



Wisconsin Trauma Report

2023 Year in Review:
Updates and Statistics

In support of the Wisconsin Trauma Care System

The purpose of this report is to inform key partners, including the Wisconsin public, on the trends of traumatic injuries treated by Trauma System Hospitals in 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 are required to submit data to Wisconsin's Trauma Registry. Data in this report are preliminary due to the possibility of long hospital admissions and other delays in reporting. The 2022 data used in this report includes minor updates from the data shared in last year's annual report, due to having more complete information after its publication.

In This Edition

2023 in Review

Focus on Falls

Self-Harm Injuries

A Message from the Trauma Team

2023 saw a 4% increase in the number of traumatic injuries treated by Trauma System Hospitals in Wisconsin and a 3% increase in pediatric trauma specifically. As we see traumatic injuries increase, our trauma hospitals and their staff are becoming more important than ever. We are grateful for the quality of care provided and dedication to performance improvement shown by the Wisconsin Trauma Care System. Please contact us if you have any further questions or suggestions for information that should be included in future editions of this report.

Margaret Wogahn (state trauma coordinator), Katie Prather (trauma registry data manager), and Will Koehne (epidemiologist)

**Department of Health Services
Division of Public Health**

Office of Preparedness and Emergency Health Care

www.dhs.wisconsin.gov/trauma

dhstrauma@dhs.wisconsin.gov

P-02087 (08/2024)



2023 Data in Review

Analyses include patients admitted between January 1 and December 31, 2023

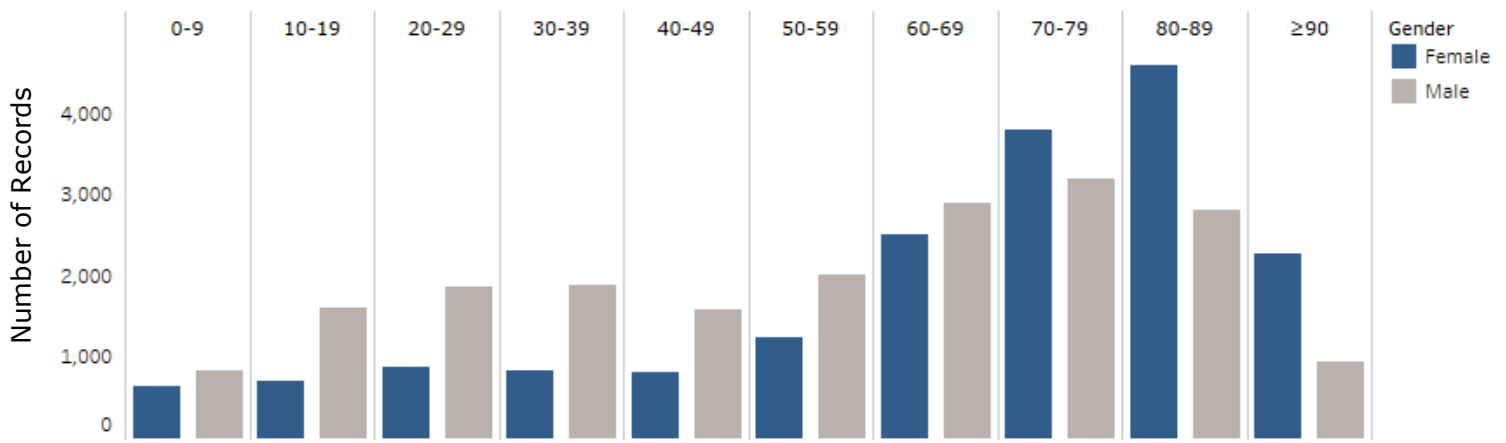
2023 Trauma Summary

44,970 Trauma System Entries

38,198 Unique Injury Events

All data for this report were exported from Wisconsin’s Trauma Registry on April 26, 2024. Patients may have multiple injury events or may be transferred to multiple facilities. As a result, these patients 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.”

Volume of Patients by Gender and Age Range



Top Five Injury Categories by Age Range

(ICD-10 Code) Mechanism of Injury	0-4	5-9	10-14	15-17	18-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
(W00-W19) Slipping, tripping, stumbling, and falls	445	384	193	109	62	174	465	707	1063	2747	4997	6633	6521	24,500
(V40-V59) Occupant of car, pick-up truck, or van injured in transport accident	34	54	80	285	205	484	725	569	400	466	434	359	125	4220
(W20-W49) Exposure to inanimate mechanical forces	74	68	79	68	47	134	257	235	198	259	173	117	42	1751
(X92-Y08) Assault	18	5	38	123	86	203	415	302	185	132	55	16	5	1583
(V80-V89) Other land transport accidents	17	52	129	107	70	110	221	184	177	201	119	60	20	1467

*Exposure to inanimate mechanical forces includes ICD-10 codes for accidental injuries from inanimate objects such as falling objects, sports equipment, power and non-power tools, machinery, firearms, sharp objects, and fireworks.

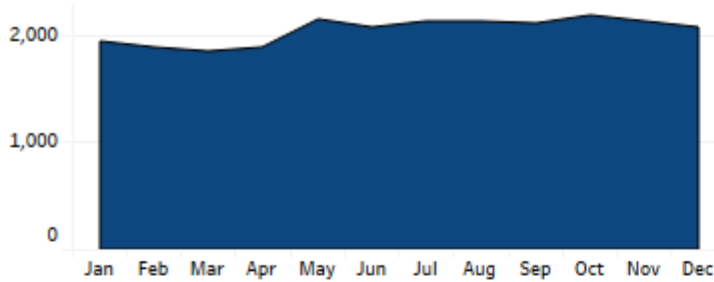


2023 Data in Review

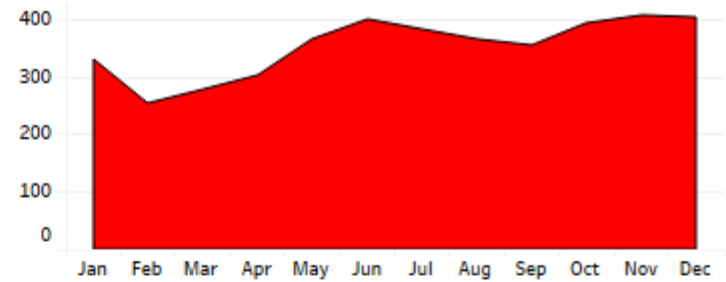
Analyses include patients admitted between January 1 and December 31, 2023

Top 8 Injury Mechanism Categories (and ICD-10 Codes) for 2023

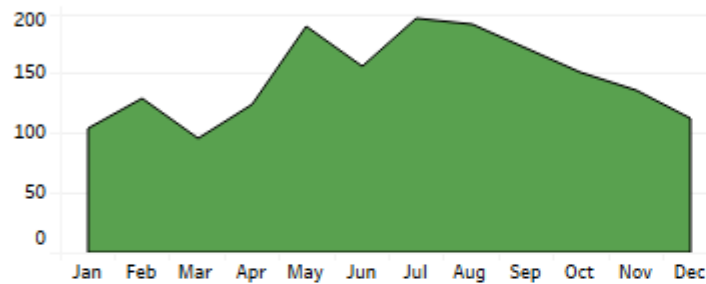
1) Slipping, tripping, stumbling and falls (W00-W19)



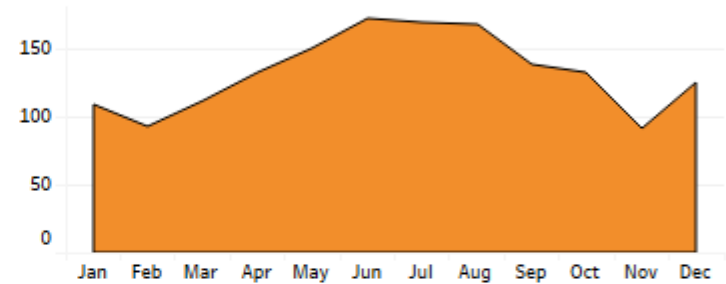
2) Occupant of car, pick-up truck, or van injury (V40-V59)



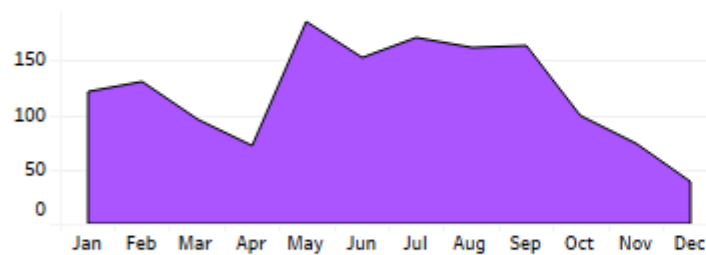
3) Exposure to inanimate mechanical forces (W20-W49)



