

WASHOE COUNTY HEALTH DISTRICT

ENHANCING QUALITY OF LIFE

Washoe County 2022 Trauma Data Report

Published June 2023



Public Health
Prevent. Promote. Protect.

Introduction

The purpose of this report is to highlight prevalence, morbidity, and mortality associated with patterns of fatal and non-fatal injuries due to trauma, as defined by The American College of Surgeons (ACS) in Washoe County. Assessment of trauma and injuries presented in this report utilizes the [Nevada Trauma Registry \(NTR\)](#) standardized dataset established under NRS 450B.238, and NAC 450B.768. This report provides characteristics and trends for specific trauma and injury data submitted in calendar year 2022 in Washoe County.

This report is divided into section(s) describing patient trauma care in Washoe County with accompanying information on:

- a) demographic distribution of traumatic injuries;
- b) specific mechanisms causing the injury;
- c) severity of the injury;
- d) place of the injury; and
- e) length of hospital stay in the intensive care unit (ICU).

These section(s) were curated to augment the Washoe County Health District strategic priority to promote impactful partnership with stakeholders in the community and mission to protect and enhance the well-being and quality of life for all in Washoe County.

Traumatic Injury in United States

According to the Centers for Disease Control and Prevention, unintentional injuries are the leading cause of deaths among persons 1 to 44 years of age, accounting for half of deaths in that age group in the United States (Graphic A). In addition to those that survive, millions of people still suffer from injuries each year¹. The combined economic cost of fatal and non-fatal preventable injury-related to employee uninsured costs, vehicle damage, fire costs, medical costs, work productivity, live lost, and quality of life in the United States was \$6.2 trillion in 2020, which is 47.2% increase in costs compared to 2019 (\$4.2 trillion)².

Injuries are categorized into three major types, 1) unintentional; 2) intentional; and 3) undetermined injuries. Unintentional poisoning, unintentional motor vehicle traffic incidents, unintentional drowning and unintentional falls related injuries make up the largest proportion of traumatic unintentional injuries and associated emergency department visitation costs in the region and the United States for population aged 1 to 44 years old (Graphic A). These injuries account for some of the highest economic cost of injuries among all types of traumatic injuries. In 2020, unintentional drug poisoning had the highest combined medical and value of life costs in the United States, reaching almost a trillion-dollars compared to other types of injuries³. Second highest combined cost was associated with homicide and suicide due to firearm injuries (\$226.8 billion and \$238.5 billion, respectively). Other injuries with high economic cost were reported amongst unintentional falls (\$176.4 billion) and motor vehicle accidents (\$194.2 billion) injuries.

¹ "FASTSTATS - Injuries." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 12 May 2016, <https://www.cdc.gov/nchs/fastats/injuries.htm>.

² Peterson C, Miller GF, Barnett SB, Florence C. Economic Cost of Injury — United States, 2019. MMWR Morb Mortal Wkly Rep 2021;70:1655–1659. DOI: <http://dx.doi.org/10.15585/mmwr.mm7048a1external icon>

³ "WISQARS Cost of Injury – Number of Injuries and Associated Costs" Centers for Disease Control and Prevention, 24 Mar 2023, <https://wisqars.cdc.gov/cost/>

10 Leading Causes of Death, United States
2020, Both Sexes, All Ages, All Races

	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
1	Congenital Anomalies 30.6 %	Unintentional Injury 45.5 %	Unintentional Injury 41.5 %	Unintentional Injury 33.2 %	Unintentional Injury 48.1 %	Unintentional Injury 51.6 %	Unintentional Injury 37.5 %	Malignant Neoplasms 23.1 %	Malignant Neoplasms 31.5 %	Heart Disease 29.3 %	Heart Disease 27.8 %
2	Short Gestation 23.8 %	Congenital Anomalies 15.1 %	Malignant Neoplasms 23.1 %	Suicide 21.9 %	Homicide 20.6 %	Suicide 13.9 %	Heart Disease 14.7 %	Heart Disease 22.8 %	Heart Disease 25.3 %	Malignant Neoplasms 23.2 %	Malignant Neoplasms 24.0 %
3	Sids 10.5 %	Homicide 12.3 %	Congenital Anomalies 10.4 %	Malignant Neoplasms 15.4 %	Suicide 19.3 %	Homicide 11.7 %	Malignant Neoplasms 13.0 %	Unintentional Injury 18.6 %	Covid-19 12.0 %	Covid-19 14.9 %	Covid-19 14.0 %
4	Unintentional Injury 9.0 %	Malignant Neoplasms 12.1 %	Homicide 10.2 %	Homicide 10.7 %	Malignant Neoplasms 4.2 %	Heart Disease 6.6 %	Suicide 8.8 %	Covid-19 11.3 %	Unintentional Injury 8.3 %	Cerebrovascular 7.2 %	Unintentional Injury 8.0 %
5	Maternal Pregnancy Comp. 8.4 %	Heart Disease 4.4 %	Heart Disease 3.4 %	Congenital Anomalies 5.6 %	Heart Disease 2.8 %	Malignant Neoplasms 5.9 %	Covid-19 7.3 %	Liver Disease 6.4 %	Chronic Low. Respiratory Disease 5.4 %	Alzheimer's Disease 7.0 %	Cerebrovascular 6.4 %
6	Placenta Cord Membranes 5.3 %	Influenza & Pneumonia 3.3 %	Influenza & Pneumonia 3.3 %	Heart Disease 4.2 %	Covid-19 1.6 %	Covid-19 3.7 %	Liver Disease 6.0 %	Diabetes Mellitus 5.0 %	Diabetes Mellitus 5.1 %	Chronic Low. Respiratory Disease 6.8 %	Chronic Low. Respiratory Disease 6.1 %
7	Bacterial Sepsis 4.1 %	Cerebrovascular 2.2 %	Chronic Low. Respiratory Disease 3.3 %	Chronic Low. Respiratory Disease 3.5 %	Congenital Anomalies 1.2 %	Liver Disease 2.7 %	Homicide 5.4 %	Suicide 4.8 %	Liver Disease 4.6 %	Diabetes Mellitus 3.8 %	Alzheimer's Disease 5.4 %
8	Respiratory Distress 2.9 %	Perinatal Period 2.1 %	Cerebrovascular 1.9 %	Diabetes Mellitus 1.9 %	Diabetes Mellitus 1.0 %	Diabetes Mellitus 1.9 %	Diabetes Mellitus 3.5 %	Cerebrovascular 3.8 %	Cerebrovascular 4.0 %	Unintentional Injury 3.3 %	Diabetes Mellitus 4.1 %
9	Circulatory System Disease 2.9 %	Septicemia 1.7 %	Benign Neoplasms 1.7 %	Influenza & Pneumonia 1.9 %	Chronic Low. Respiratory Disease 0.7 %	Cerebrovascular 1.0 %	Cerebrovascular 2.4 %	Chronic Low. Respiratory Disease 2.4 %	Suicide 2.0 %	Nephritis 2.2 %	Influenza & Pneumonia 2.1 %
10	Neonatal Hemorrhage 2.4 %	Benign Neoplasms 1.4 %	Suicide 1.2** %	Cerebrovascular 1.7 %	Complicated Pregnancy 0.6 %	Complicated Pregnancy 1.0 %	Influenza & Pneumonia 1.4 %	Homicide 1.7 %	Influenza & Pneumonia 1.8 %	Influenza & Pneumonia 2.2 %	Nephritis 2.1 %

Graphic A. Ten Leading Causes of Death, United States. Source: WISQARS Centers for Disease Control and Prevention

Trauma Centers in the United States

Designation and verification of trauma centers are two separate independent activities directed to assist hospitals to enhance and optimize trauma care. The designation of trauma facilities in the U.S. is a geopolitical process by which empowered entities, government or otherwise, are authorized to designate⁴. Although the American College of Surgeons (ACS) does not designate trauma centers, the ACS conducts consultation and verification activities through ACS Verification, Review, and Consultation (VRC) programs. Designated trauma centers may receive certification through voluntary review of essential elements such as trained and capable personnel, adequate facilities, and performance improvement to confirm resource capability readiness as a Trauma Center⁵. Trauma Centers are classified into various Levels (Level I, II, III, IV, or V), based on the kinds of resources available in the facility and the number of patients admitted annually⁶.

