wearable blankets to low-income families who cannot afford these safe sleep resources.
- Promote smoking cessation programs to pregnant and new mothers and their families.
- Encourage adults and babysitters to become trained in the Heimlich maneuver and Infant/Child CPR.
Drowning Injury

The Problem

Drowning is the 5th leading cause of unintentional injury deaths of all ages in the United States. About 20% of people who die from drowning are children 14 years old or younger. For every child who dies from drowning another 5 receive ED care for their nonfatal injuries.

More than 50% of the ED drowning injuries result in prolonged hospitalizations or transfer for further care. In addition, non-fatal drowning can result in severe brain damage, long-term cognitive disabilities, and permanent loss of basic functioning.

---

Key Findings

- From 2016 to 2019 among Kansas children aged 0-19, more than half of the drowning were fatal (n=30) (Figure 17).
- About 43% (n=13) of drowning deaths were among teenagers aged 15-19
- About 1 in 4 (27%, n=8) of drowning deaths were among children aged 1-4.
- Fatal injuries during 2016-2019:
  - In 2016, N=8
  - In 2017, N=10
  - In 2018, N=6
  - In 2019, N=6

Strategies for Prevention

- Educate adults to never leave children unsupervised around water, even for a minute. This applies to pools, backyard ponds, toilets, bathtubs, kiddie pools 5-gallon buckets of water and anywhere water may collect. Remind adults to empty tubs, buckets, containers and kiddie pools immediately after use and store upside down so they don't collect water.
- Promote swimming lessons for children. Remind adults to always supervise children around water and understand that even children who know how to swim are not drown-proof.
- Encourage adults to use the Water Watcher approach to supervision, taking turns giving children in and around water their full attention.
- Support development of water safety programs and the addition of a water safety component to other safety training (ie hunter safety courses.)
- Support and promote programs for distribution of free or discounted lifejackets to children.
- Promote ordinances requiring owners to install 4-sided fences with self-closing and self-latching gates around home pools.
- Support inspection and enforcement of the Virginia Graeme Baker Pool and Spa Safety Act for public pools and spas.
- Encourage private homes to install anti-entrapment pool drain covers and automatic pump shutoff systems.
- Encourage adults and older children to take boating safety courses.
- Promote and encourage enforcement and enhancement of the state law requiring youth ages 12 years and under to wear a lifejacket when on boats or in open bodies of water.
- Work with agencies to install and maintain life jacket loaner boards at recreational lakes.
- Promote CPR and AED training.
Falls Injury
The Problem

Falls are the leading cause of non-fatal injuries among children aged 0 to 19 years old. Nearly 8,000 children receive treatment daily in U.S. emergency rooms for fall-related injuries, which equates to about 2.8 million children annually. There are empirical-based strategies to reduce falls and prevent serious fall-related injuries, such as traumatic brain injuries.

Figure 18. Fall injuries among children 0-19, KS 2016-2019

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Figure 19. Hospitalizations due to unintentional fall among children 0-19 by age groups, KS 2016-2019

Figure 19 shows the numbers and rates of fall injury-related hospitalizations among KS children by 5 age groups from 2016 to 2019, while the values of EDVs are shown in Figure 20 below.

Of fall injuries so severe that a hospital stay was needed, 10% were infants with the highest hospitalization rate (Figure 19):
- Almost 63 out of 100,000 infants were hospitalized.
- Children from 5-9, 10-14, and 15-19 age groups had similar rates.

Except infants, the risk of EDVs for unintentional fall decreased as children became older from 2016 to 2019 (Figure 20):
- Young children aged 1-4 were most likely to visit ED among all KS youths
- Young children aged 1-4 were also the most common (31%) ED visitors compared to other age groups.

Following children aged 1-4, infants also had a high risk for accidental fall-related EDV (Figure 20). From 2016 to 2019, about 2,760 out of 100,000 infants were sent to ED for injuries associated with unintentional falls.
Key Findings

- From 2016 to 2019 among Kansas children aged 0-19, infants <1 year had the highest risk of being sent to ED or hospitalized due to injuries related to unintentional falls (Figure 19).
- About 63 out of every 100,000 infants were hospitalized, and 2,760 out of 100,000 infants were sent to ED due to unintentional fall in Kansas 2016-2019 (Figure 19, 20).
- During the same period, the EDV rate of unintentional falls was the highest among children 1-4 years old (Figure 20).
- Children other than infants were less likely to visit ED for unintentional falls when they got older (Figure 20).

