

# WASHOE COUNTY HEALTH DISTRICT

ENHANCING QUALITY OF LIFE

## Washoe County 2019 Trauma Data Report

Published March 2021



**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. As of date, NTR data are collected from all licensed acute care hospitals and trauma centers in Nevada. In previous years, the Washoe County Trauma Data report is available for the public, and stakeholders during the end of calendar year. However, this publication was delayed due to the county's ongoing COVID-19 mitigation efforts.

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; e) spatial epidemiology of injury by zip code; and f) length of hospital stay in 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 the United States

According to the Centers for Disease Control and Prevention, injuries are the leading cause of death among persons 1 to 45 years of age, accounting for 59% 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<sup>1</sup>. Approximately \$671 billion of total lifetime medical and work loss costs due to injuries in the United States are associated with fatal (\$214 billion) and non-fatal injuries (\$457 billion).

**10 Leading Causes of Death, United States**  
2018, 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 4,473	Unintentional Injury 1,226	Unintentional Injury 734	Unintentional Injury 692	Unintentional Injury 12,044	Unintentional Injury 24,614	Unintentional Injury 22,667	Malignant Neoplasms 37,301	Malignant Neoplasms 113,947	Heart Disease 526,509	Heart Disease 655,381
2	Short Gestation 3,679	Congenital Anomalies 384	Malignant Neoplasms 393	Suicide 596	Suicide 6,211	Suicide 8,020	Malignant Neoplasms 10,640	Heart Disease 32,220	Heart Disease 81,042	Malignant Neoplasms 431,102	Malignant Neoplasms 599,274
3	Maternal Pregnancy Comp. 1,358	Homicide 353	Congenital Anomalies 201	Malignant Neoplasms 450	Homicide 4,607	Homicide 5,234	Heart Disease 10,532	Unintentional Injury 23,056	Unintentional Injury 23,693	Chronic Low. Respiratory Disease 135,560	Unintentional Injury 167,127
4	Sids 1,334	Malignant Neoplasms 326	Homicide 121	Congenital Anomalies 172	Malignant Neoplasms 1,371	Malignant Neoplasms 3,684	Suicide 7,521	Suicide 8,345	Chronic Low. Respiratory Disease 18,804	Cerebrovascular 127,244	Chronic Low. Respiratory Disease 159,486
5	Unintentional Injury 1,168	Influenza & Pneumonia 122	Influenza & Pneumonia 71	Homicide 168	Heart Disease 905	Heart Disease 3,561	Homicide 3,304	Liver Disease 8,157	Diabetes Mellitus 14,941	Alzheimer's Disease 120,658	Cerebrovascular 147,810
6	Placenta Cord Membranes 724	Heart Disease 115	Chronic Low. Respiratory Disease	Heart Disease 101	Congenital Anomalies 354	Liver Disease 1,008	Liver Disease 3,108	Diabetes Mellitus 6,414	Liver Disease 13,945	Diabetes Mellitus 60,182	Alzheimer's Disease 122,019
7	Bacterial Sepsis 579	Perinatal Period 62	Heart Disease 68	Chronic Low. Respiratory Disease 64	Diabetes Mellitus 246	Diabetes Mellitus 837	Diabetes Mellitus 2,282	Cerebrovascular 5,128	Cerebrovascular 12,789	Unintentional Injury 57,213	Diabetes Mellitus 84,946
8	Circulatory System Disease 428	Septicemia 54	Cerebrovascular Septicemia	Cerebrovascular 54	Influenza & Pneumonia 200	Cerebrovascular 567	Cerebrovascular 1,704	Chronic Low. Respiratory Disease 3,807	Suicide 8,540	Influenza & Pneumonia 48,888	Influenza & Pneumonia 59,120
9	Respiratory Distress 390	Chronic Low. Respiratory Disease 50	34	Influenza & Pneumonia 51	Chronic Low. Respiratory Disease 165	Hiv 482	Influenza & Pneumonia 956	Septicemia 2,380	Septicemia 5,956	Nephritis 42,232	Nephritis 51,386
10	Neonatal Hemorrhage 375	Cerebrovascular 43	Benign Neoplasms 19**	Benign Neoplasms 30	Complicated Pregnancy 151	Influenza & Pneumonia 457	Septicemia 829	Influenza & Pneumonia 2,339	Influenza & Pneumonia 5,858	Parkinson's Disease 32,988	Suicide 48,344

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

Injuries are categorized into three major types, 1) unintentional; 2) intentional; and 3) undetermined injuries. Falls and transportation-related injuries make up the largest proportion of traumatic unintentional injuries and associated emergency department visitation costs in the region and the United States. Meanwhile, homicide and suicide accounts for the majority of traumatic intentional injuries. Reducing the risk of unintentional injury involves basic preventive mechanisms, such as implementing robust [transportation safety and primary seat belt](#) laws<sup>1</sup>. 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 do 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. Other methods of risk reduction to address the likelihood of high impact falls among seniors include the promotion of [evidence-based falls prevention programs](#)<sup>2</sup> endorsed by the National Council on Aging in regional areas with high percentage of adults residents aged 65 years and older.

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<sup>1</sup> Transportation Safety Centers for Disease Control and Prevention. Source: <https://www.cdc.gov/transportationsafety/seatbelts/states.html>

<sup>2</sup> Falls Prevention and Programs National Council on Aging. Source: <https://www.ncoa.org/resources/falls-prevention-programs-saving-lives-saving-money-infographic-3/>

## 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<sup>3</sup>. 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<sup>4</sup>. 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<sup>5</sup>.

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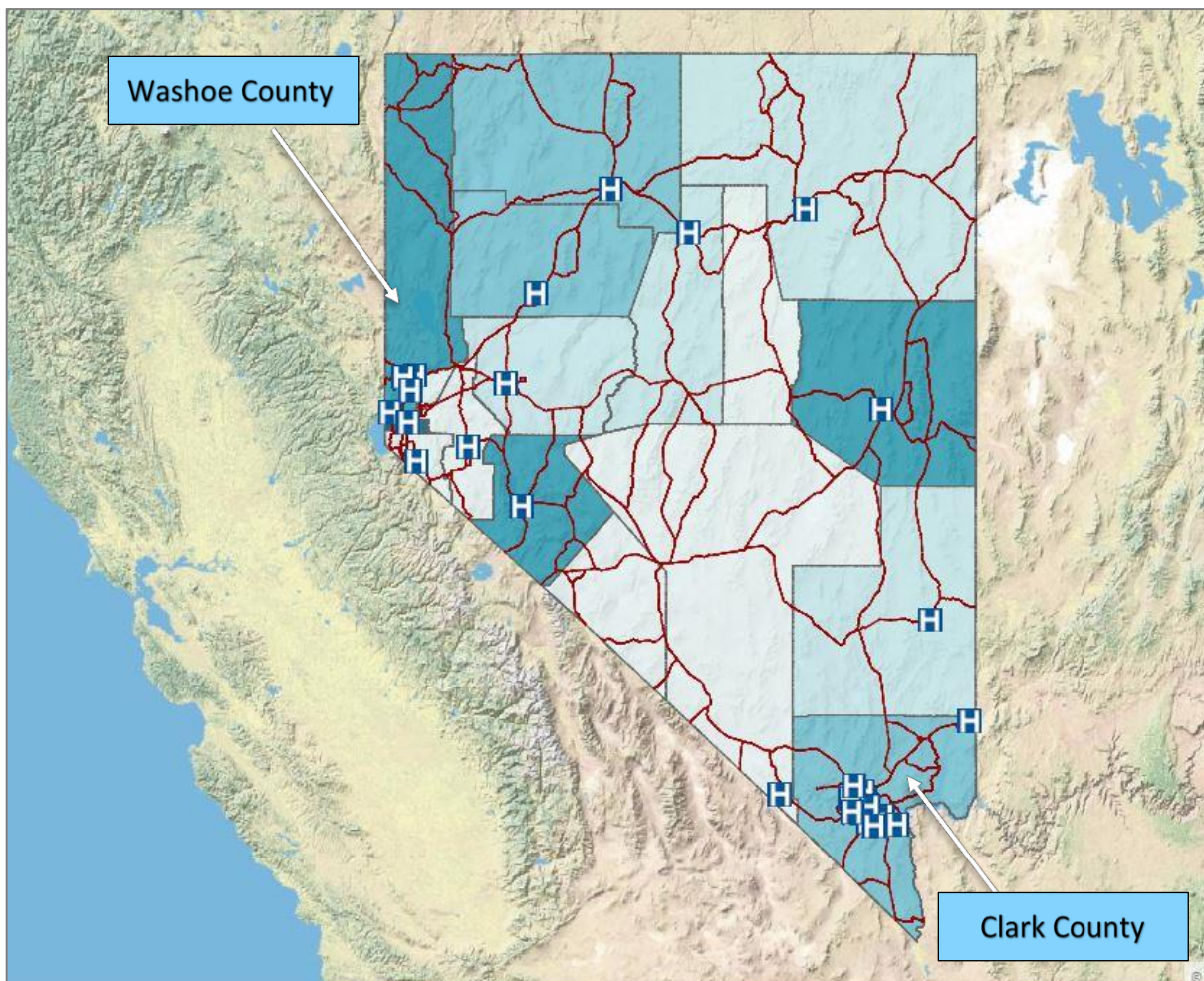
<sup>3</sup> American College of Surgeons. Verification, Review and Consultation (VRC) Program. Source: <https://www.facs.org/quality-programs/trauma/tqp/center-programs/vrc/about>

<sup>4</sup> American College of Surgeons. Resource for Optimal Care of the Injured Patient 6<sup>th</sup> edition. Source: <https://www.facs.org/Quality-Programs/Trauma/TQP/center-programs/VRC/resources>

<sup>5</sup> 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 is located in Las Vegas, Clark County. Renown Regional Medical Center (RRMC) is a Level II Trauma center in Reno, Washoe County (Table 1). 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<sup>6</sup>.



