



Wisconsin Trauma Report

2022 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 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 are required to submit data to Wisconsin's Trauma Registry.

In This Edition

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A Message From the Trauma Team

2022 saw a 1% increase in the number of traumatic injury treated by Trauma System Hospitals in Wisconsin. As always, trauma system staff rose to the challenge. 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.

Margaret Finco (state trauma coordinator), Katie Prather (trauma registry data manager), Will Koehne (epidemiologist), Sarah Boese (data coordinator)

Department of Health Services Division of Public Health

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WISCONSIN DEPARTMENT
of **HEALTH SERVICES**



2022 Data in Review

Analyses include patients admitted between January 1 and December 31, 2022

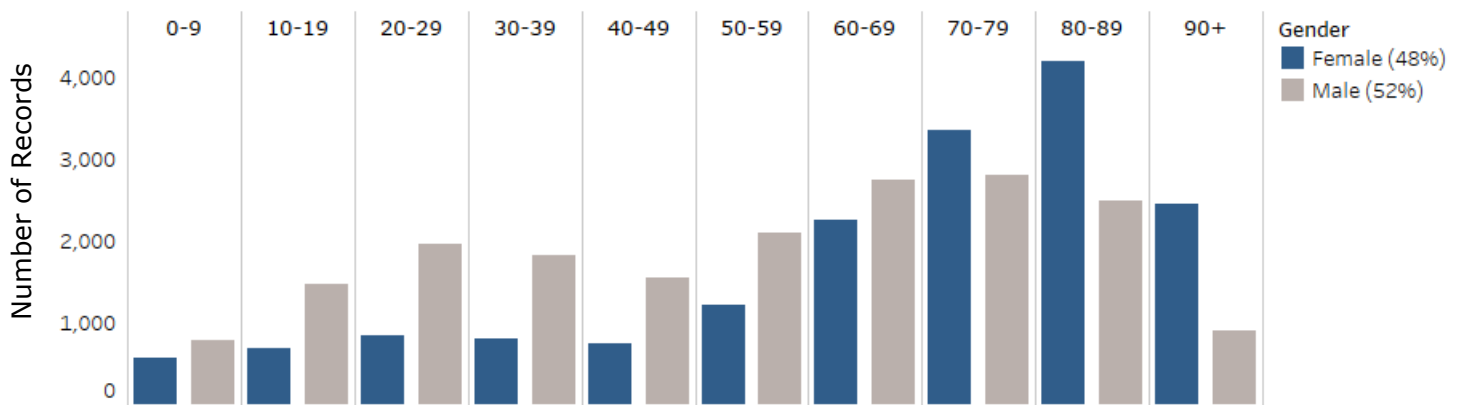
2022 Trauma Summary

42,564 Trauma System Entries

35,854 Unique Injury Events

All data for this report were exported from Wisconsin's Trauma Registry on March 20, 2023. 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

(ICD-10 Code) Mechanism of Injury	0	1-4	5-9	10-14	15-17	18-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
(W00-W19) Slipping, tripping, stumbling, and falls	117	283	382	169	81	56	155	423	632	1,015	2,582	4,482	5,879	6,429
(V40-V59) Occupant car, pick-up truck, or van injured in transport accident	7	30	56	73	254	236	487	797	564	455	444	411	304	93
(W20-W49) Exposure to inanimate mechanical forces	3	60	60	77	58	47	126	240	203	184	223	169	104	32
(X92-Y08) Assault	2	2	4	23	89	75	236	436	293	171	125	38	6	8
(V80-V89) Other land transport accidents	1	19	51	114	113	49	134	205	192	189	213	99	54	19

*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.

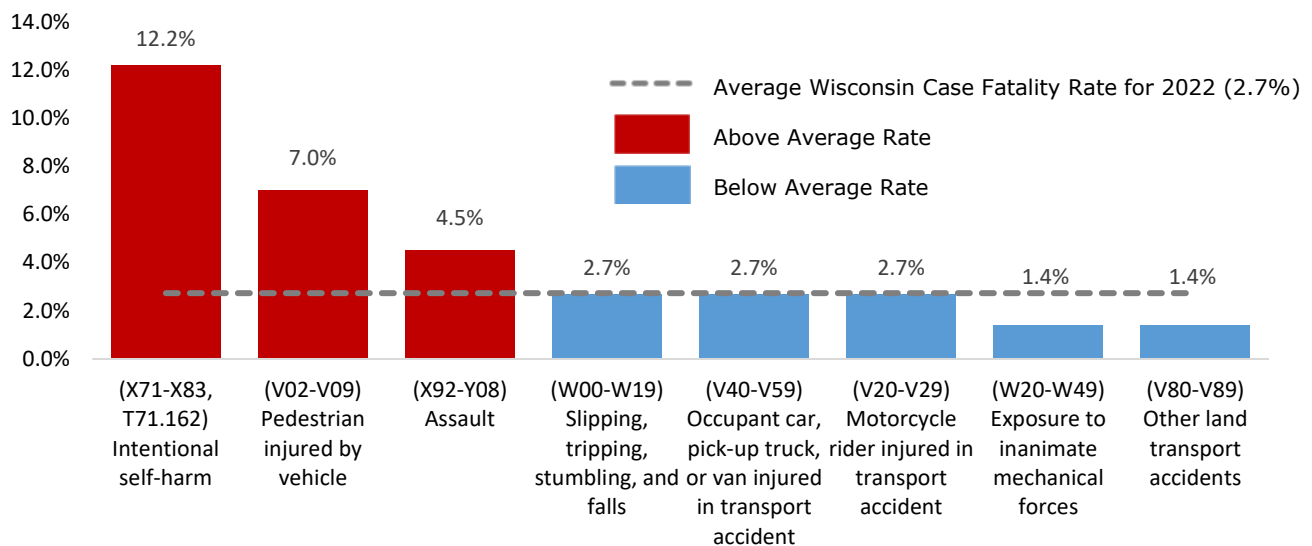


2022 Data in Review

Analyses include patients admitted between January 1 and December 31, 2022

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

Incident ICD-10 Injury Category	Total Cases	Percent of All Injuries	Deaths	Case Fatality Rate
(X71-X83) Intentional self-harm	402	1.10%	49	12.2%
(V02-V09) Pedestrian injured by vehicle	443	1.20%	31	7.0%
(X92-Y08) Assault	1,496	4.20%	67	4.5%
(W00-W19) Slipping, tripping, stumbling, and falls	22,198	62%	601	2.7%
(V40-V59) Occupant car, pick-up truck, or van injured in transport accident	4,159	12%	112	2.7%
(V20-V29) Motorcycle rider injured in transport accident	1,063	3.00%	29	2.7%
(W20-W49) Exposure to inanimate mechanical forces	1,528	4.30%	22	1.4%
(V80-V89) Other land transport accidents	1,368	3.80%	19	1.4%



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. The high intentional self-harm mortality rate is mainly due to injuries caused by firearms. You can find more details on these injuries in this report in the section on self-harm injuries on page 12.

