WASHOE COUNTY
HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

Washoe County 2021 Trauma Data Report

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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 injuries during the Declaration of Emergency related to the COVID-19 pandemic.

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

a) demographic distribution of injuries in Washoe County;
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 Washoe County during COVID-19

The Coronavirus Disease (COVID-19) pandemic continued to impact healthcare systems nationwide in 2021. In addition to the cycles of COVID-19 incidence and hospitalizations, traumatic injuries continue to be a growing health concern in Washoe County between 2020-2021. Domestic migration changes in the U.S. dramatically increased between 2020-2021 and are likely being driven by the pandemic's impact. On average, census reported that smaller counties observed higher net domestic migration, while larger counties of 500,000 population or more observed decreases in net domestic migration. Based on the migration calculations released on Vintage 2020 population estimates, Washoe County net domestic migration rate was in the 10.1 to 50.0 per 1,000 population range. However, those rates increased based on Vintage 2021 population estimates with net migration rate of 50.0 or more per 1,000 population[1]. With continued positive net domestic migration in Washoe County, the odds and patterns of injury will likely change in Washoe County. Also, increased population mobility due to lifting COVID-related restrictions will likely affect the number of injuries occurring in a growing community.

[1] Bureau, U.S. Census. "New Data Reveal Continued Outmigration from Some Larger Combined Statistical Areas and Counties." Census.gov, 13 Apr. 2022, https://www.census.gov/library/stories/2022/03/net-domestic-migration-increased-in-united-states-counties-2021.html.

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 (Appendix A). In addition to those that survive, millions of people still suffer from injuries each year[2]. 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)[3].

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 Influenza & Pneumonia 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 %		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 %

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

[2] "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.
[3] 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

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. Meanwhile, homicide and suicide accounts for most traumatic intentional injuries. Reducing the risk of unintentional injury involves understanding basic preventive mechanisms, such as implementing robust transportation safety and primary seat belt laws[4]. The State of Nevada under NRS 484D.495 enforces seat belt use under a non-moving, secondary violation. Under current statutes, including in Washoe County, seat belt use violation does not affect driver's license points or suspension. Effective transportation safety and restraint use policies have been shown to significantly reduced the risk of serious injuries and deaths by half in motor vehicle related incidents. Other methods of risk reduction to address the likelihood of high impact falls among seniors include the promotion of evidence-based falls prevention programs[5] such as STEADI - Stopping Elderly Accidents, Deaths and Injuries endorsed by the CDC National Center for Injury Prevention and Control.

[4] Transportation Safety Centers for Disease Control and Prevention. Source: https://www.cdc.gov/transportationsafety/seatbelts/states.html
[5] Falls Prevention and Programs National Council on Aging. Source: https://www.ncoa.org/article/about-evidence-based-programs

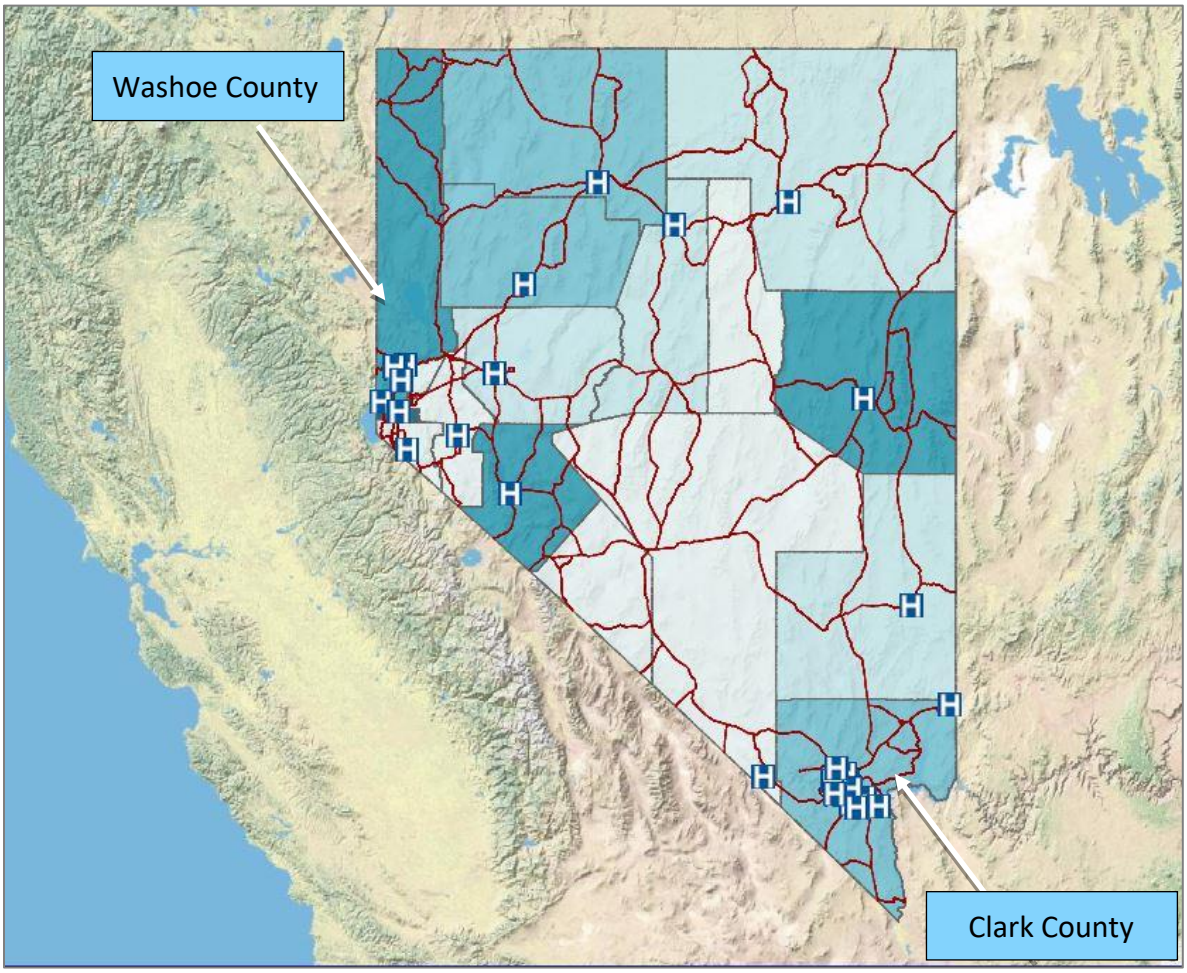
Trauma Centers in the United States

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 designate[6]. Although the 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 Center[7]. 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 annually[8].

[6] American College of Surgeons. Verification, Review and Consultation (VRC) Program. Source: https://www.facs.org/quality-programs/trauma/tqp/center-programs/vrc/about
[7] 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
[8] 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 (Appendix 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 located in Reno, Washoe County (Appendix B). Trauma Level III Center is 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 region[9].