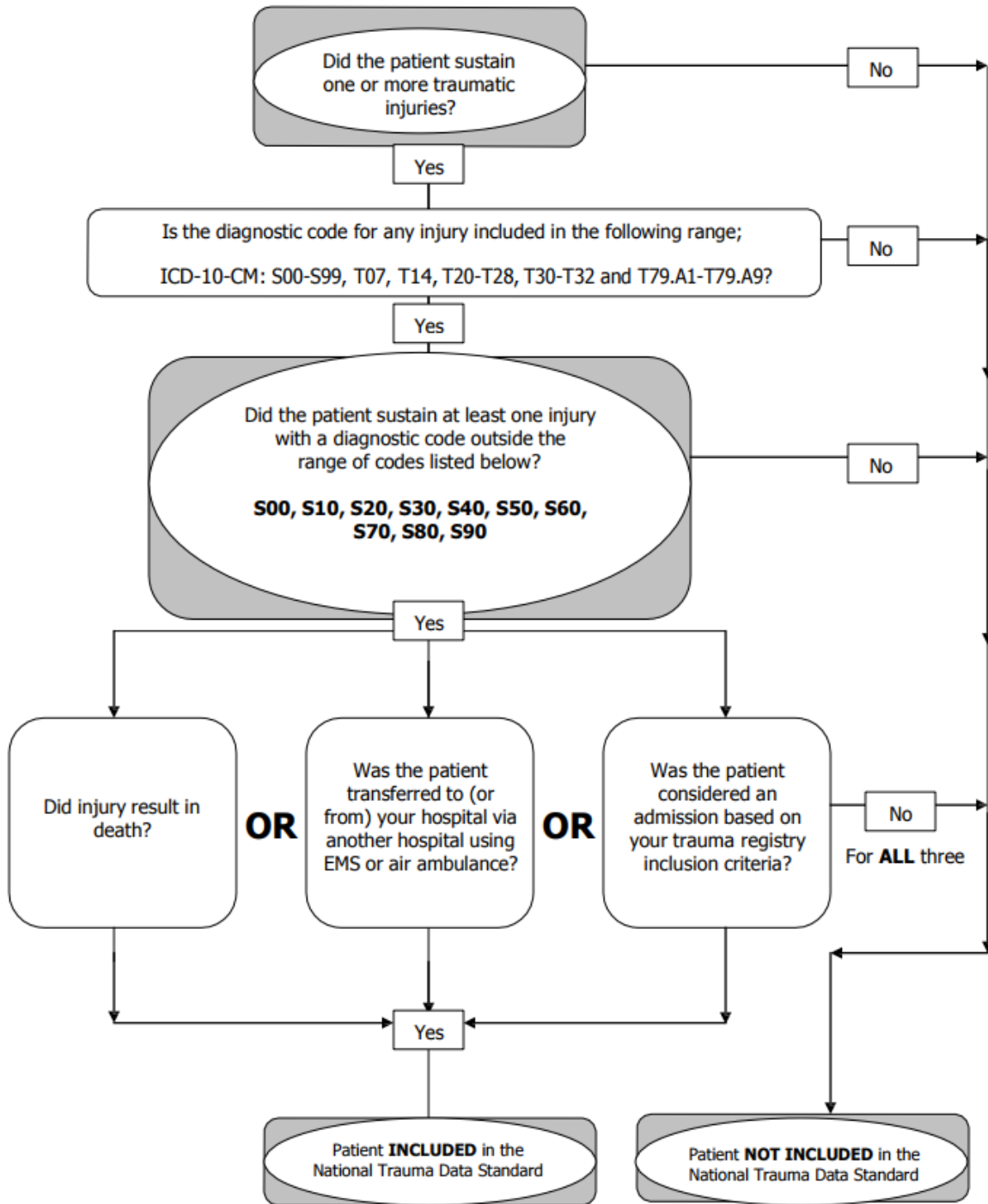
Appendix B. Licensed Community Hospitals in Nevada. Source: <https://med.unr.edu/statewide/instant-atlas/county-data-map>

<sup>6</sup> 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: 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. Emergency Room (ER) at McCarran Northwest, an extension of Northern Nevada Medical Center, in Reno has been added to the NTR system. Once training and outreach for onboarding has been completed, patient level information from ER at McCarran Northwest will be reported into NTR. Appendix B illustrates inclusion criteria that a patient must meet to be reported to the NTR.

### National Trauma Data Standard Inclusion Criteria



Appendix C. National Trauma Data Standard Data Dictionary 2019 Admissions. Source: <https://www.facs.org/quality-programs/trauma/tqpc/center-programs/ntdb/ntds>



## Traumatic Injuries in Washoe County

Table 3 depicts the trend of trauma cases reported in Washoe County to the Nevada Trauma Registry from 2017 to 2019. The number of patients with an injury classified as traumatic that were reported by Washoe County facilities increased by 15.7% in 2018 (n=2,130) compared to 2017 (n=1,841) and decreased by 30% in 2019 (n=1,501) compared to 2018. 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.

Year	Number of Incidents	Rate per 100,000 population
2017	1,841	407.14
2018	2,130	463.99
2019	1,501	320.19

Year	Number (%) of Incidents	Race Specific Rate per 100,000 population <sup>a</sup>
White	1,243 (82.8%)	421.38
Black	26 (1.7%)	216.14
American Indian	29 (1.9%)	395.36
Asian/Pacific Islander	45 (3.0%)	134.53
Hispanic	118 (7.9%)	97.53

<sup>a</sup> Source population for race-specific race from ASHRO Estimates and Projections Summary 2000 to 2038.

## Demographic Characteristics

Table 4 depicts demographic characteristics of trauma patients by age, and gender. In 2019, nearly eight out of ten (82.8%) trauma patients were white, non-Hispanic. Hispanics of any race accounted for 7.9%, while 3% were Asian/Pacific Islander, non-Hispanic, 2% were African American, non-Hispanic, 2% were American Indian, non-Hispanic, 2% were of an unknown race/ethnicity, and 1% were an “other” race (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). There’s 3% to 5% increase in the percentage of trauma reported for patients aged 65 years and older from 2017 to 2019 (Figure 2).

**Table 4. Number & Percent of Patients by Sex & Age Group, Washoe County, 2019**

Age Group	All Incidents		Male		Female		Unknown	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-4 years	16	1%	7	1%	9	1%	0	-
5-9 years	11	1%	6	1%	5	1%	0	-
10-14 years	28	2%	19	2%	9	1%	0	-
15-19 years	59	4%	46	5%	13	2%	0	-
20-24 years	72	5%	49	6%	23	4%	0	-
25-34 years	170	11%	132	15%	38	6%	0	-
35-44 years	133	9%	93	11%	39	6%	1	33%
45-54 years	139	9%	95	11%	44	7%	0	-
55-64 years	185	12%	117	14%	68	11%	0	-
65-74 years	234	16%	119	14%	114	18%	1	33%
75-84 years	251	17%	115	13%	135	21%	1	
85+ years	203	14%	63	7%	140	22%	0	33%
<b>Total</b>	<b>1,501</b>	<b>100%</b>	<b>861</b>	<b>100%</b>	<b>637</b>	<b>100%</b>	<b>3</b>	<b>100%</b>

Figure 1. Percent of Trauma Patients by Race/Ethnicity, Washoe County, 2019

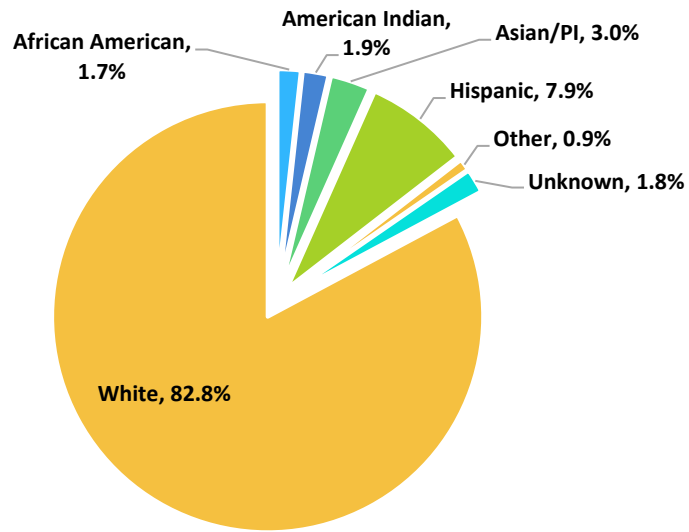
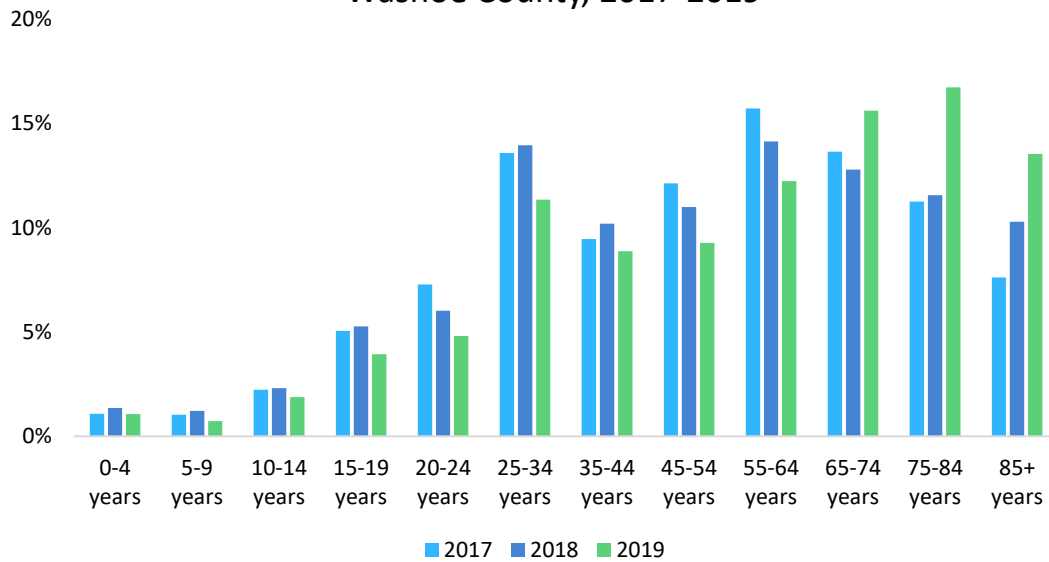


Figure 2. Percent of Trauma Patients by Age Group, Washoe County, 2017-2019



Approximately two-thirds (59%) of all trauma cases reported in 2019 were among those aged 55 and older. Nearly one in six (15%) of male trauma patients were between the ages of 25 to 34 years of age (Table 5). Female aged 75 years and older represented nearly half (43%) of female trauma patients reported to NTR in Washoe County. Overall case fatality rate for trauma patients in Washoe County in 2019 was 7.53 per 100 trauma patients. The highest case fatality rate (CFR) reported among those aged 20-24 years old (11.1 per 100), followed by 85 years and older trauma patients (9.36 per 100).