Strategies for Prevention

- Keep children’s furniture away from windows. Install window stops or guards with an emergency release in case of fire. Remind adults that screens are for keeping bugs out, not children in.
- Use safety gates at the tops and bottoms of stairs.
- Secure TVs and furniture to the walls using mounts, brackets, braces, anchors or wall straps.
- Playgrounds should have surfaces with shock-absorbing materials such as rubber, synthetic turf, sand, pea gravel, wood chips or mulch. Increase public awareness of the Consumer Product Safety Commission’s playground safety guidelines.
- Educate parents and caregivers to keep babies and young children secured by safety belts and harnesses when using high chairs, changing tables, infant carriers, swings, strollers and shopping carts.
- Discourage use of mobile baby walkers and encourage the use of stationary alternatives.
- Instruct families to place baby carriers on the floor and not on top of furniture or on a countertop.
- Educate families to keep stairs and other paths clear of items to reduce trip-hazards.
- Teach children to walk cautiously around slippery wet surfaces such as tile bathroom floors and around swimming pools.
- Educate families and distribute safety equipment such as helmets, knee pads, and wrist guards to children who are engaging in sports and activities.
Fire and burns are a leading cause of unintentional childhood injuries. Nationwide over 300 children aged 0 to 19 years old are treated in the emergency room for burns and two children die from burns every day. Older children are more likely to be injured from direct contact with fire while younger children are more likely to sustain scald burns from hot liquids or steam.

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Figure 21 summarizes fatal and non-fatal unintentional fire and burn injuries collected from death certificates and hospitals among KS children aged 0-19 between 2016 and 2019.

Figure 22 and 23 show the numbers and rates of fall injuries-related hospitalizations and EDVs among KS children by 5 age groups from 2016 to 2019.

Among children who needed to be hospitalized, younger children aged 1-4 were the most common visitors (47%) and had the highest hospitalization rate (Figure 22). From 2016 to 2019, approximately 17 in every 100,000 children aged 1-4 were hospitalized due to unintentional injuries for fire and burns (Figure 22).

Of children who visited ED for unintentional injuries related to fire and burn, children aged 1-4 had the highest EDV burden (Figure 23):

- Most (41%, n=1,592) EDVs were among children aged 1-4.
- Children aged 1-4 had the highest EDV rate: 259.2 per 100,000 persons.
- Infants had the 2nd highest EDV rate, 161.5 per 100,000 persons, followed by teenagers aged 15-19, children aged 5-9, and children aged 10-14.
Key Findings

- Between 2016 and 2019 among Kansas children aged 0-19, those aged 1-4 were most likely to be hospitalized or sent to the ED due to unintentional fire and burn injuries (Figure 22, 23).
- During the same period, infants < 1 year old had the 2nd highest EDV rate for unintentional fire and burn injuries (Figure 23).

Strategies for Prevention

- Educate families to have working smoke and carbon monoxide alarms on every level of their home and in every sleeping area. Teach them to test and replace batteries according to manufacturer recommendations.
- Support and promote programs to distribute and install free smoke/CO detectors in homes, particularly targeting low-income families.
- Provide education and tools to help families create and practice family escape plans, including identifying an outdoor family meeting place. Encourage the regular practice of home fire drills during the day and after dark. Remind them to go low under the smoke and to get outside to safety; don’t hide.
- Provide guidance to households who have family members with physical or cognitive disabilities to escape the home during an emergency.
- Inform landlords and tenants about the Kansas Smoke Detector Law.
- Create educational and public awareness campaigns regarding common fire/burn hazards and prevention (ie. hot water safety, electricity/appliance safety, candle safety, safe storage of matches and lighters, kitchen safety, fireworks safety and home heating items such as space heaters, furnaces and fireplaces.)
- Support juvenile fire-setting prevention programs.
- Educate children on how to properly use the 9-1-1 emergency number in their area, including knowing their home address.
- Encourage installation of fire-suppression sprinkler systems in residential homes.
- Increase awareness of chemical burn hazards such as button batteries and other caustic items, including safe storage.
Motor Vehicle Crash

The Problem

Motor vehicle crashes are the leading cause of unintentional injury deaths among children. Each hour, nearly 150 children aged 0 to 19 years old are treated in emergency departments for motor vehicle crash-related injuries in the United States. More children 5-19 die from crash-related injuries than from any other type of injury. Use of age- and weight-appropriate child restraints and seat belts can prevent or mitigate injuries in the occurrence of a motor vehicle crash.