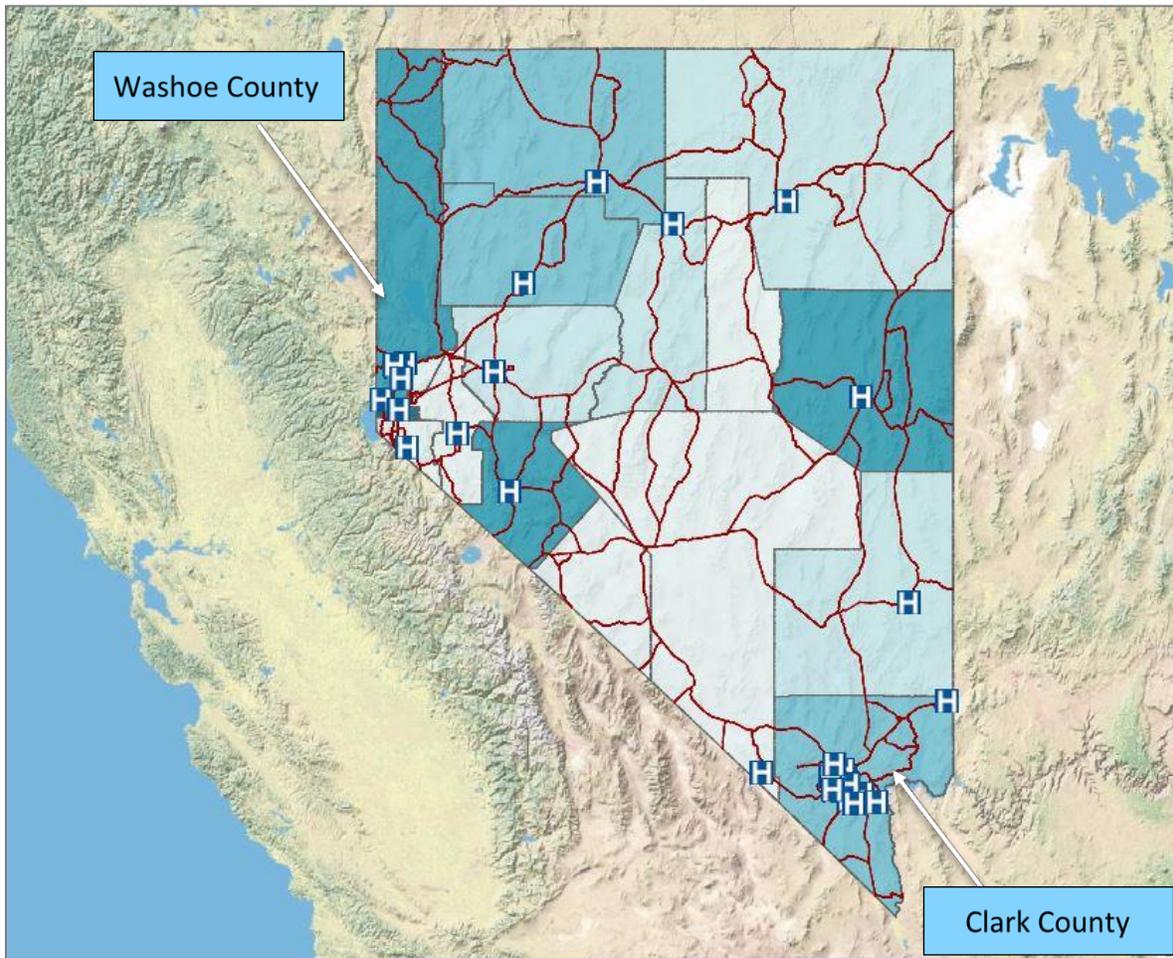
⁴ American College of Surgeons. Verification, Review and Consultation (VRC) Program. Source: <https://www.facs.org/quality-programs/trauma/tqp/center-programs/vrc/about>

⁵ American College of Surgeons. Resource for Optimal Care of the Injured Patient 6th edition. Source: <https://www.facs.org/Quality-Programs/Trauma/TQP/center-programs/VRC/resources>

⁶ Trauma Center Levels and Capabilities. Washoe County 2017 Trauma Data Report. Source: <https://www.washoecounty.us/health/files/ephp/emergency-medical-services/>

Trauma Centers in Nevada

Nevada Trauma Centers are located in the most populated counties in Nevada: Clark County and Washoe County (Graphic B). Level I Adult Trauma Center and Level II Pediatric Trauma Center are located in Las Vegas, Clark County. Renown Regional Medical Center (RRMC) is a Level II Trauma center and St. Mary's Medical Center are a Level III Trauma Center located in Reno, Washoe County (Graphic B). Trauma Level III Centers are located throughout Las Vegas, Clark County. Patients with traumatic injury may arrive at a facility which is not a designated Trauma Center. Medical personnel make an informed decision as to whether a patient should be transferred to a designated Trauma Center in the region⁷.



Graphic B. Licensed Community Hospitals in Nevada. Source: <https://med2.unr.edu/SI/CountyData/atlas.html>

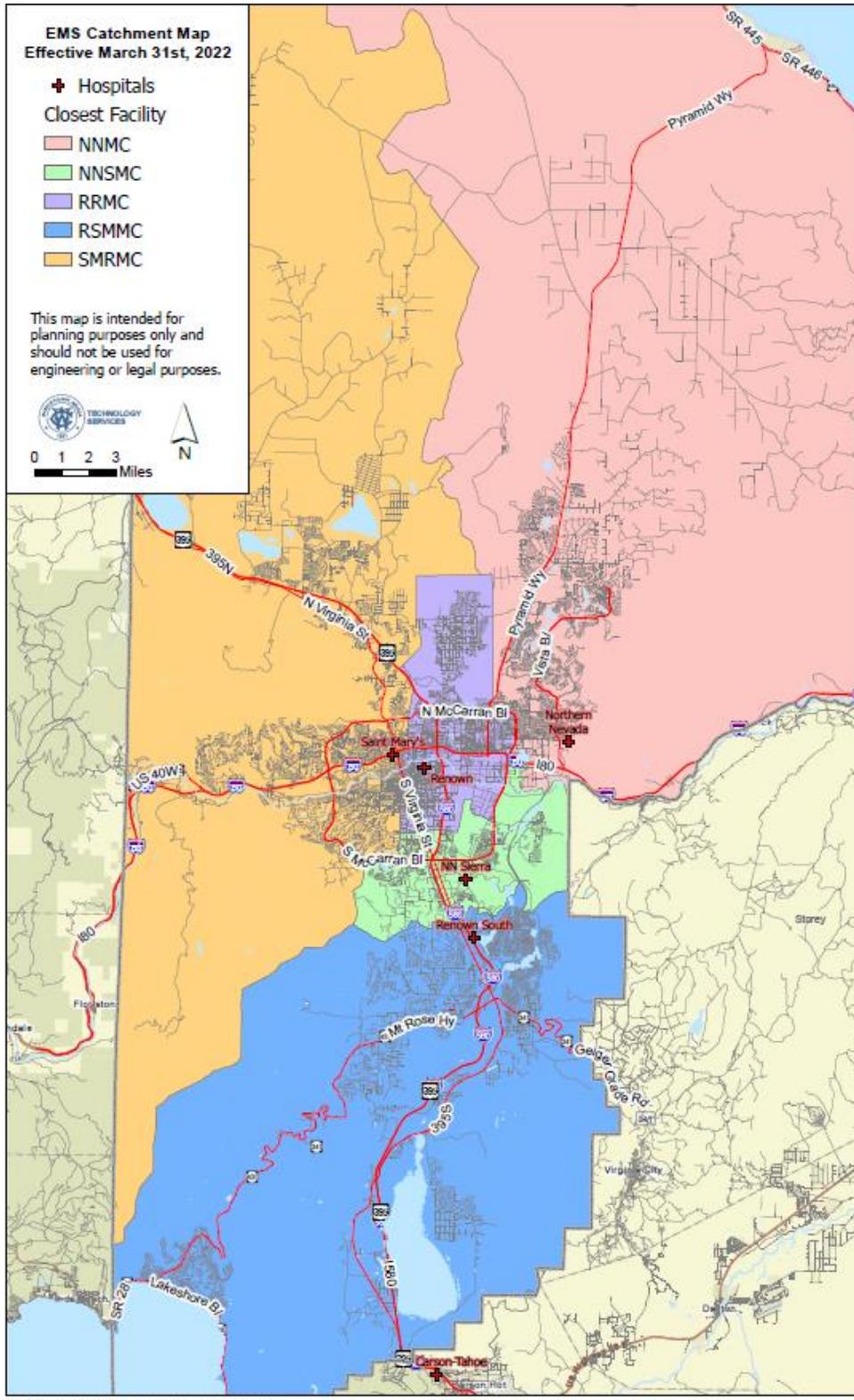
⁷ Trauma Center Levels and Capabilities. Washoe County 2017 Trauma Data Report. Source: <https://www.washoecounty.us/health/files/ehp/emergency-medical-services/>

Catchment Zone Map in Washoe County

Adult and pediatric patient identified as trauma candidate sustaining minor to very severe injuries in Washoe County will be transported to the most appropriate adult trauma center assigned per the Washoe County EMS Catchment Zone Map (Graphic C). EMS Catchment Zone(s) in Washoe County is a geographic area with defined boundaries assigned to designated facilities and trauma centers for purposes of care of identified adult and pediatric trauma candidates. Designated EMS Catchment Zone facilities in Washoe County includes:

- Northern Nevada Medical Center
- Northern Nevada Sierra Medical Center
- Renown Regional Medical Center
- Renown South Meadows Medical Center
- St. Mary's Regional Medical Center

For trauma incident reporting, all facilities listed in the Catchment Zone are actively submitting trauma data into the Nevada Trauma Registry (NTR). The NTR data quality and assurance is operated and maintained by the Nevada Department of Health and Human Services.