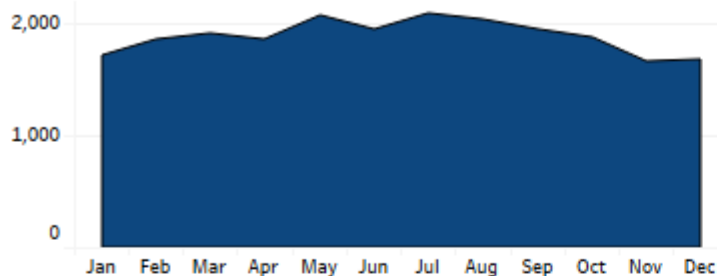


2022 Data in Review

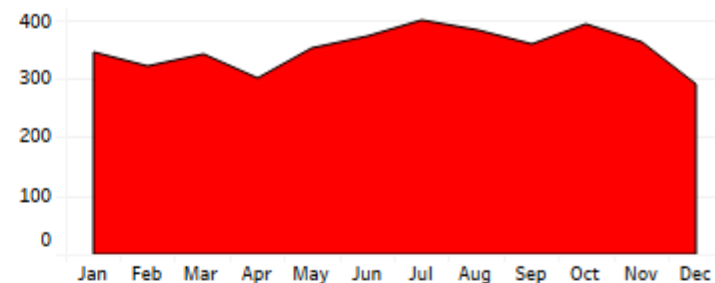
Analyses include patients admitted between January 1 and December 31, 2022

Top 8 Injury Mechanism Categories (and ICD-10 Codes) for 2022

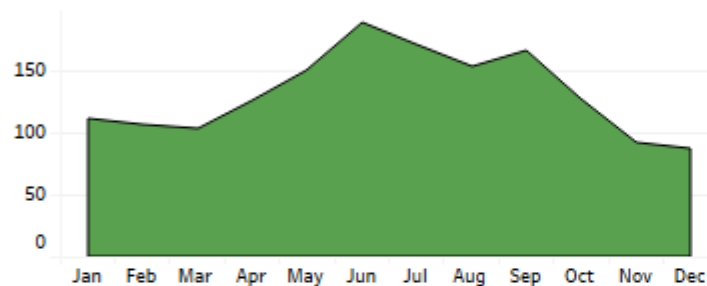
1) Slipping, tripping, stumbling and falls (W00-W19)



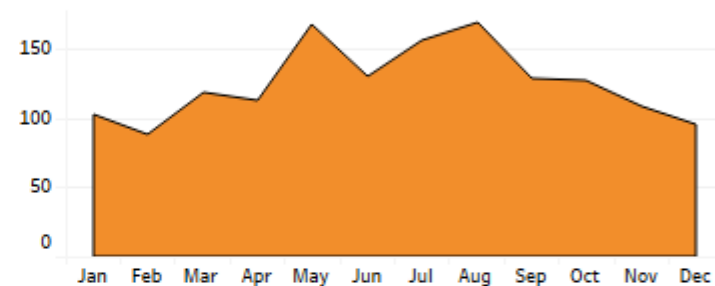
2) Occupant of car, pick-up truck, or van injury (V40-V59)



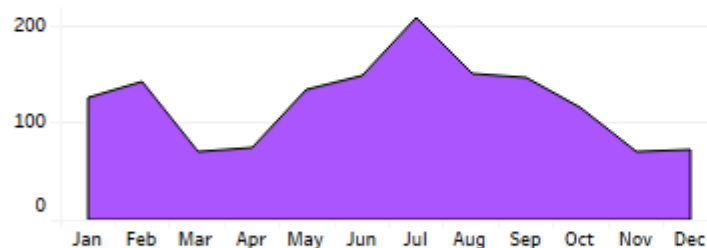
3) Exposure to inanimate mechanical forces (W20-W49)



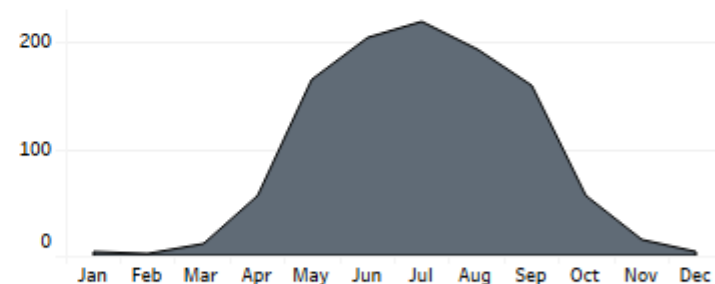
4) Assault (X92-Y08)



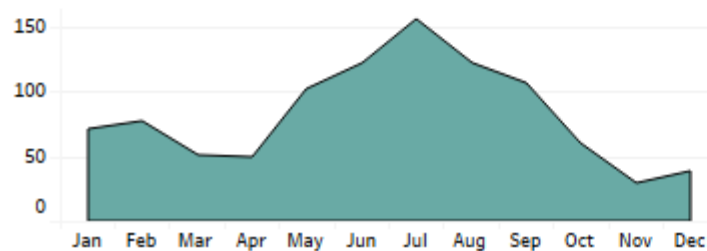
5) Other land transport accidents (ATVs, snowmobiles, agriculture vehicles, etc) (V80-V89)



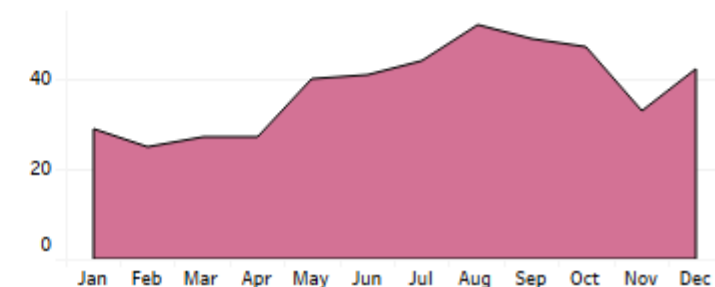
6) Motorcycle rider injury (V20-V29)



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



8) Pedestrian injured by vehicle (V03-V09)