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

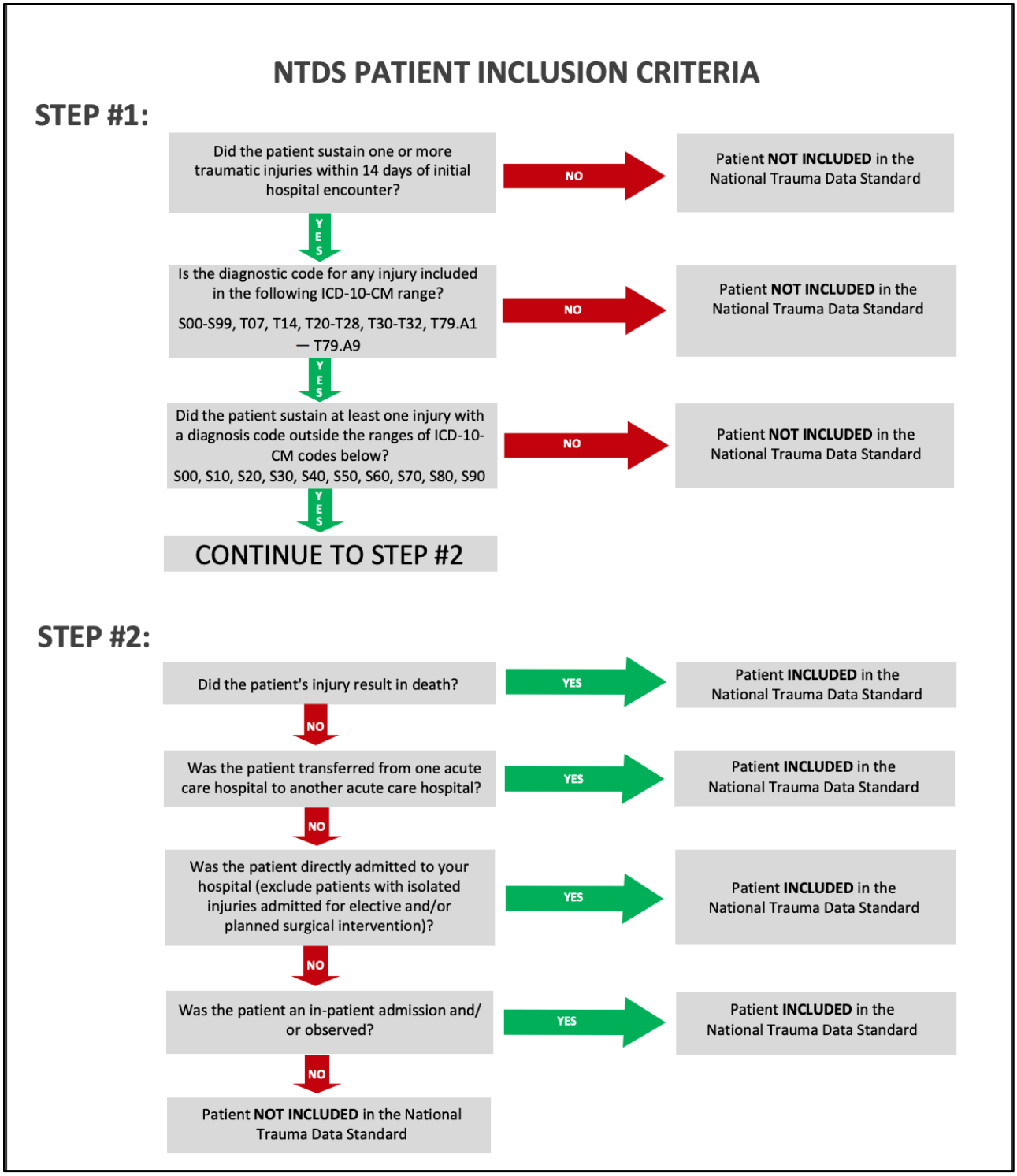
[9] Trauma Center Levels and Capabilities. Washoe County 2017 Trauma Data Report. Source: https://www.washoecounty.us/health/files/ephp/emergency-medical-services/

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 (Appendix C). 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 five healthcare facilities in Washoe County: Emergency Room (ER) at McCarran Northwest, an extension of Northern Nevada Medical Center, Incline Village Community Hospital, Northern Nevada Medical Center, Renown Regional Medical Center, Renown South Meadows Medical Center, and Saint Mary's Regional Medical Center. 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. Appendix C illustrates inclusion criteria that a patient must meet to be reported to the NTR.

For the purpose of consistency in data reporting, the Washoe County Trauma 2021 report does not exclude out-of-state patients 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.



Appendix C. 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 2018 to 2021. The rate of injury classified as traumatic that were reported by Washoe County facilities increased by 3.7% (286.7 per 100,000 population) compared to the previous year in 2020 (276.3 per 100,000 population). The trend follows closely to previous year as population in Washoe County increase post-pandemic. 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, 2018-2021

Year	Number of Incidents	Rate per 100,000 population
2018	2,130	463.99
2019	1,501	320.19
2020	1,324	276.31
2021	1,391	286.73

Table 3b: Race Specific Rate of Trauma Incidents, Washoe County, 2021

Year	Number (%) of Incidents	Race Specific Rate per 100,000 population [a]
White, non-Hispanic	1,103 (79.3%)	370.17
Black, non-Hispanic	37 (2.7%)	294.63
American Indian, non-Hispanic	26 (1.9%)	351.16
Asian/Pacific Islander, non-Hispanic	41 (3.0%)	116.95
Hispanic	131 (9.4%)	102.35

[a] Source population for race-specific race from ASHRO Estimates and Projections Summary Without Group Quarters Estimates 2000 to 2039.

Demographic Characteristics

Table 4 depicts demographic characteristics of trauma patients by age, and gender. In 2021, nearly eight out of ten (79.3%) trauma patients were white, non-Hispanic. Hispanics of any race accounted for 9.4%, while 3.0% were Asian/Pacific Islander, non-Hispanic 2.7% were African American, non-Hispanic, 2% were American Indian, non-Hispanic (Figure 1). Race-specific rate calculated for trauma reveal trauma incidents affecting American Indian population disproportionately compared to other races in Washoe County (Table 3b). Although the 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.

Almost half (48%) of the trauma incidents reported in 2021 captured trauma patients in the 1 to 44 years old age group (Table 4). The distribution of injury by age group reveals notable increase in trauma among the population 0 to 4 years old and 65-74 years old in 2021 compared to 2020 (Figure 2). Case Fatality Rate (CFR) per 100 trauma patients in Washoe County increased overall in all age groups in 2021 (Figure 3). Compared to 2020, case fatality rate increased significantly by 40% in 2021; 3.5 per 100 trauma patients (2020) to 4.9 per 100 trauma patients (2021) (Figure 3). The largest decrease in fatality rate was observed among trauma patients in the 34-44 years age group; CFR: 4.03 per 100 trauma patients in 2020 compared to 2021; CFR: less than 1 per 100 trauma patients (Figure 3).