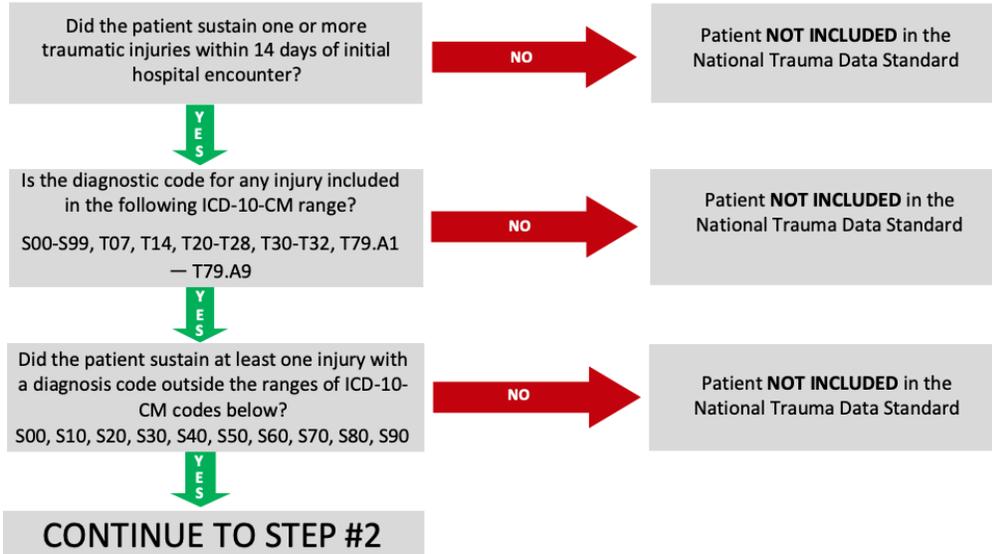
Graphic C. Washoe County EMS Catchment Zone Map 2022

Trauma Reporting in Washoe County

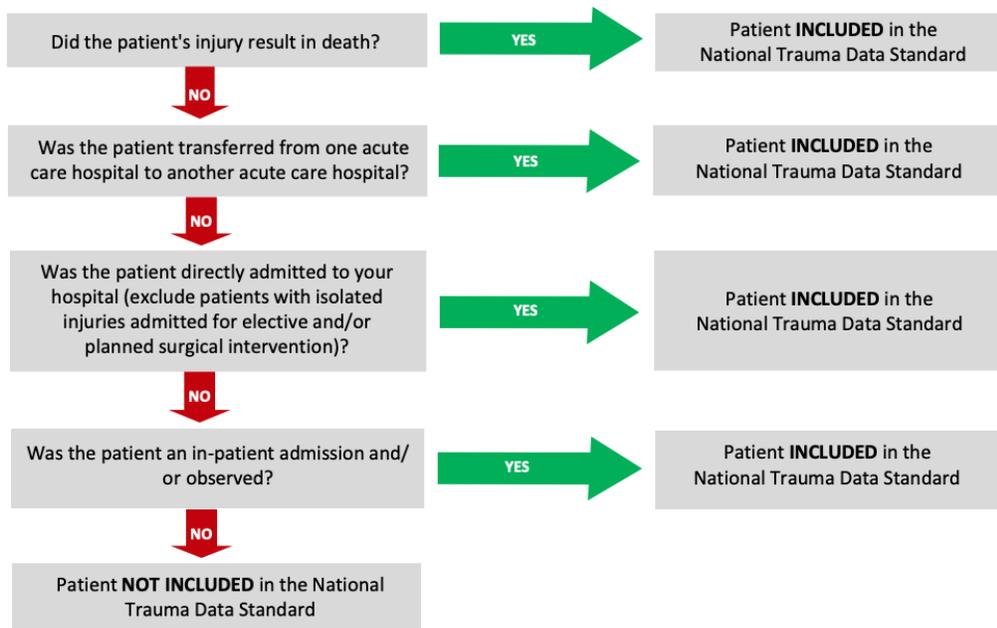
The National Trauma Data Bank (NTDB) is the largest combined trauma registry in the United States. Healthcare facilities across the nation report patient level trauma information to the NTDB that range from basic demographics to quantitative, and qualitative data describing the nature of the injury, level of care received, and the outcome of the injury. The National Trauma Data Standard defines a standardized set of data variables to capture and report to Nevada Trauma Registry (Graphic D). A facility does not have to be designated or a verified Trauma Center to report data on a patient experiencing traumatic injury to the Nevada Trauma Registry. Patient level trauma data is reported to Nevada Trauma Registry (NTR) by facilities in the Catchment Zone. Reporting facilities also admit trauma patients who sustained injuries in location(s) outside Washoe County. The NTR does capture patient level information for trauma patients transported from Northern California region(s) to healthcare facilities in Washoe County. Graphic D illustrates inclusion criteria that a patient must meet to be reported to the NTR. For consistency in data reporting, the Washoe County Trauma 2022 report does not exclude out-of-state patients injured in Washoe County treated in Washoe County facilities. We intend to continue to report incidences based on injury location, and the utilization and demand of resources (EMS and hospital) in the region regardless of residency.

NTDS PATIENT INCLUSION CRITERIA

STEP #1:



STEP #2:



Graphic D. National Trauma Data Standard Data Dictionary 2020 Admissions. Source: <https://www.facs.org/quality-programs/trauma/tqp/center-programs/ntdb/ntds>

Traumatic Injuries in Washoe County

Table 3a depicts the trend of trauma cases reported in Washoe County to the Nevada Trauma Registry from 2019 to 2022. The rate of injury classified as traumatic that were reported by Washoe County facilities increased by 53.2% in 2022 (445.2 per 100,000 population) compared to the previous year in 2021 (290.6 per 100,000 population). The increase in the number of incidents was partly due to a new facility onboarded to the NTR, and more incidents reported by designated trauma hospitals in Washoe County. Nevada Trauma Registry does not mandate compliance tracking by facilities pursuant to NRS 450B.238, and NAC 450B.768. Facilities that do report trauma cases to the registry are encouraged by the state to conduct internal data check independently.

Table 3a: Number & Rate of Trauma Incidents by Year, Washoe County, 2019-2022		
Year	Number of Incidents	Rate per 100,000 population
2019	1,501	320.20
2020	1,324	280.26
2021	1,391	290.58
2022	2,160	445.22

Table 3b: Race Specific Rate of Trauma Incidents, Washoe County, 2022		
Year	Number (%) of Incidents	Race Specific Rate per 100,000 population ^a
White, non-Hispanic	1,611 (74.5%)	538.90
Black, non-Hispanic	52 (2.4%)	399.94
American Indian, non-Hispanic	35 (1.6%)	476.64
Asian/Pacific Islander, non-Hispanic	58 (2.6%)	161.49
Hispanic	241 (11.2%)	185.45

^a Source population for race-specific race from ASHRO Estimates and Projections Summary Without Group Quarters Estimates 2000 to 2040.

Demographic Characteristics

In 2022, nearly 3/4 (74.6%) of trauma patients reported to NTR were white, non-Hispanic. Hispanics of any race accounted for 11.2% of total reports, 2.7% were Asian/Pacific Islander, non-Hispanic, 2.4% were African American, non-Hispanic, and 1.6% were American Indian, non-Hispanic (Figure 1). Race-specific rate calculated for trauma incidents affecting American Indian population disproportionately compared to other races in Washoe County (Table 3b). Although Hispanic is the second largest race/ethnicity population in Washoe County, the data suggest that the Hispanic population has the lowest traumatic injury rate compared to all other reported race/ethnicity.