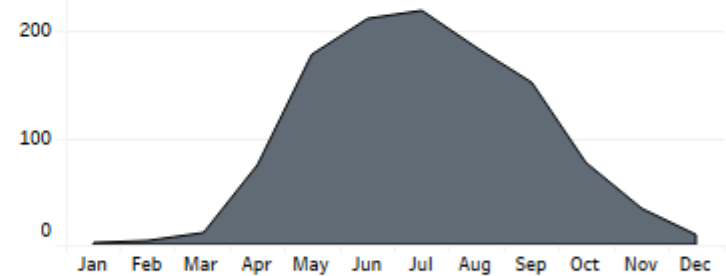
4) Assault (X92-Y08)



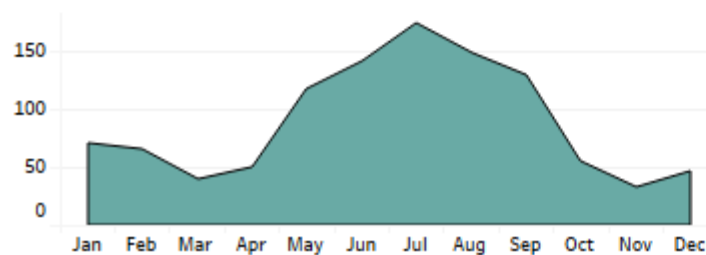
5) Other land transport accidents (ATVs, snowmobiles, agriculture vehicles, etc) (V80-V89)



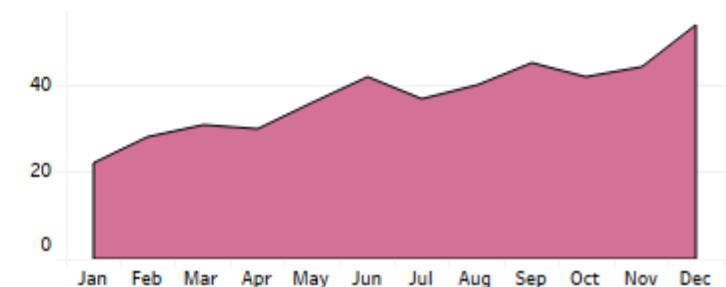
6) Motorcycle rider injury (V20-V29)



7) Recreational Transport (bicycle, skis, rollerblades, etc) (V00-V02, V10-V13, and V17-V19)



8) Pedestrian injured by vehicle (V03-V09)