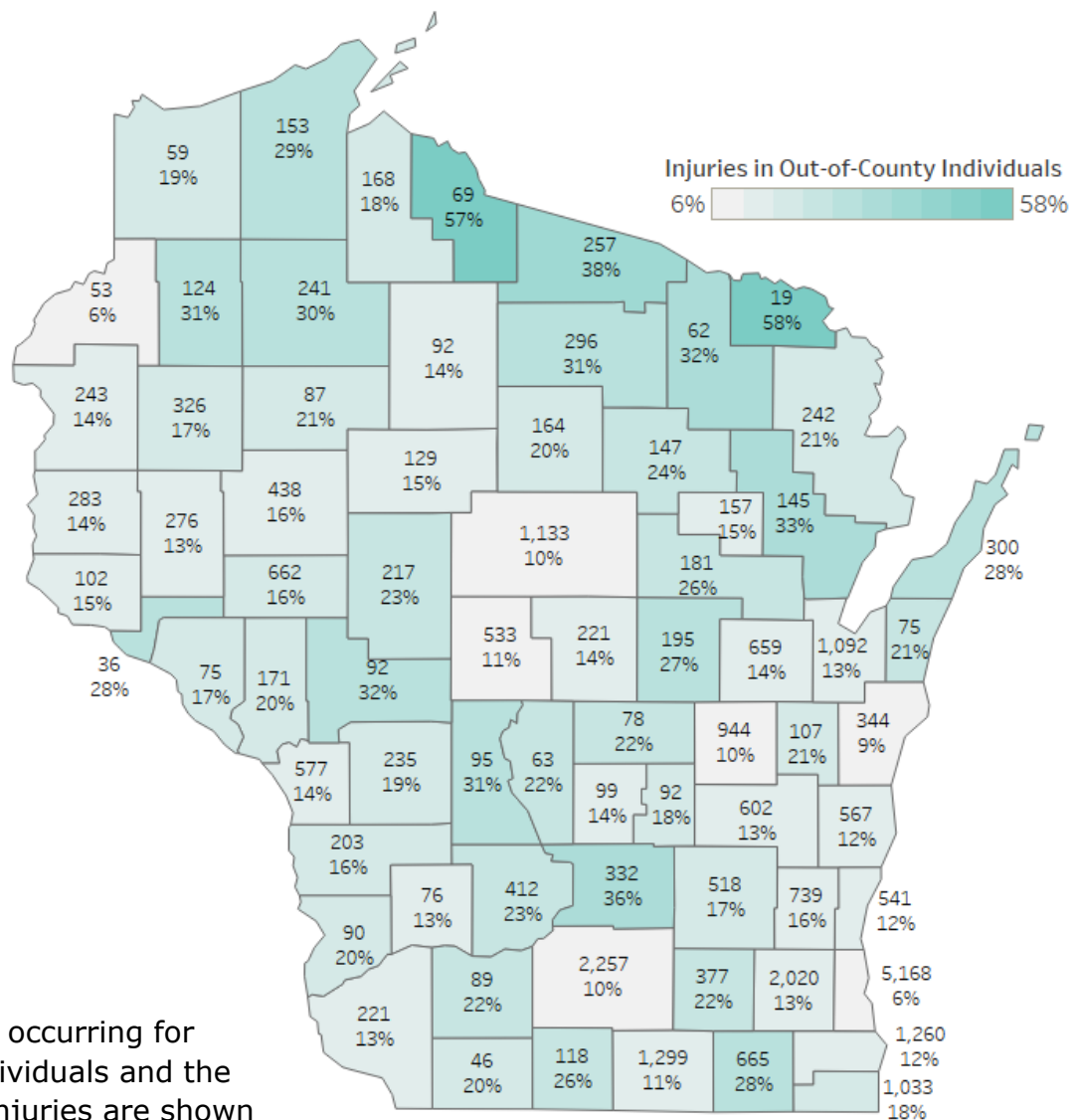




- Population based on American Community Survey 2021 estimates
- Counties with lower populations are more likely to have varying rates from quarter to quarter or year to year.
- Individuals who are only seen at out-of-state hospitals or Wisconsin hospitals without trauma certification are not included 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.



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



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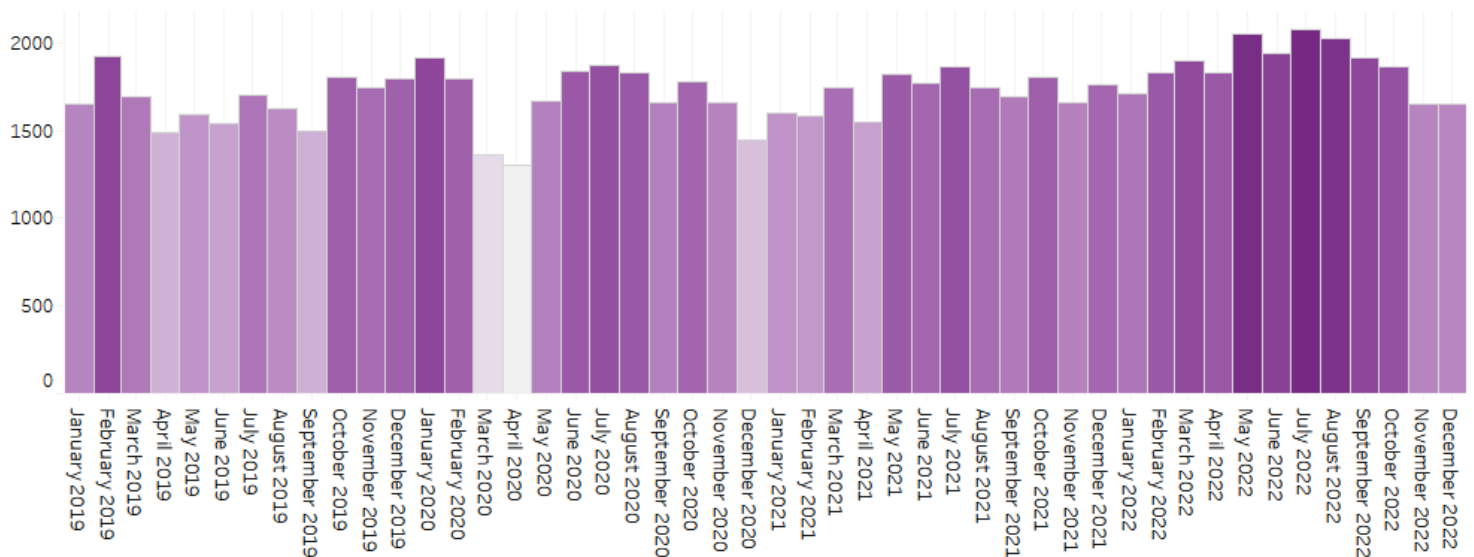


Focus on Falls

Focus on Falls in Wisconsin

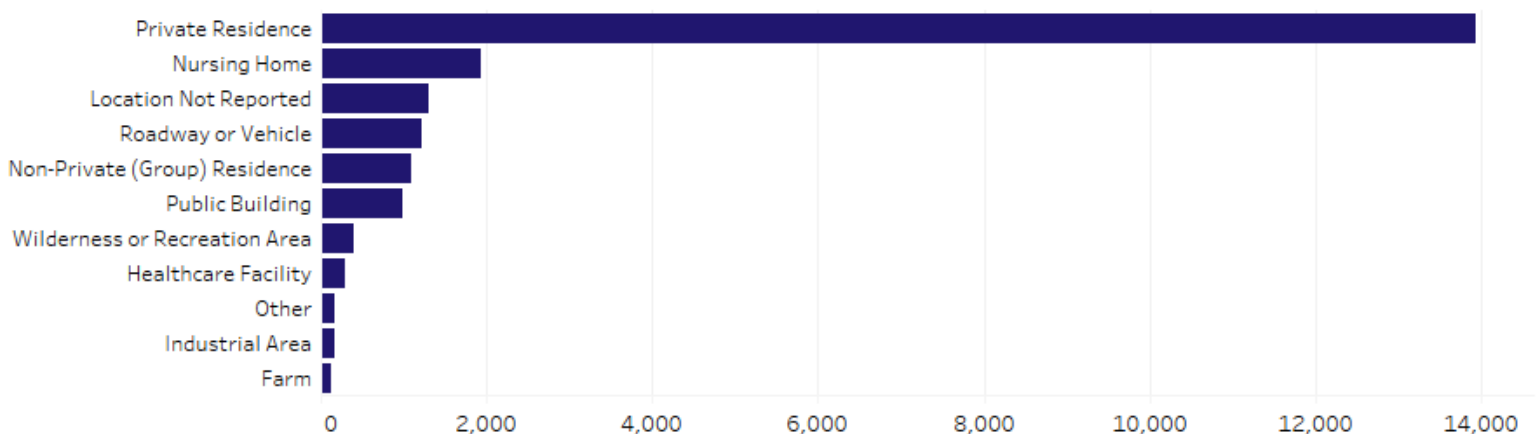
Fall injuries make up a significant number of the injuries treated by Wisconsin's Trauma Care System. Falls can be caused by medical conditions, difficulties with walking and balance, and home hazards such as uneven steps or rugs and objects that can be tripped over. All figures in the "Focus on Falls" 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 relatively steady in recent years. In some years, winter months have significantly higher traumatic fall injuries, but recent winters have not followed this pattern. Most falls occur in or around individuals' private residences but nursing homes and other group residences are also common locations.