<b>Age Group</b>	<b>Number of Incidents</b>	<b>Percent of Incidents</b>	<b>Number of Deaths</b>	<b>Case Fatality Rate<sup>a</sup></b>
0-4 years	16	1%	1	6.25
5-9 years	11	1%	1	9.09
10-14 years	28	2%	2	7.14
15-19 years	59	4%	4	6.78
20-24 years	72	5%	8	11.11
25-34 years	170	11%	7	4.12
35-44 years	133	9%	11	8.27
45-54 years	139	9%	6	4.32
55-64 years	185	12%	17	9.19
65-74 years	234	16%	18	7.69
75-84 years	251	17%	19	7.57
85+ years	203	14%	19	9.36
<b>Total</b>	<b>1,501</b>	<b>100%</b>	<b>113</b>	<b>7.53</b>

<sup>a</sup> Rate per 100 trauma patients

## Injury Characteristics

### Intent of Injury

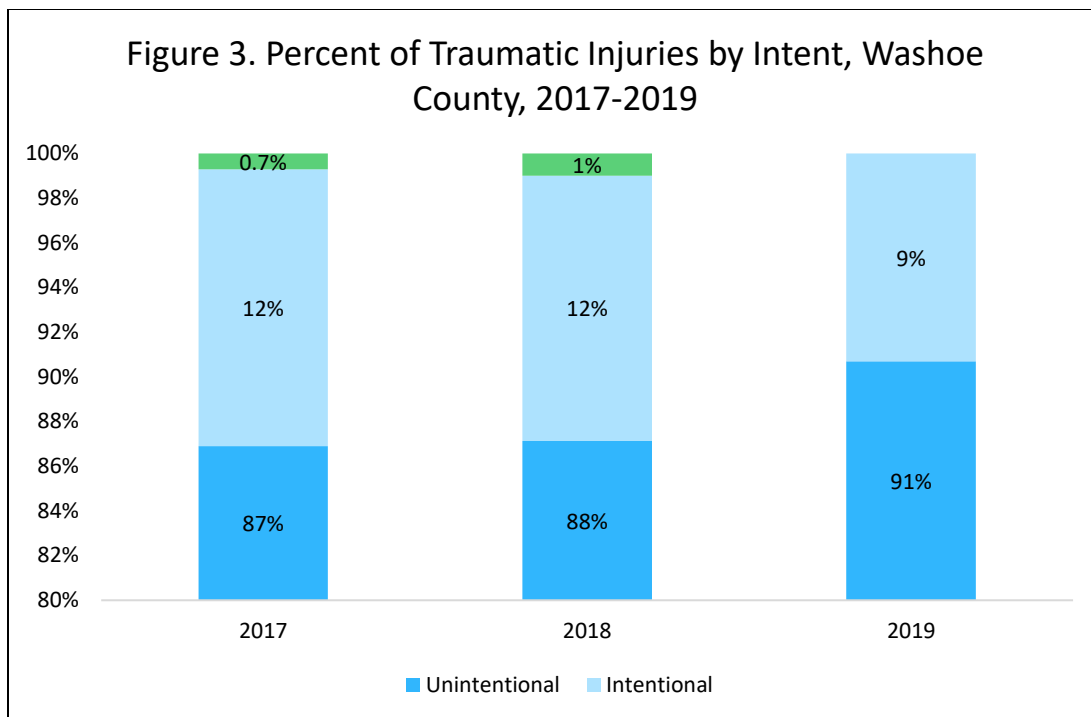
Unintentional injuries accounted for 90.6% of trauma, with reported case fatality rate of 6.5 per 100 trauma patients. Intentional injury accounted for 9.3% of overall trauma reported, with case fatality rate of 17.1 per 100 trauma patients. The intent of injury reported over the span of three years, 2017 – 2019 has remained relative stable, with 3% increase in unintentional injuries in 2019 compared to the previous years (Figure 3).

Intent of Injury	Number	Percent of Total	Deaths	Case Fatality Rate <sup>a</sup>
Unintentional	1,361	90.6%	89	6.5
Intentional	140	9.3%	24	17.1
Undetermined	1	0.1%	0	-
<b>Total</b>	<b>1,510</b>	<b>100%</b>	<b>113</b>	<b>7.5</b>

<sup>a</sup> Rate per 100 trauma patients

### Mechanism of Injury

Mechanism of injury (MOI) was determined by the ICD-10-CM primary external cause code (e-code) reported as the main cause of the injury. Almost half of unintentional traumatic injuries in Washoe County (48.2%) were due to falls, the majority of which occurred in private residences in zip code areas 89511, 89521, and 89434 (Figure 5). The second highest contributing factor to unintentional traumatic injuries in Washoe County involved occupants in transportation or motor vehicles collisions (23%). In 2019, all patients sustaining intentional traumatic injuries due to asphyxiation, drowning, and firearm/handgun discharge did not survive (Table 7). The second highest contributing factor to death due to intentional traumatic injuries is self-harm by sharp objects/other means (Table 7). Case fatalities are 2-3 times higher among patients with intentional injuries (17.1 per 100 trauma patients) compared to unintentional injuries (6.5 per 100 trauma patients).



**Table 7: Rate of Fatality Among Trauma Patient Due to Intentional Injuries, Washoe County, 2019**

Mechanism of Injury (MOI)	Number	Percent of Total	Deaths	Case Fatality Rate <sup>a</sup>
<b>Asphyxiation</b>	4	2.9	4	100
<b>Intentional (combined)</b>				
Drowning and submersion	1	0.7	1	100
Firearm and gun discharge	3	2.1	3	100
Handgun discharge	10	7.1	6	60
Self-harm by sharp object	10	7.1	1	10
Self-harm by other means	1	0.7	0	-
<b>Assault (combined)</b>				
Firearm and gun discharge	6	4.3	2	33
Handgun discharge	13	9.3	4	30
Blunt object	20	14.3	2	10
Sharp object	24	17.1	1	4.2
Bodily force	39	27.9	0	-
Rifle, shotgun and larger firearm	2	1.4	0	-
Unspecified means	4	2.9	0	-
<b>Legal intervention</b>	3	2.1	0	-
<b>Total</b>	140	100.0	24	17.1

<sup>a</sup> Rate per 100 trauma patients

**Table 8: Rate of Fatality Among Trauma Patient Due to Unintentional Injuries,  
Washoe County, 2019**

<b>Mechanism of Injury (MOI)</b>	<b>Number</b>	<b>Percent of Total</b>	<b>Deaths</b>	<b>Case Fatality Rate<sup>a</sup></b>
<b>Accidents</b>				
Accident to occupant in aircraft	2	0.1%	0	0.0
Accidental discharge firearms and guns	2	0.1%	0	0.0
Accidental handgun discharge/malfunction	5	0.3%	0	0.0
Accidental hit, strike, kick, bite or scratch	2	0.1%	0	0.0
Accidental drowning and submersion	2	0.1%	2	100.0
Accidental rifle, shotgun and larger firearm	1	0.1%	0	0.0
Accidental striking by another person	5	0.3%	0	0.0
<b>Animal-rider injured in transport accident</b>	16	1.1%	1	6.3
<b>Car occupant(s)</b>				
Collision with car, pick-up truck or van	57	3.8%	7	12.3
Collision with fixed or stationary object	27	1.8%	3	11.1
Collision with heavy transport vehicle or bus	8	0.5%	0	0.0
Collision with pedestrian or animal	1	0.1%	0	0.0
Non-collision transport accident	60	4.0%	3	5.0
Other and unspecified transport accidents	2	0.1%	0	0.0
Crushed, jammed in or between objects	2	0.1%	0	0.0
<b>Contact with specified object</b>				
Contact with agricultural machinery	1	0.1%	0	0.0
Contact with dog	7	0.5%	0	0.0
Contact with hot air and other hot gases	1	0.1%	0	0.0
Contact with lifting and transmission devices	1	0.1%	0	0.0
Contact with nonvenomous plant	1	0.1%	0	0.0
Contact with other and unspecified machinery	3	0.2%	0	0.0
Contact with other hot fluids	1	0.1%	0	0.0
Contact with other mammals	15	1.0%	0	0.0
Contact with other sharp objects	4	0.3%	0	0.0
Contact with sharp glass	1	0.1%	0	0.0
<b>Crushed, pushed or stepped on by crowd</b>	1	0.1%	0	0.0
<b>Discharge of firework</b>	3	0.2%	0	0.0
<b>Exposure to controlled fire in building</b>	1	0.1%	0	0.0
<b>Exposure to highly flammable material</b>	1	0.1%	0	0.0