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8 Motor vehicle traffic (MVT) crashes that happens on the public roadways.
Figure 24 describes fatal and non-fatal unintentional MVT accidents or motor vehicle crashes that happened on KS public roadways among KS children aged 0-19 between 2016 and 2019.

Figure 25 and 26 show the numbers and rates of motor vehicle crash-related hospitalizations and EDVs among KS children by 5 age groups from 2016 to 2019.

From 2016 to 2019, teenagers aged 15-19 had the highest unintentional motor vehicle crash-related EDV and hospitalization numbers and rates (Figure 25, 26):

- 2 in 3 (67%) of hospitalizations were among teenagers aged 15-19
- Over half (58%) of EDVs were among teenagers aged 15-19
- Nearly 69 out of 100,000 those aged 15-19 were hospitalized.
- Nearly 1,108 out of 100,000 those aged 15-19 received treatment in ED.

Key Findings

- Between 2016 and 2019, Kansas children aged 15 to 19 years old had the highest hospitalization and EDV burden (both numbers and rates) for unintentional motor vehicle crashes that happened on public roadways (Figure 25, 26).
- The hospitalization rate decreased meaningfully by 16% in 2019 compared to 2016, but the change was not statistically significant (Figure 10).
• Death due to unintentional motor vehicle crashes during 2016-2019:
  o In 2016, N=40
  o In 2017, N=43
  o In 2018, N=42
  o In 2019, N=41

Strategies for Prevention

• Support legislation that mirrors best practices in the field of Child Passenger Safety, Graduated Drivers Licensing, Impaired Driving and Distracted Driving.
• Support and promote Child Passenger Safety Technician certification and enhanced trainings, including for special needs, school bus and ambulances.
• Support and promote child passenger safety inspection stations and programs.
• Inform families how to have their child’s car seat checked by a certified Child Passenger Safety Technician.
• Provide child safety seats or incentives for purchasing safe and appropriate child safety seats, including special needs car seats, to low-income and disadvantaged families.
• Promote the Safe Kids Worldwide Ultimate Car Seat Guide website (i.e., UltimateCarSeatGuide.org) to help parents choose and use appropriate car seats for their specific child. This website is especially helpful in communities that lack a car seat technician or program.
• Increase the number of parents who register their child safety seats through safercar.gov by mailing in the registration card that comes with new seats.
• Create and implement an information/education campaign to increase awareness of safety issues related to child safety seat use and installation.
• Map hot-spots for crashes, injuries and fatalities to identify hazards and safety improvements.
• Utilize multiple sources to develop and improve data-driven outreach and education.
• Improve data-driven approach to programs and outreach efforts.
• Provide education programs and resources for novice drivers.
• Implement awareness campaigns to target drivers with safe driving habits (i.e. seatbelt checks, Bucks for Buckles, etc.)
• Increase seat belt usage through enforcement partnerships and strategies.
• Support and promote teen peer groups, such as S.A.F.E. that advocate for seat belt use.
• Promote use of guidance tools to support the learning of novice drivers (i.e Kansas Teen Novice Driver Toolkit, Countdown to Drive, apps)
Pedestrian injury

The Problem

Injuries due to transportation crashes are the leading cause of death for children with some of these children being pedestrians. Pedestrian injuries include both injuries on and off public roadways (i.e., traffic and non-traffic injuries). Nationally, pedestrian injuries account for 8% of the unintentional injury deaths among children aged 0 to 19 years old. Death rates varied by sex and age; the rates were highest among males, children 1 to 4 years old and children 15 to 19 years old. Pedestrian injuries account for less than 1% of the unintentional nonfatal injuries among children 0 to 19 years old. Males had a higher nonfatal pedestrian injury rate compared to females and rates increased with age groups.

Figure 27. Pedestrian injuries among children 0-19, KS 2016-2019

- 16 Deaths
- 83 Hospitalizations
- 633 Emergency Department Visits
Figure 27 describes fatal and non-fatal unintentional MVT-related and other pedestrian injuries among KS children aged 0-19 between 2016 and 2019.

From 2016 to 2019, most (34%, n=28) unintentional pedestrian hospitalizations were among children aged 15-19.

Among 16 pedestrian deaths, 56% (n=9) were related to MV non-traffic (happened on the non-public roadways).

Most non-fatal pedestrian injuries were motor vehicle crashes that happened on the public roadways:
- 72% (n=60) of hospitalizations were MVT
- 59% (n=371) of EDVs were MVT

Older children aged 15-19 had the highest non-fatal injury EDV number and rate;
Approximately 32 out of every 100,000 teenagers aged 15-19 visited ED due to accidental pedestrian injuries in 2016-2019 (Figure 28).