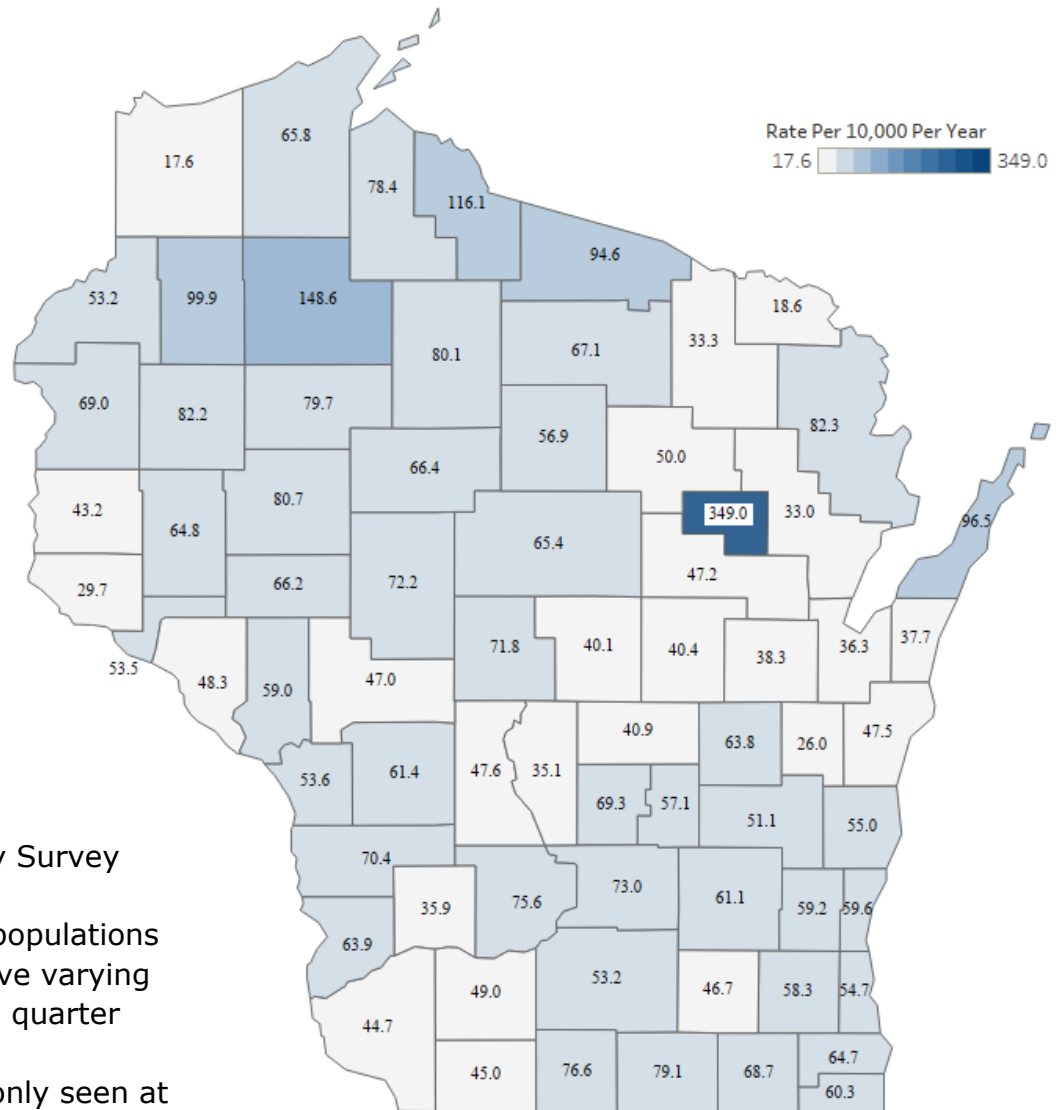




2023 Data in Review

Analyses include patients admitted between January 1 and December 31, 2023

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



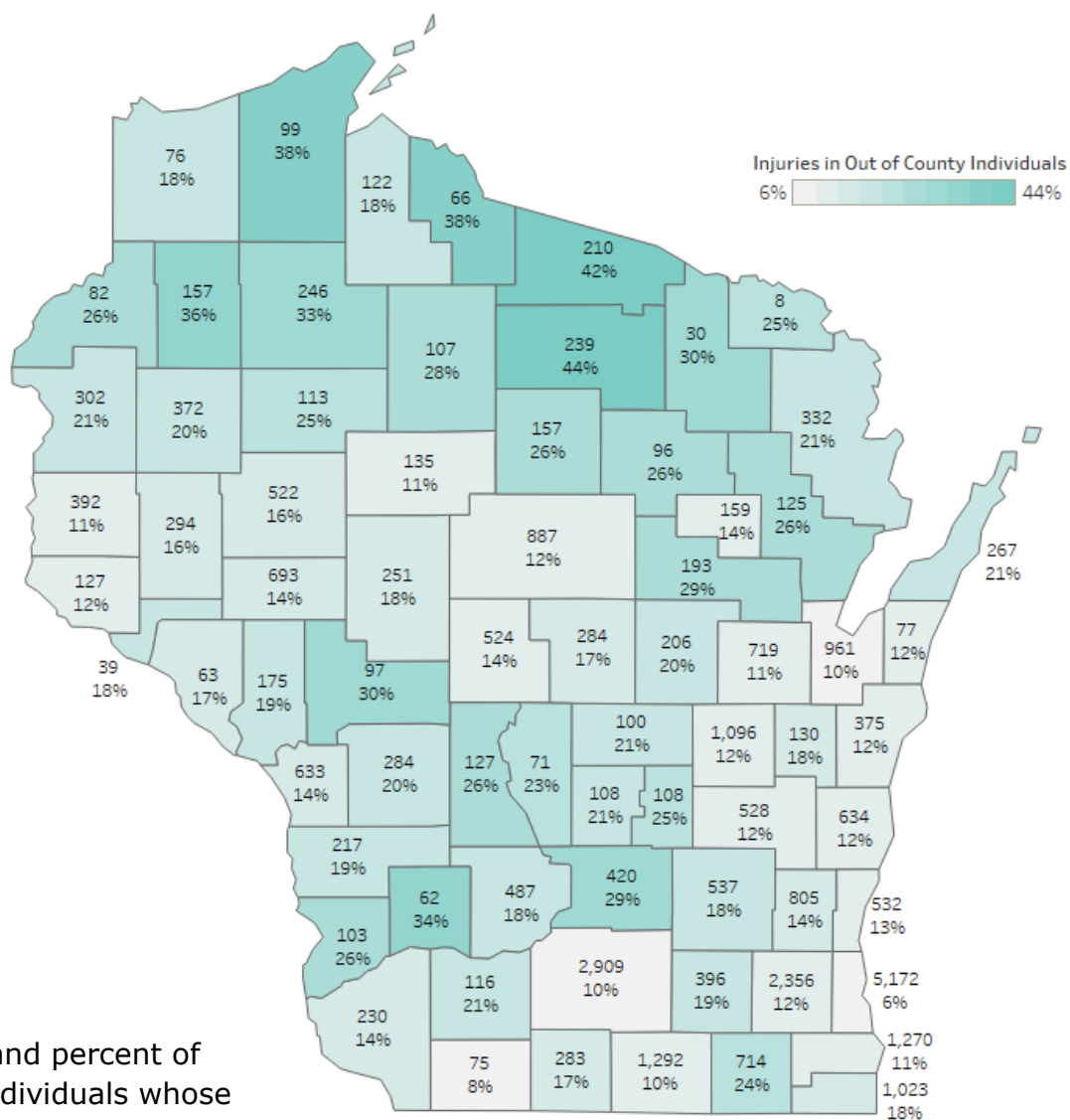
- Population based on American Community Survey 2022 estimates.
- Counties with lower populations are more likely to have varying rates from quarter to quarter or year to year.
- Individuals who are only seen at out-of-state hospitals or Wisconsin hospitals without trauma certification are not included 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. Most of Menominee County's population resides in the Menominee Reservation. Historical trauma and historic and current discrimination can lead to higher rates of poor health outcomes, including injury. [According to the U.S. Indian Health Service](#), unintentional injuries are the third leading cause of death among American Indians and Alaskan Natives in the U.S., and the leading cause among ages 1–44.



2023 Data in Review

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Injuries Count and Proportion of Total Injuries for Out-of-County Individuals by County



- The total injuries and percent of total injuries for individuals whose home is in another county 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.



2023 Data in Review

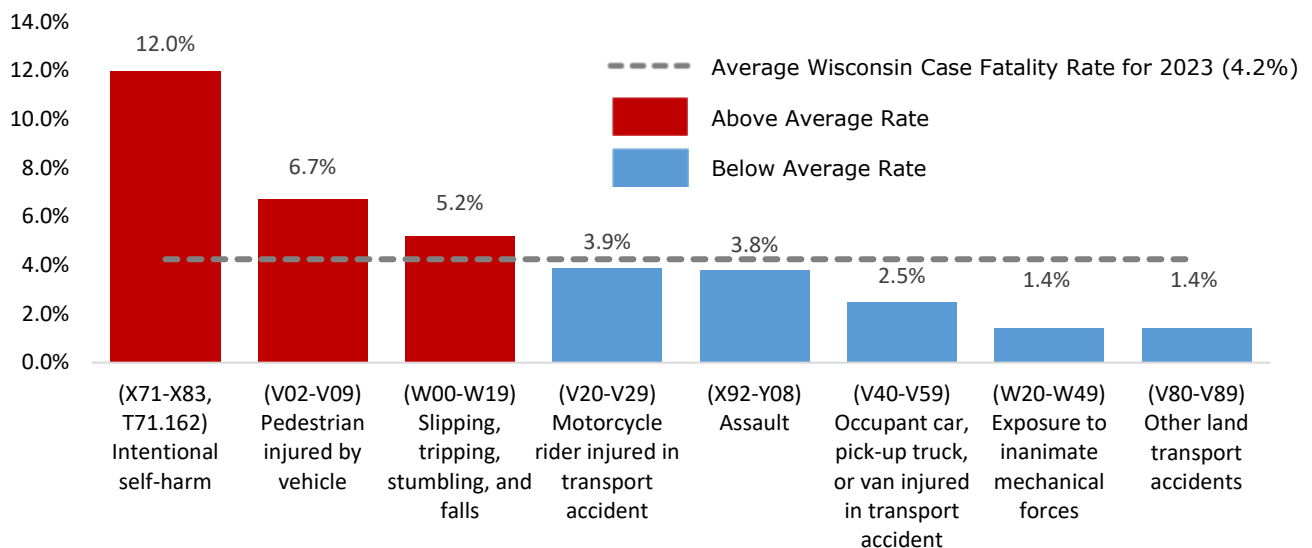
Analyses include patients admitted between January 1 and December 31, 2023

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

Case Fatality Rate refers to the number of trauma injury patients who died in the hospital or were transferred to hospice care compared to the total injuries of that type seen by the Trauma Care System. The inclusion of hospice discharges in mortality rates is new in this report and is an attempt to more accurately capture deaths after injuries. This change primarily affects the counts of fatal fall injuries which double with this method.

Case fatality Rate by Mechanism Category 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. "Events of undetermined intent" is a group of ICD-10 codes for injuries where it is unclear if the injury was self-harm or accidental.

Incident ICD-10 Injury Category	Total Cases	Percent of All Injuries	Deaths	Case Fatality Rate
(X71-X83, T71.162) Self-harm	394	1.0%	49	12.0%
(V02-V09) Pedestrian injured by vehicle	447	1.2%	30	6.7%
(W00-W19) Slipping, tripping, stumbling, and falls	24,003	63.0%	1,243	5.2%
(V20-V29) Motorcycle rider injured in transport accident	1,131	3.0%	44	3.9%
(X92-Y08) Assault	1,577	4.1%	60	3.8%
(V40-V59) Occupant car, pick-up truck, or van injured in transport accident	4,155	11.0%	102	2.5%
(W20-W49) Exposure to inanimate mechanical forces	1,690	4.4%	23	1.4%
(V80-V89) Other land transport accidents	1,393	3.6%	20	1.4%



Injury Mortality Outside the Trauma System

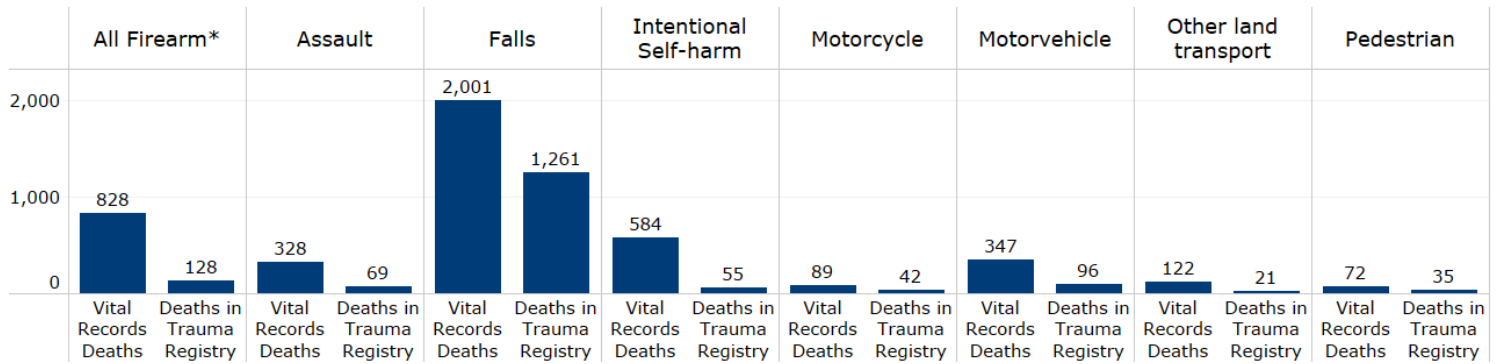


2023 Data in Review

Analyses include patients admitted between January 1 and December 31, 2023

While injury mortality seen at trauma hospitals is an important measure, there are many deaths caused by injuries where the individual is not seen at a hospital (for example, being pronounced dead on the scene), and there is also injury-related mortality that occurs after discharge that is not recorded in the Trauma Registry. Additionally, differences in coding between the Trauma Records and in the death certificate may lead to mismatches. Here we look at [Vital Records](#) data on cause of death compared to injury mortality seen in the Trauma Registry. Because of the time it takes to confirm cause of death data, 2022 data are used here.