Table 4 depicts demographic characteristics of trauma patients by age, and gender. Almost half (48%) of the trauma incidents reported in 2022 captured trauma patients between the age of 25 to 64 years old age group (Table 4). The distribution of injury by age group among the population 35 to 54 years old was higher in 2022 compared to 2021 (Figure 2). Case Fatality Rate (CFR) per 100 trauma patients in Washoe County decreased overall in all age groups in 2022 (Figure 3). The largest decrease in case fatality rate was observed among trauma patients in the 55 to 64 years age group; CFR: 2.5 per 100 trauma patients in 2022 compared to 8.99 per 100 trauma patients in 2021; CFR: 8.9 per 100 trauma patients (Figure 3).

Table 5 summarizes case fatality rates among injuries reported. Overall case fatality rate for 2022 in Washoe County is 3.2 per 100 trauma patients. The highest case fatality rate reported among patients aged 85+ years old, 15 to 19 years old (6 deaths per 100 trauma patients), and 0-4 years old patients (4 deaths per 100 trauma patients).

Table 4. Number & Percent of Patients by Sex & Age Group, Washoe County, 2022

Age Group	All Incidents		Male		Female		Unknown	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-4 years	23	1.0%	13	1.0%	10	1.2%	0	-
5-9 years	25	1.1%	19	1.4%	6	0.7%	0	-
10-14 years	47	2.2%	32	2.4%	15	1.9%	0	-
15-19 years	117	5.4%	77	5.7%	40	5.0%	0	-
20-24 years	130	6.0%	94	6.9%	36	4.5%	0	-
25-34 years	264	12.2%	188	13.9%	76	9.4%	0	-
35-44 years	236	10.9%	187	13.8%	48	6.0%	1	100%
45-54 years	236	10.9%	172	12.7%	64	8.0%	0	-
55-64 years	273	12.6%	176	13.0%	97	12.0%	0	-
65-74 years	340	15.7%	184	13.6%	156	19.4%	0	-
75-84 years	293	13.6%	135	10.0%	158	19.6%	0	-
85+ years	176	8.1%	77	5.7%	99	12.3%	0	-
Total	2,160	100%	1,354	100%	805	100%	1	100%

Table 5: Rate of Fatality Among Trauma Patients by Age Group, Washoe County, 2022

Age Group	Number of Incidents	Percent of Incidents	Number of Deaths	Case Fatality Rate ^a
0-4 years	23	1.0%	1	4.30
5-9 years	25	1.1%	-	-
10-14 years	47	2.2%	1	2.10
15-19 years	117	5.4%	6	5.10
20-24 years	130	6.0%	5	3.80
25-34 years	264	12.2%	4	1.50
35-44 years	236	10.9%	5	2.10
45-54 years	236	10.9%	5	2.10
55-64 years	273	12.6%	7	2.50
65-74 years	340	15.7%	19	5.50
75-84 years	293	13.6%	8	2.70
85+ years	176	8.1%	10	5.70
Total	2,160	100%	71	3.20

^a Rate per 100 trauma patients

Figure 1: Percent of Trauma Patients by Race/Ethnicity, Washoe County, 2022

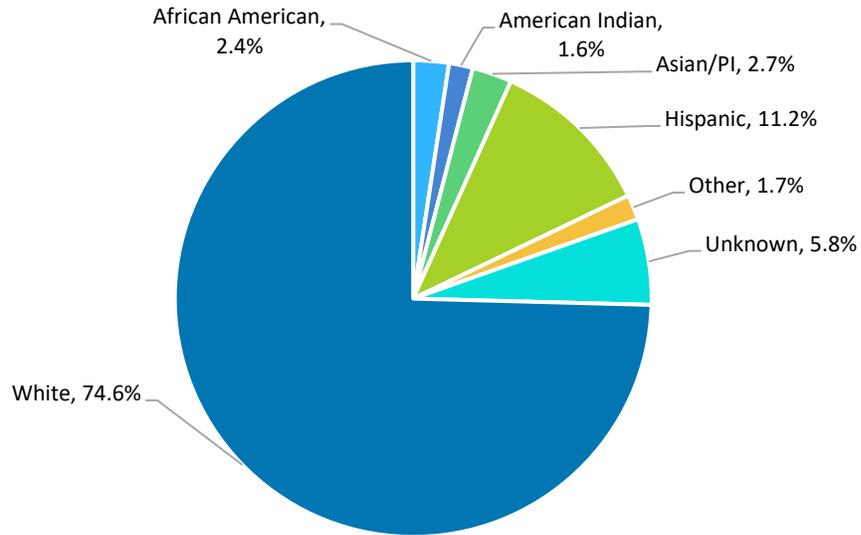


Figure 2: Percent of Trauma Patients by Age Group, Washoe County, 2019-2022

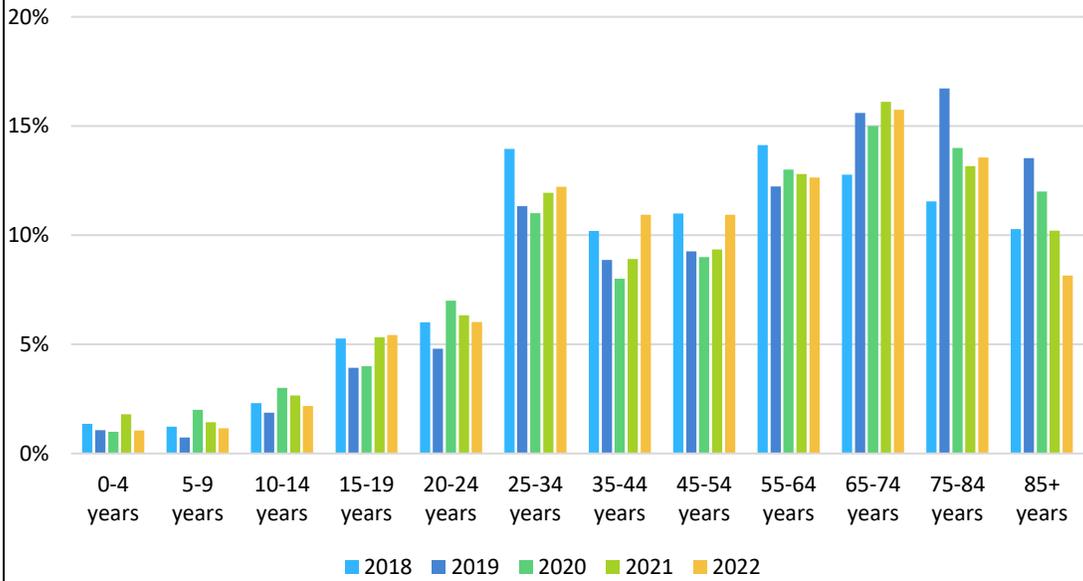
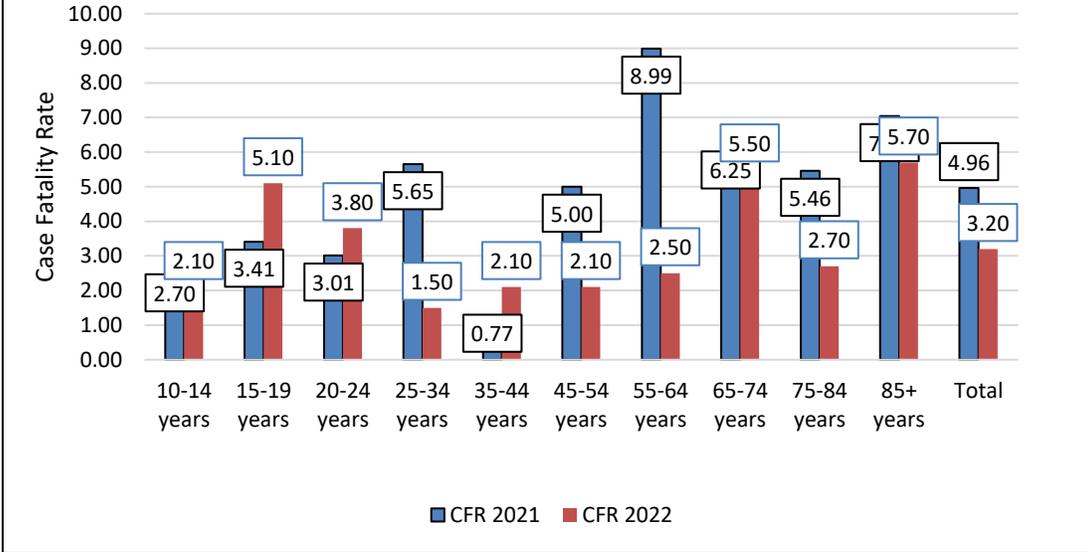


Figure 3: Case Fatality Rate per 100 Trauma Patient in Washoe County 2021 - 2022



Injury Characteristics

Intent of Injury

Unintentional injuries accounted for 91.5% of trauma, with reported case fatality rate of 3.1 per 100 trauma patients. Intentional injury accounted for 7.9% of overall trauma reported, with case fatality rate of 8.5 per 100 trauma patients (Table 6). The intent of injury reported over the span of four years from 2019 – 2022 has consistently predominantly captured unintentional injuries. Intentional injuries make up 7.9% of all trauma incidents, with fatality rate higher than unintentional injuries fatalities in 2022 (Table 6).