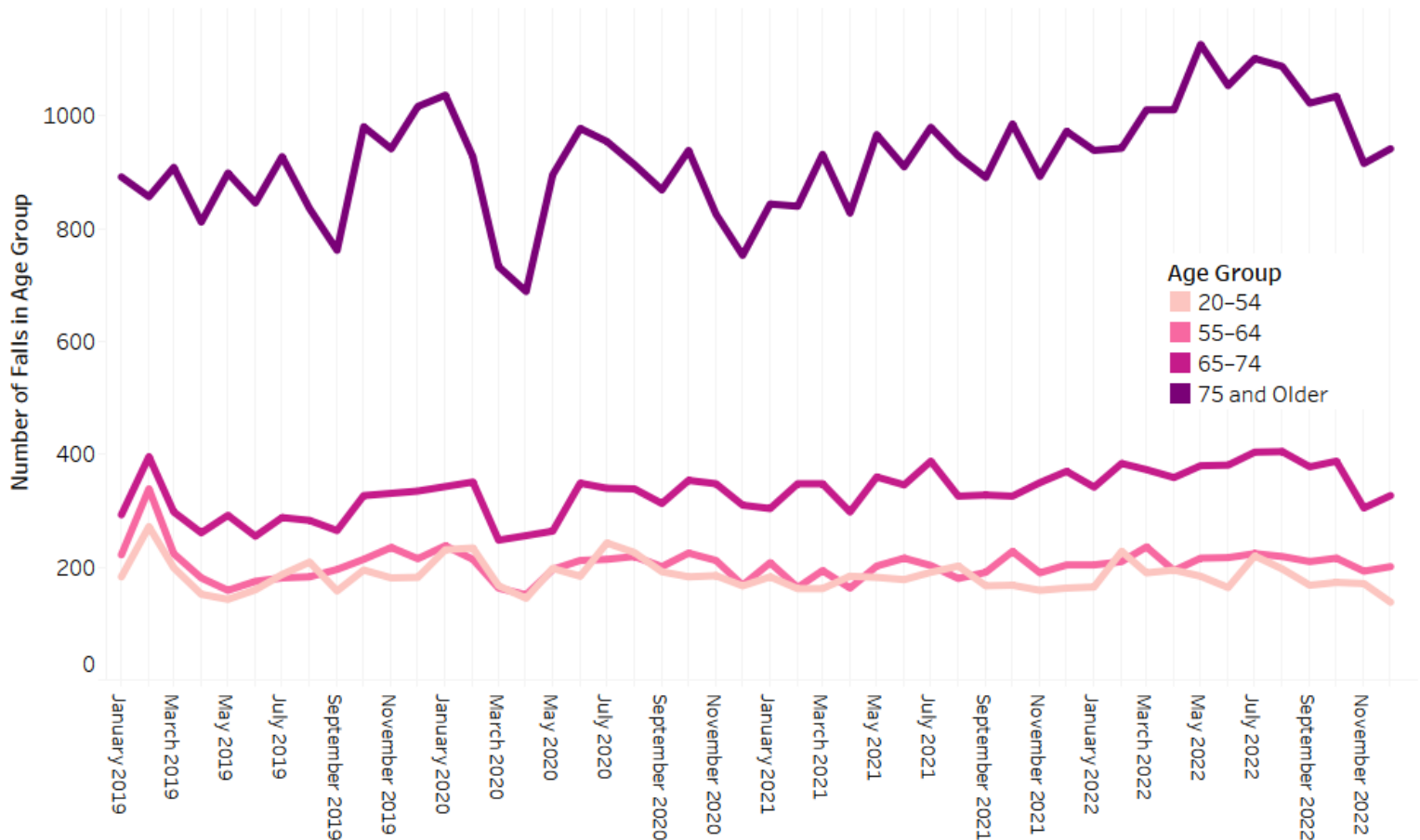
Fall Injury Locations in 2022





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](#).



The map displays the percentage of the population aged 18 and over who are married across the United States. The data is as follows:

County	Percentage
Alaska	6.6
Arizona	9.6
Arkansas	23.6
California	21.5
Colorado	16.3
Connecticut	38.1
Delaware	45.2
District of Columbia	23.4
Florida	26.9
Georgia	5.4
Hawaii	40.2
Idaho	23.0
Illinois	54.8
Indiana	19.1
Iowa	22.6
Kansas	25.6
Kentucky	16.4
Louisiana	23.1
Maine	23.6
Maryland	31.5
Massachusetts	33.4
Michigan	27.1
Minnesota	20.7
Mississippi	10.7
Missouri	23.9
Montana	18.2
Nebraska	17.0
Nevada	12.5
New Hampshire	33.0
New Jersey	39.1
New Mexico	18.5
New York	27.2
North Carolina	17.9
North Dakota	32.0
Ohio	45.7
Oklahoma	10.7
Oregon	7.9
Pennsylvania	28.4
Rhode Island	22.2
South Carolina	10.0
South Dakota	25.4
Tennessee	21.0
Texas	22.3
Utah	22.2
Vermont	14.1
Virginia	19.4
Washington	28.5
West Virginia	27.7
Wisconsin	30.5
Wyoming	13.7
Alabama	12.0
Alaska	14.1
Arizona	39.1
Arkansas	29.0
California	29.9
Colorado	34.4
Connecticut	28.9
Delaware	29.5
District of Columbia	24.1
Florida	26.8
Georgia	24.8
Hawaii	32.9
Idaho	25.0
Illinois	29.2
Indiana	23.6
Iowa	26.9
Kansas	29.5
Kentucky	24.1
Louisiana	26.8
Maine	24.1
Maryland	26.8
Massachusetts	24.1
Michigan	26.8
Minnesota	24.1
Mississippi	24.1
Missouri	24.1
Montana	24.1
Nebraska	24.1
Nevada	24.1
New Hampshire	24.1
New Jersey	24.1
New Mexico	24.1
New York	24.1
North Carolina	24.1
North Dakota	24.1
Ohio	24.1
Oklahoma	24.1
Oregon	24.1
Pennsylvania	24.1
Rhode Island	24.1
South Carolina	24.1
South Dakota	24.1
Tennessee	24.1
Texas	24.1
Utah	24.1
Vermont	24.1
Virginia	24.1
Washington	24.1
West Virginia	24.1
Wisconsin	24.1
Wyoming	24.1

