The purpose of this report is to inform key partners, including the Wisconsin public, on the trends of traumatic injury throughout Wisconsin. For more information on this report, or to request Wisconsin Trauma Registry data, contact the Wisconsin Department of Health Services (DHS) Trauma Team. All data for this report is from Wisconsin’s Trauma Registry and meets the Trauma Registry Inclusion Criteria as found in the Wisconsin State Trauma Registry Data Dictionary. Only hospitals with trauma level classifications submit data to Wisconsin’s Trauma Registry.

In This Edition

- 2021 in Review
- Focus on Falls
- 2020 Comparisons

A Message From the Trauma Team

2021 saw a return to traumatic injury trends more in line with what was seen before the COVID-19 pandemic, but many of the challenges due to the pandemic remained, compounding those challenges inherent to trauma systems. Trauma staff, like you, in the Wisconsin Trauma Care System rose to these challenges. We are grateful for the quality of care provided and dedication to performance improvement shown by the Wisconsin Trauma Care System. If you have any further questions or suggestions for information that should be included in future editions, please let us know.

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P-02087 (08/2022)
2021 Data in Review
Analyses include patients admitted between January 1 and December 31, 2021

2021 Trauma Summary

38,205 Trauma System Entries
32,193 Unique Injury Events

All data for this report were exported on June 30, 2022. Patients may have multiple injury events or may be transferred to multiple facilities; as a result, they may have more than one entry in the Trauma Registry or more than one medical record ID. For much of the visualizations and statistics presented, only data from the final trauma system hospital a patient was seen at are included to ensure that patients are only counted once. These will be referred to as “Unique Injury Events.” Previous yearly reports that used all trauma system entries may have higher counts.

Volume of Patients by Gender and Age Range

Top Five Injury Categories by Age Range

<table>
<thead>
<tr>
<th>(ICD-10 Code) Mechanism of Injury</th>
<th>0</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-17</th>
<th>18-19</th>
<th>20-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
<th>75-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>(W00-W19) Slipping, tripping, stumbling, and falls</td>
<td>68</td>
<td>154</td>
<td>142</td>
<td>85</td>
<td>39</td>
<td>64</td>
<td>145</td>
<td>370</td>
<td>588</td>
<td>886</td>
<td>2241</td>
<td>3917</td>
<td>4969</td>
<td>5692</td>
</tr>
<tr>
<td>(V40-V59) Occupant car, pick-up truck, or van injured in transport accident</td>
<td>6</td>
<td>23</td>
<td>43</td>
<td>68</td>
<td>219</td>
<td>264</td>
<td>543</td>
<td>910</td>
<td>602</td>
<td>496</td>
<td>467</td>
<td>369</td>
<td>263</td>
<td>129</td>
</tr>
<tr>
<td>(V80-V89) Other land transport accidents</td>
<td>1</td>
<td>15</td>
<td>43</td>
<td>94</td>
<td>87</td>
<td>53</td>
<td>101</td>
<td>216</td>
<td>226</td>
<td>195</td>
<td>106</td>
<td>42</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>(X92-Y08) Assault</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>39</td>
<td>65</td>
<td>202</td>
<td>411</td>
<td>257</td>
<td>157</td>
<td>103</td>
<td>44</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>(W20-W49) Exposure to inanimate mechanical forces*</td>
<td>0</td>
<td>31</td>
<td>28</td>
<td>39</td>
<td>35</td>
<td>35</td>
<td>99</td>
<td>177</td>
<td>204</td>
<td>155</td>
<td>206</td>
<td>120</td>
<td>73</td>
<td>26</td>
</tr>
</tbody>
</table>

*Exposure to inanimate mechanical forces includes ICD-10 codes for accidental injuries from intimate objects such as falling objects, sports equipment, power and non-power tools, machinery, firearms, sharp objects, and fireworks
2021 Data in Review
Analyses include patients admitted between January 1 and December 31, 2021

Case Fatality Rate by Mechanism Category (Top 8 Causes of Mortality)

<table>
<thead>
<tr>
<th>Incident ICD-10 Injury Category</th>
<th>Total Cases</th>
<th>Percent of All Injuries</th>
<th>Deaths</th>
<th>Case Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(X71-X83) Intentional self-harm</td>
<td>262</td>
<td>0.81%</td>
<td>55</td>
<td>21%</td>
</tr>
<tr>
<td>(X92-Y08) Assault</td>
<td>1290</td>
<td>4.00%</td>
<td>67</td>
<td>5.2%</td>
</tr>
<tr>
<td>(V20-V29) Motorcycle rider injured in transport accident</td>
<td>1130</td>
<td>3.50%</td>
<td>47</td>
<td>4.2%</td>
</tr>
<tr>
<td>(V01-V09) Pedestrian injured by vehicle</td>
<td>446</td>
<td>1.40%</td>
<td>14</td>
<td>3.1%</td>
</tr>
<tr>
<td>(W00-W19) Slipping, tripping, stumbling and falls</td>
<td>18998</td>
<td>59%</td>
<td>513</td>
<td>2.7%</td>
</tr>
<tr>
<td>(V40-V59) Occupant car, pick-up truck, or van injured in transport accident</td>
<td>4337</td>
<td>13%</td>
<td>108</td>
<td>2.5%</td>
</tr>
<tr>
<td>(W20-W49) Exposure to inanimate mechanical forces</td>
<td>1193</td>
<td>3.70%</td>
<td>21</td>
<td>1.8%</td>
</tr>
<tr>
<td>(V80-V89) Other land transport accidents</td>
<td>1350</td>
<td>4.20%</td>
<td>19</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Case Fatality Rate by Mechanism Category only includes patients who were not transferred to out-of-state or non-trauma system hospitals, as their final disposition at those hospitals is not recorded in the Trauma Registry.
Top 8 Injury Mechanism Categories for 2021