Intent of Injury	Number	Percent of Total	Deaths	Case Fatality Rate ^a
Unintentional	1,965	91.5%	61	3.10
Intentional ^b	168	7.9%	7	4.16
Undetermined	13	0.6%	2	15.3
Total	2,146	100%	70	3.26

^aRate per 100 trauma patients.
^bIncludes assault, other, and self-inflicted related injury.

Mechanism of Injury

Mechanism of injury (MOI) was determined by the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD10-CM) primary external cause code (e-code) reported as the main cause of the injury. ICD10-CM is a standardized classification system of diagnosis in medical reporting for healthcare systems in the United States. The percentage of reported unintentional injuries make up most injuries reported to the registry (Figure 4). The highest number of intentional injuries reported in Washoe County was due to intentional cut/pierce (Table 7). Based on analysis of ICD10-CM, the deadliest injury was due to intentional firearm (CFR: 21.6 per 100) in 2022. The highest contributing factor to unintentional traumatic injuries in Washoe County are injuries due to falls, and the second highest involving occupants in transportation or motor vehicles collisions (Table 8).

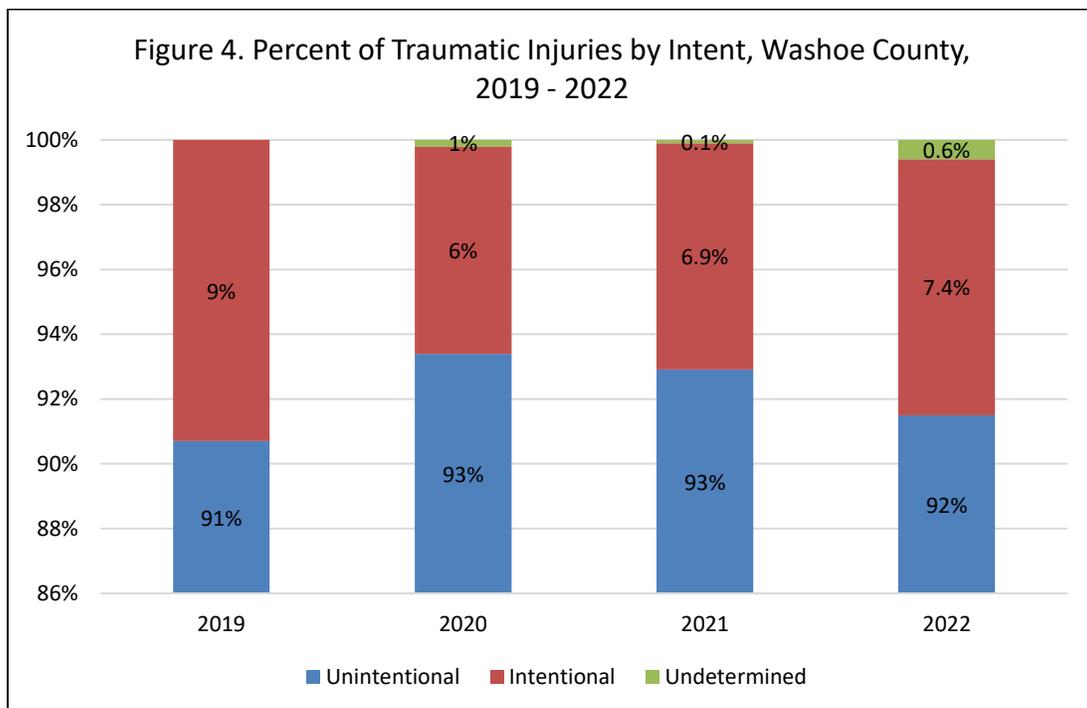


Table 7: Rate of Fatality Among Trauma Patient Due to Intentional Injuries, Washoe County, 2022

Mechanism of Injury (MOI)	Number	Percent of Total	Deaths	Case Fatality Rate ^a
Cut/Pierce	53	31.5%	1	1.88
Fall	4	2.4%	-	-
Fire/Flame	0	0.0%	-	
Firearm	37	22.0%	8	21.6
Hot Object/Substance	0	0.0%	-	-
MVT Motorcyclist	0	0.0%	-	-
MVT Occupant	1	0.6%	-	-
MVT Other	1	0.6%	-	-
MVT Pedal Cyclist	0	0.0%	-	-
MVT Pedestrian	0	0.0%	-	-
Machinery	0	0.0%	-	-
Natural/Environmental Bites and Stings	0	0.0%	-	-
Natural/Environmental Other	0	0.0%	-	-
Other Specified Not Elsewhere Classification	4	2.4%	-	-
Other Specified and Classifiable	2	1.2%	-	-
Overexertion	0	0.0%	-	-
Pedal Cyclist	0	0.0%	-	-
Pedestrian	0	0.0%	-	-
Struck by or Against	57	33.9%	-	-
Transport	0	0.0%	-	-
Unspecified	9	5.4%	-	-
Total	168	31.5%	9	5.4

^a Rate per 100 trauma patients

Table 8: Rate of Fatality Among Trauma Patient Due to Unintentional Injuries, Washoe County, 2022

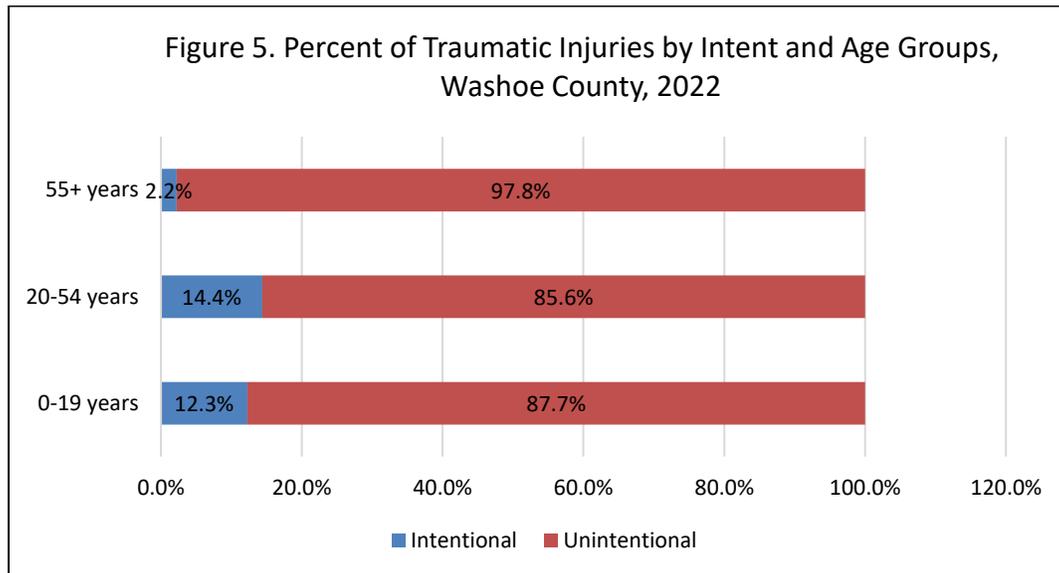
Mechanism of Injury (MOI)	Number	Percent of Total	Deaths	Case Fatality Rate ^a
Cut/Pierce	16	0.8%	-	-
Fall	943	48.0%	30	3.2
Fire/Flame	5	0.3%	-	-
Firearm	18	0.9%	1	12.5
Hot Object/Substance	2	0.1%	-	-
MVT Motorcyclist	134	6.8%	5	3.7
MVT Occupant	370	18.8%	14	3.7
MVT Other	41	2.1%	1	2.4
MVT Pedal Cyclist	19	1.0%	-	-
MVT Pedestrian	67	3.4%	6	8.9
Machinery	4	0.2%	-	-
Natural/Environmental Bites and Stings	6	0.3%	-	-
Natural/Environmental Other	6	0.3%	1	16.6
Other Specified Not Elsewhere Classification	1	0.1%	-	-
Other Specified and Classifiable	39	2.0%	-	-
Overexertion	8	0.4%	1	12.5
Pedal Cyclist	76	3.9%	-	-
Pedestrian	13	0.7%	-	-
Struck by or Against	74	3.8%	1	1.4
Transport	124	6.3%	1	0.8
Unspecified	0	0.0%	-	-
Total	1,966	100.0%	61	3.1

^a Rate per 100 trauma patients

Mechanism of Injury by Age Group

Table 9 indicates the top three mechanisms of intentional and unintentional traumatic injury by selection of age groups: 0-19 years, 20-54 years old, and 55 years and older. Motor vehicle accidents were among the top three mechanisms of injury across all age groups. Intentional injuries reported were more common among individuals 20-54 years old age group (Figure 5).