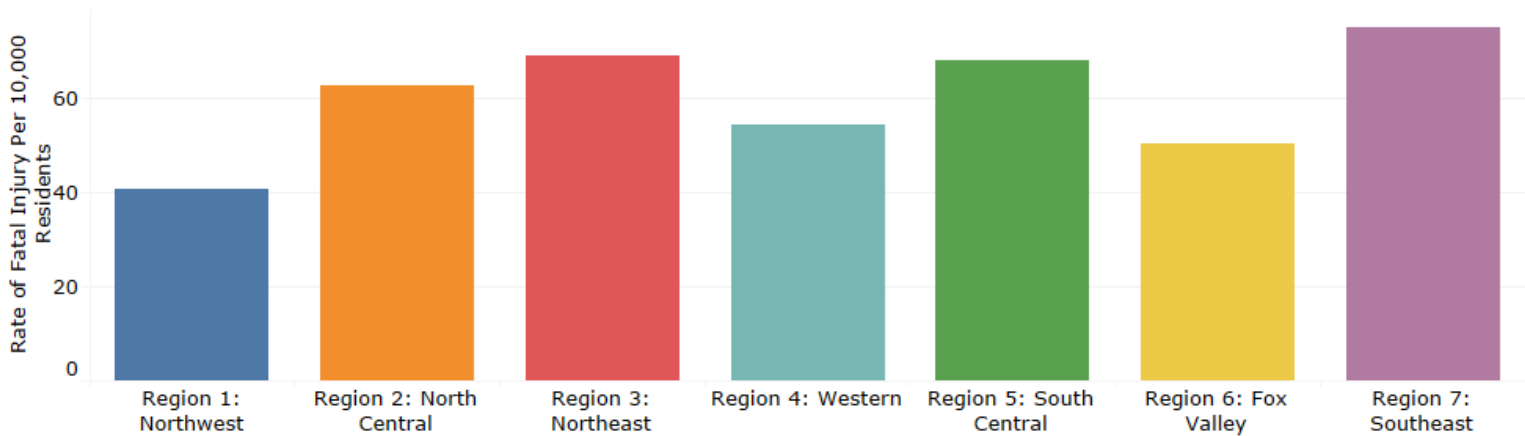
Injury Mortality in Vital Records and the Trauma Registry in 2022



*Firearm injuries are not mutually exclusive to other groups including assaults, self-harm, and other injuries.

Self-harm traumatic injury deaths have the highest ratio of those in the trauma registry compared to in vital records. There are likely a large number of these injuries not seen at trauma hospitals, and hospitals may also decline to attribute an injury as self-harm, instead classifying it as an injury with undetermined intent. Keeping in mind mortality rates of injuries beyond the number treated in hospitals is important to injury prevention work. For more data on injury mortality, please see the [WISH \(Wisconsin Interactive Statistics on Health\) Query System](#).

Injury Mortality Rate per 10,000 Residents by Region in 2022



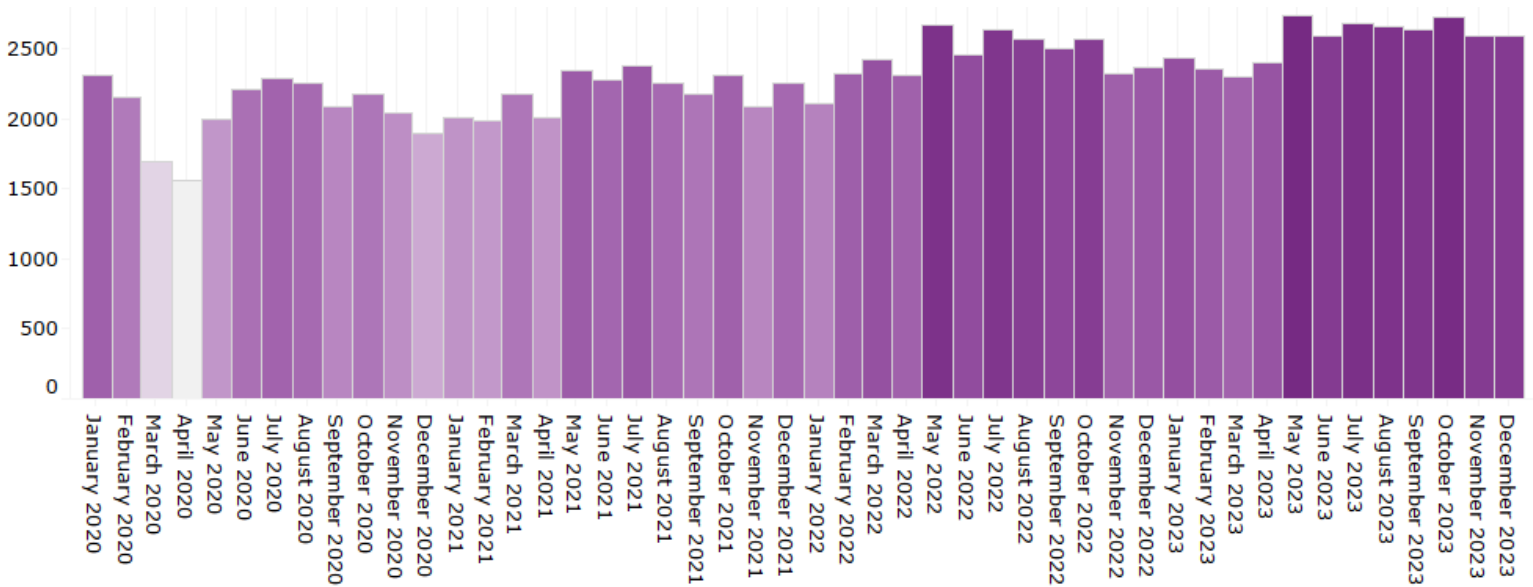


Focus on Falls

Focus on Falls in Wisconsin

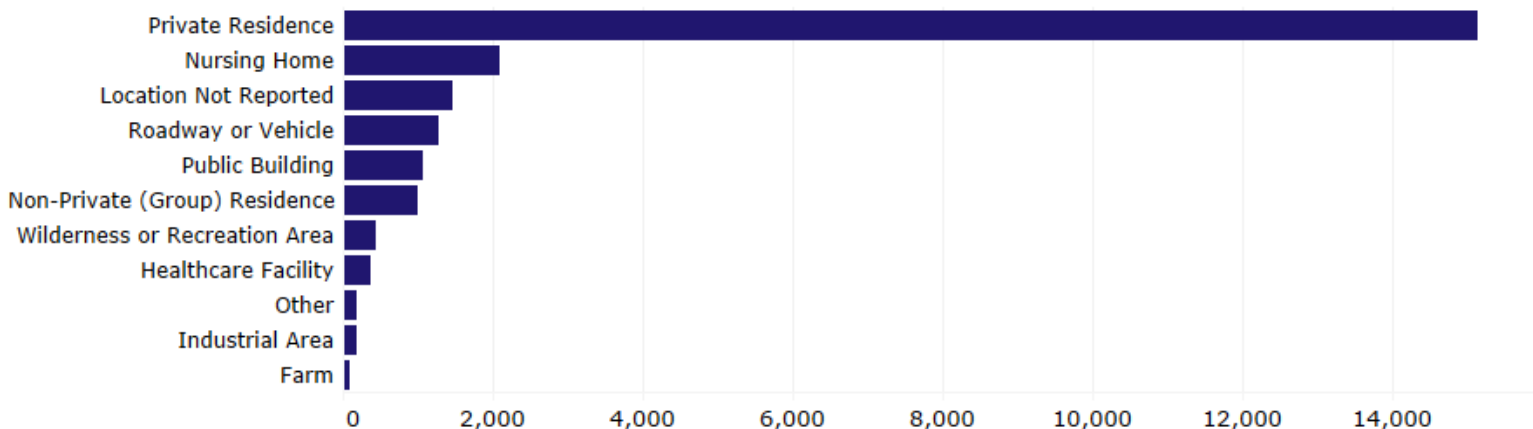
Fall injuries make up a significant number of the injuries treated by Wisconsin’s Trauma Care System. Falls can be caused by medical conditions, difficulties with walking and balance, and home hazards such as uneven steps or rugs and objects that can be tripped over. All figures in the “Focus on Falls” 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 increasing the last few years with 2023 seeing a 6% increase over 2022 with fall injuries increasing from 22,070 in 2022 to 23,370 in 2023. Most falls occur in or around individuals’ private residences but, nursing homes and other group residences are also common locations.