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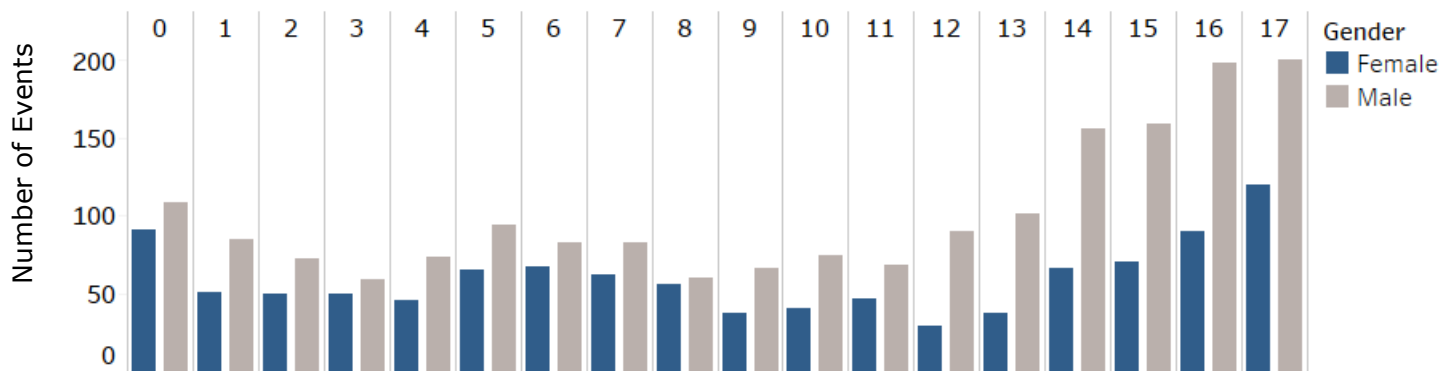
2022 Pediatric Trauma Data

Analyses include patients admitted between January 1 and December 31, 2022

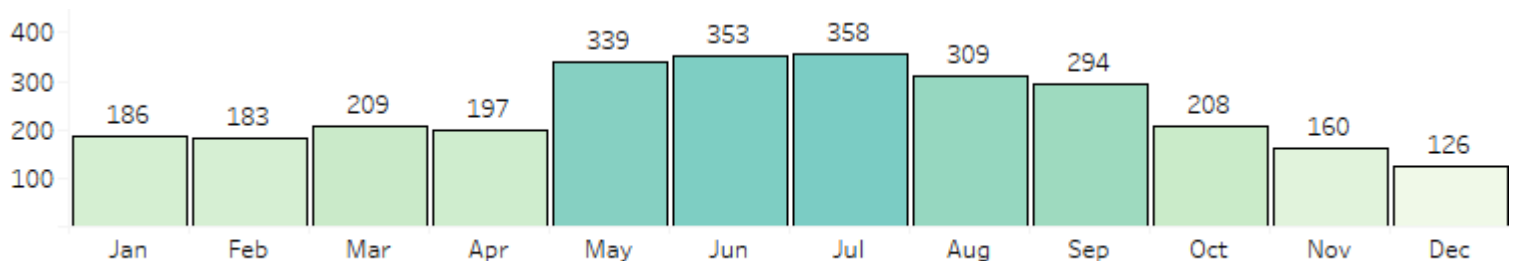
2022 Pediatric Trauma Data

3,994 Pediatric Records
2,922 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	400	382	169	81
(V40-V59) Occupant car, pick-up truck, or van injured in transport accident	37	56	73	254
(V80-V89) Other land transport accidents	20	51	114	113
(W20-W49) Exposure to inanimate mechanical forces	63	60	77	58
(V00-V02, V10-V13, and V17-V19) Recreational transport (ski, bike, skateboard, etc)	10	51	126	64



2022 Pediatric Trauma Data

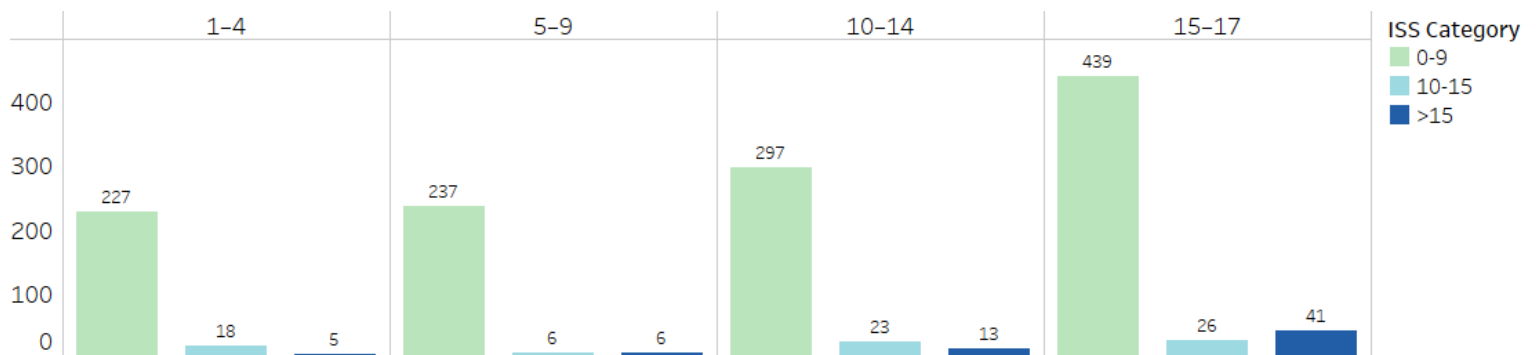
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The Importance of Non-Pediatric Trauma Care Centers

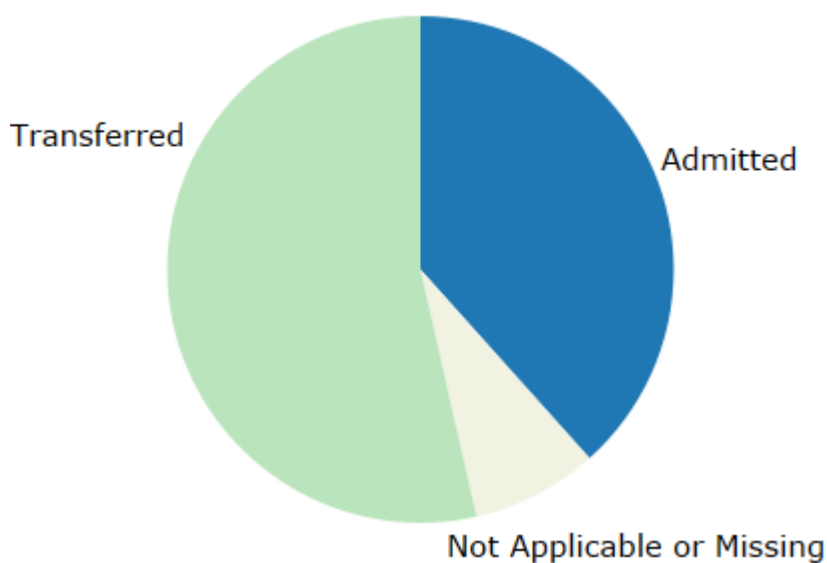


Almost **6 of 10** pediatric patients (58%) whose injuries met inclusion criteria received their initial care at a hospital that is not designated as a Level I or Level II Pediatric Trauma Center. This highlights the role that non-pediatric trauma centers play in caring for our sick and injured pediatric 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



38% of major trauma patients age 17 and under that were initially seen at a non-pediatric trauma care center were admitted to that hospital.