Rank	0-19 years	20-54 years	55+ years
1	MVT Occupant	MVT Occupant	Fall
2	Fall	Fall	MVT Occupant
3	Struck by or Against	MVT Motorcyclist	Transport (Other)



Place of Injury

The Nevada Trauma Registry database captures place of injury through ICD-10-CM codes, which allows for detailed classification of the place of injury. Approximately 10.7% of all injuries that occurred in Washoe County in 2022 took place on the local residential or business street, interstate highway (7.3%) and other recreation area (8.0%). These were also the three most common places of injuries reported in 2021.

Place of Injury	Number	Percent
Airport	5	0.2%
Amusement park	1	0.0%
Baseball field	1	0.0%
Bathroom	57	2.6%
Bedroom	68	3.1%
Bike path	2	0.1%
Bus station	1	0.0%
Campsite	1	0.0%
Car	2	0.1%
Cell of prison	8	0.4%
Courtyard of prison	2	0.1%
Daycare center	1	0.0%
Derelict house	18	0.8%
Desert	97	4.5%
Driveway	5	0.2%
Elementary school	3	0.1%
Exit ramp or entrance ramp of street or highway	12	0.6%
Football field	5	0.2%
Forest	14	0.6%
Garage of mobile home	1	0.0%
Garden or yard in single-family (private) house	43	2.0%
Gas station	2	0.1%
Health care provider office	3	0.1%
Ice skating rink (indoor) (outdoor)	1	0.0%
Interstate highway	157	7.3%
Kitchen	24	1.1%
Local residential or business street	231	10.7%
Other ambulatory health services establishments	3	0.1%

Table 10: Detailed Place of Injury, Washoe County, 2022 (cont'd)

Place of Injury	Number	Percent
Other place in mobile home	2	0.1%
Other paved roadways		
Other place in apartment		
Other place in nursing home	3	0.1%
Other place in other non-institutional residence	1	0.0%
Other place in prison	1	0.0%
Other place in single-family (private) house	43	2.0%
Other place in unspecified private residence	18	0.8%
Other place on military base	1	0.0%
Other public administrative building	1	0.0%
Other recreation area	173	8.0%
Other wilderness area	25	1.2%
Other ambulatory health services establishments	22	1.0%
Other paved roadways	3	0.1%
Other place in apartment	1	0.1%
Other place in mobile home	19	0.0%
Parking lot	7	0.0%
Parkway	13	0.1%
Patient room in hospital	1	0.0%
Private driveway to single-family (private) house	9	0.9%
Private garage of single-family (private) house	1	0.3%
Public park	6	0.6%
Railroad track	42	0.0%
Restaurant or café	2	0.4%
Roller skating rink	24	0.0%
Shop (commercial)	8	0.3%
Sidewalk	1	1.9%
Soccer field	2	0.1%
State road	3	1.1%
Supermarket, store or market	1	0.4%
Train	1	0.0%
Unspecified	627	29.0%
Missing	318	14.7%
Total	2,160	100.0%

Injury Severity

The Injury Severity Score (ISS) is an ordinal anatomical scoring system that provides an overall score for patients with multiple injuries. The score may range from 1-75. The ISS score is calculated as the sum of the squares of the highest Abbreviated Injury Score (AIS) for the three most severely injured region out of six AIS grouped regions: head or neck, face, chest, abdominal or pelvic contents, extremities, or pelvic girdle, and external⁸. The category of the injury severity is minor, moderate, severe, or very severe. Categories were derived based on the 2016 National Trauma Data Bank Annual Report which assigns ISS into the groups identified in Table 11.

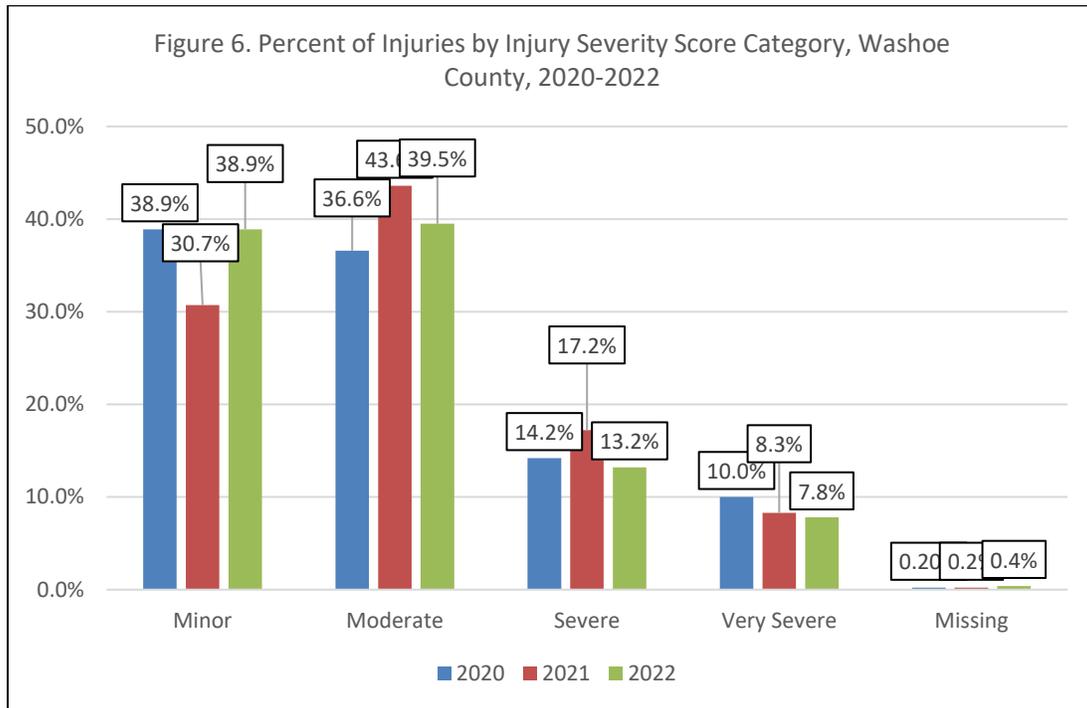
Injury Severity Score (ISS)	ISS Category
1 to 8	Minor
9 to 15	Moderate
16 to 24	Severe
25 or higher	Very Severe

Injury Severity Score Category	Number of Injuries	Percent of Injuries	Number of Deaths	Case Fatality Rate*
Minor	842	38.9	10	1.2
Moderate	855	39.5	9	1.1
Severe	286	13.2	11	3.8
Very Severe	169	7.8	41	24.2
Missing	8	0.4	0	-
Total	2,160	100%	71	3.3

^a Rate per 100 trauma patients

Almost 80% of all injuries in Washoe County in 2022 were categorized as minor or moderate injuries (Table 12). While nearly one in ten incidents were categorized as very severe. The case fatality rate increases dramatically with each increase in ISS category. In 2022, trauma cases with very severe injuries accounted for 57% of deaths reported.

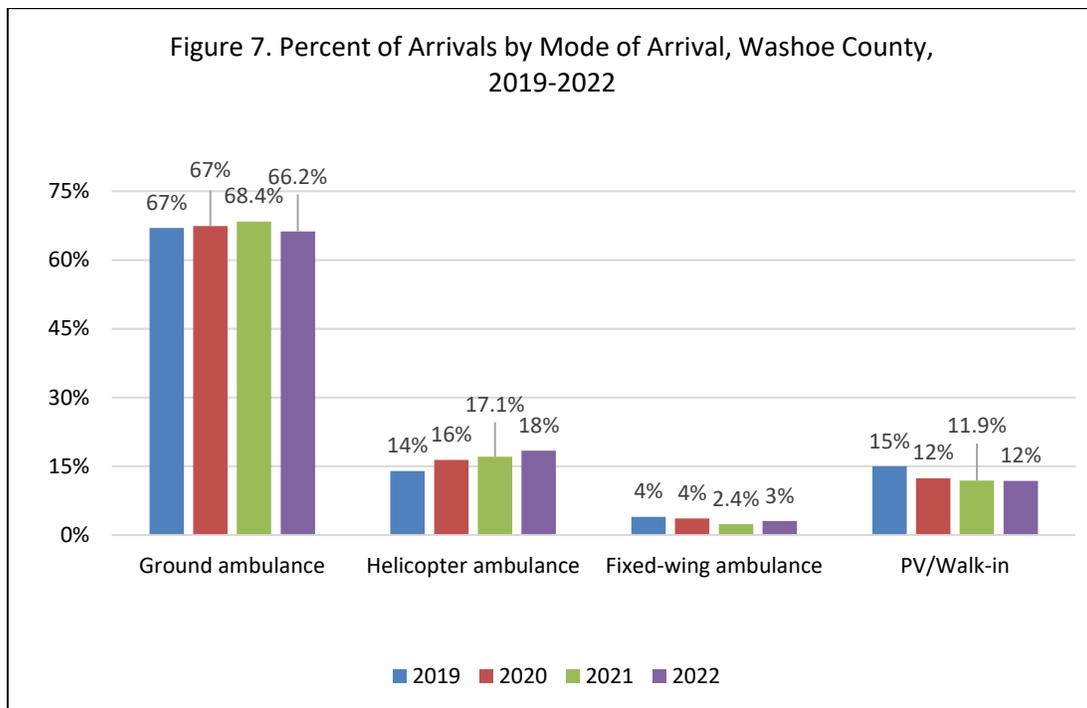
⁸ An overview of the injury severity score and the new injury severity score. BMJ Injury Prevention. Accessed <https://injuryprevention.bmj.com/content/7/1/10>