1) Slipping, tripping, stumbling and falls
2) Occupant of car, pick-up truck, or van injury
3) “Other” land transport accidents (ATVs, snowmobiles, agriculture vehicles, etc)
4) Exposure to inanimate mechanical forces
5) Assault
6) Motorcycle rider injury
7) Pedestrian injured by vehicle
8) Pedal cycle rider injury

Analyses include patients admitted between January 1 and December 31, 2021
Analyses include patients admitted between January 1 and December 31, 2021.

Crude Rate of Traumatic Injuries per 10,000 by Incident County

- Population based on U.S. Census 2019 estimations
- Counties with lower populations are more likely to have varying rates from quarter to quarter or year to year
- Individuals who are only seen at out-of-state hospitals or Wisconsin hospitals without trauma certification are not included in these rates
- Menominee County stands out as having a high rate of injuries. The age distribution of injuries is similar to other counties, but there is a much higher incidence of fall injuries and vehicle-related injuries, as well as a somewhat above-average incidence of other injuries
Injuries and Proportion of Total Injuries for Out of County Individuals by County

- The total injuries occurring for out of county individuals and the percent of total injuries are shown on this map.
- Counties with a high proportion of injuries occurring for out of county individuals may want to target prevention efforts with this in mind.
- Counties with lower injury counts are more likely to have varying counts and percentages from quarter-to-quarter or year-to-year.
Focus on Falls in Wisconsin

Falls make up a significant proportion of the injuries that are entered into the trauma registry database, and they can cause a variety of different injuries such as broken bones or head injuries. Falls can be caused by medical conditions, difficulties with walking and balance, and home hazards such as uneven steps or rugs and objects that can be tripped over. According to the Centers for Disease Control and Prevention (CDC), Wisconsin’s rate of older adult falls is about the same as the national average, but Wisconsin has a higher rate of deaths from falling compared to the national average. All figures in the “Focus on Falls” section include only injuries in adults 20 years of age or older.

Adult Falls by Month over Time

Falls injuries seen in the trauma care system have been relatively steady in recent years. In some years, winter months have significantly higher falls, but recent winters have not followed this pattern. Most falls occur in or around individuals’ private residences.

Fall Injury Locations in 2021
Focus on Falls

Falls By Age Group

Older age groups are at higher risk for falls and at higher risk for incurring injuries from falls. Falls can have lasting impacts on an individual’s health, but there are a variety of steps that people can take to reduce their chance of falling. These include improving lighting, reducing clutter, and making commonly used items easily accessible. People should also consider working with an occupational therapist, their local aging and disability resource center, or other specialists for more advice.

You can find more resources on preventing falls on CDC’s Stopping Elderly Accidents, Deaths & Injuries website or on Wisconsin Institute for Healthy Aging’s website.
Age adjustment shows us what the rates of disease or injury might be if all populations had the same age distribution. Crude rates are useful to compare the overall number of incidents but can be very sensitive to differences in ages by geography. By adjusting for age, we can control for differences in each county’s underlying age. We know that older populations are more likely to suffer injuries from falls, so age adjusting can help us highlight counties with higher than expected rates of fall injuries than would be expected based on their age distribution. There might be differences within counties that puts individuals at higher risk of fall injuries and a higher age-adjusted rate may indicate that a county might benefit more from fall prevention interventions.
2021 Pediatric Trauma Data