Table 4. Number & Percent of Patients by Sex & Age Group, Washoe County, 2021								
Age Group	**All Incidents**		**Male**		**Female**		**Unknown**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1-4 years	25	2%	19	2%	6	1%	0	-
5-9 years	20	1%	15	2%	5	1%	0	-
10-14 years	37	3%	21	3%	16	3%	0	-
15-19 years	74	5%	52	6%	22	4%	0	-
20-24 years	88	6%	63	8%	25	5%	0	-
25-34 years	166	12%	129	15%	36	7%	1	100%
35-44 years	124	9%	89	11%	35	6%	0	-
45-54 years	130	9%	92	11%	38	7%	0	-
55-64 years	178	13%	120	14%	58	10%	0	-
65-74 years	224	16%	115	14%	109	20%	0	-
75-84 years	183	13%	75	9%	108	20%	0	-
85+ years	142	10%	47	6%	95	17%	0	-
Total	**1,391**	**100%**	**837**	**100%**	**553**	**100%**	**1**	**100%**

Table 5: Rate of Fatality Among Trauma Patients by Age Group, Washoe County, 2021				
Age Group	**Number of Incidents**	**Percent of Incidents**	**Number of Deaths**	**Case Fatality Rate[a]**
0-4 years	25	2%	-	-
5-9 years	20	1%	-	-
10-14 years	37	3%	2	2.70
15-19 years	74	5%	3	3.41
20-24 years	88	6%	5	3.01
25-34 years	166	12%	7	5.65
35-44 years	124	9%	1	0.77
45-54 years	130	9%	1	5.00
55-64 years	178	13%	16	8.99
65-74 years	224	16%	14	6.25
75-84 years	183	13%	10	5.46
85+ years	142	10%	10	7.04
Total	**1,391**	**100%**	**69**	**4.96**

[a] Rate per 100 trauma patients

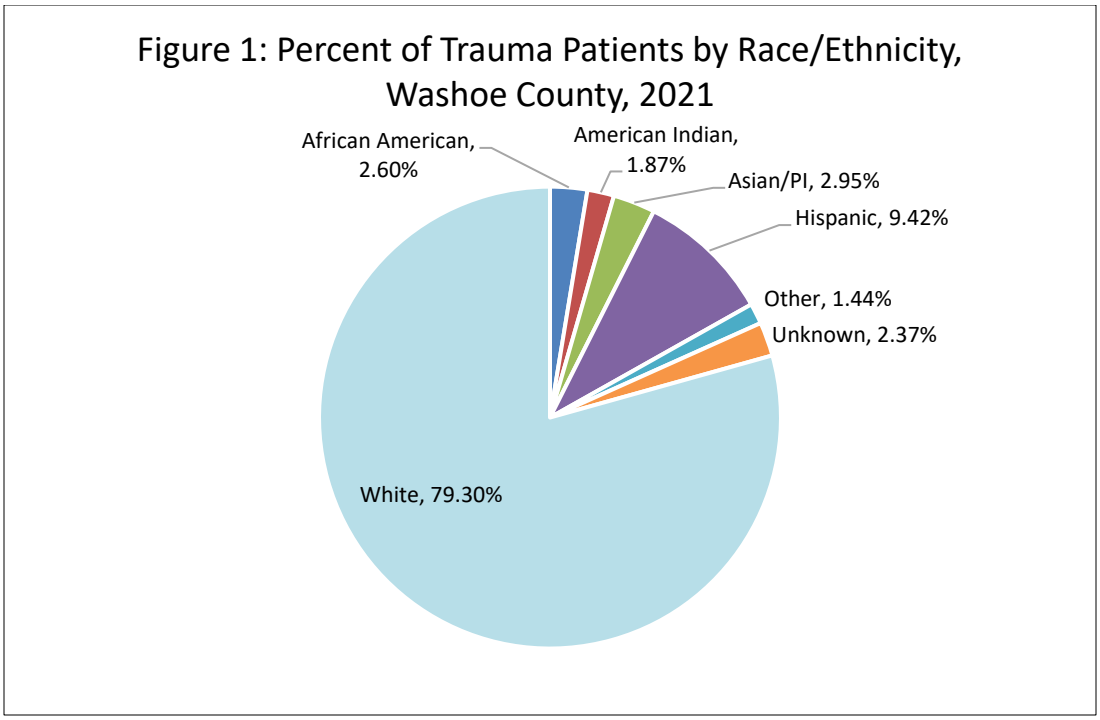


Figure 1: Percent of Trauma Patients by Race/Ethnicity, Washoe County, 2021
African American, 2.60%
American Indian, 1.87%
Asian/PI, 2.95%
Hispanic, 9.42%
Other, 1.44%
Unknown, 2.37%
White, 79.30%

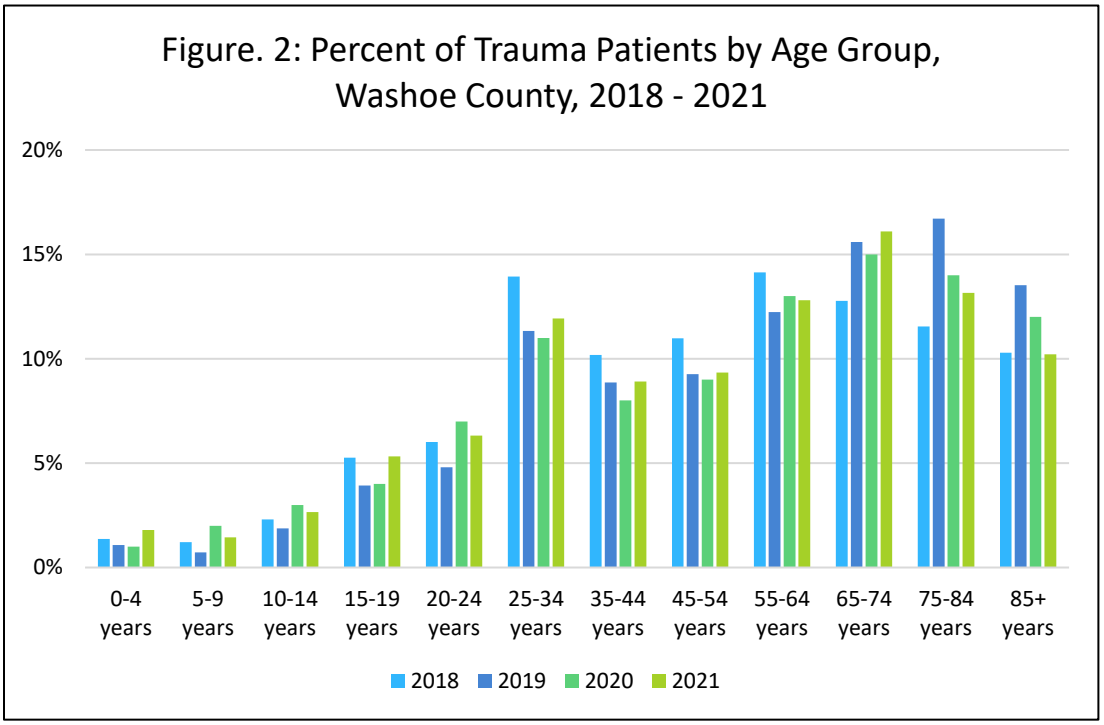


Figure. 2: Percent of Trauma Patients by Age Group, Washoe County, 2018 - 2021
20%
15%
10%
5%
0%
0-4 years
5-9 years
10-14 years
15-19 years
20-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
85+ years
2018
2019
2020
2021