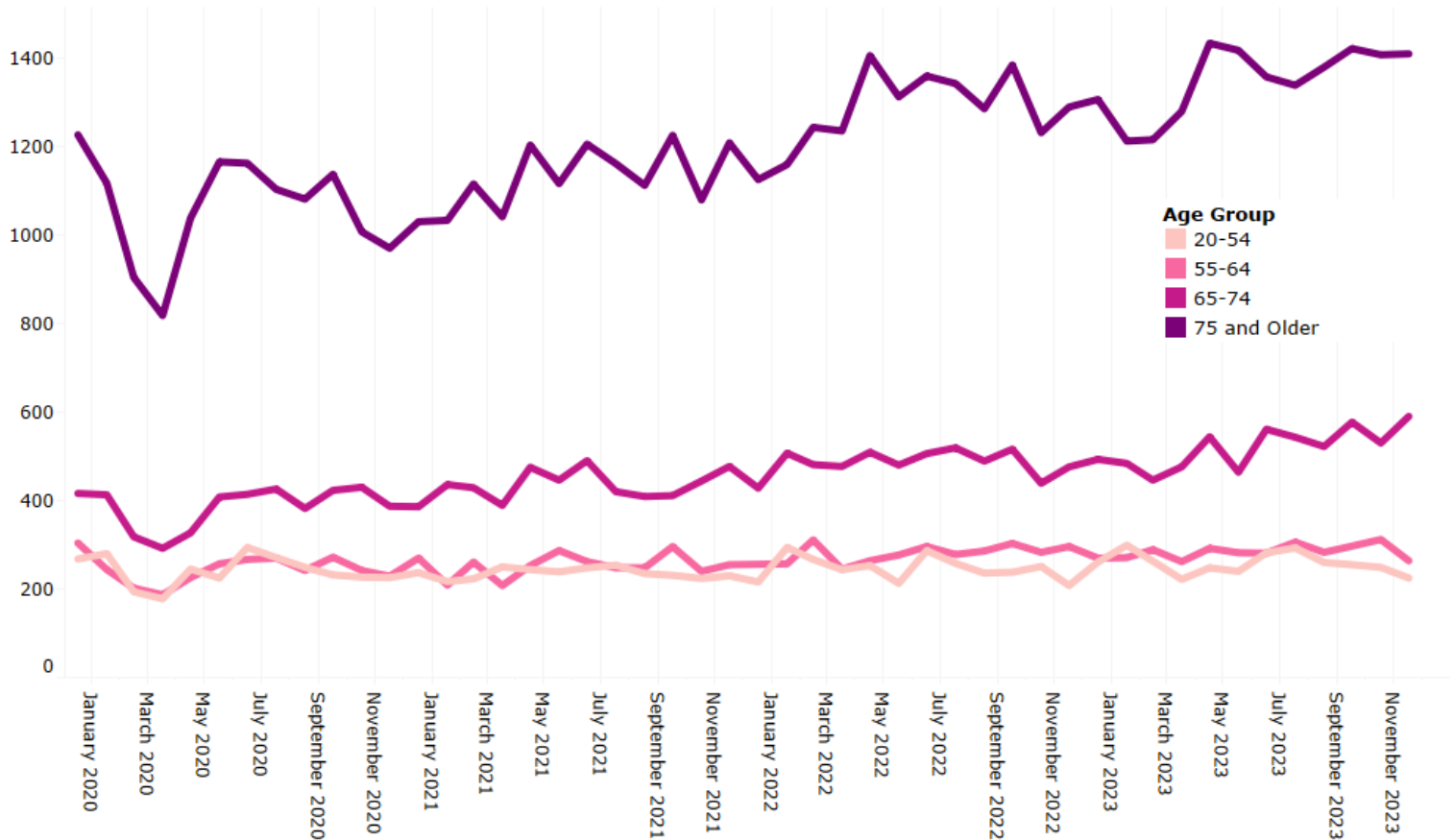
Fall Injury Locations in 2023





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. 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.](#)

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](#).



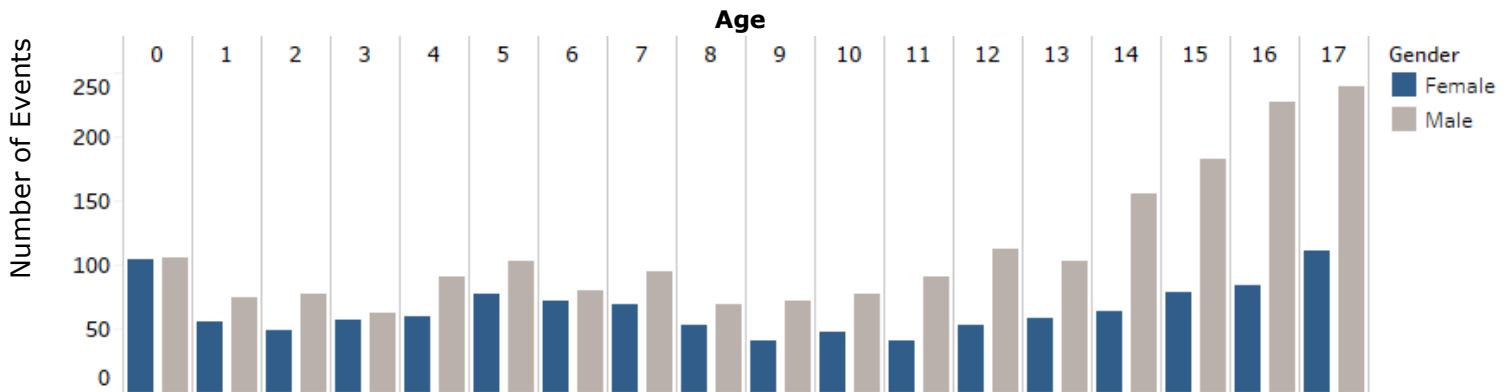
2023 Pediatric Trauma Data

Analyses include patients admitted between January 1 and December 31, 2023

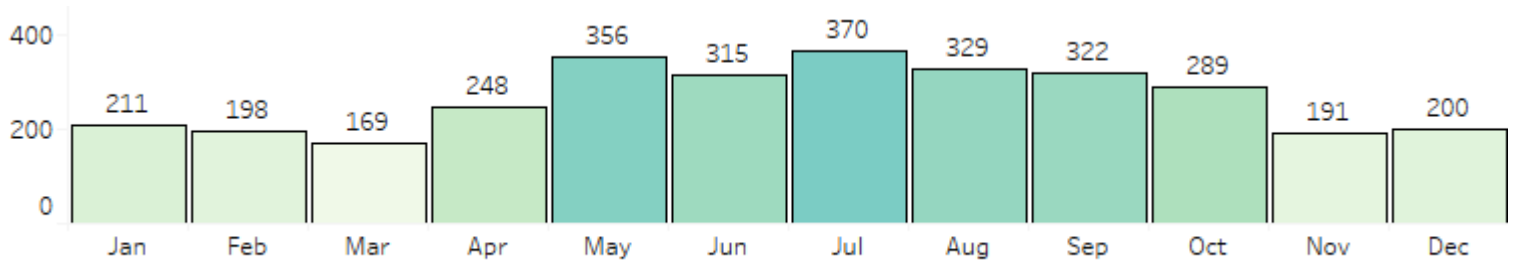
2023 Pediatric Trauma Data

4,331 Pediatric Records
3,198 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

(ICD-10 Code Category) Mechanisms of Injury	0-4	5-9	10-14	15-17
(W00-W19) Slipping, tripping, stumbling, and falls	445	384	193	109
(V40-V59) Occupant car, pick-up truck, or van injured in transport accident	34	54	80	285
(V80-V89) Other land transport accidents	17	52	129	107
(W20-W49) Exposure to inanimate mechanical forces	74	68	79	68
(V00-V02, V10-V13, and V17-V19) Recreational transport injury (bike, ski, skateboar..	8	72	124	53