Analyses include patients admitted between January 1 and December 31, 2021

2,584 Pediatric Records
1,779 Unique Injury Events

Volume of Pediatric Patients by Gender and Age Range

Volume of Pediatric Trauma Patients by Emergency Department Admission Month

Top 5 Pediatric Injury Categories by Age Group

<table>
<thead>
<tr>
<th>ICD-10 Code Category</th>
<th>Mechanisms of Injury</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>(W00-W19)</td>
<td>Slipping, tripping, stumbling and falls</td>
<td>222</td>
<td>142</td>
<td>85</td>
<td>39</td>
</tr>
<tr>
<td>(V40-V59)</td>
<td>Occupant car, pick-up truck, or van injured in transport accident</td>
<td>29</td>
<td>43</td>
<td>68</td>
<td>219</td>
</tr>
<tr>
<td>(V80-V89)</td>
<td>Other land transport accidents</td>
<td>16</td>
<td>43</td>
<td>94</td>
<td>87</td>
</tr>
<tr>
<td>(W20-W49)</td>
<td>Exposure to inanimate mechanical forces</td>
<td>31</td>
<td>28</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>(V00, V10-V19)</td>
<td>Recreation Transport Activity (ski, skateboard, bike, etc injury)</td>
<td>7</td>
<td>30</td>
<td>51</td>
<td>36</td>
</tr>
</tbody>
</table>
The Importance of Non-Pediatric Trauma Care Centers

Almost 8 of 10 pediatric patients (78%) whose injuries met inclusion criteria received their initial care at a hospital that is not designated as a Level I or Level II Pediatric Trauma Center. This highlights the role that non-pediatric trauma centers play in caring for our sick and injured pediatric trauma patients in Wisconsin.

Volume of Pediatric Trauma Patients Initially Seen at Non-Pediatric Trauma Care Centers by Age and Injury Severity Score (ISS)

Admission and Transfers Among Major Trauma (ISS >15) Pediatric Patients Seen at Non-Pediatric Trauma Care Centers for Initial Care

42% of major trauma patients age 17 and under that were initially seen at a non-pediatric trauma care center were admitted to that hospital.

52% of these patients were transferred to another hospital.

The remaining 6% is made up those who were not transferred or admitted or for whom this information was missing.
**2021 and 2020 Comparison**

**Trauma Incidents by Month for 2021 and 2020**

The number of trauma incidents in 2021 decreased compared to 2020 (32,193 in 2021 versus 32,502 in 2020) and the distribution of Injury Severity Scores (ISS) was similar. However, the pattern of some types of trauma was different. 2021 saw a return to a more normal pattern of traumatic injuries while 2020 had a suppressed number of traumatic injuries in March and April at the beginning of the COVID-19 pandemic and an unusually high number of traumatic injuries in the summer, particularly in June.

**Trauma Incidents by Month, 2021**

![Graph showing trauma incidents by month in 2021]

**Trauma Incidents by Month, 2020**

![Graph showing trauma incidents by month in 2020]

**ISS Score Distribution**

![Bar chart showing ISS score distribution for 2020 and 2021]

Wisconsin Department of Health Services, Division of Public Health, dhstrauma@dhs.wisconsin.gov
2021 and 2020 Comparison

Car, Truck, and Van Trauma

The number of traumas associated with car, pickup truck, and van accidents increased slightly from 2020 (4,228 injuries) to 2021 (4,403 injuries).

Adult Falls

Fall injuries increased somewhat from 2020 to 2021, going from 18,395 fall injuries in 2020 to 18,872 in 2021.

Assault Trauma

There were much higher counts of trauma due to assault in 2021 than in 2020 (1,158 in 2020 versus 1,301 in 2021, a 12% increase) with a peak in May and overall higher counts in spring and summer.

ATV/Off-Road Vehicle Trauma

Trauma occurring during the use of ATVs or other off-road vehicles decreased by 14% between 2020 (708 trauma injuries) and 2021 (606 injuries).
Recognition for Timeliness of Data Reporting in 2021

The below facilities completed records with exceptional timeliness. Only incidents meeting inclusion criteria were evaluated.

**Platinum:** 100% of Records Closed Within 60 Days of Patient Discharge

- Aspirus Divine Savior Hospital
- Aspirus Stanley Hospital
- Aspirus Stevens Point Hospital
- Aurora Medical Center Bay Area
- Gundersen Tri-County Hospital and Clinics
- Marshfield Medical Center - Neillsville
- Mayo Clinic Health System - Northland
- ProHealth Oconomowoc Memorial Hospital
- ProHealth Waukesha Memorial Hospital
- Ripon Medical Center
- Upland Hills Health
- Western Wisconsin Health

**Gold:** 99.9%–99.0% of Records Closed Within 60 Days of Patient Discharge

- UnityPoint Health - Meriter
- Aurora Medical Center Oshkosh
- Froedtert Menomonee Falls Hospital
- Aurora St. Luke’s Medical Center South Shore
- SSM Health St. Mary’s Hospital - Janesville

**Silver:** 98.9%–98.0% of Records Closed Within 60 Days of Patient Discharge

- Bellin Memorial Hospital
- Aurora Medical Center Washington County

**Bronze:** 97.9%–95.0% of Records Closed Within 60 Days of Patient Discharge

- St. Mary’s Hospital Medical Center
- Froedtert West Bend Hospital
- Amery Hospital & Clinic
- Beloit Memorial Hospital
- Aurora Medical Center Burlington
- Aurora West Allis Medical Center
- Aurora St. Luke's Medical Center