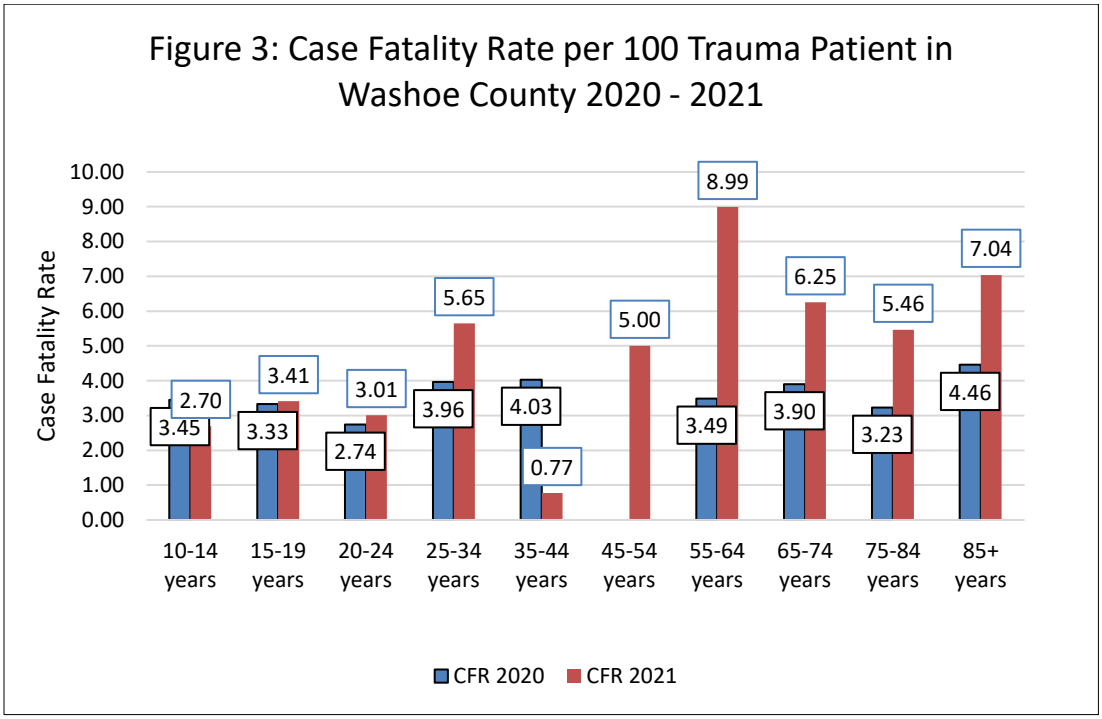


Figure 3: Case Fatality Rate per 100 Trauma Patient in Washoe County 2020 - 2021
Case Fatality Rate
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
3.45
2.70
3.33
3.41
2.74
3.01
3.96
5.65
4.03
0.77
5.00
3.49
8.99
3.90
6.25
3.23
5.46
4.46
7.04
10-14 years
15-19 years
20-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
85+ years
CFR 2020
CFR 2021

Injury Characteristics

Intent of Injury

Unintentional injuries accounted for 93.0% of trauma, with reported case fatality rate of 4.7 per 100 trauma patients. Intentional injury accounted for 6.9% 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 2018 – 2021 has predominantly captures unintentional injuries. Intentional injuries make up 6.9% of all trauma incidents, with fatality rate higher than unintentional injuries fatalities in 2021 (Table 6).

Table 6: Rate of Fatality Among Trauma Patients by Intent, Washoe County, 2021

Intent of Injury	Number	Percent of Total	Deaths	Case Fatality Rate [a]
Unintentional	1,293	93.0%	61	4.7
Intentional	96	6.9%	8	8.3
Undetermined	1	0.1%	0	-
Total	**1,390**	**100%**	**69**	**4.9**

[a] Rate per 100 trauma patients

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 have increased, and meanwhile reported intentional injuries have decreased since 2018 (Figure 4). The highest number of intentional injuries reported in Washoe County was due to assaults from unarmed brawl or fight. Intentional self-harm was second highest category for intentional injury and specifically self-harm by knife accounted for the common MOI in this category (Table 7). Based on analysis of ICD10-CM, two out five unintentional traumatic injuries in Washoe County (41.6%) were due to falls. The second highest contributing factor to unintentional traumatic injuries in Washoe County involved occupants in transportation or motor vehicles collisions (Table 8).