Overall, the EDV rate remained constant from 2016 to 2019 (Figure 29).
Key Findings

- From 2016 and 2019, about 1 in 3 youth unintentional pedestrian hospitalizations were among teenagers aged 15-19.
- During the same period, children aged 15-19 had the highest EDV burden (both number and rate) among Kansas youths for unintentional pedestrian injury (Figure 28).
- Most pedestrian hospitalizations and EDVs were due to motor vehicle crashes happened on public roadways.

Strategies for Prevention

- Teach children the rules of the road for pedestrians, including where and how to walk on roadways with or without sidewalks, and how to safely cross the street. Children should be supervised by a grown-up until approximately age 10.
- Teach children and teens to put phones, headphones and devices down when crossing the street. Remind parents, older siblings and other caregivers to be a good role model and set a safe example by putting their phone, headphones and devices down when walking around cars.
- Complete walkability assessments of communities to identify dangerous areas and ways to improve pedestrian access and safety.
Cycling Injury

The Problem

Injuries due to transportation are the leading cause of death for children, and a mechanism of interest is pedal cycling. Pedal cyclist injuries include both injuries on and off public roadways (i.e., traffic and non-traffic injuries). Nationally, pedal cyclist injuries account for 2% of the unintentional injury deaths among children aged 0-19. The childhood mortality rate due to cycling injuries is nearly four times higher among males compared to females and the highest death rates are among children aged 10-14. Pedal cyclist injuries account for 4% of nonfatal injuries among children 0 to 19 years old. The nonfatal injury rate for pedal cyclists increases with children’s age up to 14 years old.

Figure 30. Pedal cycling injuries among children 0-19, KS 2016-2019
Figure 30 describes fatal and non-fatal unintentional MVT-related and other pedal cyclist injuries among KS children aged 0-19 between 2016 and 2019.

Most (42%, n=32) unintentional pedal cycling injury hospitalizations were among children aged 10-14.

Most non-fatal pedal cyclist injuries happened on non-public roadways:
- 54% (n=41) of hospitalizations
- 80% (n=4,014) of EDVs

Figure 31 shows the numbers and rates of accidental pedal cyclist injury-related EDVs among KS children by age groups from 2016 to 2019:
- Children within 5-9 and 10-14 groups had higher EDV numbers and rates than other children.
- About 78% of EDVs were among the 5-14yrs old.
- Around 260 per 100,000 KS children aged 10-14 visited ED.
- Nearly 232 per 100,000 KS children aged 5-9 visited ED.

Figure 32 shows the change of number and rate of EDVs for accidental pedal cyclist injury over time among KS children aged 0-19 during 2016-2019:
- Overall, EDV rate remained constant
- In 2019, about 163 out of every 100,000 KS youth aged 0-19 visited ED due to accidental pedal cyclist injuries
Key Findings

- Most non-fatal pedal cyclist injuries (hospitalizations and EDVs) were due to transport accidents that did not happen on public roadways,
- From 2016 to 2019, Kansas children within 5-9 and 10-14 years old had higher EDV burden (both number and rate) for unintentional pedal cycling injuries (Figure 31).

Strategies for Prevention

- Increase helmet usage rate for children participating in all wheeled sports through distribution of free or discounted helmets in communities.
- Educate families on the proper way to fit and wear a helmet to prevent brain injuries and death.
- Educate families on the rules of the road for cyclists and other roadway-users, including proper hand signals.
- Support efforts to enact comprehensive and enforceable local bike helmet use ordinances and policies.
- Promote safe bikeways in communities.
- Promote visibility of cyclists through use of lights and reflectors to reduce the risk of being struck by a vehicle. Support distribution programs for these items.
Poisoning injury

The Problem

Poisoning is a leading cause of childhood morbidity and mortality in the United States. Every day, over 300 children aged 0 to 19 years old are treated in the emergency department and two children die as a result of poisoning.\textsuperscript{10} In addition to legal prescriptions and illegal drugs, everyday items in your home can be poisonous (e.g., household cleaners and over the counter medications). It’s important to keep medicines and toxic products away from children, supervise ingestion of medication and carefully measure medication dosing, as these are common ways that children are poisoned.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{poisoning_injuries.png}
\caption{Poisoning injuries among children 0-19, KS 2016-2019}
\end{figure}

Drug poisoning were most commonly associated with both deaths and non-fatal injuries:
- Over 4 in 5 deaths
- Nearly 9 in 10 (87%) hospitalizations
- About 2 in 3 (67%) EDVs

Over 90% of unintentional poisoning deaths were among teenagers aged 15-19.