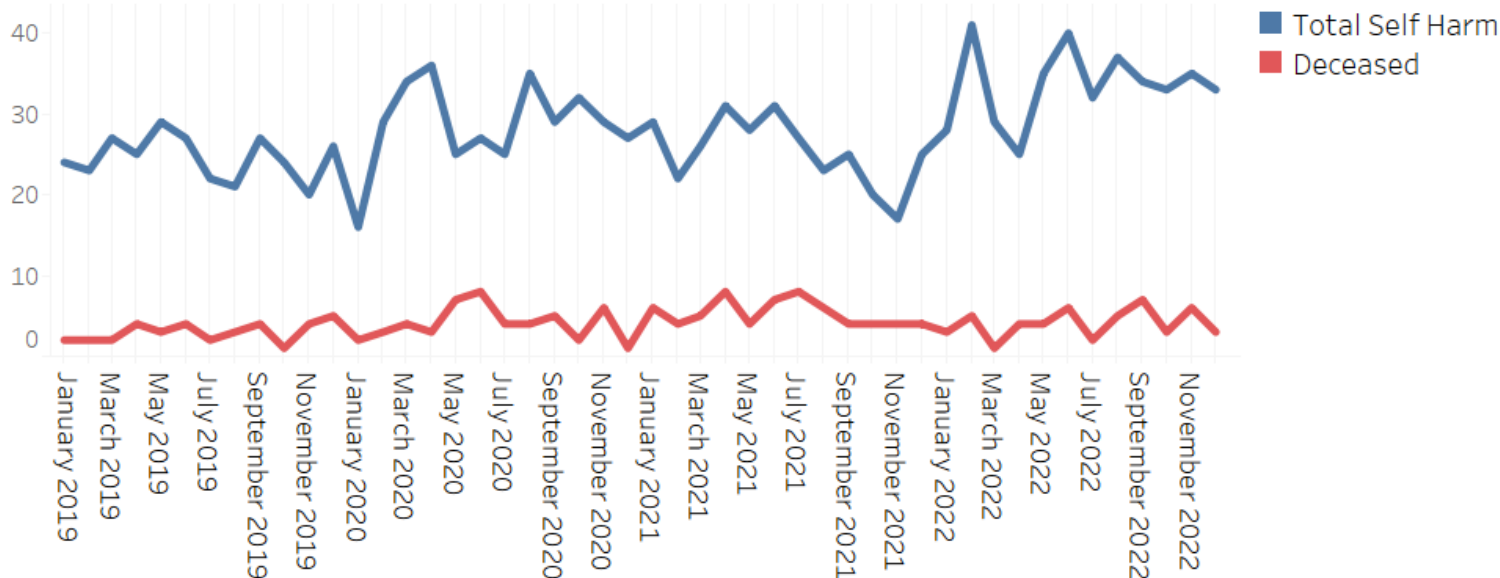
54% of these patients were transferred to another hospital.

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



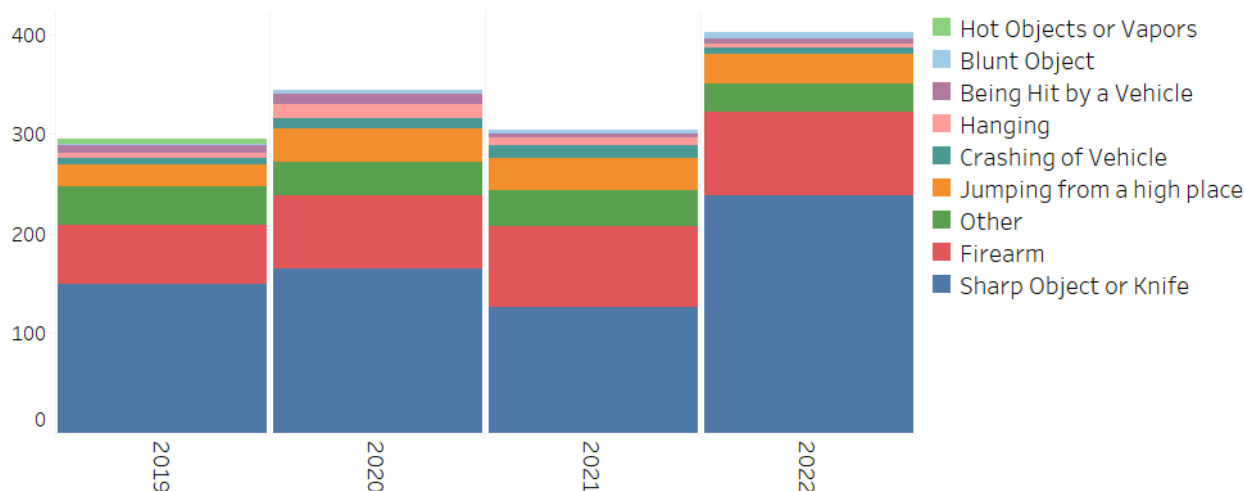
Intentional Self-Harm Trauma

Intentional Self-Harm Trauma Injuries by Month



Injuries due to intentional self-harm have the highest mortality rate of any type of injury treated by the Wisconsin Trauma System. The number of injuries due to intentional self-harm had fallen in 2021, but then **increased from 304 cases in 2021 to 402 cases in 2022, a 32% increase**. Fatal cases decreased however, from 64 in 2021 to 49 in 2022.