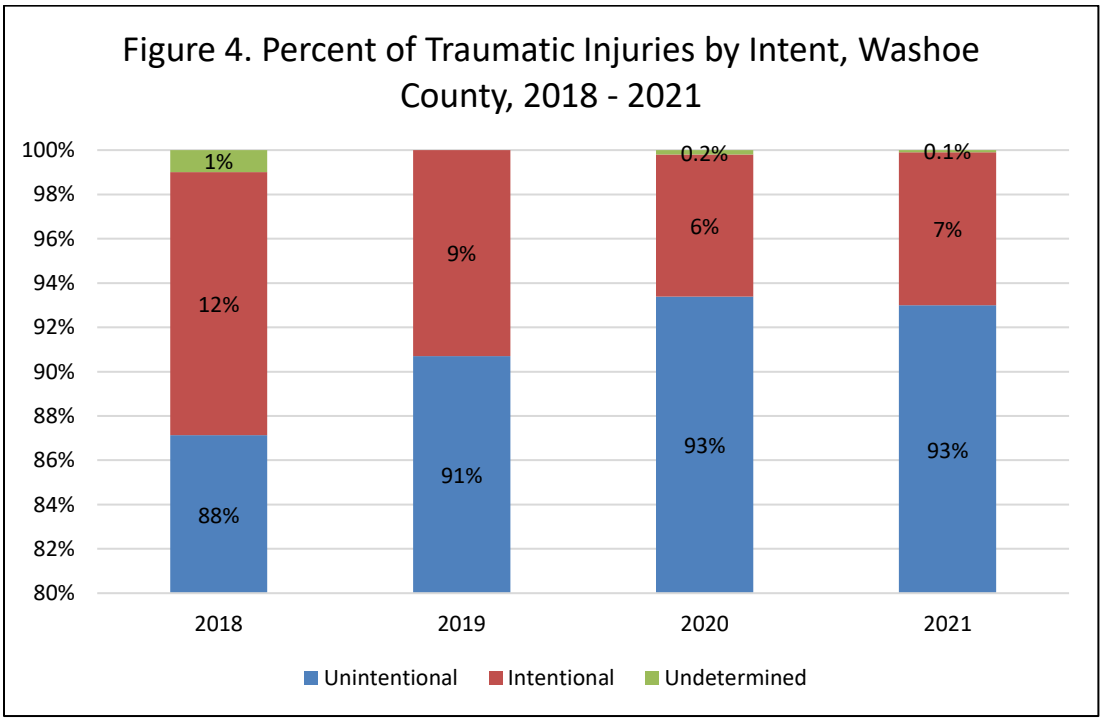


Table 7: Rate of Fatality Among Trauma Patient Due to Intentional Injuries, Washoe County, 2021				
Mechanism of Injury (MOI)	**Number**	**Percent of Total**	**Deaths**	**Case Fatality Rate** [a]
Asphyxiation				
Mechanical threat to breathing	4	4.2%	1	25.0
Intentional (combined)				
Collision of motor vehicles	1	1.1%	-	-
Self-harm by handgun discharge	4	4.2%	-	-
Self-harm by jumping from a high place	2	2.1%	-	-
Self-harm by knife	11	11.6%	-	-
Self-harm by other sharp object	2	2.1%	-	-
Self-harm by other specified means	1	1.1%	-	-
Self-harm by unspecified firearm discharge	1	1.1%	-	-
Assault (combined)				
Assault by handgun discharge	11	11.6%	3	27.2
Assault by knife	16	16.8%	1	6.3
Assault by other bodily force	2	2.1%	-	-
Assault by sharp glass	1	1.1%	-	-
Assault by strike against by another person	3	3.2%	1	33.3
Assault by strike by sport equipment	2	2.1%	-	-
Assault by sword or dagger	1	1.1%	-	-
Assault by unarmed brawl or fight	18	18.9%	1	5.5
Assault by unspecified firearm discharge	2	2.1%	-	-
Assault by unspecified means	2	2.1%	-	-
Assault by unspecified sharp object	10	10.5%	1	10.0
Physical abuse, suspected	1	1.1%	-	-
Total	**96**	**100.0%**	**8**	**8.3**

[a] Rate per 100 trauma patients

Table 8: Rate of Fatality Among Trauma Patient Due to Unintentional Injuries, Washoe County, 2021				
Mechanism of Injury (MOI)	**Number**	**Percent of Total**	**Deaths**	**Case Fatality Rate[a]**
Accidents				
Aircraft causing injury to occupant	2	0.16%	-	-
Accidental discharge from firearms	1	0.08%	1	100.0
Accidental hit, strike, kick, twist, bite	2	0.16%	-	-
Accidental striking against by another	4	0.32%	-	-
Animal-rider injured in transport accident	16	1.27%	-	-
Car occupant(s)				
Collision with car, pick-up truck or van	79	6.28%	6	7.6
Collision with fixed or stationary object	37	2.94%	1	2.7
Collision with heavy transport vehicle or bus	5	0.40%	-	-
Collision with pedestrian or animal	1	0.08%	-	-
Non-collision transport accident	76	6.04%	6	7.9
Other and unspecified transport accidents	2	0.16%	-	-
Caught in or between objects	6	0.48%	-	-
Contact with specified object				
Contact with dog	2	0.16%	-	-
Contact with hot engines, machinery	1	0.08%	-	-
Contact with lifting and transmission devices	2	0.16%	-	-
Contact with other mammals	4	0.32%	-	-
Contact with other sharp objects	1	0.08%	-	-
Contact with sharp glass	3	0.24%	-	-
Exposure to highly flammable material	1	0.08%	-	-
Falls				
Fall due to ice and snow	31	2.46%	1	3.2
Fall from bed	21	1.67%	2	9.5
Fall from chair	11	0.87%	-	-
Fall from cliff	5	0.40%	-	-
Fall from non-moving wheelchair or scooter	2	0.16%	-	-
Fall from other furniture	8	0.64%	-	-
Fall from tree home while engaged in sports	2	0.16%	-	-
Fall from, out of or through building	17	1.35%	-	-
Fall on and from ladder	17	1.35%	1	5.9
Fall on and from playground equipment	6	0.48%	-	-
Fall on and from scaffolding	5	0.40%	1	20.0
Fall on and from stairs and steps	37	2.94%	7	18.9
Fall from slipping, tripping and stumbling	329	26.15%	12	3.6
Table 8 (cont'd): Rate of Fatality Among Trauma Patient Due to Unintentional Injuries, Washoe County, 2021				
Fall, jump or diving into water	1	0.08%	-	-
Unspecified fall	32	2.54%	4	12.5

Motorcycle rider				
Collision with car, pick-up truck or van	31	2.46%	2	6.5
Collision with fixed or stationary object	10	0.79%	1	10.0
Collision with heavy transport vehicle or bus	2	0.16%	-	-
Collision with pedestrian or animal	2	0.16%	-	-
Collision with two- or three-wheeled motor vehicle	2	0.16%	-	-
Non-collision transport accident	50	3.97%	1	2.0
Other and unspecified transport accidents	3	0.24%	-	-
Occupant in transport accidents				
Heavy vehicle injured in non-collision	14	1.12%	1	7.1
Pick-up truck or van injured in collision	6	0.48%	1	16.7
Special all-terrain or other off-road motor	66	5.25%	-	-
Collision with fixed or stationary object	1	0.08%	-	-
Collision with heavy transport vehicle/bus	2	0.16%	-	-
Other specified incidents				
Other fall from one level to another	28	2.23%	-	-
Other slipping, tripping, and stumbling	61	4.85%	-	-
Other fall on same level due to collision	1	0.08%	-	-
Pedal cycle rider				
Collision with car, pick-up truck or van	8	0.64%	-	-
Collision with fixed or stationary	6	0.48%	-	-
Collision with other pedal cycle	3	0.24%	-	-
Non-collision transport accident	39	3.40%	-	-
Other and unspecified transport accidents	3	0.24%	-	-
Pedestrian				
Conveyance accident	96	7.63%	2	2.1
Collision with car, pick-up truck or van	41	3.26%	3	7.3
Other and unspecified transport accidents	1	0.24%	-	-
Striking against or struck by other objects	8	0.48%	1	-
Contact with venomous animals or plant	1	0.08%	-	-
Total	**1,258**	**100.0%**	**59**	**4.7**