Figure 34 and 35 show the numbers and rates of unintentional poisoning-related hospitalizations and EDVs among KS children by 5 age groups in 2016-2019:
- Children aged 1-4 had the highest hospitalization rate, but which was not statistically significantly different from that of teenagers aged 15-19.
- Children aged 1-4 had the highest EDV number and rate.
Figure 10 shows that the age-adjusted hospitalization rate increased by 19% among KS youths from 2016 to 2019, but the change was not statistically significant.

For injuries that did need a hospital stay, the EDV numbers and rate started decreasing since 2017 (Figure 36). However, the change was not statistically significant.

**Key Findings**

- From 2016 to 2019, unintentional drug poisonings were more common than non-drug poisonings in Kansas children aged 0-19.
- The majority of unintentional poisoning deaths were among teenagers aged 15-19.
- Children aged 1-4 had a higher burden of unintentional poisoning with the highest EDV and hospitalization numbers and rates (Figure 34, 35).
- The hospitalization rate of unintentional poisoning increased by a meaningful but not statistically significant 19% among Kansas children aged 0-19 from 2016 to 2019, (Figure 10):
  - In 2016, N=96, Age-Adjusted Rate=12.0 per 100,000, 95%CI (9.6, 14.4)
  - In 2017, N=104, Age-Adjusted Rate=13.1 per 100,000, 95%CI (10.5, 15.5)
  - In 2018, N=112, Age-Adjusted Rate=14.2 per 100,000, 95%CI (11.6, 16.8)
  - In 2019, N=112, Age-Adjusted Rate=14.3 per 100,000, 95%CI (11.6, 16.9)

**Strategies for Prevention**

- Promote use of the toll-free Poison Control Hotline number (800-222-1222) and encourage individuals to program the number into home and cell phones. Have families post it near phones in the home or on refrigerators for babysitters and guests.
- Share awareness and prevention tips about poisons through social media platforms.
- Develop and share poison and medication safety materials and curriculum through multiple avenues, such as hospitals and clinics, WIC offices, schools, childcare providers, home visitation programs, etc.
- Have homeowners check for lead-based paint, especially if your home was built before 1978.
- Increase awareness of lesser-known products that can be hazardous to kids, such as makeup, personal care products, plants, pesticides, lead, art supplies, alcohol and carbon monoxide.
- Remind adults to make sure all medications, including vitamins, are stored out of reach and out of sight of children. Teach children to always ask an adult before eating or drinking something to make sure it is safe.
- Provide low-cost or free safety devices such as cabinet-latches, poison lock boxes, and carbon monoxide detectors to low-income families.
• Raise awareness of options for safe drug disposal, including medication disposal pouches, pharmaceutical drop boxes and drug take-back events.
• Support efforts to enact local ordinances requiring carbon monoxide detectors in school and residential dwellings that rely on the combustion of fossil fuel for heat, ventilation, or hot water.
• Ensure materials and training is accessible to those with disabilities.
## Traumatic Brain Injury (TBI)

### The problem

A traumatic brain injury (TBI) is “a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury”. TBI is a leading cause of childhood death and disability in the United States. 

There were 99,796 American children aged 0-19 died of TBI from 1999 to 2017. The unintentional transport crash was the leading (55%) cause, followed by suicide (16%) and homicide by firearms (12%). On average, the TBI death rate from unintentional transport-related crash decreased annually by 6% among children aged 0-19 in 1999-2017. However, the rate among infants<1yr increased annually by 18% since 2014. Unintentional transport-related crashes remained the leading cause of TBI death among boys, older children (1-4, 5-9, 10-14, and 15-19yrs old), and children living in small/medium cities or rural areas.

Unintentional childhood injuries that result in a TBI are often age-dependent (i.e., fall-related injuries among toddlers, sports-related injuries among youth, and motor vehicle crashes in older children). With respect to severity, TBIs vary greatly but many non-fatal injuries result in long-term physical, sensory, cognitive, social and/or behavioral issues. Therefore efforts to mitigate and prevent TBIs is of great public health importance.