Intentional Self-Harm Trauma Injuries by Type

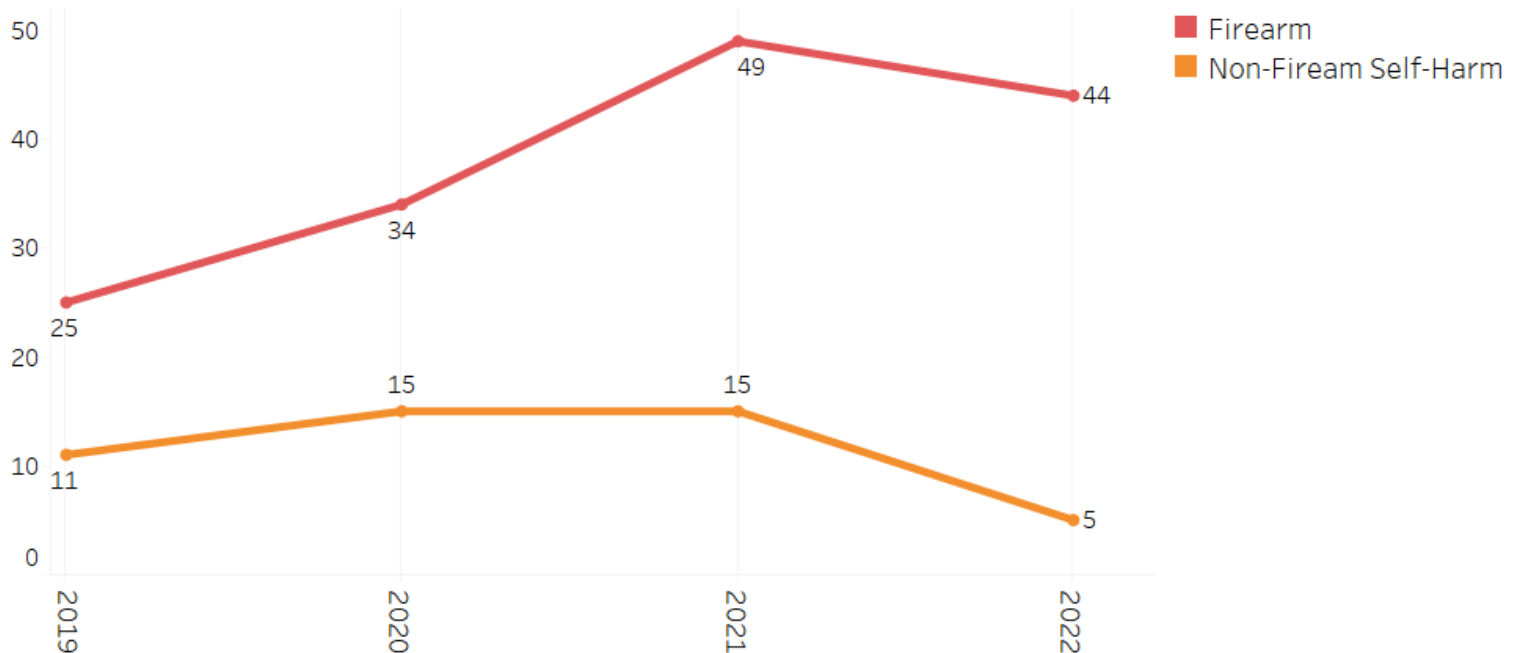


The increase in intentional self-harm incidents in 2022 was mostly due to an increase in the number of injuries due to sharp objects or knives, which increased from 127 in 2021 to 239 in 2022, an 88% increase.



Intentional Self-Harm Trauma

Fatal Intentional 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 2.3%, close to the average across all traumatic injuries, the mortality rate for self-harm injuries due to firearms is 52%.

Notes on Intentional 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 intentional self-harm.

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 these are important to addressing intentional self-harm more broadly.

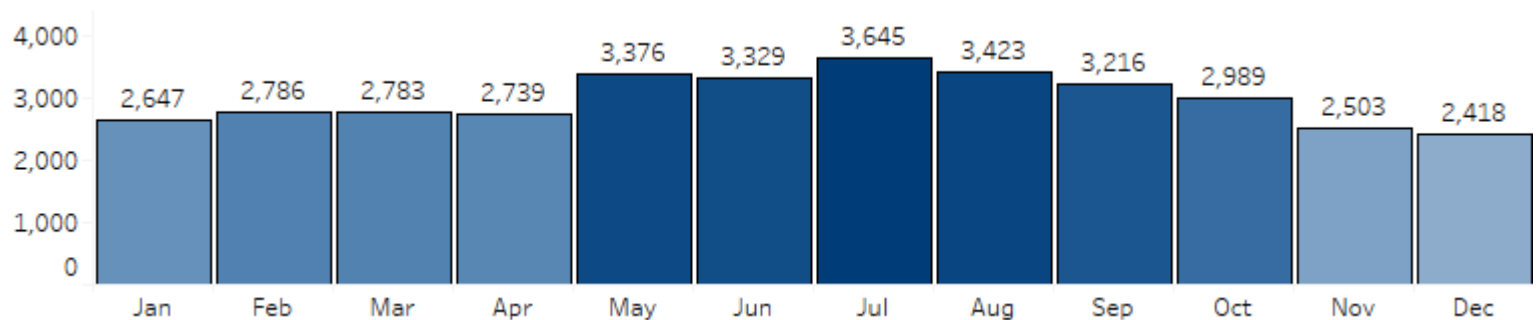


2022 and 2021 Comparison

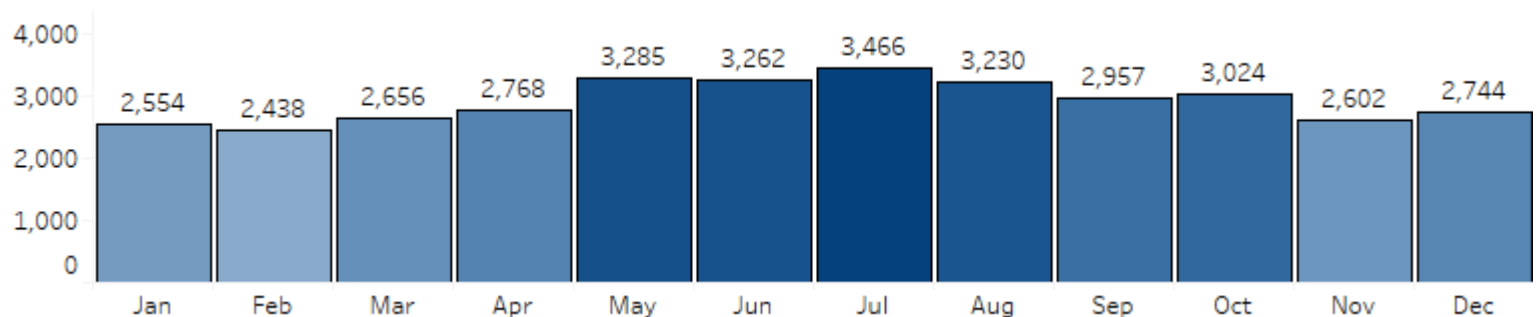
Trauma Incidents by Month for 2022 and 2021

The number of trauma incidents in 2022 increased by 1% when compared to the prior year (35,854 in 2022 versus 34,986 in 2021) 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, 2022

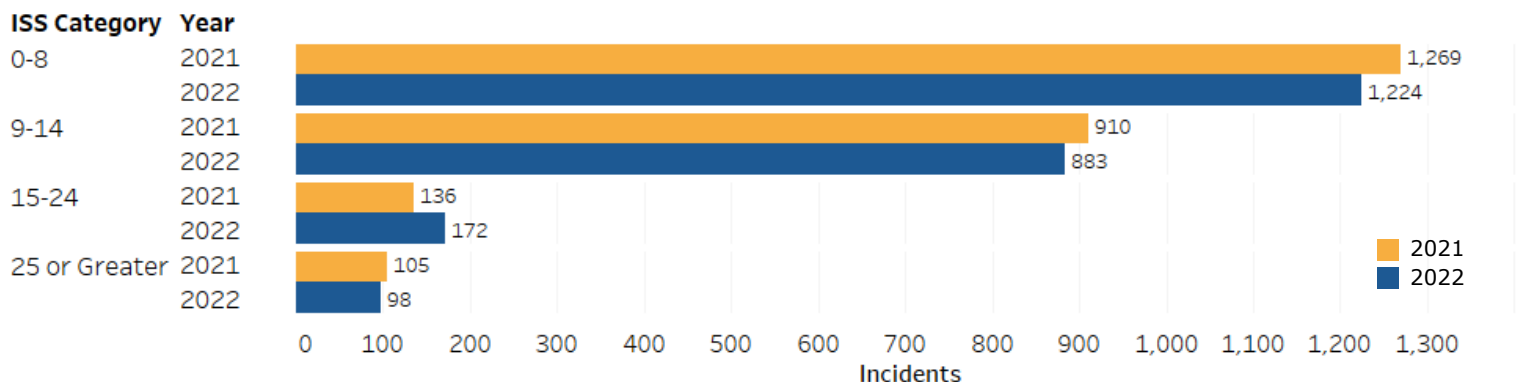


Trauma Incidents by Month, 2021



ISS Score Distribution

Injury Severity Score (ISS) is a measure of injury severity with higher scores representing more severe injury and injury of more body parts.