**Table 8: Rate of Fatality Among Trauma Patient Due to Unintentional Injuries, Washoe County, 2019 (cont'd)**

<b>Mechanism of Injury (MOI)</b>	<b>Number</b>	<b>Percent of Total</b>	<b>Deaths</b>	<b>Case Fatality Rate<sup>a</sup></b>
<b>Falls</b>				
Fall due to ice and snow	46	3.1%	0	0.0
Fall from bed	33	2.2%	3	9.1
Fall from chair	25	1.7%	2	8.0
Fall from cliff	1	0.1%	0	0.0
Fall from non-moving wheelchair, scooter	7	0.5%	0	0.0
Fall from other furniture	4	0.3%	0	0.0
Fall from, out of or through building	10	0.7%	0	0.0
Fall on and from ladder	35	2.3%	0	0.0
Fall on and from playground equipment	1	0.1%	0	0.0
Fall on and from scaffolding	2	0.1%	0	0.0
Fall on and from stairs and steps	48	3.2%	0	14.6
Fall on same level from slipping or tripping	388	25.8%	7	3.9
Fall while being carried by other persons	2	0.1%	15	0.0
Fall, jump or diving into water	1	0.1%	0	0.0
Unspecified fall	26	1.7%	2	7.7
<b>Motorcycle</b>				
Collision with car, pick-up truck or van	18	1.2%	6	33.3
Collision with fixed or stationary object	9	0.6%	0	0.0
Collision with heavy transport vehicle or bus	1	0.1%	1	100.0
Collision with pedestrian or animal	2	0.1%	0	0.0
Collision with two or three motor vehicle	1	0.1%	0	0.0
Non-collision transport accident	27	1.8%	2	7.4
Other and unspecified transport accidents	3	0.2%	0	0.0
<b>Occupant in transport accidents</b>				
Vehicle injured in non-collision	11	0.7%	1	9.1
Pick-up truck or van injured in collision	14	1.3%	5	35.7
Special all-terrain or other off-road motor	56	3.7%	0	0.0
Three-wheeled motor vehicle	2	0.1%	0	0.0
<b>Other specified incidents</b>				
Other fall from one level to another	21	1.4%	0	0.0
Other fall on same level due to collision	1	0.1%	0	0.0
Other slipping, tripping and stumbling	106	8.1%	16	13.1



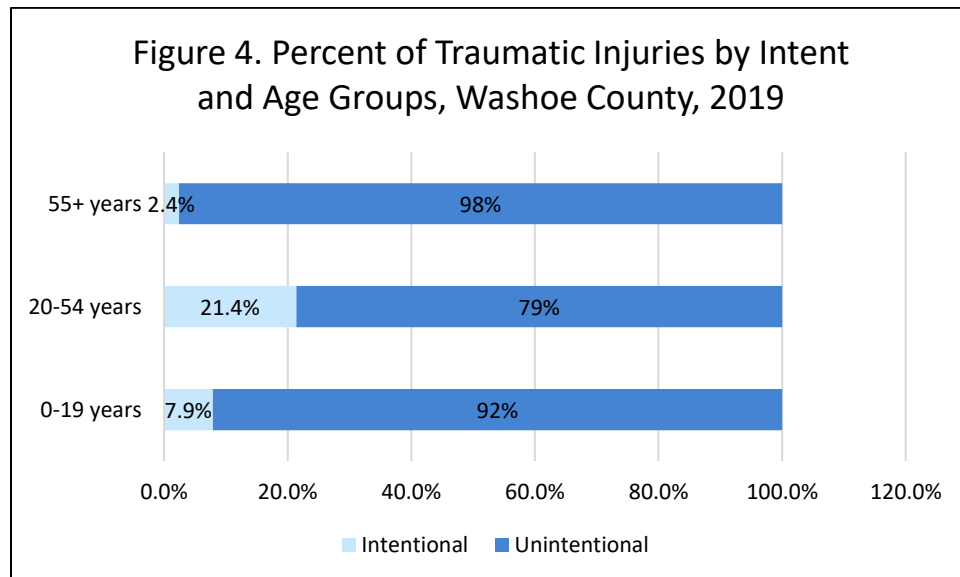
<b>Table 8: Rate of Fatality Among Trauma Patient Due to Unintentional Injuries, Washoe County, 2019 (cont'd)</b>				
<b>Mechanism of Injury (MOI)</b>	<b>Number</b>	<b>Percent of Total</b>	<b>Deaths</b>	<b>Case Fatality Rate<sup>a</sup></b>
Other specified air transport accidents	2	0.1%	0	0.0
Other undetermined intent	1	0.1%	0	0.0
<b>Pedal cycle rider</b>				
Collision with car, pick-up truck or van	6	0.4%	1	16.7
Collision with fixed or stationary	2	0.1%	1	50.0
Collision with other pedal cycle	1	0.1%	0	0.0
Collision with pedestrian or animal	1	0.1%	0	0.0
Non-collision transport accident	31	2.1%	0	0.0
Other and unspecified transport accidents	2	0.1%	0	0.0
<b>Pedestrian</b>				
Conveyance accident	99	6.6%	4	4.0
Collision with car, pick-up truck or van	31	2.1%	5	16.1
Other and unspecified transport accidents	2	0.1%	0	0.0
<b>Assault, maltreatment and neglect</b>				
Striking against or struck by other objects	22	1.5%	0	0.0
Contact with venomous animals or plant	4	0.3%	0	0.0
<b>Unspecified MOI</b>	<b>140</b>	<b>9.3%</b>	-	-
<b>Total</b>	<b>1,361</b>	<b>90.67</b>	<b>89</b>	<b>6.5</b>

\*Rate per 100 trauma patients

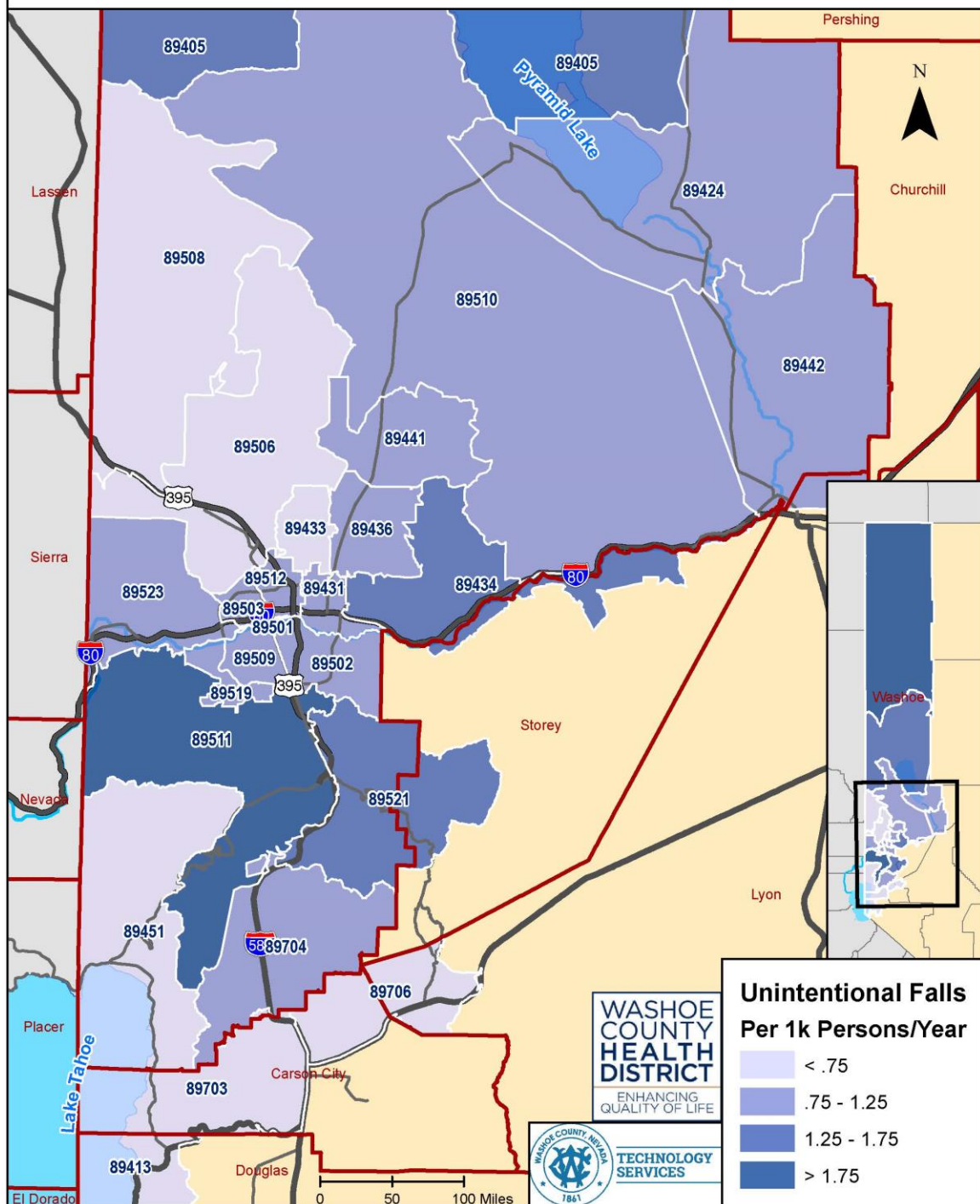
## Mechanism of Injury by Age Group

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. Falls and motor vehicles were among the top three mechanisms of injury across all age groups, including high reported number of intentional assaults among cases in the 20-54 years old age group. Intentional assault reported varies in mechanism of injury from assaults due to bodily force (36%), assault by sharp object (23%), assault by blunt object (17%) and assault by handgun discharge (12%), and assault by other specified/unspecified means (12%). Pedestrian were among the top three unintentional injuries across all age group with a case fatality rate of 50 per 100 trauma patients (Table 9).