[a] Rate per 100 trauma patients

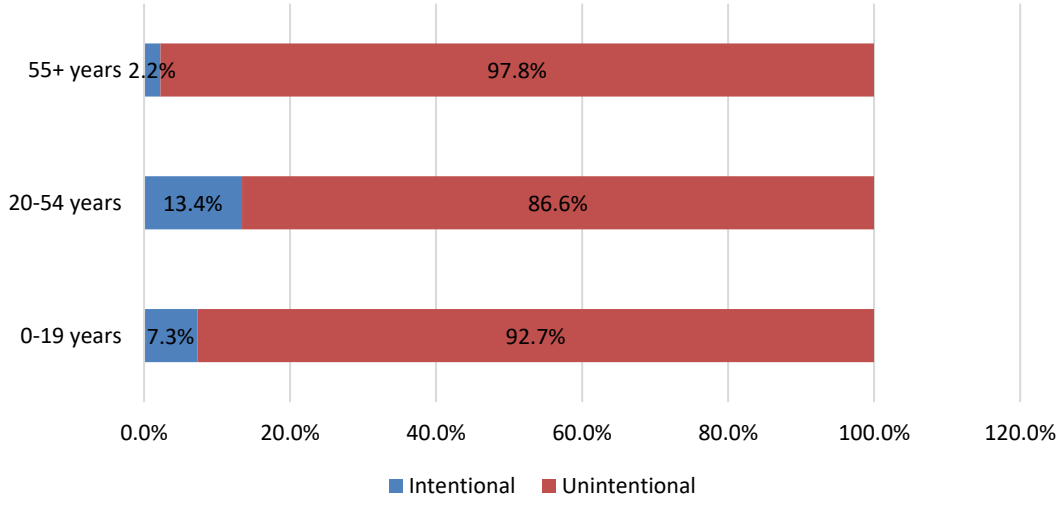
Mechanism of Injury by Age Group

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. Pedestrian, falls and motor vehicles were among the top three mechanisms of injury across all age groups. Injuries by intent observed in 2021 is consistent with previous year observations. Transportation and motor vehicle injuries were the top mechanism for populations in the 0-19 years age group. Intentional assault reported varies in mechanism of injury from assaults due unarmed brawl or fight (18.9%), and by sharp object and knife (2.1%). Pedestrian related injuries were among the top three unintentional injuries across all age group with a case fatality rate of 9.4 per 100 trauma patients (Table 8).

Table 9: Top 3 Mechanisms of Injury by Number of Incidents by Age Group in Washoe County, 2021

Rank	0-19 years	20-54 years	55+ years
1	Transport/Motor Vehicle	Transport/Motor Vehicle	Falls, Stumbling, Slipping
2	Pedestrian	Pedestrian	Transport/Motor Vehicle
3	Unintentional Falls	Intentional Assault	Pedestrian

Figure 5. Percent of Traumatic Injuries by Intent and Age Groups, Washoe County, 2021



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 15.0% of all injuries that occurred in Washoe County in 2021 took place on the interstate highway, followed by other places in an apartment (9.0%) and parking lot (6.8%) (Table 10).

Table 10: Detailed Place of Injury, Washoe County, 2021

Place of Injury	Number	Percent
Airplane as the place of occurrence of the external cause	1	0.08%
Airport as the place of occurrence of the external cause	2	0.16%
Baseball field	1	0.08%
Bathroom in apartment	5	0.41%
Bathroom in mobile home	1	0.08%
Bathroom in nursing home	7	0.58%
Bathroom in other non-institutional residence	1	0.08%
Bathroom in other specified residential institution	3	0.25%
Bathroom of single-family (private) house	34	2.80%
Bathroom of unspecified private residence single family	5	0.41%
Beach as the place	4	0.33%
Bedroom in apartment	8	0.66%
Bedroom in nursing home	14	1.15%
Bedroom of single-family (private) house	43	3.54%
Bedroom of unspecified non-institutional (private) residence	3	0.25%
Bike path	1	0.08%
Bus station	1	0.08%
Cell of prison	2	0.16%
Daycare center	1	0.08%
Derelict house	6	0.49%
Desert	50	4.11%
Dining room of single-family (private) house	4	0.33%
Driveway of nursing home	1	0.08%
Driveway of other non-institutional residence	1	0.08%
Elementary school	1	0.08%
Exit ramp or entrance ramp of street or highway	6	0.49%
Football field	1	0.08%
Forest	17	1.4%
Garden or yard in single-family (private) house	32	2.63%
Garden or yard of mobile home	2	0.16%

Table 10: Detailed Place of Injury, Washoe County, 2021 (cont'd)

Place of Injury	Number	Percent
Garden or yard of other non-institutional residence	1	0.08%
Garden or yard of unspecified private residence	6	0.49%
Health care provider office	4	0.33%
Ice skating rink (indoor) (outdoor)	1	0.08%
Interstate highway	182	14.97%
Kitchen in apartment	4	0.33%
Kitchen in nursing home	4	0.33%
Kitchen in other non-institutional residence	19	1.56%
Kitchen in other specified residential institution	1	0.08%
Kitchen of single-family (private) house	2	0.16%
Kitchen of unspecified non-institutional (private) residence	1	0.08%
Local residential or business street	33	2.71%
Other paved roadways	1	0.08%
Other place in apartment	110	9.05%
Other place in nursing home	21	1.73%
Other place in other specified residential institution	27	2.22%
Other place in prison	1	0.08%
Other place in single-family (private) house	1	0.08%
Other place in unspecified non-institutional private house	1	0.08%
Other public administrative building	6	0.49%
Other recreation area	4	0.33%
Other wilderness area	1	0.08%
Parking lot	83	6.83%
Parkway	3	0.25%
Patient room in hospital	1	0.08%
Private driveway to single-family (private) house	19	1.56%
Private garage of single-family (private) house	8	0.66%
Public park	19	1.56%
Railroad track	3	0.25%

Table 10: Detailed Place of Injury, Washoe County, 2021 (cont'd)

Place of Injury	Number	Percent
Restaurant or café	10	0.82%
Shop (commercial)	10	0.82%

Sidewalk	35	2.88%
State road	33	2.71%
Supermarket, store or market	5	0.41%
Train	1	0.08%
Unspecified place in apartment	18	1.48%
Unspecified place in mobile home	1	0.08%
Unspecified place in nursing home	18	1.48%
Unspecified place in other non-institutional residence	4	0.33%
Unspecified place in other specified residential institution	3	0.25%
Unspecified place in prison	6	0.49%
Unspecified place in school dormitory	1	0.08%
Unspecified place in single-family (private) house	108	8.88%
Unspecified place in unspecified private residence	39	3.21%
Unspecified street and highway	81	6.66%
Zoological garden (Zoo)	1	0.08%
Missing or unspecified	180	12.90%
Total	**1,391**	**87.1%**

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 external[10]. The category of the injury severity is minor, moderate, severe, or very severe. Categories derived based on the 2016 National Trauma Data Bank Annual Report which assigns ISS into the groups identified in Table 11.