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Of 81 TBI-induced deaths among KS children aged 0-19 in 2016-2019:
- Nearly 9 in 10 (88%, n=71) were related to all transport accidents, and 89% of them were MVT crashes.
- About 3 in 5 (60%, n=49) were among adolescents aged 15-19

For the non-fatal TBI injuries, the leading causes were (Figure 38):
- All transport accidents-most were MVT crashes
- Fall
- Struck by or against

Among youth TBI injuries that required a hospital stay in 2016-2019 (Figure 39):
- Infants and adolescents aged 15-19 had higher hospitalization rates than others
- The leading cause of TBI hospitalizations among each age group:
  - Fall: infants (71%), 1-4yrs (66%), 5-9yrs (37%)
  - MVT: 5-9yrs (36%), 10-14yrs (42%), 15-19yrs (62%)
Figure 40. Emergency department visits (EDVs) due to unintentional TBI among children 0-19 by age group, KS 2016-2019

Among youth TBI injuries that required an EDV in 2016-2019 (Figure 40):

- KS children aged 15-19 had the highest EDV rate
- The leading cause of TBI EDV among each age group:
  - Fall: infants (81%), 1-4yrs (73%), 5-9yrs (54%)
  - Struck by or against: 10-14yrs (46%), 15-19yrs (38%)

Figure 41 and 42 describe how the age-adjusted unintentional TBI hospitalization and EDV rates changed from 2016 to 2019 by cause of injuries:

- Overall TBI rate remained constant.
- TBI MVT hospitalization rate decreased meaningfully by 17%.
- The TBI EDV rate due to other transport (happened on non-public roadways) injuries significantly decreased by 21%.
Key Findings

- Between 2016 and 2019, motor vehicle crashes were the leading cause of death (78%) among Kansas children aged 0-19 where unintentional TBI was reported as a cause of death on the death certificate.
- Transport-related crashes were the leading (58%) cause of injury with unintentional TBI-related hospitalizations (Figure 38).
- Most of the unintentional TBI EDVs were due to fall-related injuries (42%), followed by struck by or against injuries (36%) (Figure 38).
- More serious injuries that cause TBI (e.g., motor vehicle crashes) result in a death or a hospital stay compared to less serious injuries (e.g., falls) that result in an EDV.
- From 2016 to 2019, 3 in 5 unintentional TBI-induced deaths were among Kansas adolescents aged 15-19.
- During 2016-2019, Kansas adolescents aged 15-19 and infants<1 were most likely to have a hospital stay due to an unintentional TBI (Figure 39).
- During 2016-2019, Kansas adolescents aged 15-19 were most likely to visit ED due to an unintentional TBI (Figure 40).
- Fall injury was the leading cause for TBI hospitalization among younger children:
  - Infants (71%)
  - 1-4yrs (66%)
  - 5-9yrs (37%)
- Motor vehicle crash was the main cause for TBI hospitalization among older children:
  - 5-9yrs (36%)
  - 10-14yrs (42%)
  - 15-19yrs (62%)
- Fall injury was the leading cause for TBI EDV among younger children:
  - Infants (81%)
  - 1-4yrs (73%)
  - 5-9yrs (54%)
- Struck by or against injury was the leading cause for TBI EDV among older children:
  - 10-14yrs (46%)
  - 15-19yrs (38%)
- Between 2016 and 2019, the TBI hospitalization rate for MVT injuries decreased by 17% meaningfully.
- Between 2016 and 2019, the TBI EDV rate for other transport (happened on non-public roadways) injuries decreased by 21% meaningfully (Figure 40).
Strategies for Prevention

- Support and promote programs that educate parents and caregivers on proper selection, installation and use of a child safety seats, booster seats, and seat belts to keep children safe from motor vehicle crash-related injuries.
- Support education and enforcement of the Kansas seat belt law.
- Support and promote a variety of helmet distribution programs to protect children when using bicycles, skates, skateboards, ATVs, horses, or when skiing or snowboarding.
- Increase awareness and use of window guards to keep young children from falling out of open windows.
- Promote the use of safety gates at the top and bottom of stairs when young children are around. Support home visitation programs that provide these safety devices to low-income families.
- Educate families and caregivers on prevention from falls for babies and young children, such as use of safety straps on changing tables, highchairs and strollers.
- Inform and educate families on the dangers of TV and furniture tip-overs and how to safely secure these items.
- Share guidance from Consumer Product Safety Council (CPSC) about safe playground design and surfacing to reduce injuries from falls on playgrounds.
- Promote Return to Play and Return to Learn guidelines from the Kansas Sports Concussion Partnership at www.kansasconcussion.org.
- Support youth sports concussion prevention protocols for all sports, both school and private-sponsored, including cheerleading.
Appendix

Analysis Notes

Throughout this report you will find various statistical measures. The following are short descriptions of each type of measure. All data were analyzed using SAS 9.4.