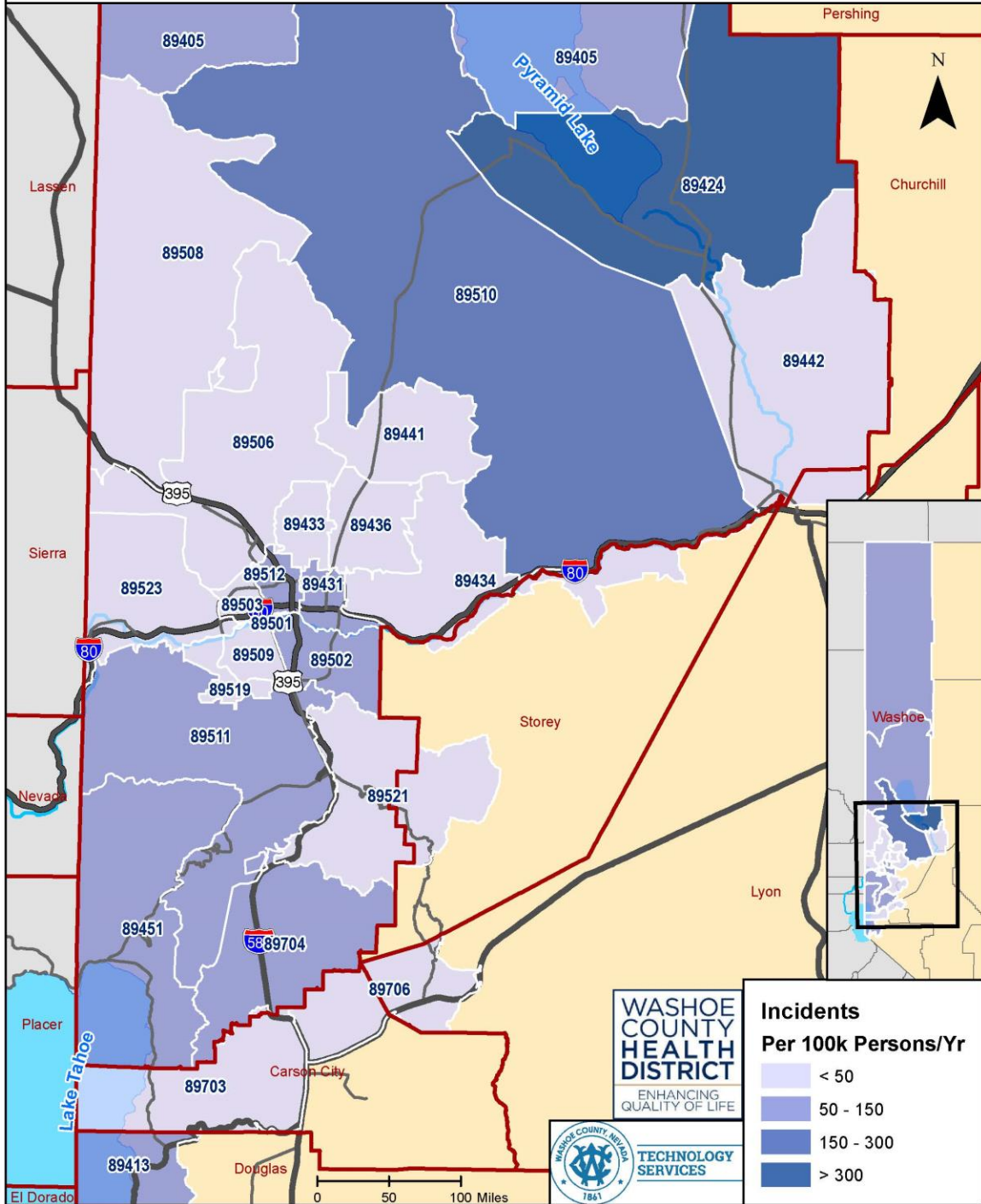
Rank	0-19 years	20-54 years	55+ years
1	Pedestrian	Transport/Motor Vehicle	Falls, Stumbling, Slipping
2	Transport/Motor Vehicle	Intentional Assault	Transport/Motor Vehicle
3	Falls & Pedal Cycle (tied)	Falls & Pedestrian (tied)	Pedestrian



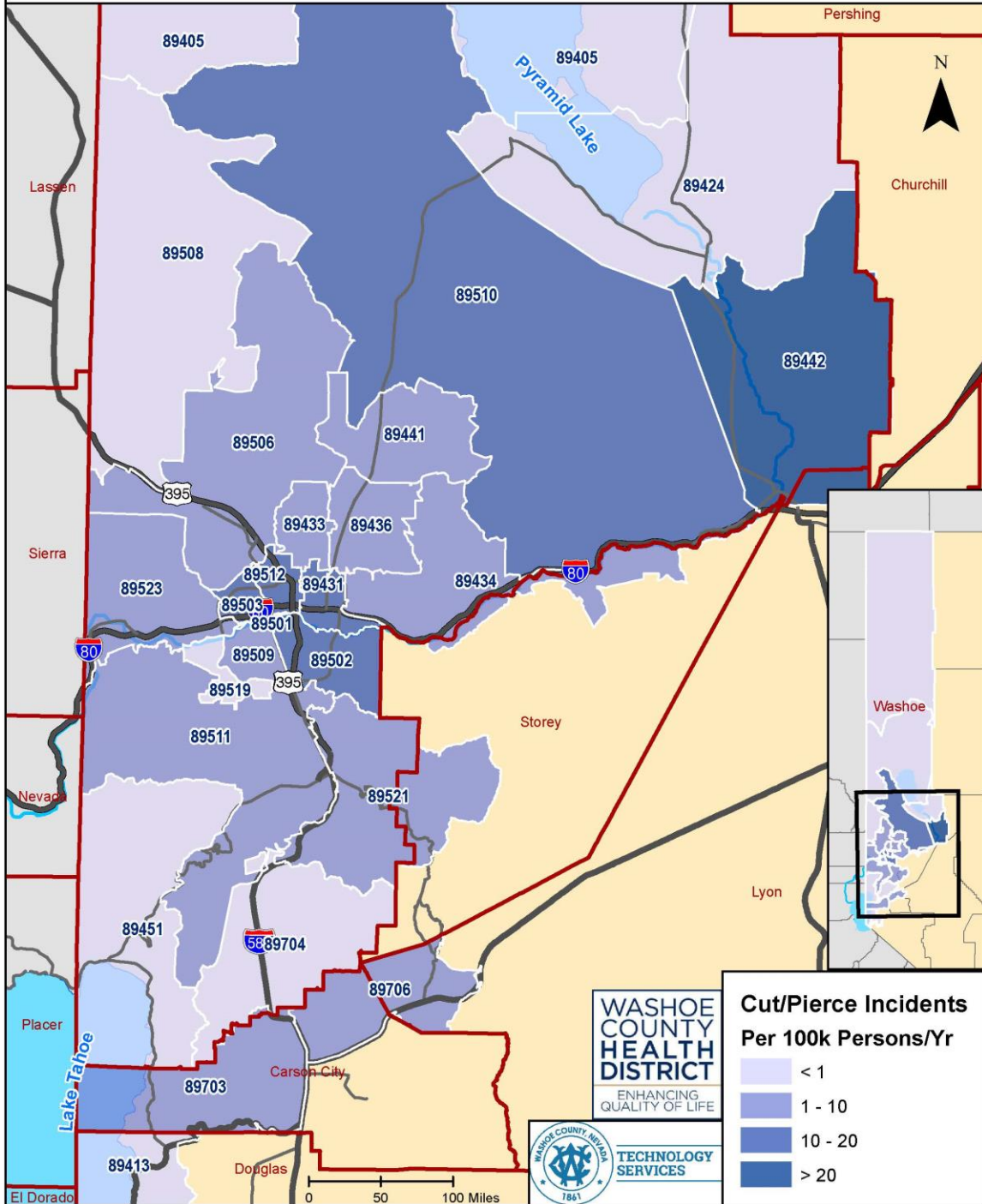
**Figure 5. Unintentional Fall Incidents by Zip Code, Washoe County, 2017 - 2019**