2023 Pediatric Trauma Data

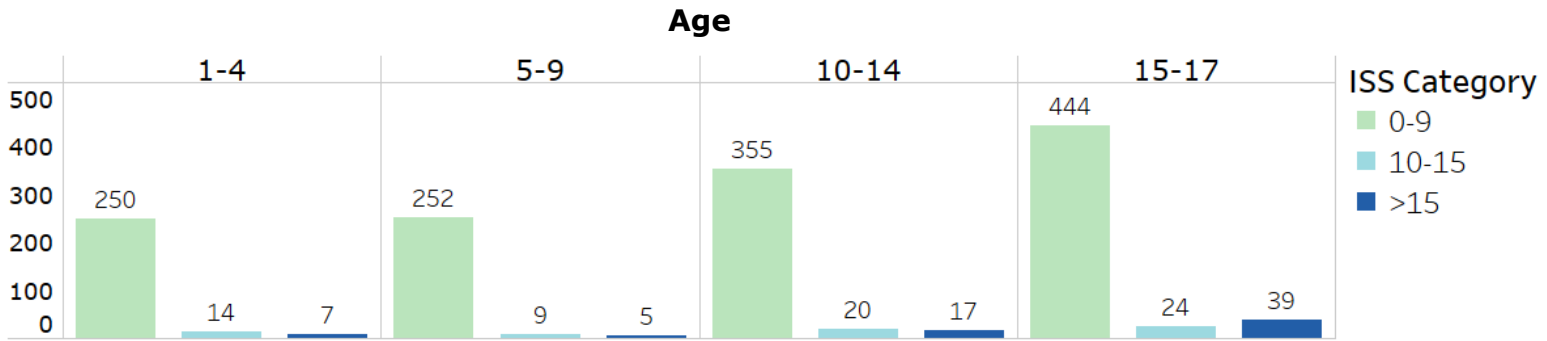
Analyses include patients admitted between January 1 and December 31, 2023

The Importance of Non-Pediatric Trauma Care Centers

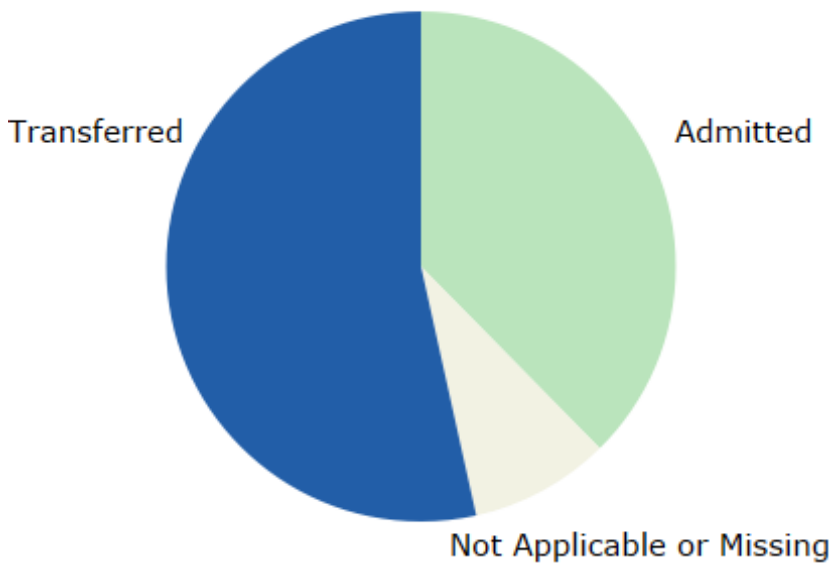


Almost **6 of 10** pediatric patients (57%) whose injuries met inclusion criteria received their initial care at a hospital that is not designated as a Level I or Level II Pediatric Trauma Center. This highlights the role that non-pediatric trauma centers play in caring for our sick and injured pediatric 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



34% of major trauma patients age 17 and under that were initially seen at a non-pediatric trauma care center were admitted to that hospital.

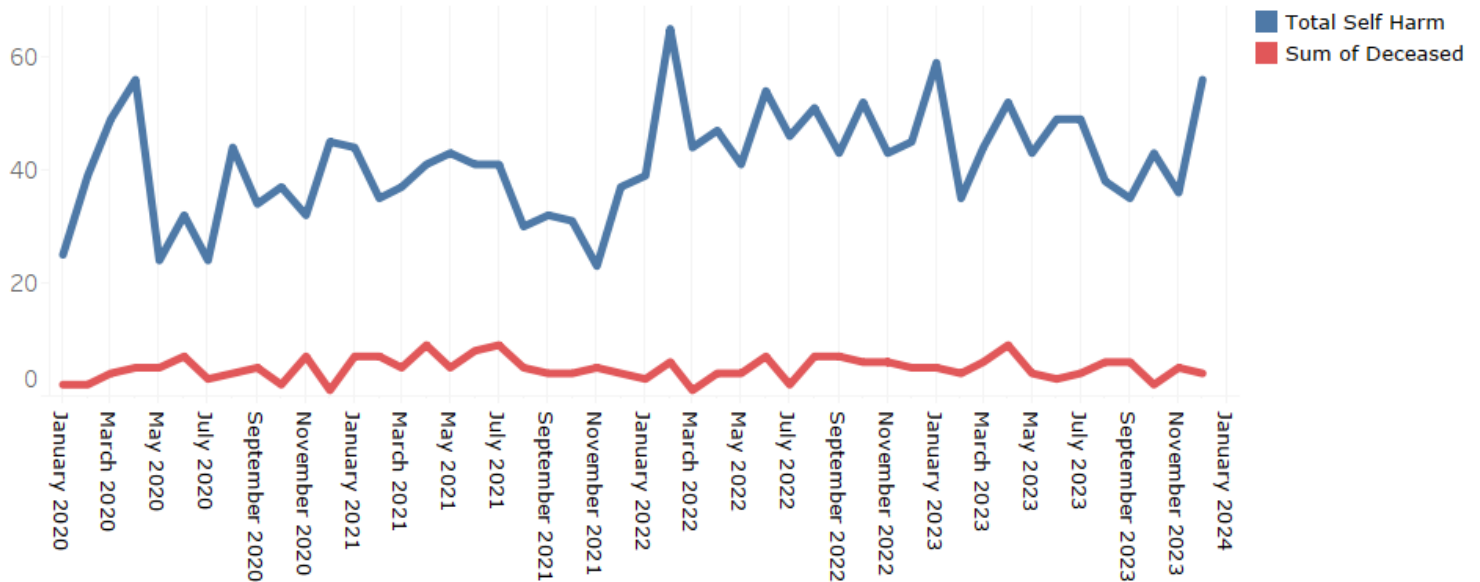
58% of these patients were transferred to another hospital.

The remaining 8% is made up those who were not transferred or admitted or for whom this information was missing.



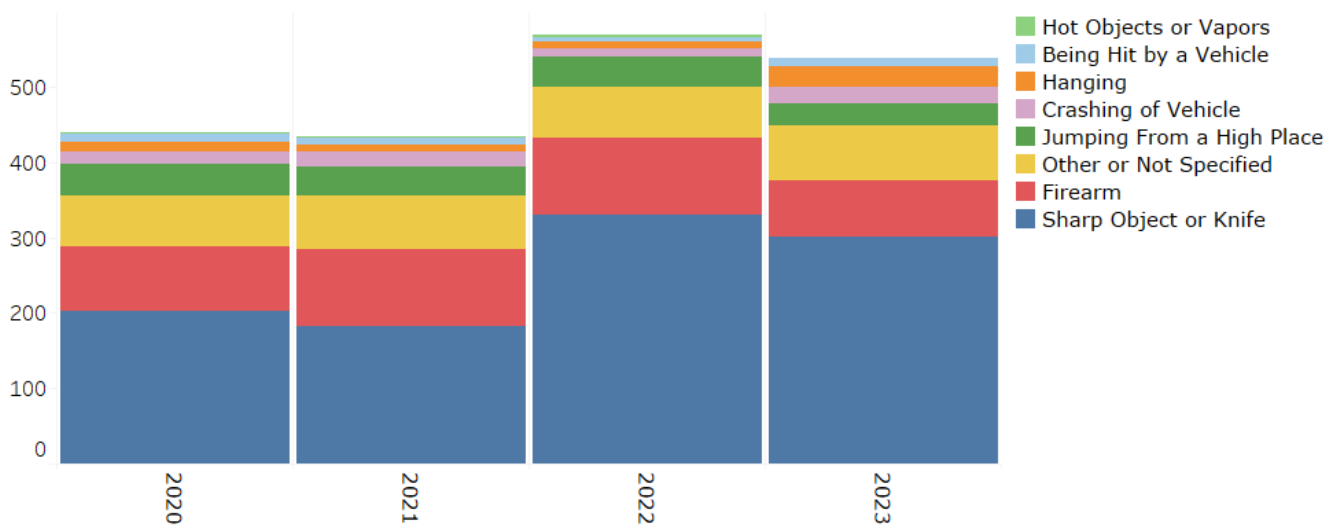
Self-Harm Injuries

Self-Harm Trauma Injuries by Month



Self-harm refers to intentional actions taken to hurt oneself. Self-harm injuries in this report include injuries with external cause of morbidity ICD-10 codes X71-X83 and T71.162. Self-harm that results in injury may be done to express or lessen emotional pain. Some examples include cutting, poisoning, or burning oneself. Someone who self-harms may or may not have the intention to die by suicide. Self-harm may, however, put a person at greater risk for repeated self-harm, suicide attempt, or death by suicide. The number of injuries due to self-harm recorded by the trauma system increased in 2022 due to a change in the Trauma Registry inclusion criteria. However, these injuries fell by 5% from 2022 to 2023, from 570 to 539.