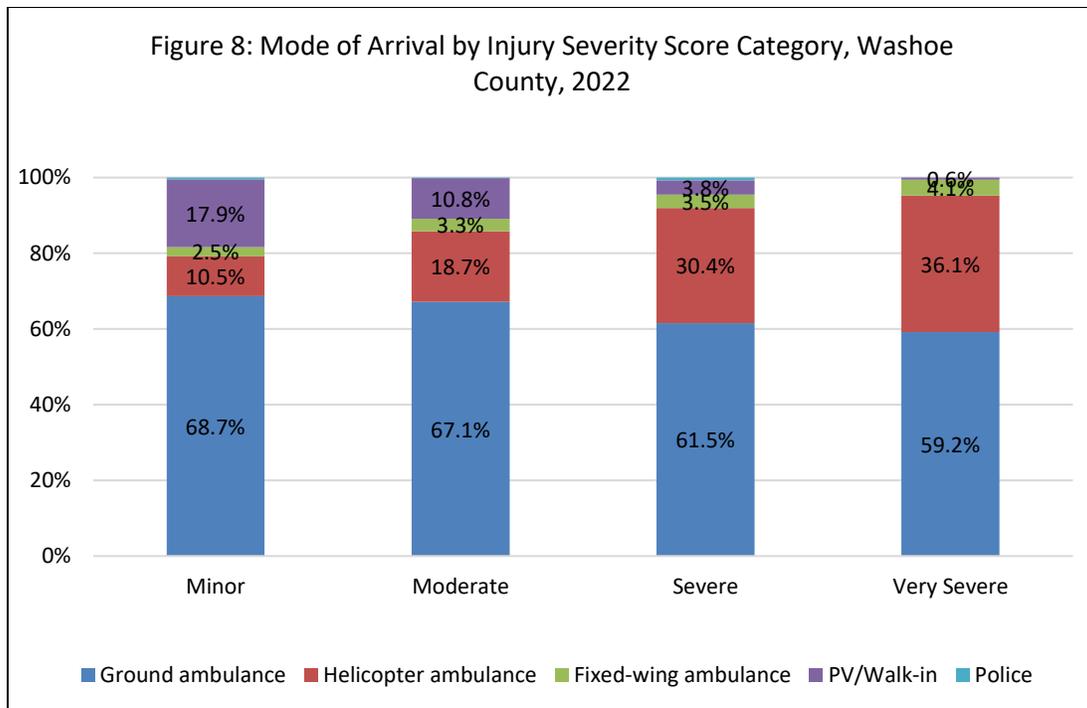


Over the span of 2020 – 2022, the trends for minor injuries based on ISS increased from 30.7% to 38.9% and very severe injuries slightly decreased from 8.3% to 7.8% in Washoe County. Moderate and severe injuries decreased by 4% over the span of three years from 2020 – 2022 (Figure 6).

Prehospital Characteristics

Figure 7 summarizes the distribution of transport by mode of arrival from 2019 – 2022. More than 2/3 of trauma patients in Washoe County was transported by ground ambulance (66.2%), followed by private vehicle/walk in (12%), and by helicopter ambulance (18.1%). In 2022, more than half of patients with very severe injury score was transported via ground ambulance, with consistent increase in helicopter ambulance utilization as injury severity score increases (Figure 8). Helicopter ambulance utilization in Washoe County also increased by 4% from 2019 – 2022.





The highest case fatality rate (CFR) reported in Washoe County were among trauma patients transported by fixed wing and helicopter ambulance [CFR:5.8]. CFR by transport doubles among patients transported in helicopter ambulance compared to ground ambulance [CFR:3.2] (Table 13). Approximately 12% of patients opted for private vehicle or walk in to be seen by ER providers in Washoe County.

Mode of Arrival	Number of Incidents	Percent of Incidents	Number of Deaths	Case Fatality Rate ^a
Ground ambulance	1,430	66.2%	46	3.2
Helicopter ambulance	397	18.4%	23	5.8
Fixed-wing ambulance	66	3.1%	-	-
Private Vehicle/Walk-in	255	11.8%	2	0.8
Other	12	0.4%	-	-
Total	2,159	100%	71	3.3

^a Rate per 100 trauma patients

Substance Use

As noted in Table 14, approximately 37.1% of patients with traumatic injury in Washoe County were not tested for alcohol use in 2022. Among those patients who were tested for alcohol use, less than 17.4% had alcohol detected in their system via trace levels or tested above the legal limit. Alcohol use was detected above the legal blood alcohol limit among 15.3%, or 40 trauma patients with intentional injuries. Approximately 83.9% or 219 trauma patients with unintentional injuries were also tested above the legal blood alcohol limit (Table 15). Substance use was detected and confirmed by test in 373 trauma patients or 17.3% of all trauma patients reported to NTR in 2022.

Alcohol Use	2019		2020		2021		2022	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No/Not Tested	719	47.9%	589	44.5%	541	38.8%	800	37.1%
No/Confirmed by Test	535	35.6%	515	38.9%	611	43.9%	980	45.4%
Yes/Confirmed by Test, Trace Levels	116	7.7%	63	4.7%	42	3.0%	112	5.2%
Yes/Confirmed by Test, > Legal Limit ^a	129	8.6%	154	11.6%	193	13.8%	264	12.2%
Unknown	1	<1%	1	0.1%	4	0.3%	4	0.1%

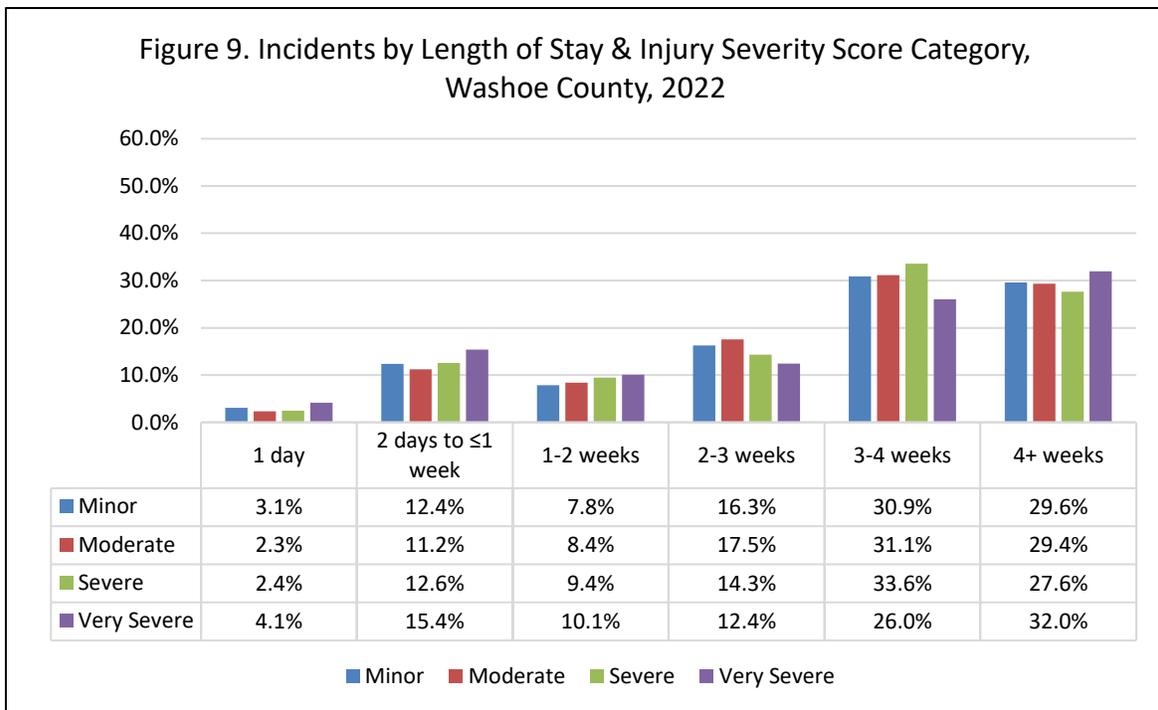
^a Legal alcohol limit less than 0.08 blood alcohol limit NRS 484C.110