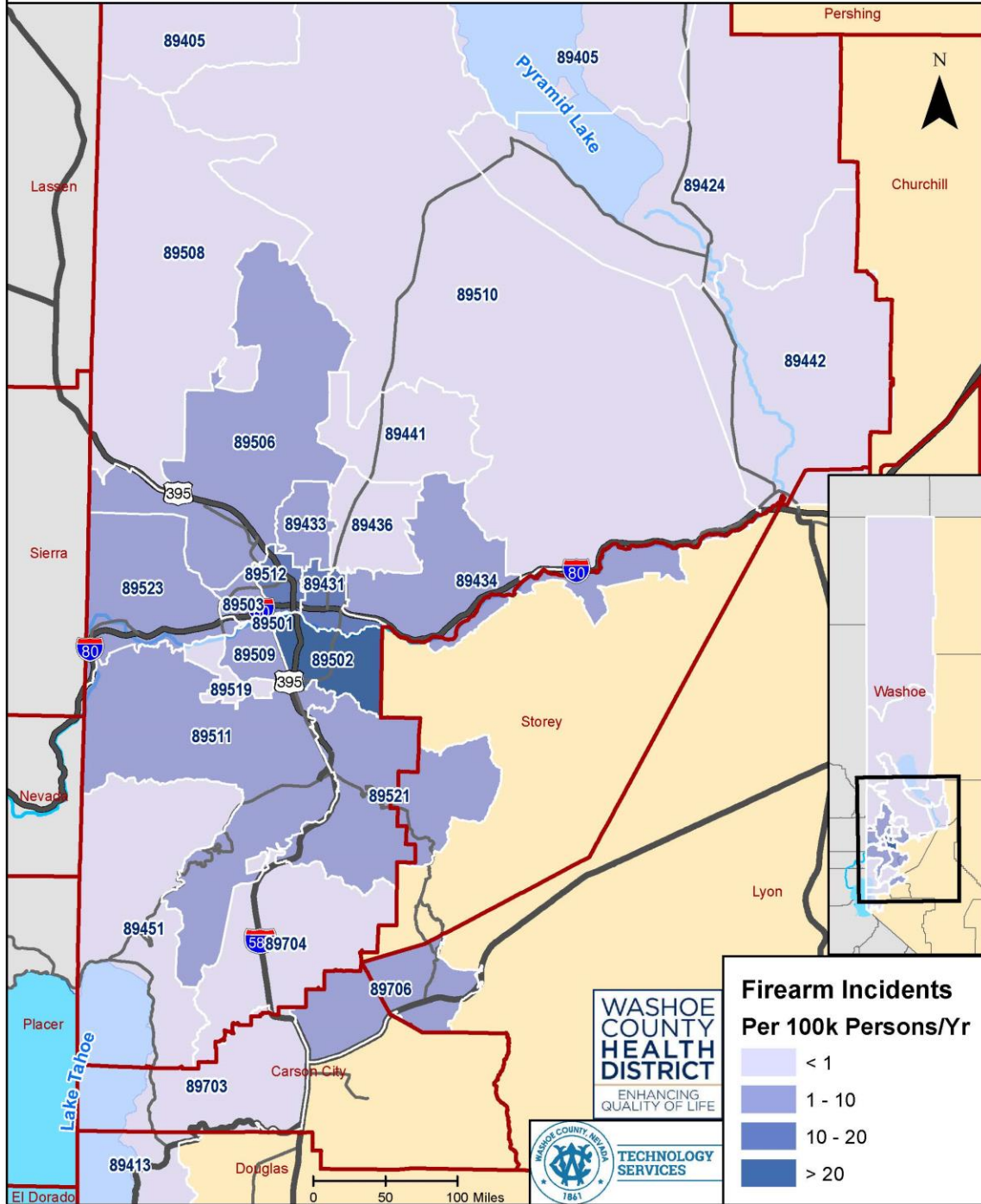
**Figure 6: Unintentional Motor Vehicle Incidents by Zip Code, Washoe County, 2017 - 2019**



**Figure 7: Intentional Cut/Pierce Incidents by Zip Code, Washoe County, 2017 - 2019**



**Figure 8: Intentional Firearm Incidents by Zip Code, Washoe County, 2017 - 2019**



## **Spatial Pattern of Injury by Zip Code**

In 2019, unintentional falls were the primary mechanism of unintentional injury (48.2%), followed by motor vehicle incidents (23%). Figure 5 depicts spatial pattern of unintentional fall injuries in Washoe County over the span of three years from 2017 – 2019 with more than 2 incidents per 1,000 persons/year in zip codes 89511, 89521, 89434 and 89405. Figure 6 depicts spatial patterns of unintentional motor vehicle injuries as primary MOI. Unintentional motor vehicle incidents highest in zip codes 89510 and 89424 with 150 - 300 incidents reported per 100,000 persons/year.

Intentional injuries accounted for 9.3% of all traumatic injuries in Washoe County (Table 6). Among all intentional injuries, two out of three trauma cases reported due to assault by sharp/blunt object (31.4%), and bodily force (27.9%). Figure 7 depicts intentional injuries due to cut/pierce by sharp/blunt object with high incidents reported in zip code 89442 (>20 incidents per 100,000 persons/year). Among the zip codes in the metropolitan city areas in Washoe County, zip code 89503, 89502, 89512 and 89431 reported 10 – 20 cut/pierce incidents per 100,000 persons/year.

Firearm related incidents accounted for only 20% of intentional incidents reported in 2019, with alarming case fatality rates in Washoe County (Table 7). Figure 8 depicts intentional injuries due to firearm incidents in Washoe County. Zip codes areas in 89502, 89512, 89501, 89431 reported more than 20 firearm incidents per 100,000/year.

## 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. Over half of trauma cases reported in Washoe County occurred in a specified place in private residence, streets and highway (Table 10).

<b>Table 10: Detailed Place of Injury, Washoe County, 2019</b>		
<b>Place of Injury</b>	<b>Number</b>	<b>Percent</b>
<b>Airport</b>	<b>1</b>	<b>0.08</b>
<b>Baseball field</b>	<b>1</b>	<b>0.08</b>
<b>Basketball court</b>	<b>1</b>	<b>0.08</b>
<b>Bathroom</b>	<b>63</b>	<b>4.81</b>
Bathroom in apartment	8	0.61
Bathroom in mobile home	1	0.08
Bathroom in nursing home	3	0.23
Bathroom in other non-institutional residence	1	0.08
Bathroom in other specified residential institution	2	0.15
Bathroom in prison	1	0.08
Bathroom of single-family (private) house	39	2.97
Bathroom of unspecified non-institutional residence	8	0.61
<b>Beach</b>	<b>3</b>	<b>0.23</b>
<b>Bedroom</b>	<b>95</b>	<b>7.24</b>
Bedroom in apartment	15	1.14
Bedroom in mobile home	3	0.23
Bedroom in nursing home	26	1.98
Bedroom in other non-institutional residence	2	0.15
Bedroom in other specified residential institution	3	0.23
Bedroom of single-family (private) house	37	2.82
Bedroom of unspecified non-institutional residence	9	0.69
<b>Campsite</b>	<b>2</b>	<b>0.15</b>
<b>Cell of prison</b>	<b>3</b>	<b>0.23</b>
<b>Courtyard of prison</b>	<b>1</b>	<b>0.08</b>
<b>Daycare center</b>	<b>1</b>	<b>0.08</b>
<b>Derelict house</b>	<b>25</b>	<b>1.91</b>
<b>Desert</b>	<b>21</b>	<b>1.60</b>
<b>Dining room</b>	<b>5</b>	<b>0.39</b>
Dining room in other specified residential institution	1	0.08
Dining room of single-family (private) house	3	0.23
Dining room of non-institutional residence	1	0.08



**Table 10: Detailed Place of Injury, Washoe County, 2019 (cont'd)**

Place of Injury	Number	Percent
<b>Driveway of mobile home</b>	<b>1</b>	<b>0.08</b>
<b>Driveway of other non-institutional residence</b>	<b>1</b>	<b>0.08</b>
<b>Exit ramp or entrance ramp of street or highway</b>	<b>2</b>	<b>0.15</b>
<b>Football field</b>	<b>1</b>	<b>0.08</b>
<b>Forest</b>	<b>19</b>	<b>1.45</b>
<b>Garden</b>	<b>99</b>	<b>7.55</b>
Garden or yard in single-family (private) house	70	5.34
Garden or yard of mobile home	3	0.23
Garden or yard of nursing home	2	0.15
Garden or yard of unspecified non-institutional (private) residence	24	1.83
<b>Gas station</b>	<b>1</b>	<b>0.08</b>
<b>Ice skating rink (indoor) (outdoor)</b>	<b>1</b>	<b>0.08</b>
<b>Interstate highway</b>	<b>96</b>	<b>7.32</b>
<b>Kitchen</b>	<b>43</b>	<b>3.28</b>
Kitchen in apartment	3	0.23
Kitchen in mobile home	2	0.15
Kitchen in other specified residential	1	0.08
Kitchen of single-family (private) house	27	2.06
Kitchen of unspecified non-institutional (private) residence	10	0.76
<b>Local residential or business street</b>	<b>121</b>	<b>9.23</b>
<b>Other</b>	<b>232</b>	<b>17.71</b>
Other athletic field	1	0.08
Other paved roadways	7	0.53
Other place in apartment	11	0.84
Other place in mobile home	3	0.23
Other place in nursing home	3	0.23
Other place in other non-institutional residence	3	0.23
Other place in other specified residential institution	1	0.08
Other place in prison	2	0.15
Other place in single-family (private) house	43	3.28
Other place in unspecified non-institutional (private)	11	0.84
Other public administrative building	2	0.15
Other recreation area	114	8.70
Other school	1	0.08
Other transport vehicle	1	0.08

**Table 10: Detailed Place of Injury, Washoe County, 2019 (cont'd)**

Place of Injury	Number	Percent
Other wilderness area	29	2.21
<b>Parking lot</b>	<b>31</b>	<b>2.36</b>
<b>Parkway</b>	<b>3</b>	<b>0.23</b>
<b>Patient room in hospital</b>	<b>1</b>	<b>0.08</b>
<b>Private driveway to single family (private) house</b>	<b>21</b>	<b>1.60</b>
<b>Private garage of single family (private) house</b>	<b>12</b>	<b>0.92</b>
<b>Public park</b>	<b>7</b>	<b>0.53</b>
<b>Railroad track</b>	<b>1</b>	<b>0.08</b>
<b>Restaurant or café</b>	<b>14</b>	<b>1.07</b>
<b>Shop (commercial)</b>	<b>4</b>	<b>0.31</b>
<b>Sidewalk</b>	<b>68</b>	<b>5.19</b>
<b>State road</b>	<b>6</b>	<b>0.46</b>
<b>Supermarket, store or market</b>	<b>8</b>	<b>0.61</b>
<b>Truck</b>	<b>1</b>	<b>0.08</b>
<b>Unspecified place</b>	<b>290</b>	<b>22.13</b>
Unspecified place in apartment	30	2.29
Unspecified place in mobile home	3	0.23
Unspecified place in nursing home	25	1.91
Unspecified place in other non-institutional residence	4	0.31
Unspecified place in other specified residential institution	3	0.23
Unspecified place in prison	10	0.76
Unspecified place in single-family (private) house	86	6.56
Unspecified place in unspecified non-institutional (private)	71	5.42
Unspecified street and highway	58	4.42
Unspecified place in apartment	30	2.29
Unspecified place in mobile home	3	0.23
Unspecified place in nursing home	25	1.91
Unspecified place in other non-institutional residence	4	0.31
Missing	195	12.9
<b>Total</b>	<b>1,501</b>	<b>100.0</b>