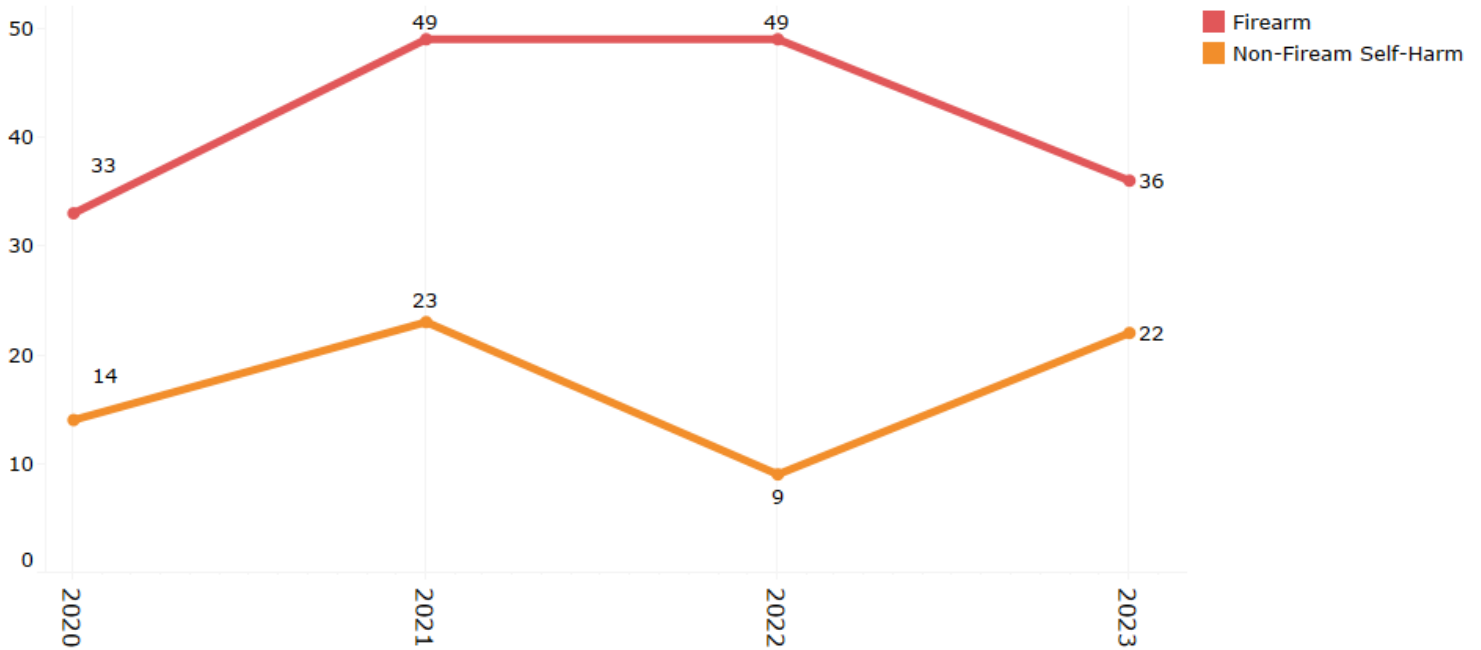
Self-Harm Trauma Injuries by Type





Self-Harm Injuries

Fatal Self-Harm Trauma Injuries by Type



Self-harm caused by firearms accounts for most of the fatal injuries due to self-harm. While the mortality rate of self-harm injuries in the Trauma Registry that do not involve firearms is 4.7%, close to the average across all traumatic injuries, the mortality rate for self-harm injuries due to firearms was 49%.

Notes on Self-Harm Injuries in the Trauma Registry

There are important caveats to keep in mind regarding self-harm and trauma data. For some types of injuries, intent may be more difficult to determine so those injuries may not be classified as self-harm, and some self-harm injuries may be classified as “injuries of undetermined intent.”

Additionally, data contained in this report represent only those incidents reported into the Wisconsin Trauma Registry and that meet inclusion criteria. There may be injuries where patients are not seen at trauma hospitals, and injuries that do not meet inclusion criteria. Poisoning or overdose for example are not reported to the Trauma Registry but are important in addressing self-harm more broadly.

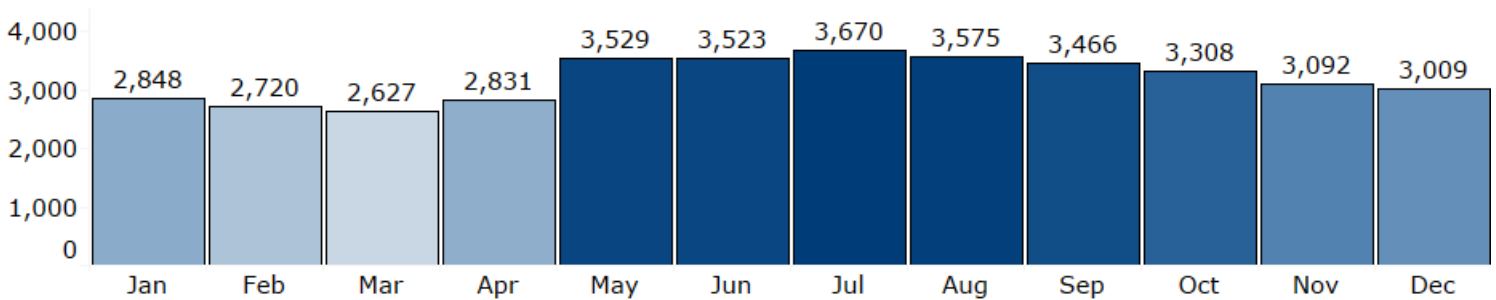


2023 and 2022 Comparison

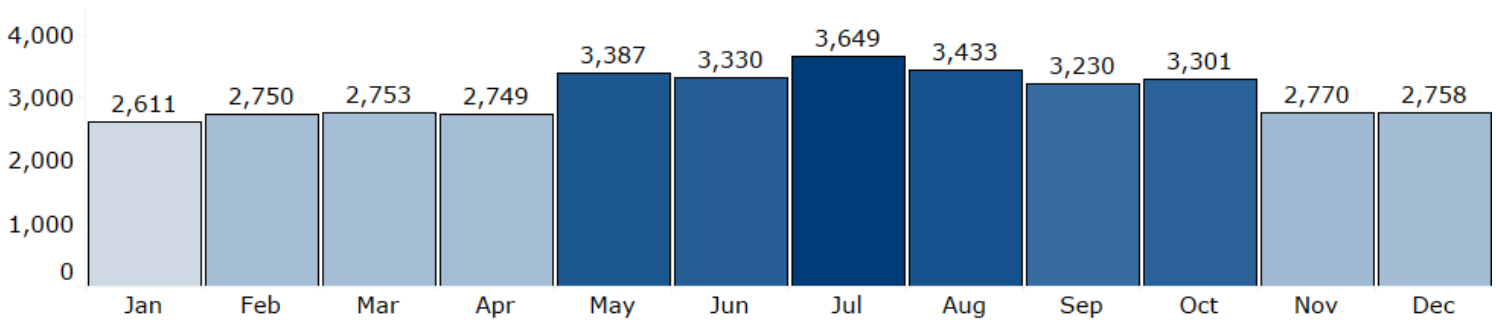
Trauma Incidents by Month for 2023 and 2022

The number of trauma injuries seen in Wisconsin trauma hospitals increased by 4% when compared to the prior year (38,198 in 2023 versus 36,721 in 2022) and the distribution of Injury Severity Scores (ISS) was similar. However, the pattern of some types of trauma was different. 2022 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.