Table 11: Injury Severity Score & Category

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

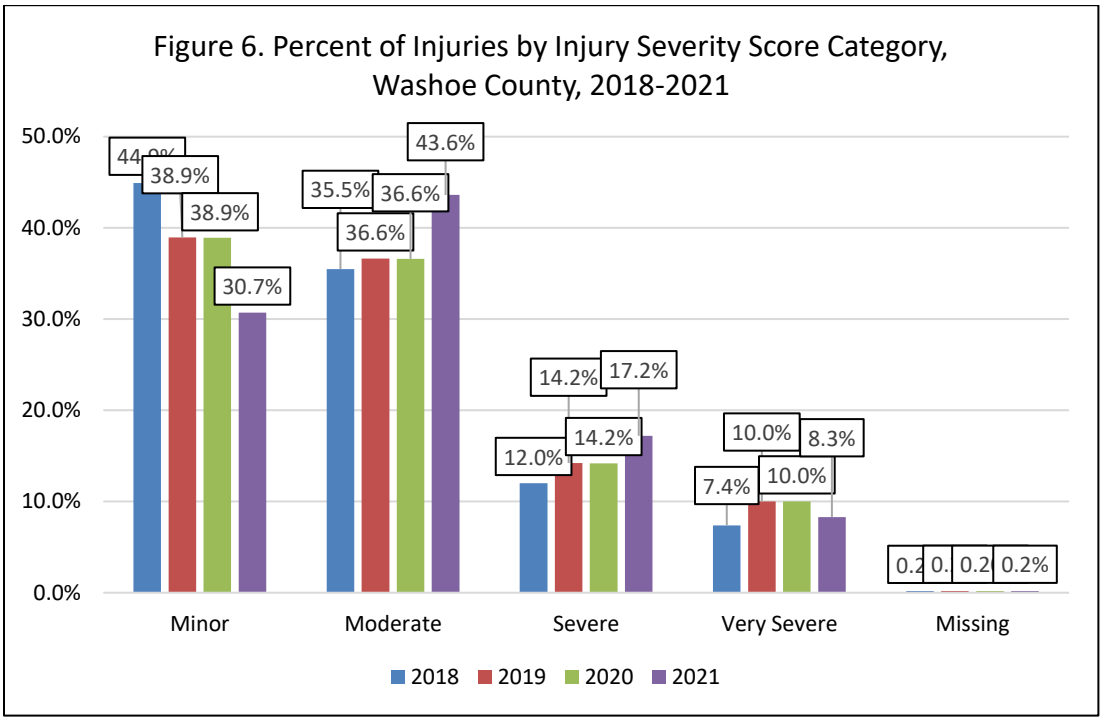
Table 12: Rate of Fatality by Injury Severity Score Category, Washoe County, 2021

Injury Severity Score Category	Number of Injuries	Percent of Injuries	Number of Deaths	Case Fatality Rate*
Minor	427	30.7%	6	1.4
Moderate	606	43.6%	13	2.1
Severe	239	17.2%	14	5.9
Very Severe	116	8.3%	36	31.0
Missing	3	0.2%	0	0.0
Total	**1,391**	**100%**	**69**	**4.9**

[a] Rate per 100 trauma patients

Almost three fourths of all injuries in Washoe County 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 2021, trauma cases with very severe injuries accounted for more than half of deaths reported.

[10] 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

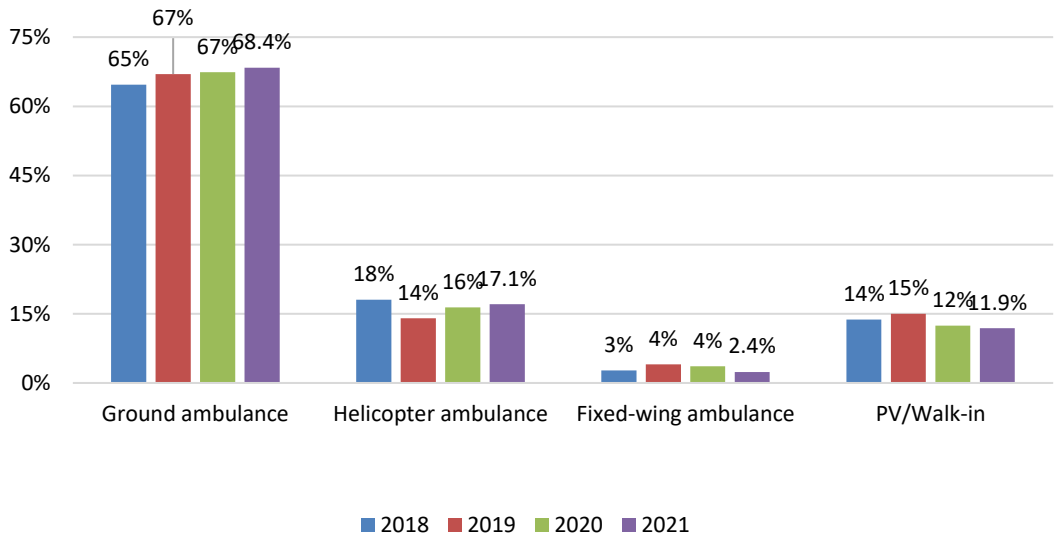


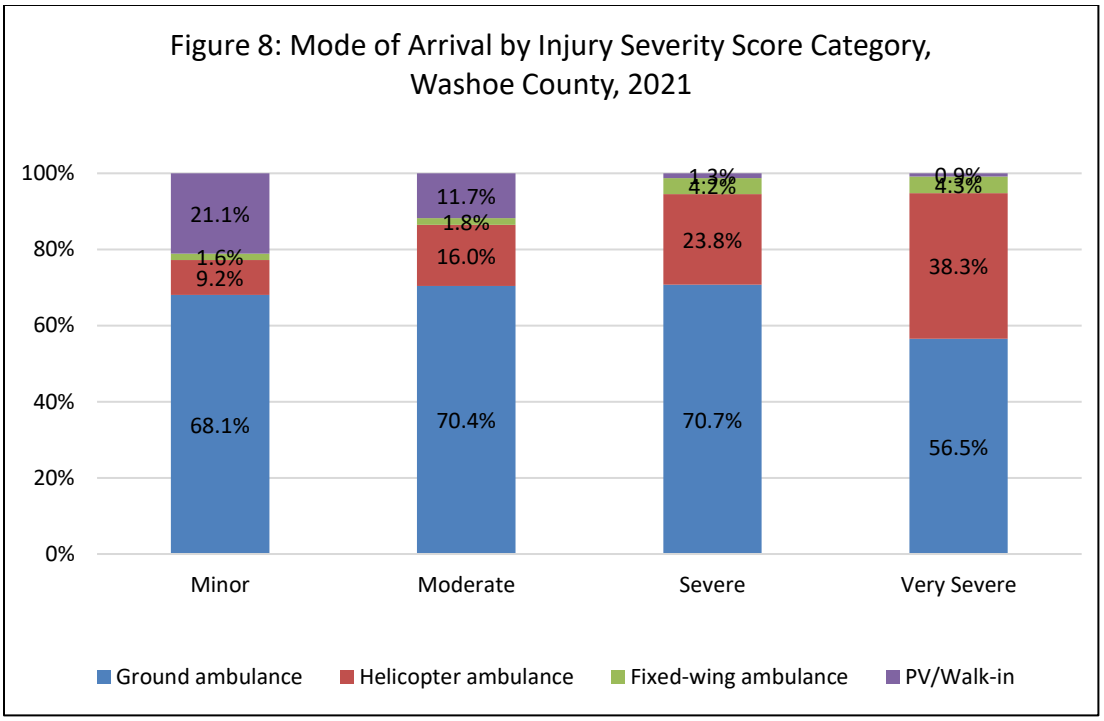
Over the span of 2018 – 2021, the trends for minor injuries based on ISS decreased from 44.8% to 30.7% and very severe injuries decreased from 10.0% to 8.3% in Washoe County. Moderate and severe injuries increased by 3.0% to 10% over the span of three years from 2018 – 2021 (Figure 6).