Alcohol Use	Intentional		Unintentional		Undetermined		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No/Not Tested	41	5.2%	746	94.3%	4	0.5%	791	100%
No/Confirmed by Test	76	7.8%	896	91.5%	7	0.7%	979	100%
Yes/Confirmed by Test, Trace Levels	11	9.8%	101	90.2%	0	0.0%	112	100%
Yes/Confirmed by Test, > Legal Limit ^a	40	15.3%	219	83.9%	2	0.8%	261	100%
Unknown	0	0.0%	3	100.0%	0	0.0%	3	100%

^a Legal alcohol limit less than 0.08 blood alcohol limit NRS 484C.110

Patient Outcomes

Patient outcomes highlighted in this section include median length of stay spent in an intensive care unit, total length of stay by ISS category and top ten highest median length of stay by MOI. Fifteen percent of patients with traumatic injury classified as minor were discharged within a week. The length of stay increases as the severity of the injury increases, as demonstrated by nearly 27.6% of patients with severe traumatic injury, and 32.0% of patients with very severe traumatic injuries being hospitalized for more than four weeks (Figure 9).



Intensive Care Unit

The median number of days spent in an intensive care unit (ICU) increased as the severity of injury increased every year (Table 16). Incidents of intentional self-harm had the longest median length of stay in an ICU of 30 days (Table 17). Among the top 10 highest median length of stay, poisoning, motor vehicle transport, and contact with heat or hot substances related injuries resulted into longer ICU days and hospitalizations.

ISS Category	2019	2020	2021	2022
Minor	0	0	0	0
Moderate	2	2	2	2
Severe	4	4	4	4
Very Severe	4	6	5	6
Missing	-	-	-	-

Mechanism of Injury	2022 (LOS)
Toxic effects of substances nonmedicinal (T51-T65)	31.0
Occupant motor vehicle in transport accident (V30-V39)	29.0
Contact with heat and hot substances (X10-X19)	27.5
Other land transport accidents (V80-V89)	25.0
Motorcycle rider injured in transport accident (V20-V29)	24.5
Pedestrian injured in transport accident (V00-V09)	24.0
Pedal cycle rider injured in transport accident (V10-V19)	24.0
Water transport accidents (V90-V94)	24.0
Slipping, tripping, stumbling and falls (W00-W19)	23.0
Occupant of pick-up injured in transport accident (V50-V59)	23.0

Conclusion

In 2022, injuries due to cut/pierce, firearm, and assault (violence) made up 80% of all intentional cases reported to the trauma registry. Hospitalized trauma patients aged 15-19 years old had the highest case fatality rate compared to case fatalities in all other age groups. Among patients sustaining very severe injuries, fatality increased by six-fold compared to other ISS injury category. Motor vehicle and transport related accidents continues to be a common preventable unintentional injury. Local residential and business streets, recreational areas and interstate highway are among the most common places of injury reported in Washoe County. In addition to motor vehicle injuries, falls are the second most common unintentional injury reported. Roughly 60% of injuries reported are minor to moderate injuries, with ground ambulance or private vehicle/walk in as the most common mode of transportation. With increasing severity of injury, the utilization of helicopter ambulance increases.

With half of trauma patients tested for alcohol use, about 2/3 or 886 cases tested negative for blood alcohol level. However, alcohol use was detected in 16% of unintentional cases (approximately 320 cases) from impaired motor vehicle and motorcyclist accidents, and falls reported in 2022.

Suggested Citation

Washoe County Health District, Division of Epidemiology and Public Health Preparedness. (June 2023). Washoe County 2022 Trauma Data Report. Reno, NV.

Additional Information

For additional information regarding the Washoe County Trauma Report contact

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APPENDIX A – MECHANISM OF INJURY DESCRIPTION(s)

Cut/Pierce
Assault by sharp object
Contact with other sharp objects
Contact with sharp glass
Intentional self-harm by sharp object
Fall
Fall due to ice and snow
Fall from bed
Fall from chair
Fall from cliff
Fall from non-moving wheelchair, nonmotorized scooter and motorized mobility scooter
Fall from other furniture
Fall from, out of or through building or structure
Fall on and from ladder
Fall on and from playground equipment
Fall on and from scaffolding
Fall on and from stairs and steps
Fall on same level from slipping, tripping and stumbling
Fall while being carried or supported by other persons
Fall, jump or diving into water
Other fall from one level to another
Other fall on same level due to collision with another person
Other slipping, tripping, and stumbling and falls
Pedestrian conveyance accident
Fire/Flame
Exposure to ignition of highly flammable material
Firearm
Accidental discharge and malfunction from other and unspecified firearms and guns
Accidental handgun discharge and malfunction
Accidental rifle, shotgun and larger firearm discharge and malfunction
Assault by handgun discharge
Assault by other and unspecified firearm and gun discharge
Intentional self-harm by handgun discharge
Intentional self-harm by other and unspecified firearm and gun discharge
Legal intervention
Hot Object/Substance
MVT Motorcyclist
Motorcycle rider injured in collision with car, pick-up truck or van
Motorcycle rider injured in collision with fixed or stationary object
Motorcycle rider injured in collision with heavy transport vehicle or bus

APPENDIX A (cont'd)– MECHANISM OF INJURY DESCRIPTION(S)

Motorcycle rider injured in collision with two- or three-wheeled motor vehicle
Motorcycle rider injured in non-collision transport accident
Motorcycle rider injured in other and unspecified transport accidents
MVT Occupant
Car occupant injured in collision with car, pick-up truck or van
Car occupant injured in collision with fixed or stationary object
Car occupant injured in collision with heavy transport vehicle or bus
Car occupant injured in collision with pedestrian or animal
Car occupant injured in non-collision transport accident
Car occupant injured in other and unspecified transport accidents
Occupant of heavy transport vehicle injured in non-collision transport accident
Occupant of pick-up truck or van injured in collision with car, pick-up truck, or van
Occupant of pick-up truck or van injured in collision with fixed or stationary object
Occupant of pick-up truck or van injured in collision with heavy transport vehicle or bus
Occupant of pick-up truck or van injured in non-collision transport accident
Occupant of special all-terrain or other off-road motor vehicle, injured in transport accident
MVT Pedal Cyclist
Pedal cycle rider injured in collision with car, pick-up truck or van
Pedal cycle rider injured in other and unspecified transport accidents
MVT Pedestrian
Pedestrian injured in collision with car, pick-up truck or van
Machinery
Contact with other and unspecified machinery
Natural/Environmental Other
Contact with dog
Contact with other mammals
Toxic effect of contact with venomous animals and plants
Other Specified and Classifiable
Caught, crushed, jammed or pinched in or between objects
Discharge of firework
Legal intervention
Overexertion
Other slipping, tripping and stumbling and falls
Pedal Cyclist
Pedal cycle rider injured in collision with car, pick-up truck or van
Pedal cycle rider injured in collision with fixed or stationary object
Pedal cycle rider injured in collision with other pedal cycle
Pedal cycle rider injured in collision with pedestrian or animal
Pedal cycle rider injured in non-collision transport accident
Pedal cycle rider injured in other and unspecified transport accidents

APPENDIX A (cont'd) – MECHANISM OF INJURY DESCRIPTION(s)

Pedestrian Other
Pedestrian injured in collision with car, pick-up truck or van
Pedestrian injured in other and unspecified transport accidents
Struck by or Against
Accidental hit, strike, kick, twist, bite or scratch by another person
Accidental striking against or bumped into by another person
Assault by blunt object
Assault by bodily force
Other slipping, tripping and stumbling and falls
Striking against or struck by other objects
Striking against or struck by sports equipment
Struck by thrown, projected or falling object
Accidental hit, strike, kick, twist, bite or scratch by another person
Transport
Accident to nonpowered aircraft causing injury to occupant
Animal-rider or occupant of animal-drawn vehicle injured in transport accident
Occupant of special all-terrain or other off-road motor vehicle, injured in transport accident
Unspecified
Assault by unspecified means