Databases:
The three databases used in this document are the hospital discharge (HD) database, the emergency department database (EDD) and the mortality database. Only non-federal hospitals and acute care facilities are included in the KHA data system, and facilities that are not included are: hospital units of institutions, long-term care hospitals, psychiatric hospitals, federal hospitals, and alcoholism and chemical dependency facilities; therefore, these databases do not include 100% of emergency department visits (EDVs) and hospitalizations in Kansas. EDVs and hospitalizations for non-jurisdiction residents are excluded. Patients who are admitted to the hospital from the ED are included in the HD database and excluded in the ED database. Re-admissions and transfers are included in the HD database.

Please see appendix v for detailed information.

Counts:
Counts are the actual number of events that occur. Counts can give you an idea of the size and scope of an issue. Larger communities will have much larger counts than small communities because of the larger population size. To compare groups (communities or age groups) it is best to use rates. Not all counts and rates are provided; counts<6 are suppressed, and rates with counts<20 are suppressed (i.e., not given) for confidentiality and protection of individual identity.

Percentages:
Percentages are used in this report to describe the proportion of certain characteristics of an injury such as age, cause, and traumatic brain injuries (TBIs).

Rates:
Age-specific rates are calculated by dividing the number of events (i.e., counts) by the population in the corresponding age group.

2) HD Data: 2016-2019 Kansas Hospital Discharge Database, Kansas Hospital Association
3) EDV Data: 2016-2019 Kansas Hospital Emergency Department Database, Kansas Hospital Association.
Age-adjusting is a process by which the age composition of a population is defined as constant so that differences in age composition can be eliminated from the analysis. Population-based rates, i.e., the number of cases per 100,000 people, are commonly used to report death statistics so that comparisons can be made across years or among geographic areas. Crude rates compensate for the differences in population within the studied groups or time, but not the different age make up of compared populations. For example, some Kansas counties may have more older residents than other counties. To address this, statisticians prepare age-adjusted rates because older populations have higher rates of death. Direct method for calculating age-adjusted death rates is used with the reference population, the U.S. Year 2000 standard population.

By using rates, two differently sized communities/regions can be compared to each other. Note that rates in which the number of events<20 were not calculated for this report. Rates with <20 counts are considered scientifically unreliable estimates.

Kansas population denominators are taken from estimates produced by the U.S. Census Bureau called the Bridged-race Population Estimates. The 2016-2019 midyear population estimates published in each year (2016-2019 Vintage) are used. For example, 2016 population estimates are abstracted from the 2016 vintage file rather than using the most recent 2019 vintage file. Information on the Bridged Race estimates can be found at https://www.cdc.gov/nchs/nvss/bridged_race.htm. The Census Bureau methodology for creating the population estimates can be found at https://www.census.gov/programs-surveys/popest/technical-documentation/methodology.html.

External Cause-of-Injury (E-code) Coding:

(1) Mortality: For mortality statistics, the International Classification of Diseases, Tenth Version (ICD-10) is the standard for international comparison for causes of deaths. ICD-10 is published by the World Health Organization (WHO). The U.S. adopted ICD-10 for mortality data in 1999.

The external cause of ICD-10 injury matrix is used to describe the mechanism and intent of death, which can be found at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/injury/sascodes/icd10_external.xls.

(2) Morbidity: Morbidity cases are captured in ED/HD database by the procedures and diagnostics codes using the Clinical Modifications (CM) of the ICD manual published by the US Centers for Medicare and Medicaid Services. The ninth revision manual, ICD-9-CM, were used to code US medical provider data from 1979 until the implementation of the 10th revision, ICD-10-CM on October 1, 2015. Data from 2016 cannot be compared to previous years due to the ICD-10-CM transition.
The ICD-10-CM external cause of injury matrix released by National Center for Health Statistics (NCHS) on 10/2020 is used to categorize the mechanism of intent of injury. The ICD-10-CM injury matrices, formats, and codes can be found at https://ftp.cdc.gov/pub/health_statistics/NCHS/injury/tools/.

In this report, only unintentional deaths and injuries among Kansas residents 0 to 19 years old are included for analysis.

Limitations:
1. EDV and hospital results from Geary and Riley and other Northeast counties may underestimate the real youth unintentional injury burden.

   Low rates in Geary and Riley County may be reflective of the high number of military families living in this area. Military families are more likely to use military hospitals (federal) for care than community hospitals thus excluding these cases form our analysis and potentially decreasing the injury rates in these areas.