**Table 11: Rate of Fatality by Place of Injury, Washoe County, 2019**

Place of Injury	Number of Incidents	Percent of Incidents	Number of Deaths	Case Fatality Rate <sup>a</sup>
<b>Athletic court/Field</b>	<b>9</b>	<b>0.6</b>	<b>0</b>	<b>0</b>
<b>Farm</b>	<b>15</b>	<b>1.0</b>	<b>0</b>	<b>0</b>
<b>Industrial/Construction</b>	<b>10</b>	<b>0.6</b>	<b>0</b>	<b>0</b>
<b>Institutional residence</b>	<b>83</b>	<b>5.4</b>	<b>5</b>	<b>6.0</b>
Hospital	1	0.0	1	100.0
Nursing home	56	3.7	4	7.1
Other	9	0.6	0	0
Prison	17	1.1	0	0
<b>Movie house</b>	<b>2</b>	<b>0.1</b>	<b>0</b>	<b>0</b>
<b>Other</b>	<b>40</b>	<b>2.6</b>	<b>5</b>	<b>12.5</b>
Non-institutional residence	8	0.5	1	12.5
Paved roadway	6	0.4	0	0.0
Specified place	26	1.7	4	15.4
<b>Parking lot</b>	<b>29</b>	<b>1.9</b>	<b>2</b>	<b>6.9</b>
<b>Private commercial establishment</b>	<b>26</b>	<b>1.7</b>	<b>1</b>	<b>3.8</b>
<b>Private residence</b>	<b>551</b>	<b>37.2</b>	<b>41</b>	<b>7.4</b>
<b>Public building</b>	<b>4</b>	<b>0.2</b>	<b>0</b>	<b>0.0</b>
<b>Recreation area</b>	<b>125</b>	<b>8.4</b>	<b>6</b>	<b>4.8</b>
<b>Service area</b>	<b>29</b>	<b>1.9</b>	<b>3</b>	<b>10.3</b>
<b>Sidewalk</b>	<b>68</b>	<b>4.5</b>	<b>2</b>	<b>2.9</b>
<b>Street/Highway</b>	<b>282</b>	<b>19.0</b>	<b>41</b>	<b>14.5</b>
<b>Unspecified place/NA</b>	<b>138</b>	<b>9.3</b>	<b>3</b>	<b>2.2</b>
<b>Wilderness area</b>	<b>69</b>	<b>4.6</b>	<b>2</b>	<b>2.9</b>
<b>Missing</b>	<b>21</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total</b>	<b>1,501</b>	<b>100%</b>	<b>111</b>	<b>7.5</b>

<sup>a</sup> Rate per 100 trauma patients

Table 11 depicts pattern of injuries and fatalities by place of injury in Washoe County. Highest incidence of injury reported in 2019 occurred in private residence (37.2%), followed by street/highway (19.0%). Highest case fatality rates were among incidents in non-institutional residence [CFR:15.4], street and highway [CFR:14.5], and service areas [CFR:10.3].

## 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<sup>7</sup>. 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 12.

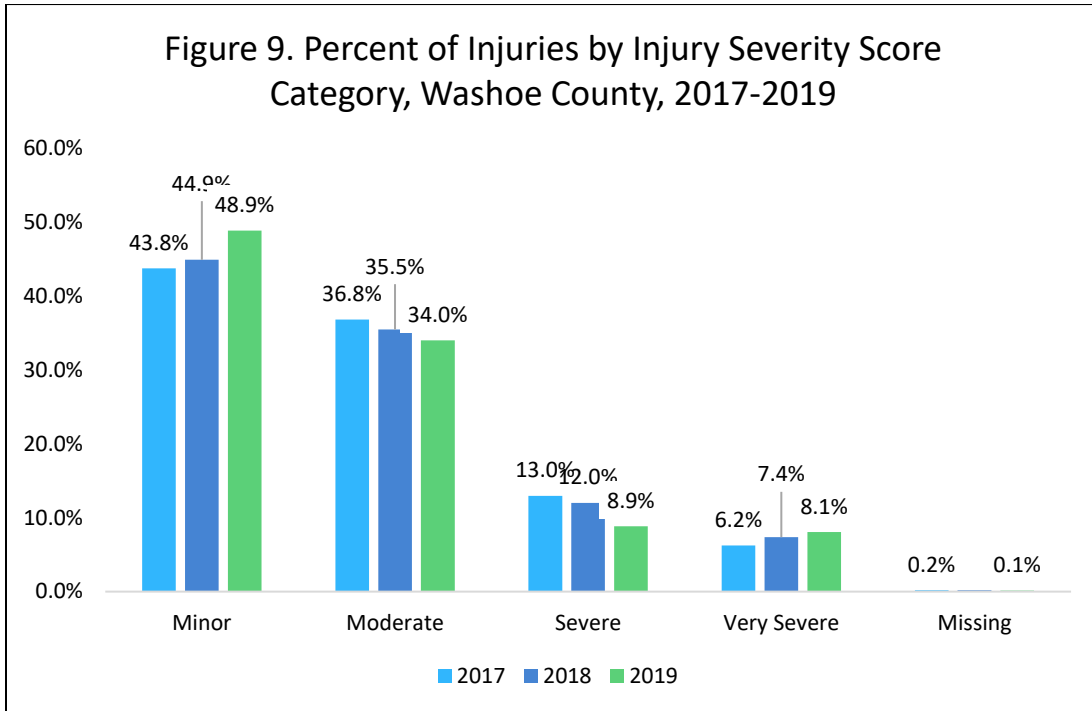
<b>Injury Severity Score (ISS)</b>	<b>ISS Category</b>
1 to 8	Minor
9 to 15	Moderate
16 to 24	Severe
25 or higher	Very Severe

<b>Injury Severity Score Category</b>	<b>Number of Injuries</b>	<b>Percent of Injuries</b>	<b>Number of Deaths</b>	<b>Case Fatality Rate*</b>
Minor	734	48.9%	11	1.5
Moderate	511	34.0%	17	3.3
Severe	133	8.9%	16	12.0
Very Severe	121	8.1%	69	57.0
Missing	2	0.1%	0	0
<b>Total</b>	<b>1,501</b>	<b>100%</b>	<b>113</b>	<b>7.5</b>

<sup>a</sup> Rate per 100 trauma patients

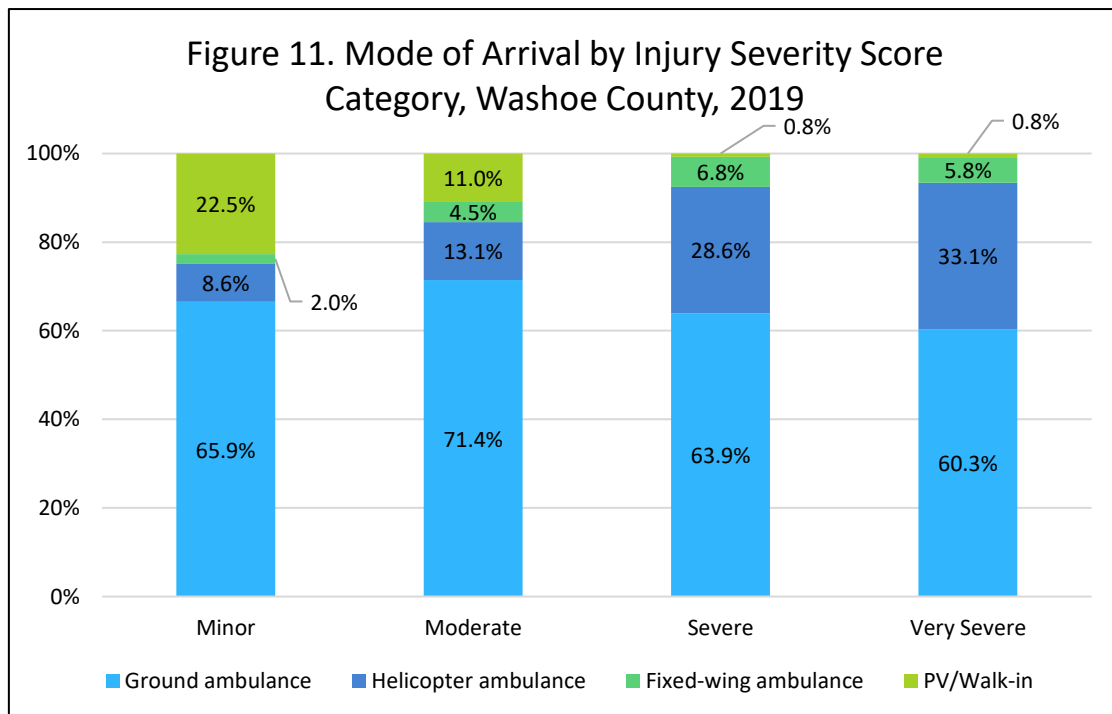
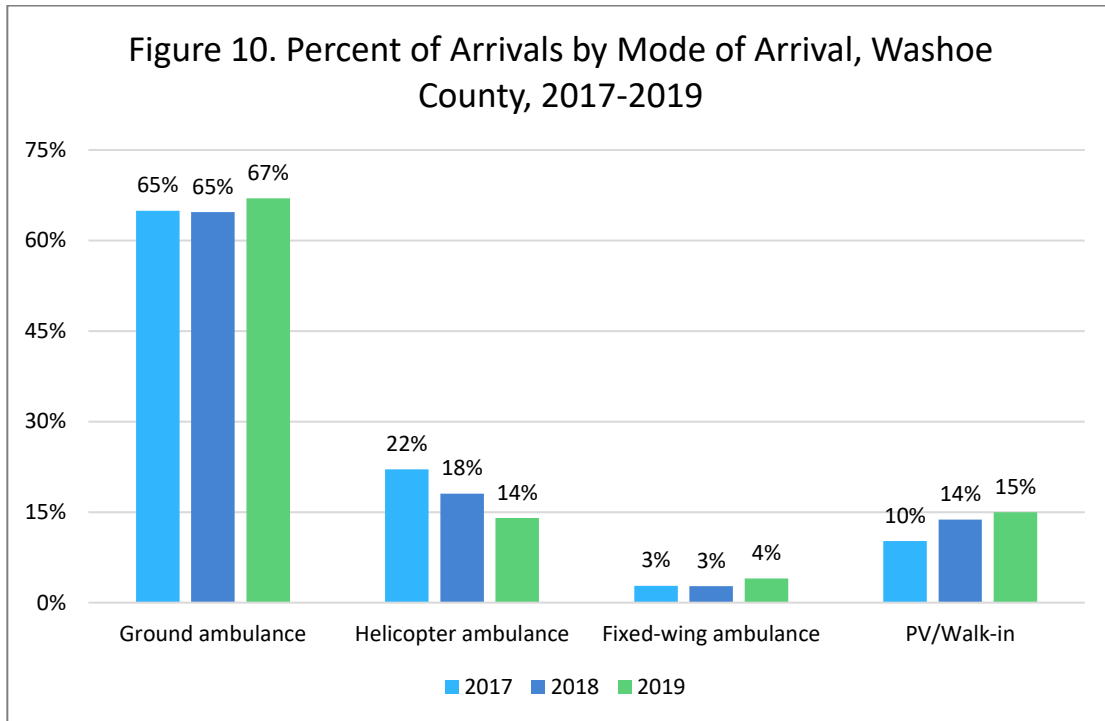
Eight in ten traumatic injuries in Washoe County were categorized as minor or moderate injuries (Table 13). While nearly one in ten incidents were categorized as severe or very severe. The case fatality rate increases dramatically with each increase in ISS category. In 2019, trauma cases with very severe injuries accounted for more than half of deaths reported (57.0%).