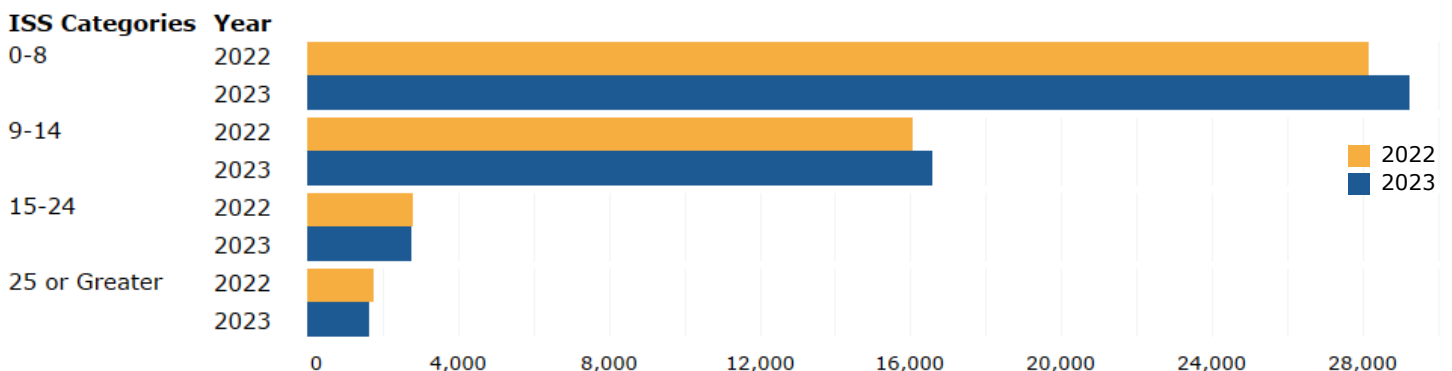
Trauma Incidents by Month, 2023



Trauma Incidents by Month, 2022



ISS Score Distribution



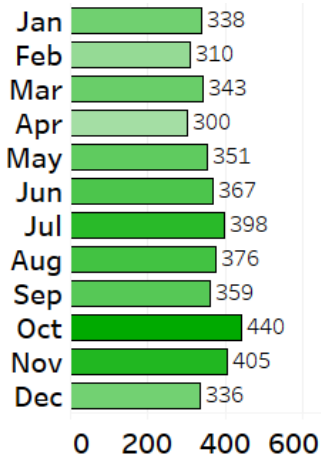


2023 and 2022 Comparison

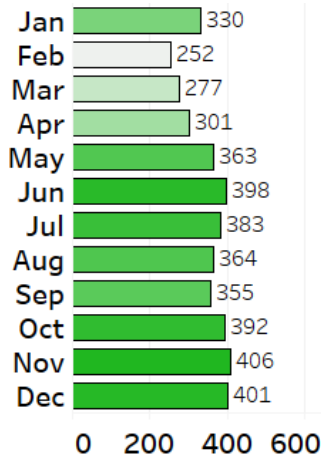
Car, Truck, and Van Trauma

The number of traumas associated with car, pickup truck, and van accidents decreased by 2% from 2022 (4,323 injuries) to 2023 (4,223 injuries).

2022 Vehicle Trauma



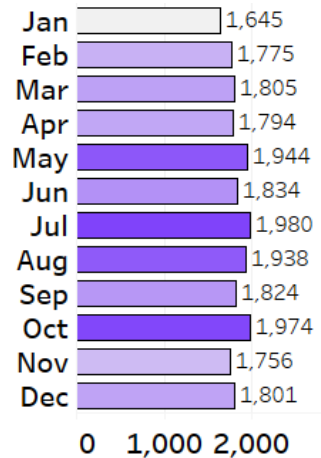
2023 Vehicle Trauma



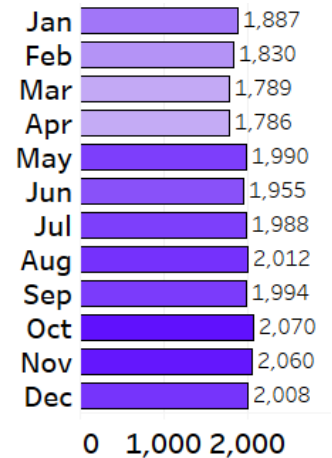
Adult Falls

Fall injuries increased by 6% from 2022 to 2023, going from 22,070 fall injuries in 2022 to 23,370 in 2023.

2022 Adult Falls



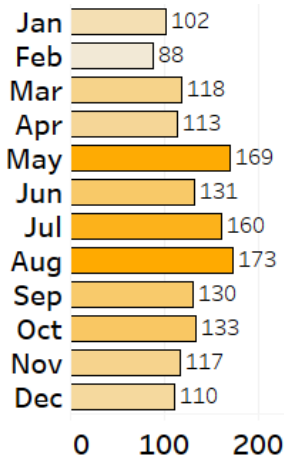
2023 Adult Falls



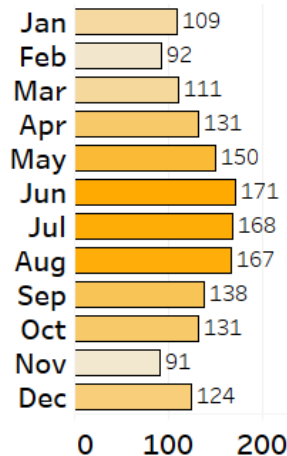
Assault Trauma

There were more traumatic injuries due to assault in 2023 than in 2022 (1,544 in 2022 versus 1,584 in 2023, a 3% increase).

2022 Assaults



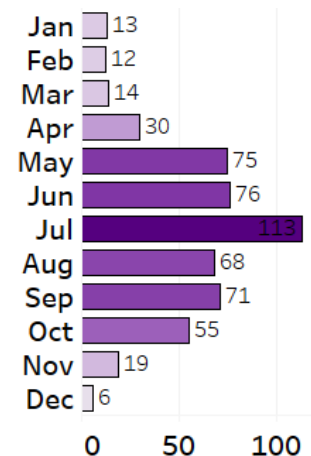
2023 Assaults



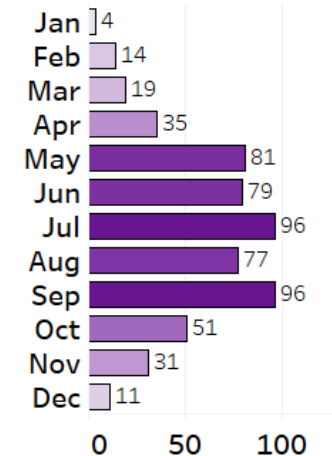
ATV/Off-Road Vehicle Trauma

Trauma occurring during the use of ATVs or other off-road vehicles increased by 8% between 2022 (552 trauma injuries) and 2023 (594 injuries).

2022 ATV Traumas



2023 ATV Traumas





Recognition of Your Work

Analyses include patients admitted between January 1 and December 31, 2023

Recognition for Timeliness of Data Reporting in 2023

The below facilities completed records with exceptional timeliness. Only incidents meeting inclusion criteria were evaluated. If you are interested in having accomplishments or new initiatives featured in future trauma reports, please email [Will Koehne](mailto:Will.Koehne).

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



Ascension Columbia St. Mary's Hospital Ozaukee

Aspirus Stevens Point Hospital

Aspirus Tomahawk Hospital

Aurora Medical Center Bay Area

Froedtert West Bend Hospital

Indianhead Medical Center Shell Lake

Marshfield Medical Center—Neillsville

Marshfield Medical Center—Rice Lake

ProHealth Oconomowoc Memorial Hospital

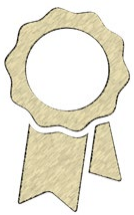
ProHealth Waukesha Memorial Hospital—Mukwonago Campus

ProHealth Waukesha Memorial Hospital

SSM Health St. Mary's Sun Prairie Emergency Center

Watertown Regional Medical Center

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



Aurora St. Luke's Medical Center

SSM Health St. Agnes Hospital—Fond Du Lac

Ascension Columbia St. Mary's Hospital Milwaukee

UnityPoint Health—Meriter

Aurora Medical Center Oshkosh

Froedtert Menomonee Falls Hospital

Aurora West Allis Medical Center

Mayo Clinic Health System—Northland

Marshfield Medical Center—Eau Claire

Amery Hospital & Clinic

Beloit Memorial Hospital

Marshfield Medical Center—Beaver Dam



Recognition of Your Work

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



Ascension SE Wisconsin Hospital—St. Joseph Campus

River Falls Area Hospital

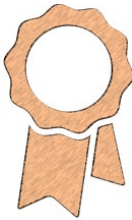
Western Wisconsin Health

Aurora Medical Center Grafton

Ascension SE Wisconsin Hospital—Franklin Campus

Tamarack Health Hayward Medical Center

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



Vernon Memorial Hospital

SSM Health Ripon Community Hospital

Ascension All Saints Hospital

Sauk Prairie Hospital

St. Joseph’s Hospital

Grant Regional Health Center

Marshfield Medical Center—Minocqua