   Another consideration of this data is proximity of Northeast counties to Children’s Mercy Hospital in Kansas City, Missouri. Due to its location, many children who reside in the Northeast Kansas counties may receive care from this hospital and are not recorded in the Kansas hospital discharge database. Children's Mercy is a leading caregiver for children in the Midwest. Children from Kansas, Nebraska, Missouri, and Iowa receive care there. This affects all children in Kansas, but we believe especially children in the Northeast Trauma Region.

2. For small numbers, counts <6 and rates with counts<20 are suppressed.

3. More data need to be collected to determine the trend of unintentional injury burden.

Confidence Intervals (CIs):
CIs are a range around an estimate that shows how precise a measurement is. By comparing CIs, you can make a quick statistical comparison of two estimates. CIs around rates are calculated using the methods described in the Technical Appendix from Vital Statistics of United States 1999 Mortality from National Center for Health Statistics (NCHS). This method uses a normal distribution for CIs of events of 100 or more and Poisson distribution for events<100. The method used to calculate confidence intervals for death, hospitalization and EDV rates.
A 95% CI is a range (interval) around our estimate that says this range has a 95% probability of containing the true value\textsuperscript{14}. Two things can affect the size of a CI; the size of the sample and the variance (the variability of a sample). If the variance is unchanging by increasing the size of a sample, it makes the confidence interval narrower. Therefore, if two samples have the same variance the sample with the larger size will always have a narrower CI. A sample refers to whatever groups you are comparing. In this report our samples are age groups, years, counties, and Kansas Trauma Regions.

**Interpreting CIs\textsuperscript{15}:**

In public health we try to make comparisons between two groups such as, was Group A healthier than Group B. These groups can be defined by numerous characteristics such as counties, states, races, gender and age groups. CIs are one of the tools we can use to tell if two groups are actually different.

In this report many numbers and rates are provided. They serve as estimates of the true numbers and rates in a community. In a perfect world we would be able to obtain true values for a question like “how many children went to the emergency department due to snake bites last year?” but many things can happen that make this impossible such as missing information, lost records, and miscoding. These things add random error to an estimate. Although these numbers are the most accurate we can provide, there is room for random error in any estimate.

We must account for random error before we can say that two groups are statistically significantly different. One way to measure random error is to estimate a CI and use that interval to determine if estimates are statistically significantly different from a comparison.


## Database Information

<table>
<thead>
<tr>
<th>Database</th>
<th>Who’s Counted</th>
<th>Coding System</th>
<th>Data Year</th>
<th>How to use</th>
</tr>
</thead>
</table>
| **Emergency Department (ED) Database**<sup>*</sup>  
Kansas Hospital Association** | Any Kansas resident who is admitted for less than 24 hours to a non-federal, short stay community or general hospital who is reporting emergency department visits to Kansas Hospital Association. | ICD-10-CM 2016-2019 |           | This database is most commonly referred to in this report due to its size and completeness. Counts <6 and rates with counts<20 are suppressed. It provides an understanding of less serious injuries in Kansas.                                           |
| **Hospital Discharge (HD) Database**<sup>*</sup>  
Kansas Hospital Association** | Any Kansas resident who is admitted for at least 24 hours to a non-federal, short stay community or general hospital who is reporting hospital discharge data to Kansas Hospital Association. | ICD-10-CM 2016-2019 |           | This database provides more in-depth analysis of serious injuries. Counts <6 and rates with counts<20 are suppressed.                                                                                                       |
| **Mortality Database**  
Kansas Department of Health and Environment | Any Kansas resident who dies in the state of Kansas and Kansans who die outside of the state.                                                                                                                                                                                                                                              | ICD-10 2016-2019 |           | Although this database is the most complete, the numbers of deaths in Kansas are often too low to report. Counts <6 and rates with counts<20 are suppressed. This database provides a look at fatal injuries at a state and region level. |

ICD-10-CM: International Classification of Diseases, Tenth Revision, Clinical Modification; ICD-10: International Classification of Diseases, Tenth Revision

* The records in the Kansas ED and HD database are not unique. Records are not unique when they are unlinked. Suppose someone breaks an arm and goes to the emergency department but is then transferred to another emergency department due to a complication. In a linked system this one event can be tied together and counted as one event but with an unlinked system these are counted as two separate events. Serious injuries can inflate the counts if the person is transferred more than once. Therefore, we refer to events as hospital discharges (not unique).

** Federal and specialty hospitals in Kansas do not report their discharges and emergency department visits to these databases.