<sup>7</sup> 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 2017 – 2019, the trend for minor injuries based on ISS increased from 43.8% to 48.9% and very severe injuries increased from 6.2% to 8.1% in Washoe County. Severe injuries decreased by 5.0% over the span of three years from 13.0% in 2017 to 8.9% in 2019 (Figure 9).

**Prehospital Characteristics**



<b>Table 14: Rate of Fatality by Mode of Arrival, Washoe County, 2019</b>				
<b>Mode of Arrival</b>	<b>Number of Incidents</b>	<b>Percent of Incidents</b>	<b>Number of Deaths</b>	<b>Case Fatality Rate<sup>a</sup></b>
Ground ambulance	1,008	67%	81	8.0
Helicopter ambulance	208	14%	30	14.4
Fixed-wing ambulance	54	4%	2	3.7
PV/Walk-in	223	15%	0	0.0
Police	7	0%	0	0.0
Missing	1	0%	-	-
<b>Total</b>	<b>1,501</b>	<b>100%</b>	<b>92</b>	<b>7.5</b>

<sup>a</sup> Rate per 100 trauma patients

Table 10 summarizes the distribution of transport by mode of arrival from 2017 – 2019. Majority of trauma patients in Washoe County was transported by ground ambulance (67%), followed by PV/Walk in (15%), and by helicopter ambulance (14%). In 2019, about one in three patients with injuries classified as severe (28.6%) or very severe (33.1%) were transported by helicopter ambulance (Figure 11). Trauma patient transport by helicopter ambulance decreased by 8% from 2017 – 2019 in Washoe County (Figure 10).

Highest case fatality rate reported in Washoe County were among trauma patients transported by helicopter ambulance [CFR:14.4]. Case fatality rate (CFR) by transport increases by almost two folds among patients transported in helicopter ambulance compared to ground ambulance. About one third of trauma patients with severe (28.6%) and very severe (33.1%) are transported by helicopter ambulance.

## Substance Use

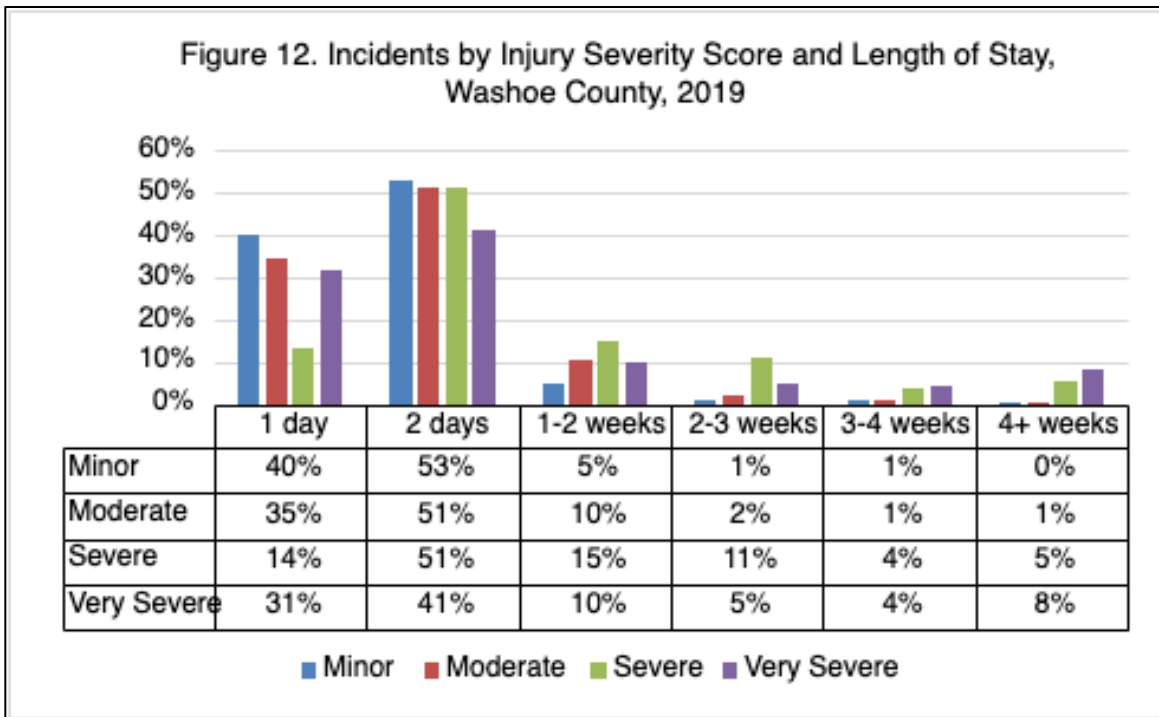
Approximately 47.9% of patients with traumatic injury in Washoe County were not tested for alcohol use, which is an increase from 38.0% in 2017. There has been a significant reduction in the proportion of patients who had no alcohol use, as confirmed by test (Table 18).

<b>Table 15: Detected Substance Use Among Trauma Patients, Washoe County, 2017 – 2019</b>						
<b>Alcohol Use</b>	<b>2017</b>		<b>2018</b>		<b>2019</b>	
	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>
No/Not Tested	700	38.0%	834	39.2%	719	47.9%
No/Confirmed by Test	656	35.6%	841	39.5%	535	35.6%
Yes/Confirmed by Test, Trace Levels	249	13.5%	196	9.2%	116	7.7%
Yes/Confirmed by Test, > Legal Limit	226	12.3%	256	12.0%	129	8.6%
Unknown	10	0.5%	3	<1%	1	<1%



## Patient Outcomes

Patient outcomes highlighted in this section include median length of stay spent in an intensive care unit, total length of stay by injury severity score (ISS) category and top ten highest median length of stay by mechanism of injury (MOI). Similar to previous years, four in ten (40%) of patients with traumatic injury classified as minor were discharged within one day. The length of stay increase as the severity of the injury increases, as demonstrated by nearly 35% of patients with severe traumatic injury, and 27% of patients with very severe traumatic injuries being hospitalized for longer than one week.



## 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 involving motor vehicle collision(s) and pedal cycling had the longest median length of stay in an ICU, 17.5 days and 15.0 days, respectively (Table 17).

**Table 16: Incidents by Injury Severity Score and Median Days, Washoe County, 2017 - 2019**

ISS Category	2017	2018	2019
Minor	0	0	0
Moderate	2	2	2
Severe	3	4	4
Very Severe	5	6	4
Missing	1	-	-

**Table 17: Top Ten Highest Median Days in ICU by Mechanism of Injury, Washoe County, 2017 - 2019**

Mechanism of Injury	2019 (Days)
Occupant of motor vehicle injured in collision	17.5
Pedal cycle rider injured in unspecified transport accident	15.0
Contact with unspecified machinery	13.5
Motorcycle rider injured in collision with transport vehicle or bus	11.0
Pedestrian injured in unspecified transport accident	8.0
Occupant of railway train or vehicle injured in transport accident	7.0
Pedal cycle rider injured in collision with fixed stationary object	6.5
Intentional self-harm by sharp object	6.0
Intentional self-harm by other or unspecified firearm discharge	5.0
Intentional self-harm by hand-gun discharge	5.0

## Conclusion

Falls, transportation and motor vehicle, and pedestrian incidents are very common preventable injuries in Washoe County. Spatial pattern provided in this report show incidence of common intentional and unintentional injuries across various region and jurisdiction(s) in Washoe County. The number and severity of traumatic injuries can be largely prevented by identifying high risk areas and populations, concurrent with implementing safety and prevention guidelines to reduce injury severity where most accidents occur. Adoption of best-practice policy, as recommended in this report, would also greatly reduce contributing risk factors for traumatic injuries, specifically those involving falls, and occupants of motor vehicle injury. The findings in this report is appropriate source of current research and information for various community agencies concerned with reducing the likelihood and effects of traumatic injury and contributing to safety and injury prevention efforts in Washoe County.

For further reading, the American College of Surgeon's National Trauma Reports can be accessed at <https://www.facs.org/quality-programs/trauma/ntdb/docpub>

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Spatial zip code maps in this report was created by Paulo Vandenberg, Washoe County Regional Technology Services

### Additional Information

For additional information regarding the Washoe County Trauma Report contact

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