Prehospital Characteristics

Figure 7 summarizes the distribution of transport by mode of arrival from 2018 – 2021. Majority of trauma patients in Washoe County was transported by ground ambulance (68.4%), followed by Private Vehicle/Walk in (12%), and by helicopter ambulance (17.1%). In 2021, 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).

Figure 7. Percent of Arrivals by Mode of Arrival, Washoe County, 2018 – 2021





Highest case fatality rate reported in Washoe County were among trauma patients transported by fixed wing, and helicopter ambulance [CFR:9.2]. Case fatality rate (CFR) by transport doubles among patients transported in helicopter ambulance compared to ground ambulance [CFR:4.7] (Table 13). Approximately 12% of patients opted for private vehicle or walk in to be seen by ER clinicians and providers in Washoe County.

Table 13: Rate of Fatality by Mode of Arrival, Washoe County, 2021

Mode of Arrival	Number of Incidents	Percent of Incidents	Number of Deaths	Case Fatality Rate[a]
Ground ambulance	951	68.4%	45	4.7
Helicopter ambulance	238	17.1%	22	9.2
Fixed-wing ambulance	33	2.4%	1	3.0
Private Vehicle/Walk-in	166	11.9%	1	0.6
Missing	3	0.2%	-	-
Total	**1,391**	**100%**	**0**	**5.0**

[a] Rate per 100 trauma patients

Substance Use

As noted in Table 14, approximately 38.9% of patients with traumatic injury in Washoe County were not tested for alcohol use in 2021. Among those patients who were tested for alcohol use, less than 15% had alcohol detected in their system via trace levels or tested above the legal limit.

Table 14: Detected Substance Use Among Trauma Patients, Washoe County, 2018 – 2021

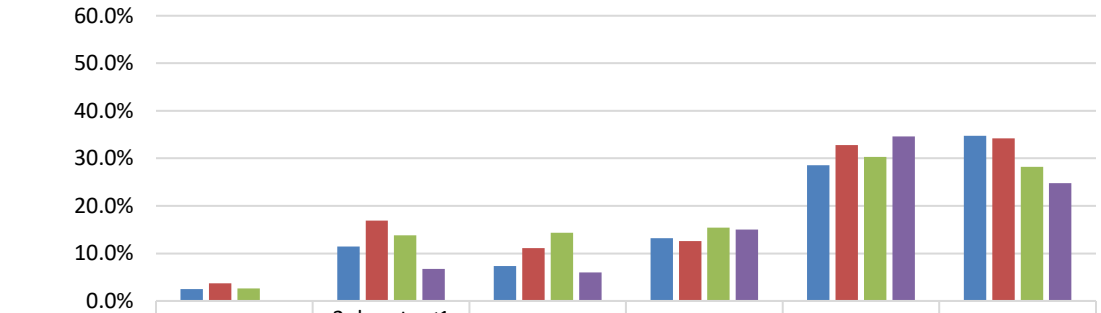
Alcohol Use	2018		2019		2020		2021	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No/Not Tested	834	39.20%	719	47.90%	589	44.50%	541	38.89%
No/Confirmed by Test	841	39.50%	535	35.60%	515	38.90%	611	43.93%
Yes/Confirmed by Test, Trace Levels	196	9.20%	116	7.70%	63	4.70%	42	3.02%
Yes/Confirmed by Test, > Legal Limit[a]	256	12.00%	129	8.60%	154	11.60%	193	13.87%
Unknown	3	<1%	1	<1%	1	0.10%	4	0.29%

[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. Twelve 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 28.2% of patients with severe traumatic injury, and 24.8% of patients with very severe traumatic injuries being hospitalized up to four weeks (Figure 9).

Figure 9. Incidents by Length of Stay & Injury Severity Score Category, Washoe County, 2021



	1 day	2 days to ≤1 week	1-2 weeks	2-3 weeks	3-4 weeks	4+ weeks
Minor	2.5%	11.5%	7.4%	13.2%	28.5%	34.8%
Moderate	3.7%	16.9%	11.1%	12.6%	32.8%	34.2%
Severe	2.7%	13.8%	14.4%	15.4%	30.3%	28.2%
Very Severe	0.0%	6.8%	6.0%	15.0%	34.6%	24.8%

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 15) incidents intentional self-harm had the longest median length of stay in an ICU of 30 days (Table 16). Among the top 10 highest median length of stay, injury involving pedal cycle rider, transport accidents, motor vehicle accidents are injuries related to longer ICU days and hospitalizations in Washoe County.

Table 15: Incidents by Injury Severity Score and Median Days in ICU, Washoe County, 2018~~7~~ - 202~~1~~0

ISS Category	2018	2019	2020	2021
Minor	0	0	0	0
Moderate	2	2	2	2
Severe	4	4	4	4
Very Severe	6	4	6	5
Missing	-	-	-	-

Table 16: Top Ten Highest Median Length of Stay (LOS) Mechanism of Injury ICD-10 Code, Washoe County, 2021

Mechanism of Injury	2021 (LOS)
Other and unspecified effects of external causes (T66-T78)	31.0
Intentional self-harm	29.5
Pedal cycle rider injured in transport accident (V10-V19)	27.0
Other land transport accidents (V80-V89)	25.0
Motorcycle rider injured in transport accident (V20-V29)	24.0
Contact with heat and hot substances (X10-X19)	24.0
Slipping, tripping, stumbling and falls (W00-W19)	23.0
Event of undetermined intent (Y21-Y33)	23.0
Car occupant injured in transport accident (V40-V49)	2~~2~~1.0
Exposure to inanimate mechanical forces (W20-W49)	21.0

Conclusion

On May 2021, Washoe County released a local authority plan to enter recovery phase of the COVID-19 mitigation measures. While under the Declaration of Emergency related to COVID-19, re-opening of normal business activities and large gathering allowed population mobility to gradually meet the mobility criteria observed during pre-pandemic periods. More vehicles occupied the roads as workers, residents, and tourists filled streets and interstate highway. Motor vehicle and transport related accidents continues to be a common preventable unintentional injury in Washoe County. According to Zero Fatalities report produced by Nevada Department of Transportation, about 42.7% of total fatalities in Nevada is due to impaired driving where substances are involved and lane departures. Higher fatalities observed among incidences where substances are involved in motor vehicle accidents occurring during the night. The most common type of crash fatalities in the Reno Sparks area involve sideswipe, overtaking vehicles moving in the same direction.

In addition to motor vehicle injuries in Washoe County, there were observed increases by two folds in case fatality rates among individuals 55 years old and older. The number of injuries is following trend to previous year, however data suggest that fatalities are on the rise for the older population group in Washoe County.

Suggested Citation

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Additional Information

For additional information regarding the Washoe County Trauma Report contact

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