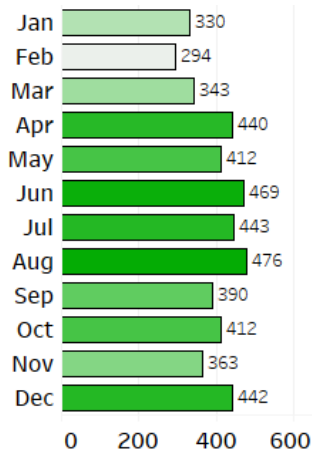


2022 and 2021 Comparison

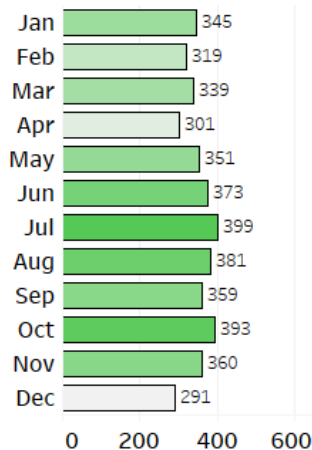
Car, Truck, and Van Trauma

The number of traumas associated with car, pickup truck, and van accidents decreased by 13% from 2021 (4,814 injuries) to 2022 (4,211 injuries).

2021 Vehicle Trauma



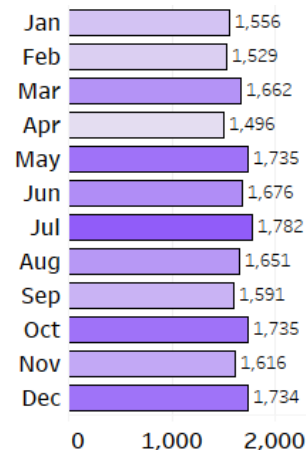
2022 Vehicle Trauma



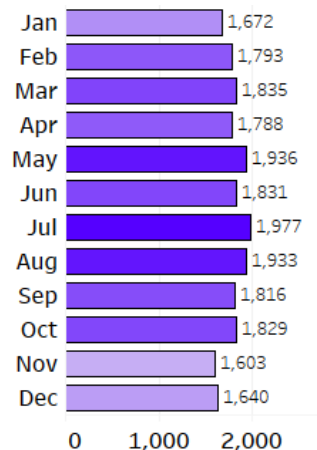
Adult Falls

Fall injuries increased by 10% from 2021 to 2022, going from 19,763 fall injuries in 2021 to 21,653 in 2022.

2021 Adult Falls



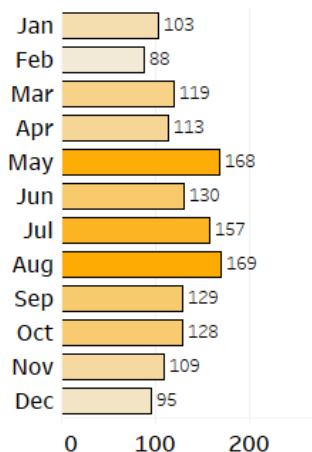
2022 Adult Falls



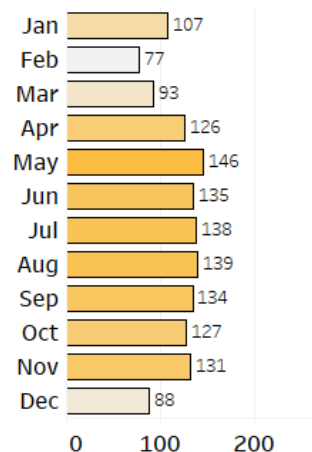
Assault Trauma

There were more traumatic injuries due to assault in 2022 than in 2021 (1,441 in 2021 versus 1,508 in 2022, a 5% increase).

2021 Assaults



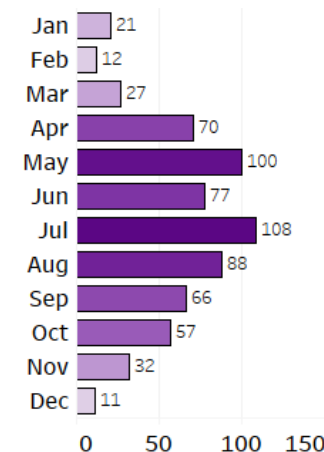
2022 Assaults



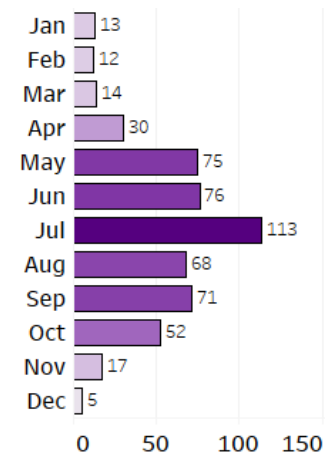
ATV/Off-Road Vehicle Trauma

Trauma occurring during the use of ATVs or other off-road vehicles decreased by 18% between 2021 (669 trauma injuries) and 2022 (546 injuries), the second consecutive year of decrease.

2021 ATV Traumas



2022 ATV Traumas





Recognition of Your Work

Trauma Projects and Initiatives Worth Celebrating

We want to recognize partners who have went above and beyond this past year.

In 2022, the Injury Prevention Coordinators at *Gundersen Health System's Level II Adult Trauma Center* responded to the recent increase in traumatic ATV/UTV injuries seen locally and statewide. With the help of partners from the local ATV/UTV safety workgroup convened by the coordinators, a variety of prevention outreach and education was provided reaching nearly 1,000 community members.

We would also like to offer a special thanks to the hospitals participating in the *Wisconsin Trauma Quality Improvement Program (TQIP)* whose work helps improve the care of Wisconsin trauma patients across the state. In 2022 TQIP's collaboration produced a variety of new guidance to help guide patient care and supported trauma research in the state to prevent traumatic injuries and improve patient outcomes.

If you are interested in having accomplishments or new initiatives featured in future trauma reports, please email Will Koehne at William.Koehne@DHS.Wisconsin.gov

Recognition for Timeliness of Data Reporting in 2022

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



Amery Hospital & Clinic

Aspirus Tomahawk Hospital

Aurora Medical Center Oshkosh

Froedtert West Bend Hospital

ProHealth Waukesha Memorial Hospital

SSM Health Monroe Hospital

SSM Health St. Mary's Hospital - Janesville

UnityPoint Health - Meriter

Marshfield Medical Center - Neillsville

Upland Hills Health

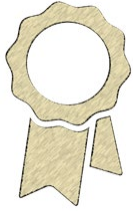
ProHealth Oconomowoc Memorial Hospital

Western Wisconsin Health



Recognition of Your Work

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



Aurora West Allis Medical Center

Aurora St. Luke's Medical Center

Froedtert Menomonee Falls Hospital

Aurora Medical Center Kenosha

Aurora Medical Center Mount Pleasant

Aurora Sinai Medical Center

Aurora Medical Center Washington County

Aurora Lakeland Medical Center

Aurora St. Luke's Med Ctr South Shore

Marshfield Medical Center - Weston

Aurora Medical Center Burlington

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



Aspirus Stevens Point Hospital

Aurora Medical Center Grafton

St. Agnes Hospital

Sacred Heart Hospital

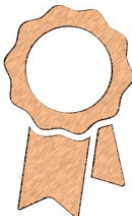
Aurora Medical Center Bay Area

Ascension SE Wisconsin Hospital - St Joseph Campus

Hayward Area Memorial Hospital

Prairie Ridge Health

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



SSM Health Waupun Memorial Hospital

Aspirus Rhinelander Hospital

Ascension All Saints Hospital

St. Joseph's Hospital

Aspirus Stanley Hospital

Grant Regional Health Center

Ascension St Francis Hospital